

### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

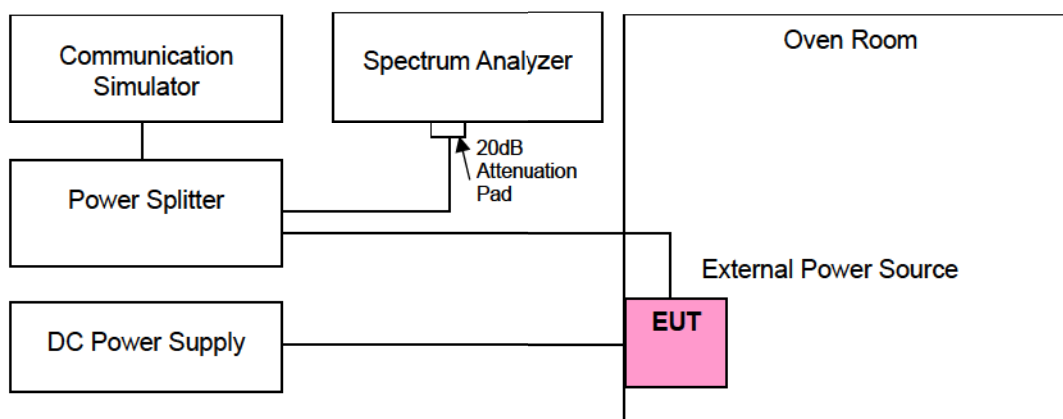
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### 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  $\pm 0.5$  °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 Conducted Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

| Voltage (Vdc) | GPRS            |                       |                 |                       |
|---------------|-----------------|-----------------------|-----------------|-----------------------|
|               | Low Channel     |                       | High Channel    |                       |
|               | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0           | 1850.200003     | 0.002                 | 1909.800001     | 0.001                 |
| 3.4           | 1850.200001     | 0.001                 | 1909.800001     | 0.001                 |
| 4.6           | 1850.200001     | 0.001                 | 1909.800004     | 0.002                 |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

##### Frequency Error vs. Temperature

| Temp. (°C) | GPRS            |                       |                 |                       |
|------------|-----------------|-----------------------|-----------------|-----------------------|
|            | Low Channel     |                       | High Channel    |                       |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1850.200003     | 0.002                 | 1909.800002     | 0.001                 |
| -30        | 1850.200001     | 0.001                 | 1909.800003     | 0.002                 |
| -20        | 1850.200004     | 0.002                 | 1909.800004     | 0.002                 |
| -10        | 1850.200001     | 0.001                 | 1909.800002     | 0.001                 |
| 0          | 1850.200004     | 0.002                 | 1909.800001     | 0.001                 |
| 10         | 1850.200002     | 0.001                 | 1909.800002     | 0.001                 |
| 20         | 1850.200004     | 0.002                 | 1909.800004     | 0.002                 |
| 30         | 1850.200002     | 0.001                 | 1909.800004     | 0.002                 |
| 40         | 1850.200003     | 0.002                 | 1909.800004     | 0.002                 |
| 50         | 1850.199996     | -0.002                | 1909.799997     | -0.002                |
| 60         | 1850.199996     | -0.002                | 1909.799996     | -0.002                |
| 70         | 1850.199997     | -0.002                | 1909.799996     | -0.002                |
| 80         | 1850.199997     | -0.002                | 1909.799997     | -0.002                |
| 85         | 1850.199998     | -0.001                | 1909.799998     | -0.001                |

#### Frequency Error vs. Voltage

| Voltage<br>(Vdc) | EDGE            |                       |                 |                       |
|------------------|-----------------|-----------------------|-----------------|-----------------------|
|                  | Low Channel     |                       | High Channel    |                       |
|                  | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0              | 1850.200005     | 0.003                 | 1909.799997     | -0.002                |
| 3.4              | 1850.199997     | -0.002                | 1909.800005     | 0.003                 |
| 4.6              | 1850.199996     | -0.002                | 1909.799999     | -0.001                |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

#### Frequency Error vs. Temperature

| Temp. (°C) | EDGE            |                       |                 |                       |
|------------|-----------------|-----------------------|-----------------|-----------------------|
|            | Low Channel     |                       | High Channel    |                       |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1850.199999     | -0.001                | 1909.799996     | -0.002                |
| -30        | 1850.200001     | 0.001                 | 1909.800001     | 0.001                 |
| -20        | 1850.199996     | -0.002                | 1909.799998     | -0.001                |
| -10        | 1850.200002     | 0.001                 | 1909.799997     | -0.002                |
| 0          | 1850.199998     | -0.001                | 1909.800004     | 0.002                 |
| 10         | 1850.200003     | 0.002                 | 1909.800003     | 0.002                 |
| 20         | 1850.199997     | -0.002                | 1909.799996     | -0.002                |
| 30         | 1850.200004     | 0.002                 | 1909.800002     | 0.001                 |
| 40         | 1850.200003     | 0.002                 | 1909.800003     | 0.002                 |
| 50         | 1850.199997     | -0.002                | 1909.799998     | -0.001                |
| 60         | 1850.199996     | -0.002                | 1909.800004     | 0.002                 |
| 70         | 1850.199999     | -0.001                | 1909.799998     | -0.001                |
| 80         | 1850.199998     | -0.001                | 1909.800002     | 0.001                 |
| 85         | 1850.200003     | 0.002                 | 1909.800002     | 0.001                 |

### Frequency Error vs. Voltage

| Voltage<br>(Vdc) | LTE Band 2                |                       |                 |                       |
|------------------|---------------------------|-----------------------|-----------------|-----------------------|
|                  | Channel Bandwidth 1.4 MHz |                       |                 |                       |
|                  | Low Channel               |                       | High Channel    |                       |
|                  | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0              | 1850.699998               | -0.001                | 1909.300000     | -0.002                |
| 3.4              | 1850.700004               | 0.002                 | 1909.300002     | 0.001                 |
| 4.6              | 1850.700001               | 0.001                 | 1909.299999     | -0.001                |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2                |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 1.4 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1850.699999               | -0.001                | 1909.300003     | 0.002                 |
| -30        | 1850.699998               | -0.001                | 1909.300001     | 0.001                 |
| -20        | 1850.700003               | 0.002                 | 1909.300005     | 0.003                 |
| -10        | 1850.699996               | -0.002                | 1909.299999     | -0.001                |
| 0          | 1850.699995               | -0.003                | 1909.299995     | -0.003                |
| 10         | 1850.699999               | -0.001                | 1909.299999     | -0.001                |
| 20         | 1850.700001               | 0.001                 | 1909.299998     | -0.001                |
| 30         | 1850.700004               | 0.002                 | 1909.300001     | 0.001                 |
| 40         | 1850.699998               | -0.001                | 1909.300005     | 0.003                 |
| 50         | 1850.700002               | 0.001                 | 1909.300001     | 0.001                 |
| 60         | 1850.700002               | 0.001                 | 1909.300001     | 0.001                 |
| 70         | 1850.700002               | 0.001                 | 1909.299998     | -0.001                |
| 80         | 1850.700005               | 0.003                 | 1909.300003     | 0.002                 |
| 85         | 1850.699997               | -0.002                | 1909.300003     | 0.002                 |

### Frequency Error vs. Voltage

| Voltage<br>(Vdc) | LTE Band 2             |                       |                 |                       |
|------------------|------------------------|-----------------------|-----------------|-----------------------|
|                  | Channel Bandwidth 3MHz |                       |                 |                       |
|                  | Low Channel            |                       | High Channel    |                       |
|                  | Frequency (MHz)        | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0              | 1851.500003            | 0.002                 | 1908.500002     | 0.001                 |
| 3.4              | 1851.499999            | -0.001                | 1908.500002     | 0.001                 |
| 4.6              | 1851.500003            | 0.002                 | 1908.500005     | 0.003                 |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2             |                       |                 |                       |
|------------|------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 3MHz |                       |                 |                       |
|            | Low Channel            |                       | High Channel    |                       |
|            | Frequency (MHz)        | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1851.500002            | 0.001                 | 1908.500001     | 0.001                 |
| -30        | 1851.500001            | 0.001                 | 1908.499997     | -0.002                |
| -20        | 1851.499998            | -0.001                | 1908.499995     | -0.003                |
| -10        | 1851.500003            | 0.002                 | 1908.499998     | -0.001                |
| 0          | 1851.499997            | -0.002                | 1908.500005     | 0.003                 |
| 10         | 1851.500005            | 0.003                 | 1908.499999     | -0.001                |
| 20         | 1851.499995            | -0.003                | 1908.500004     | 0.002                 |
| 30         | 1851.500004            | 0.002                 | 1908.499996     | -0.002                |
| 40         | 1851.500002            | 0.001                 | 1908.499999     | -0.001                |
| 50         | 1851.499997            | -0.002                | 1908.499995     | -0.003                |
| 60         | 1851.500002            | 0.001                 | 1908.499998     | -0.001                |
| 70         | 1851.500005            | 0.003                 | 1908.500003     | 0.002                 |
| 80         | 1851.499999            | -0.001                | 1908.500003     | 0.002                 |
| 85         | 1851.499999            | -0.001                | 1908.499995     | -0.003                |

### Frequency Error vs. Voltage

| Voltage<br>(Vdc) | LTE Band 2              |                       |                 |                       |
|------------------|-------------------------|-----------------------|-----------------|-----------------------|
|                  | Channel Bandwidth 5 MHz |                       |                 |                       |
|                  | Low Channel             |                       | High Channel    |                       |
|                  | Frequency (MHz)         | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0              | 1852.499997             | -0.002                | 1907.499996     | -0.002                |
| 3.4              | 1852.500002             | 0.001                 | 1907.500004     | 0.002                 |
| 4.6              | 1852.499996             | -0.002                | 1907.499995     | -0.003                |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2              |                       |                 |                       |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 5 MHz |                       |                 |                       |
|            | Low Channel             |                       | High Channel    |                       |
|            | Frequency (MHz)         | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1852.500003             | 0.002                 | 1907.500003     | 0.002                 |
| -30        | 1852.499995             | -0.003                | 1907.499997     | -0.002                |
| -20        | 1852.500005             | 0.003                 | 1907.500001     | 0.001                 |
| -10        | 1852.499995             | -0.003                | 1907.499995     | -0.003                |
| 0          | 1852.499999             | -0.001                | 1907.500003     | 0.002                 |
| 10         | 1852.499998             | -0.001                | 1907.500001     | 0.001                 |
| 20         | 1852.500003             | 0.002                 | 1907.500002     | 0.001                 |
| 30         | 1852.500003             | 0.002                 | 1907.500004     | 0.002                 |
| 40         | 1852.500004             | 0.002                 | 1907.500005     | 0.003                 |
| 50         | 1852.500005             | 0.003                 | 1907.500003     | 0.002                 |
| 60         | 1852.499998             | -0.001                | 1907.500004     | 0.002                 |
| 70         | 1852.500004             | 0.002                 | 1907.500003     | 0.002                 |
| 80         | 1852.499995             | -0.003                | 1907.500004     | 0.002                 |
| 85         | 1852.499998             | -0.001                | 1907.499995     | -0.003                |

### Frequency Error vs. Voltage

| Voltage<br>(Vdc) | LTE Band 2               |                       |                 |                       |
|------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                  | Channel Bandwidth 10 MHz |                       |                 |                       |
|                  | Low Channel              |                       | High Channel    |                       |
|                  | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0              | 1854.999998              | -0.001                | 1905.000001     | 0.001                 |
| 3.4              | 1854.999999              | -0.001                | 1904.999997     | -0.002                |
| 4.6              | 1855.000001              | 0.001                 | 1905.000001     | 0.001                 |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 10 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1854.999999              | -0.001                | 1905.000005     | 0.003                 |
| -30        | 1854.999997              | -0.002                | 1905.000005     | 0.003                 |
| -20        | 1855.000002              | 0.001                 | 1905.000003     | 0.002                 |
| -10        | 1855.000004              | 0.002                 | 1905.000005     | 0.003                 |
| 0          | 1854.999997              | -0.002                | 1904.999997     | -0.002                |
| 10         | 1854.999996              | -0.002                | 1905.000002     | 0.001                 |
| 20         | 1855.000003              | 0.002                 | 1904.999998     | -0.001                |
| 30         | 1854.999997              | -0.002                | 1905.000005     | 0.003                 |
| 40         | 1855.000005              | 0.003                 | 1904.999995     | -0.003                |
| 50         | 1855.000002              | 0.001                 | 1905.000003     | 0.002                 |
| 60         | 1855.000003              | 0.002                 | 1904.999997     | -0.002                |
| 70         | 1855.000004              | 0.002                 | 1905.000003     | 0.002                 |
| 80         | 1855.000003              | 0.002                 | 1905.000002     | 0.001                 |
| 85         | 1855.000003              | 0.002                 | 1904.999997     | -0.002                |

### Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 2               |                       |                 |                       |
|---------------|--------------------------|-----------------------|-----------------|-----------------------|
|               | Channel Bandwidth 15 MHz |                       |                 |                       |
|               | Low Channel              |                       | High Channel    |                       |
|               | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0           | 1857.500002              | 0.001                 | 1902.499996     | -0.002                |
| 3.4           | 1857.499997              | -0.002                | 1902.499995     | -0.003                |
| 4.6           | 1857.499998              | -0.001                | 1902.500003     | 0.002                 |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 15 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1857.499999              | -0.001                | 1902.499999     | -0.001                |
| -30        | 1857.500005              | 0.003                 | 1902.499999     | -0.001                |
| -20        | 1857.499998              | -0.001                | 1902.500002     | 0.001                 |
| -10        | 1857.499999              | -0.001                | 1902.499997     | -0.002                |
| 0          | 1857.500003              | 0.002                 | 1902.500002     | 0.001                 |
| 10         | 1857.499996              | -0.002                | 1902.500002     | 0.001                 |
| 20         | 1857.499999              | -0.001                | 1902.500005     | 0.003                 |
| 30         | 1857.500003              | 0.002                 | 1902.499999     | -0.001                |
| 40         | 1857.499995              | -0.003                | 1902.500002     | 0.001                 |
| 50         | 1857.499997              | -0.002                | 1902.499996     | -0.002                |
| 60         | 1857.499997              | -0.002                | 1902.499995     | -0.003                |
| 70         | 1857.500004              | 0.002                 | 1902.500003     | 0.002                 |
| 80         | 1857.500004              | 0.002                 | 1902.499999     | -0.001                |
| 85         | 1857.499995              | -0.003                | 1902.499998     | -0.001                |

### Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 2               |                       |                 |                       |
|---------------|--------------------------|-----------------------|-----------------|-----------------------|
|               | Channel Bandwidth 20 MHz |                       |                 |                       |
|               | Low Channel              |                       | High Channel    |                       |
|               | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0           | 1859.999998              | -0.001                | 1900.000002     | 0.001                 |
| 3.4           | 1860.000003              | 0.002                 | 1900.000001     | 0.001                 |
| 4.6           | 1859.999999              | -0.001                | 1899.999995     | -0.003                |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 2               |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 20 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1860.000004              | 0.002                 | 1900.000001     | 0.001                 |
| -30        | 1859.999998              | -0.001                | 1900.000005     | 0.003                 |
| -20        | 1860.000004              | 0.002                 | 1900.000001     | 0.001                 |
| -10        | 1859.999998              | -0.001                | 1899.999997     | -0.002                |
| 0          | 1859.999998              | -0.001                | 1899.999997     | -0.002                |
| 10         | 1860.000004              | 0.002                 | 1899.999997     | -0.002                |
| 20         | 1859.999997              | -0.002                | 1899.999999     | -0.001                |
| 30         | 1859.999998              | -0.001                | 1900.000003     | 0.002                 |
| 40         | 1859.999996              | -0.002                | 1899.999997     | -0.002                |
| 50         | 1860.000005              | 0.003                 | 1900.000005     | 0.003                 |
| 60         | 1859.999996              | -0.002                | 1900.000002     | 0.001                 |
| 70         | 1859.999995              | -0.003                | 1899.999998     | -0.001                |
| 80         | 1860.000001              | 0.001                 | 1899.999995     | -0.003                |
| 85         | 1859.999996              | -0.002                | 1900.000005     | 0.003                 |

### Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25               |                       |                 |                       |
|---------------|---------------------------|-----------------------|-----------------|-----------------------|
|               | Channel Bandwidth 1.4 MHz |                       |                 |                       |
|               | Low Channel               |                       | High Channel    |                       |
|               | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0           | 1850.700003               | 0.002                 | 1914.299997     | -0.002                |
| 3.4           | 1850.700002               | 0.001                 | 1914.300004     | 0.002                 |
| 4.6           | 1850.699995               | -0.003                | 1914.300004     | 0.002                 |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25               |                       |                 |                       |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 1.4 MHz |                       |                 |                       |
|            | Low Channel               |                       | High Channel    |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1850.699995               | -0.003                | 1914.299995     | -0.003                |
| -30        | 1850.700005               | 0.003                 | 1914.299996     | -0.002                |
| -20        | 1850.699999               | -0.001                | 1914.300005     | 0.003                 |
| -10        | 1850.699998               | -0.001                | 1914.299996     | -0.002                |
| 0          | 1850.699998               | -0.001                | 1914.299996     | -0.002                |
| 10         | 1850.700001               | 0.001                 | 1914.299999     | -0.001                |
| 20         | 1850.700001               | 0.001                 | 1914.299998     | -0.001                |
| 30         | 1850.699999               | -0.001                | 1914.300001     | 0.001                 |
| 40         | 1850.700003               | 0.002                 | 1914.300004     | 0.002                 |
| 50         | 1850.699999               | -0.001                | 1914.300002     | 0.001                 |
| 60         | 1850.700004               | 0.002                 | 1914.299997     | -0.002                |
| 70         | 1850.700005               | 0.003                 | 1914.300005     | 0.003                 |
| 80         | 1850.700005               | 0.003                 | 1914.300004     | 0.002                 |
| 85         | 1850.700003               | 0.002                 | 1914.300005     | 0.003                 |

### Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25            |                       |                 |                       |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
|               | Channel Bandwidth 3MHz |                       |                 |                       |
|               | Low Channel            |                       | High Channel    |                       |
|               | Frequency (MHz)        | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0           | 1851.500004            | 0.002                 | 1913.499998     | -0.001                |
| 3.4           | 1851.499995            | -0.003                | 1913.499996     | -0.002                |
| 4.6           | 1851.499995            | -0.003                | 1913.500004     | 0.002                 |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25            |                       |                 |                       |
|------------|------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 3MHz |                       |                 |                       |
|            | Low Channel            |                       | High Channel    |                       |
|            | Frequency (MHz)        | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1851.500001            | 0.001                 | 1913.499995     | -0.003                |
| -30        | 1851.499998            | -0.001                | 1913.499996     | -0.002                |
| -20        | 1851.500005            | 0.003                 | 1913.500002     | 0.001                 |
| -10        | 1851.500003            | 0.002                 | 1913.499995     | -0.003                |
| 0          | 1851.500001            | 0.001                 | 1913.499996     | -0.002                |
| 10         | 1851.500001            | 0.001                 | 1913.499998     | -0.001                |
| 20         | 1851.499998            | -0.001                | 1913.499998     | -0.001                |
| 30         | 1851.500002            | 0.001                 | 1913.500001     | 0.001                 |
| 40         | 1851.500003            | 0.002                 | 1913.500005     | 0.003                 |
| 50         | 1851.500002            | 0.001                 | 1913.500004     | 0.002                 |
| 60         | 1851.500003            | 0.002                 | 1913.500004     | 0.002                 |
| 70         | 1851.500003            | 0.002                 | 1913.499999     | -0.001                |
| 80         | 1851.500001            | 0.001                 | 1913.500002     | 0.001                 |
| 85         | 1851.499997            | -0.002                | 1913.500002     | 0.001                 |

### Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25             |                       |                 |                       |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
|               | Channel Bandwidth 5 MHz |                       |                 |                       |
|               | Low Channel             |                       | High Channel    |                       |
|               | Frequency (MHz)         | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0           | 1852.500002             | 0.001                 | 1912.500004     | 0.002                 |
| 3.4           | 1852.499995             | -0.003                | 1912.499998     | -0.001                |
| 4.6           | 1852.500001             | 0.001                 | 1912.500002     | 0.001                 |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25             |                       |                 |                       |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 5 MHz |                       |                 |                       |
|            | Low Channel             |                       | High Channel    |                       |
|            | Frequency (MHz)         | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1852.500004             | 0.002                 | 1912.499998     | -0.001                |
| -30        | 1852.500005             | 0.003                 | 1912.500005     | 0.003                 |
| -20        | 1852.500003             | 0.002                 | 1912.499997     | -0.002                |
| -10        | 1852.499999             | -0.001                | 1912.499999     | -0.001                |
| 0          | 1852.499999             | -0.001                | 1912.499999     | -0.001                |
| 10         | 1852.499995             | -0.003                | 1912.499999     | -0.001                |
| 20         | 1852.500004             | 0.002                 | 1912.500004     | 0.002                 |
| 30         | 1852.500001             | 0.001                 | 1912.499995     | -0.003                |
| 40         | 1852.500001             | 0.001                 | 1912.499998     | -0.001                |
| 50         | 1852.500001             | 0.001                 | 1912.500004     | 0.002                 |
| 60         | 1852.500004             | 0.002                 | 1912.499996     | -0.002                |
| 70         | 1852.500005             | 0.003                 | 1912.500004     | 0.002                 |
| 80         | 1852.500001             | 0.001                 | 1912.499996     | -0.002                |
| 85         | 1852.499997             | -0.002                | 1912.499996     | -0.002                |

### Frequency Error vs. Voltage

| Voltage<br>(Vdc) | LTE Band 25              |                       |                 |                       |
|------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                  | Channel Bandwidth 10 MHz |                       |                 |                       |
|                  | Low Channel              |                       | High Channel    |                       |
|                  | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0              | 1854.999998              | -0.001                | 1910.000005     | 0.003                 |
| 3.4              | 1854.999995              | -0.003                | 1909.999995     | -0.003                |
| 4.6              | 1854.999996              | -0.002                | 1910.000003     | 0.002                 |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25              |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 10 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1854.999996              | -0.002                | 1909.999997     | -0.002                |
| -30        | 1854.999999              | -0.001                | 1910.000005     | 0.003                 |
| -20        | 1855.000005              | 0.003                 | 1910.000001     | 0.001                 |
| -10        | 1854.999997              | -0.002                | 1909.999999     | -0.001                |
| 0          | 1855.000004              | 0.002                 | 1910.000003     | 0.002                 |
| 10         | 1855.000004              | 0.002                 | 1909.999996     | -0.002                |
| 20         | 1854.999995              | -0.003                | 1909.999998     | -0.001                |
| 30         | 1855.000001              | 0.001                 | 1909.999995     | -0.003                |
| 40         | 1854.999995              | -0.003                | 1909.999996     | -0.002                |
| 50         | 1854.999996              | -0.002                | 1910.000001     | 0.001                 |
| 60         | 1854.999997              | -0.002                | 1909.999995     | -0.003                |
| 70         | 1855.000002              | 0.001                 | 1910.000005     | 0.003                 |
| 80         | 1855.000005              | 0.003                 | 1910.000002     | 0.001                 |
| 85         | 1854.999999              | -0.001                | 1909.999998     | -0.001                |

### Frequency Error vs. Voltage

| Voltage<br>(Vdc) | LTE Band 25              |                       |                 |                       |
|------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                  | Channel Bandwidth 15 MHz |                       |                 |                       |
|                  | Low Channel              |                       | High Channel    |                       |
|                  | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0              | 1857.500001              | 0.001                 | 1907.499998     | -0.001                |
| 3.4              | 1857.499998              | -0.001                | 1907.500002     | 0.001                 |
| 4.6              | 1857.500002              | 0.001                 | 1907.499999     | -0.001                |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25              |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 15 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1857.499998              | -0.001                | 1907.500002     | 0.001                 |
| -30        | 1857.500005              | 0.003                 | 1907.500005     | 0.003                 |
| -20        | 1857.500002              | 0.001                 | 1907.500002     | 0.001                 |
| -10        | 1857.499995              | -0.003                | 1907.499998     | -0.001                |
| 0          | 1857.500001              | 0.001                 | 1907.500004     | 0.002                 |
| 10         | 1857.499997              | -0.002                | 1907.499995     | -0.003                |
| 20         | 1857.500005              | 0.003                 | 1907.499996     | -0.002                |
| 30         | 1857.500004              | 0.002                 | 1907.499998     | -0.001                |
| 40         | 1857.499998              | -0.001                | 1907.500005     | 0.003                 |
| 50         | 1857.499999              | -0.001                | 1907.500004     | 0.002                 |
| 60         | 1857.499996              | -0.002                | 1907.500004     | 0.002                 |
| 70         | 1857.500002              | 0.001                 | 1907.499999     | -0.001                |
| 80         | 1857.500001              | 0.001                 | 1907.500002     | 0.001                 |
| 85         | 1857.499998              | -0.001                | 1907.500003     | 0.002                 |

### Frequency Error vs. Voltage

| Voltage<br>(Vdc) | LTE Band 25              |                       |                 |                       |
|------------------|--------------------------|-----------------------|-----------------|-----------------------|
|                  | Channel Bandwidth 20 MHz |                       |                 |                       |
|                  | Low Channel              |                       | High Channel    |                       |
|                  | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.0              | 1860.000005              | 0.003                 | 1904.999999     | -0.001                |
| 3.4              | 1859.999997              | -0.002                | 1905.000002     | 0.001                 |
| 4.6              | 1860.000002              | 0.001                 | 1904.999996     | -0.002                |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 25              |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth 20 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 1859.999998              | -0.001                | 1904.999999     | -0.001                |
| -30        | 1859.999996              | -0.002                | 1904.999995     | -0.003                |
| -20        | 1860.000001              | 0.001                 | 1905.000002     | 0.001                 |
| -10        | 1860.000003              | 0.002                 | 1904.999997     | -0.002                |
| 0          | 1860.000004              | 0.002                 | 1905.000004     | 0.002                 |
| 10         | 1860.000003              | 0.002                 | 1905.000005     | 0.003                 |
| 20         | 1860.000005              | 0.003                 | 1904.999998     | -0.001                |
| 30         | 1859.999999              | -0.001                | 1904.999995     | -0.003                |
| 40         | 1859.999997              | -0.002                | 1905.000001     | 0.001                 |
| 50         | 1859.999998              | -0.001                | 1904.999999     | -0.001                |
| 60         | 1860.000001              | 0.001                 | 1905.000001     | 0.001                 |
| 70         | 1860.000001              | 0.001                 | 1905.000005     | 0.003                 |
| 80         | 1859.999995              | -0.003                | 1905.000005     | 0.003                 |
| 85         | 1859.999999              | -0.001                | 1905.000003     | 0.002                 |

## 4.4 Occupied Bandwidth Measurement

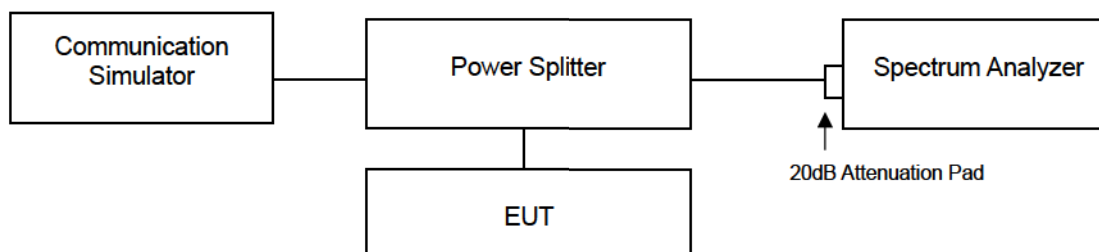
### 4.4.1 Test Procedure

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

- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
- The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set  $\geq 3 \times \text{RBW}$ .
- Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
- The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
- Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
- Determine the following reference values: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
- Determine the “-X dB amplitude” as equal to (Reference Value - X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.
- Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB amplitude” determined in step f). If a marker is below this “-X dB amplitude” value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers.
- The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

For the occupied bandwidth measurement method, please refer to section 5.4.4 of ANSI C63.26.

### 4.4.2 Test Setup

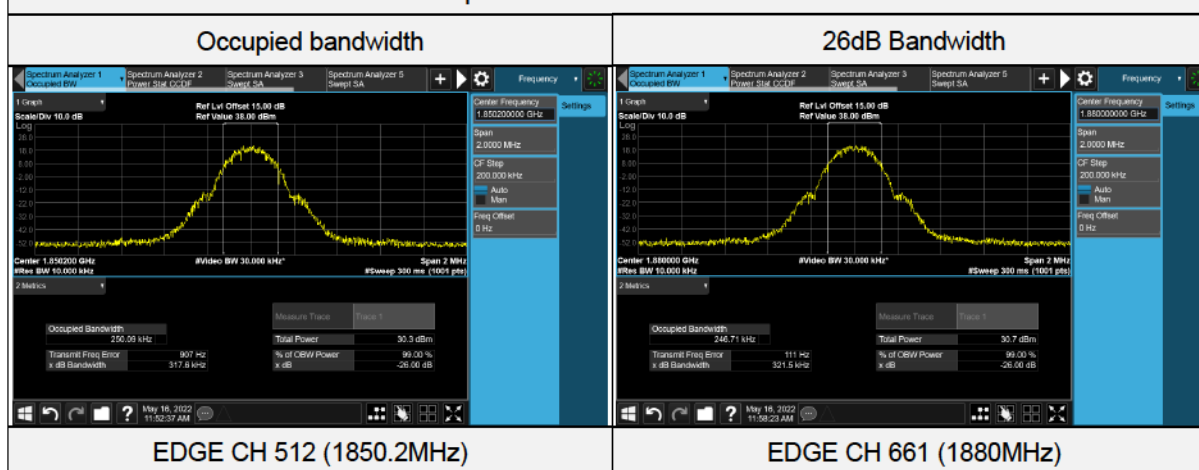


#### 4.4.3 Test Result

##### GPRS, EDGE

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (kHz) | 26dB Bandwidth (kHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| GPRS           | 512     | 1850.2          | 247.09                   | 319.50               |
| GPRS           | 661     | 1880            | 248.07                   | 311.30               |
| GPRS           | 810     | 1909.8          | 248.40                   | 321.50               |
| EDGE           | 512     | 1850.2          | 250.09                   | 317.60               |
| EDGE           | 661     | 1880            | 246.71                   | 321.50               |
| EDGE           | 810     | 1909.8          | 244.12                   | 321.30               |

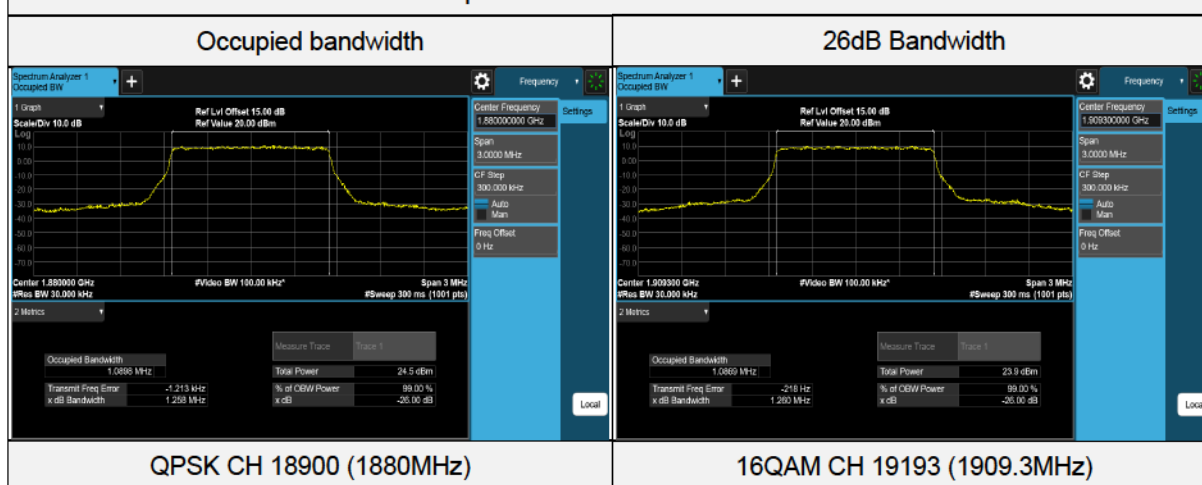
Spectrum Plot of Worst Value



### LTE Band 2 (Channel Bandwidth 1.4MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 18607   | 1850.7          | 1.0876                   | 1.247                |
| QPSK           | 18900   | 1880            | 1.0898                   | 1.258                |
| QPSK           | 19193   | 1909.3          | 1.0888                   | 1.259                |
| 16QAM          | 18607   | 1850.7          | 1.0866                   | 1.254                |
| 16QAM          | 18900   | 1880            | 1.0876                   | 1.251                |
| 16QAM          | 19193   | 1909.3          | 1.0869                   | 1.260                |
| 64QAM          | 18607   | 1850.7          | 1.0883                   | 1.253                |
| 64QAM          | 18900   | 1880            | 1.0876                   | 1.256                |
| 64QAM          | 19193   | 1909.3          | 1.0883                   | 1.252                |

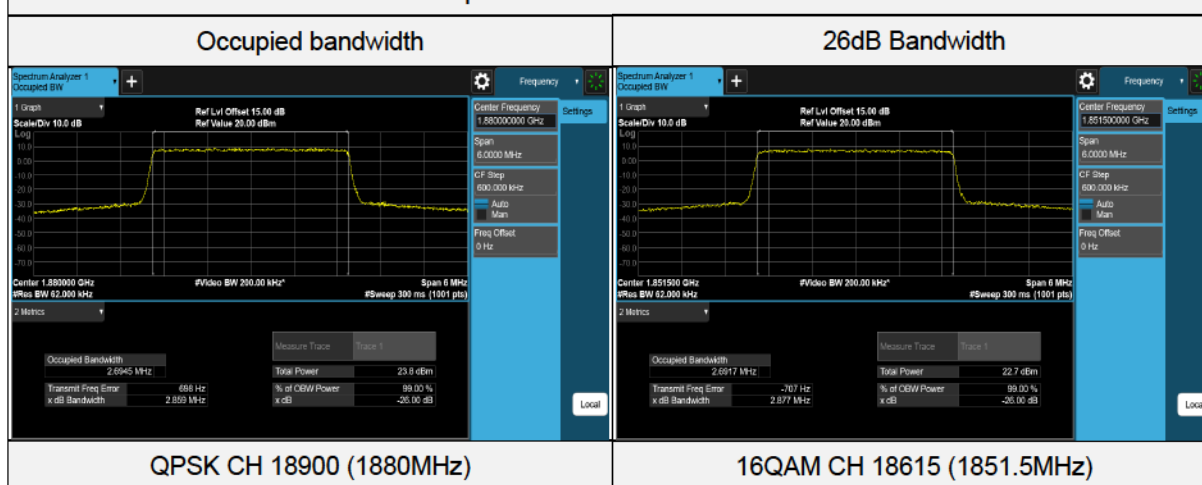
### Spectrum Plot of Worst Value



### LTE Band 2 (Channel Bandwidth 3MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 18615   | 1851.5          | 2.6893                   | 2.862                |
| QPSK           | 18900   | 1880            | 2.6945                   | 2.859                |
| QPSK           | 19185   | 1908.5          | 2.6920                   | 2.868                |
| 16QAM          | 18615   | 1851.5          | 2.6917                   | 2.877                |
| 16QAM          | 18900   | 1880            | 2.6921                   | 2.863                |
| 16QAM          | 19185   | 1908.5          | 2.6902                   | 2.877                |
| 64QAM          | 18615   | 1851.5          | 2.6905                   | 2.865                |
| 64QAM          | 18900   | 1880            | 2.6906                   | 2.854                |
| 64QAM          | 19185   | 1908.5          | 2.6891                   | 2.861                |

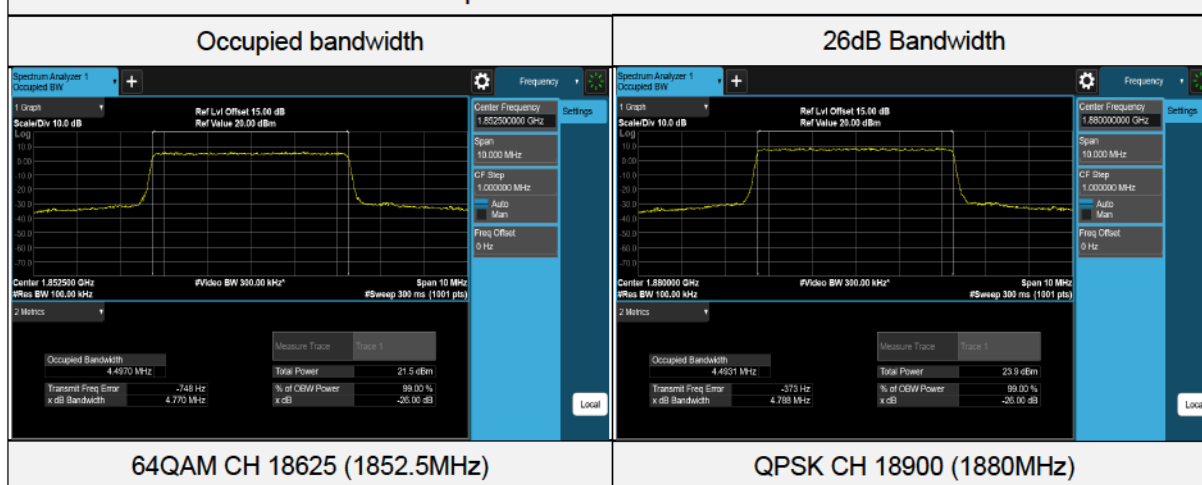
### Spectrum Plot of Worst Value



# LTE Band 2 (Channel Bandwidth 5MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 18625   | 1852.5          | 4.4955                   | 4.786                |
| QPSK           | 18900   | 1880            | 4.4931                   | 4.788                |
| QPSK           | 19175   | 1907.5          | 4.4935                   | 4.777                |
| 16QAM          | 18625   | 1852.5          | 4.4889                   | 4.767                |
| 16QAM          | 18900   | 1880            | 4.4909                   | 4.773                |
| 16QAM          | 19175   | 1907.5          | 4.4905                   | 4.774                |
| 64QAM          | 18625   | 1852.5          | 4.4970                   | 4.770                |
| 64QAM          | 18900   | 1880            | 4.4930                   | 4.773                |
| 64QAM          | 19175   | 1907.5          | 4.4959                   | 4.775                |

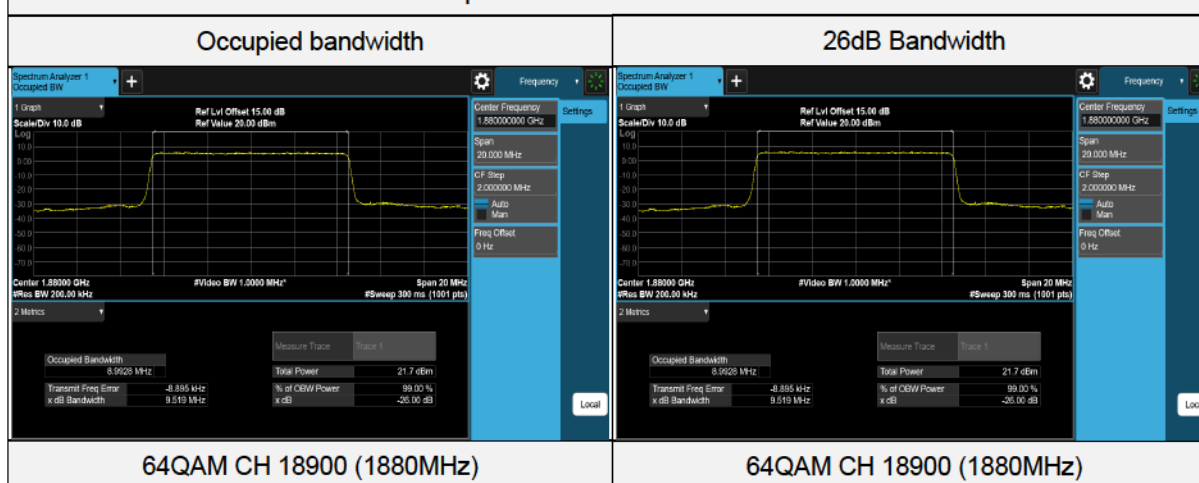
## Spectrum Plot of Worst Value



# LTE Band 2 (Channel Bandwidth 10MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 18650   | 1855            | 8.9839                   | 9.500                |
| QPSK           | 18900   | 1880            | 8.9823                   | 9.515                |
| QPSK           | 19150   | 1905            | 8.9862                   | 9.513                |
| 16QAM          | 18650   | 1855            | 8.9832                   | 9.501                |
| 16QAM          | 18900   | 1880            | 8.9856                   | 9.497                |
| 16QAM          | 19150   | 1905            | 8.9801                   | 9.504                |
| 64QAM          | 18650   | 1855            | 8.9892                   | 9.510                |
| 64QAM          | 18900   | 1880            | 8.9928                   | 9.519                |
| 64QAM          | 19150   | 1905            | 8.9841                   | 9.517                |

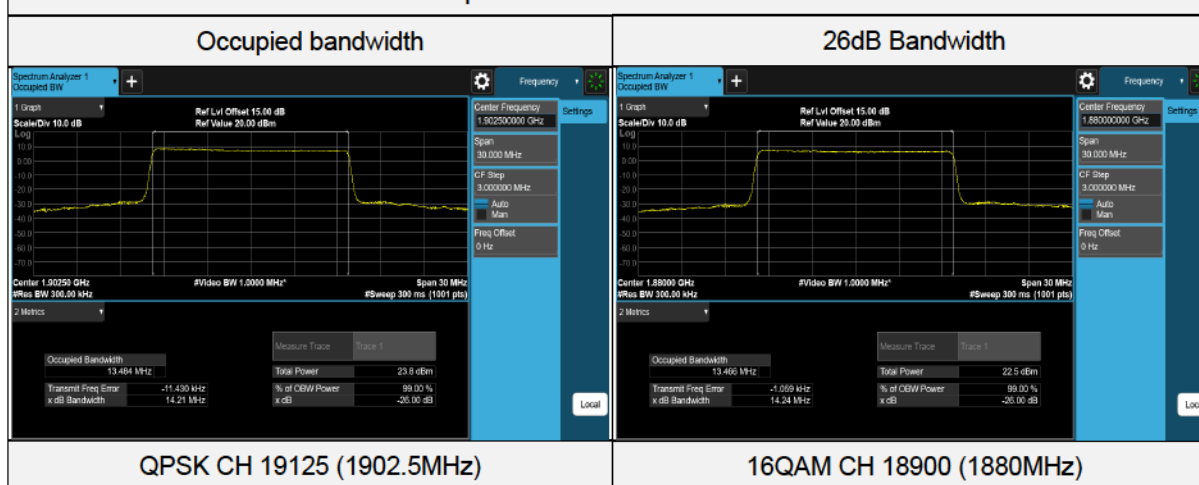
## Spectrum Plot of Worst Value



# LTE Band 2 (Channel Bandwidth 15MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 18675   | 1857.5          | 13.475                   | 14.22                |
| QPSK           | 18900   | 1880            | 13.477                   | 14.23                |
| QPSK           | 19125   | 1902.5          | 13.484                   | 14.21                |
| 16QAM          | 18675   | 1857.5          | 13.465                   | 14.24                |
| 16QAM          | 18900   | 1880            | 13.466                   | 14.24                |
| 16QAM          | 19125   | 1902.5          | 13.470                   | 14.22                |
| 64QAM          | 18675   | 1857.5          | 13.457                   | 14.22                |
| 64QAM          | 18900   | 1880            | 13.466                   | 14.23                |
| 64QAM          | 19125   | 1902.5          | 13.463                   | 14.23                |

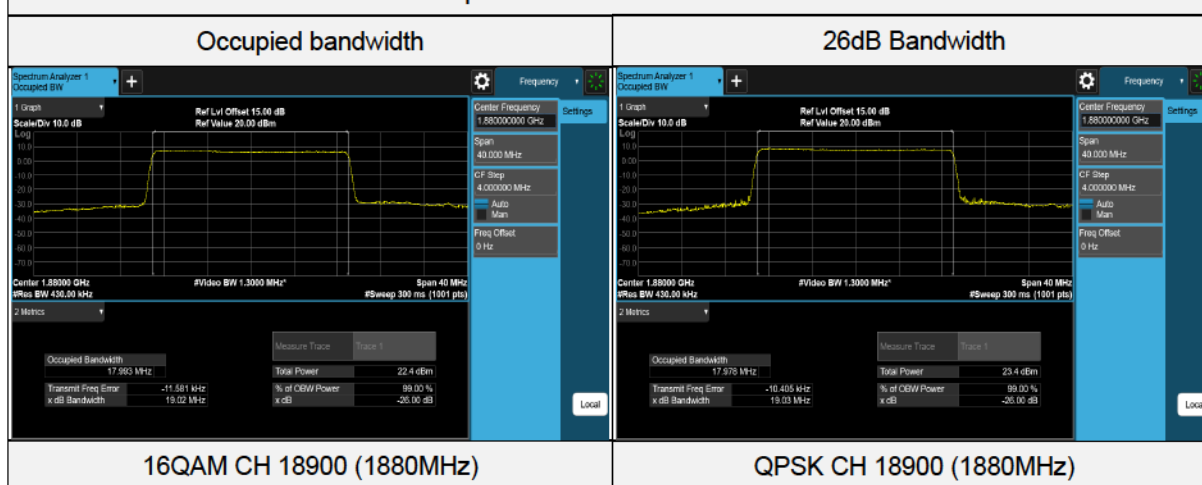
## Spectrum Plot of Worst Value



# LTE Band 2 (Channel Bandwidth 20MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 18700   | 1860            | 17.946                   | 19.01                |
| QPSK           | 18900   | 1880            | 17.979                   | 19.03                |
| QPSK           | 19100   | 1900            | 17.949                   | 19.02                |
| 16QAM          | 18700   | 1860            | 17.962                   | 19.01                |
| 16QAM          | 18900   | 1880            | 17.993                   | 19.02                |
| 16QAM          | 19100   | 1900            | 17.956                   | 19.03                |
| 64QAM          | 18700   | 1860            | 17.953                   | 19.01                |
| 64QAM          | 18900   | 1880            | 17.976                   | 19.03                |
| 64QAM          | 19100   | 1900            | 17.955                   | 19.02                |

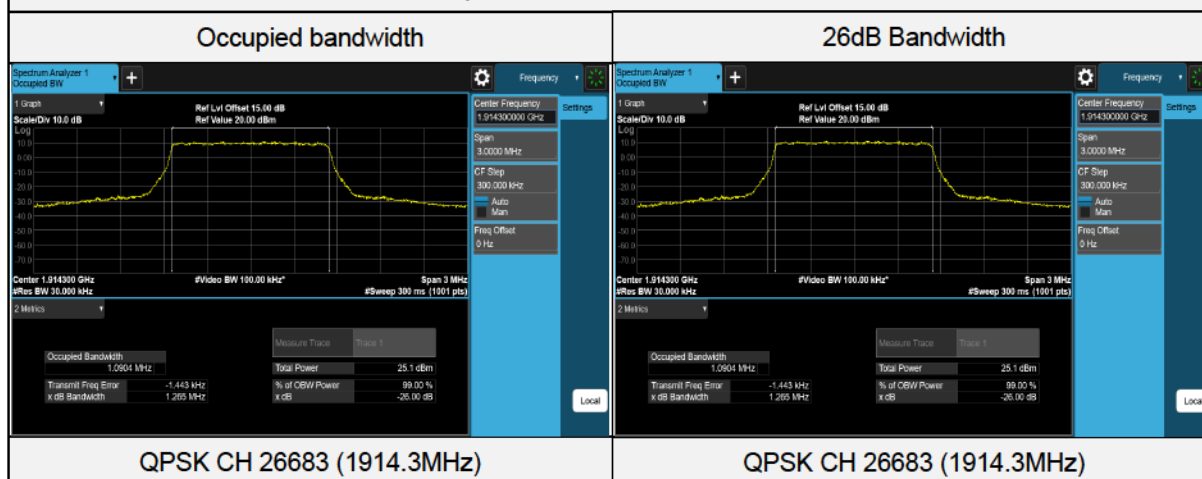
## Spectrum Plot of Worst Value



# LTE Band 25 (Channel Bandwidth 1.4MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 26047   | 1850.7          | 1.0864                   | 1.247                |
| QPSK           | 26365   | 1882.5          | 1.0898                   | 1.254                |
| QPSK           | 26683   | 1914.3          | 1.0904                   | 1.265                |
| 16QAM          | 26047   | 1850.7          | 1.0876                   | 1.254                |
| 16QAM          | 26365   | 1882.5          | 1.0868                   | 1.258                |
| 16QAM          | 26683   | 1914.3          | 1.0867                   | 1.250                |
| 64QAM          | 26047   | 1850.7          | 1.0874                   | 1.256                |
| 64QAM          | 26365   | 1882.5          | 1.0872                   | 1.258                |
| 64QAM          | 26683   | 1914.3          | 1.0881                   | 1.261                |

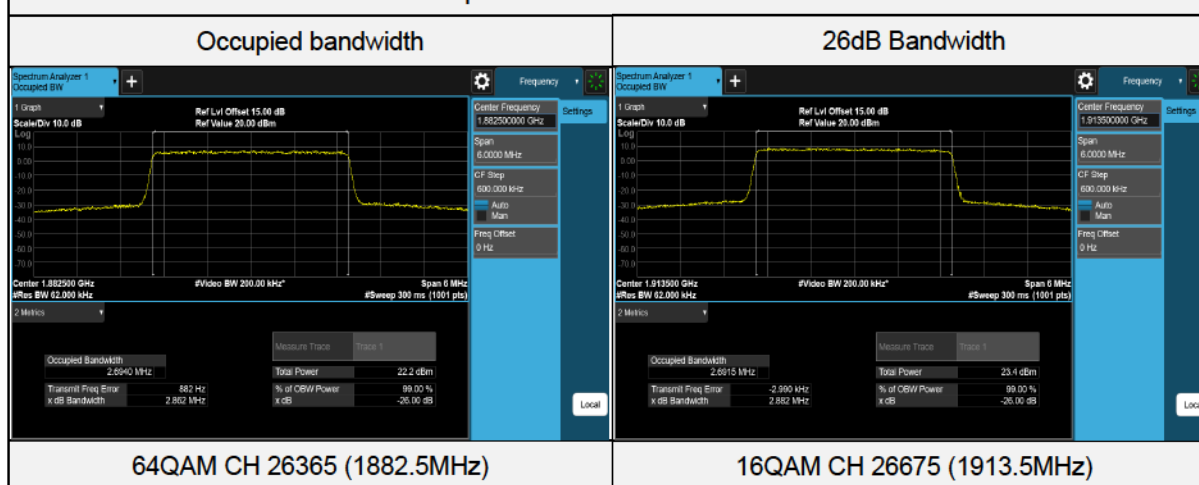
## Spectrum Plot of Worst Value



# LTE Band 25 (Channel Bandwidth 3MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 26055   | 1851.5          | 2.6925                   | 2.869                |
| QPSK           | 26365   | 1882.5          | 2.6923                   | 2.863                |
| QPSK           | 26675   | 1913.5          | 2.6889                   | 2.863                |
| 16QAM          | 26055   | 1851.5          | 2.6885                   | 2.874                |
| 16QAM          | 26365   | 1882.5          | 2.6900                   | 2.874                |
| 16QAM          | 26675   | 1913.5          | 2.6915                   | 2.882                |
| 64QAM          | 26055   | 1851.5          | 2.6925                   | 2.865                |
| 64QAM          | 26365   | 1882.5          | 2.6940                   | 2.862                |
| 64QAM          | 26675   | 1913.5          | 2.6895                   | 2.864                |

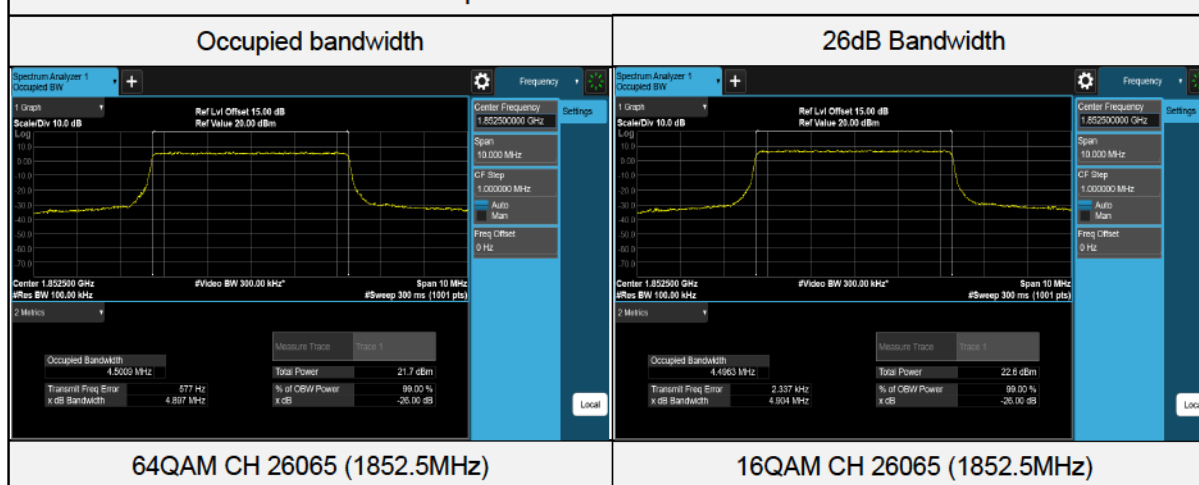
## Spectrum Plot of Worst Value



# LTE Band 25 (Channel Bandwidth 5MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 26065   | 1852.5          | 4.4976                   | 4.893                |
| QPSK           | 26365   | 1882.5          | 4.4996                   | 4.867                |
| QPSK           | 26665   | 1912.5          | 4.4948                   | 4.880                |
| 16QAM          | 26065   | 1852.5          | 4.4963                   | 4.904                |
| 16QAM          | 26365   | 1882.5          | 4.4966                   | 4.877                |
| 16QAM          | 26665   | 1912.5          | 4.4903                   | 4.855                |
| 64QAM          | 26065   | 1852.5          | 4.5009                   | 4.897                |
| 64QAM          | 26365   | 1882.5          | 4.4992                   | 4.871                |
| 64QAM          | 26665   | 1912.5          | 4.4936                   | 4.821                |

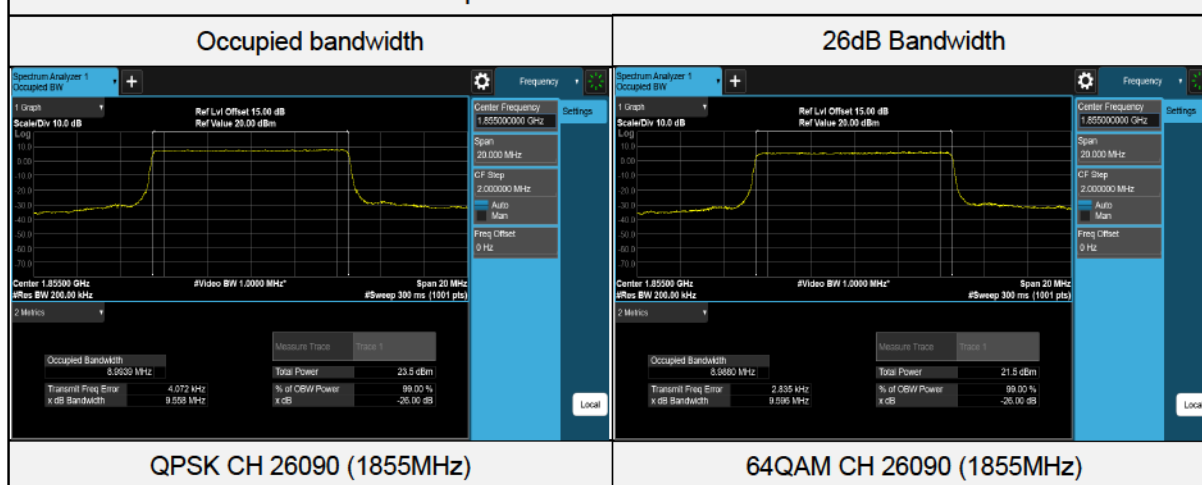
## Spectrum Plot of Worst Value



# LTE Band 25 (Channel Bandwidth 10MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 26090   | 1855            | 8.9939                   | 9.558                |
| QPSK           | 26365   | 1882.5          | 8.9879                   | 9.563                |
| QPSK           | 26640   | 1910            | 8.9752                   | 9.574                |
| 16QAM          | 26090   | 1855            | 8.9890                   | 9.543                |
| 16QAM          | 26365   | 1882.5          | 8.9875                   | 9.546                |
| 16QAM          | 26640   | 1910            | 8.9735                   | 9.536                |
| 64QAM          | 26090   | 1855            | 8.9880                   | 9.596                |
| 64QAM          | 26365   | 1882.5          | 8.9900                   | 9.573                |
| 64QAM          | 26640   | 1910            | 8.9776                   | 9.555                |

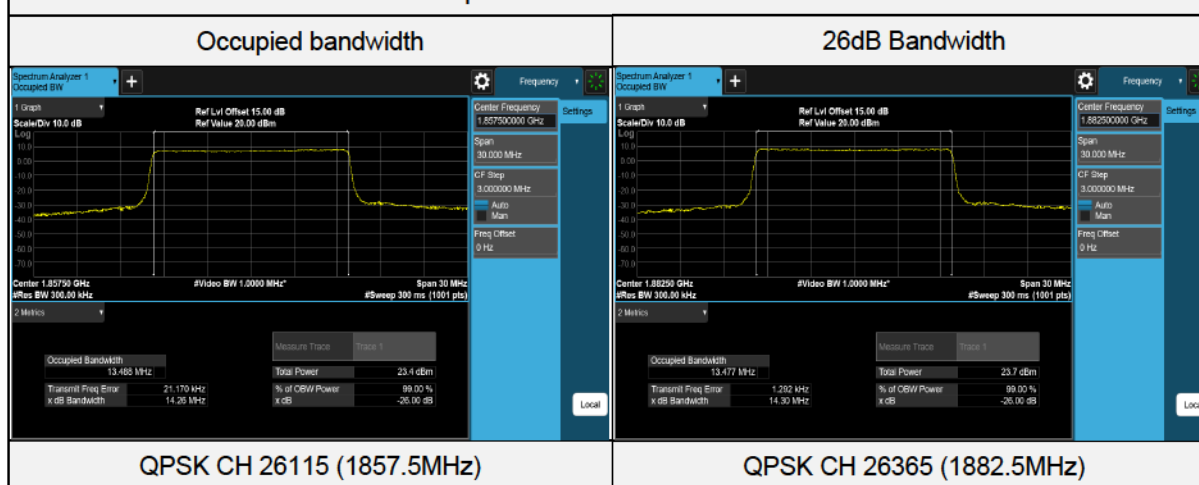
## Spectrum Plot of Worst Value



# LTE Band 25 (Channel Bandwidth 15MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 26115   | 1857.5          | 13.488                   | 14.26                |
| QPSK           | 26365   | 1882.5          | 13.477                   | 14.30                |
| QPSK           | 26615   | 1907.5          | 13.464                   | 14.27                |
| 16QAM          | 26115   | 1857.5          | 13.468                   | 14.25                |
| 16QAM          | 26365   | 1882.5          | 13.477                   | 14.29                |
| 16QAM          | 26615   | 1907.5          | 13.463                   | 14.28                |
| 64QAM          | 26115   | 1857.5          | 13.465                   | 14.29                |
| 64QAM          | 26365   | 1882.5          | 13.473                   | 14.29                |
| 64QAM          | 26615   | 1907.5          | 13.457                   | 14.29                |

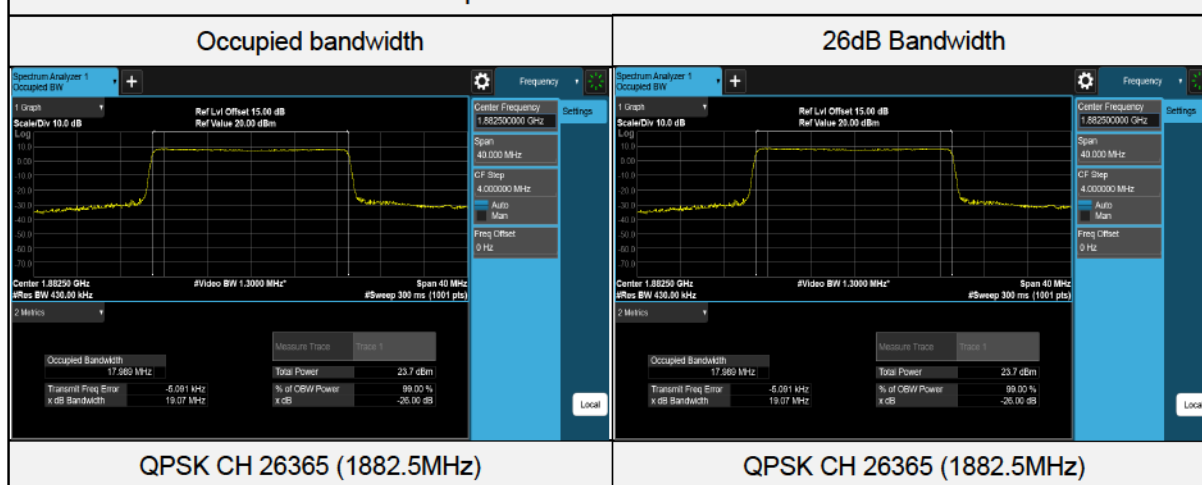
## Spectrum Plot of Worst Value



# LTE Band 25 (Channel Bandwidth 20MHz)

| Test Condition | Channel | Frequency (MHz) | Occupied bandwidth (MHz) | 26dB Bandwidth (MHz) |
|----------------|---------|-----------------|--------------------------|----------------------|
| QPSK           | 26140   | 1860            | 17.950                   | 19.04                |
| QPSK           | 26365   | 1882.5          | 17.989                   | 19.07                |
| QPSK           | 26590   | 1905            | 17.966                   | 19.04                |
| 16QAM          | 26140   | 1860            | 17.966                   | 19.03                |
| 16QAM          | 26365   | 1882.5          | 17.989                   | 19.05                |
| 16QAM          | 26590   | 1905            | 17.973                   | 19.04                |
| 64QAM          | 26140   | 1860            | 17.956                   | 19.05                |
| 64QAM          | 26365   | 1882.5          | 17.985                   | 19.07                |
| 64QAM          | 26590   | 1905            | 17.966                   | 19.05                |

## Spectrum Plot of Worst Value

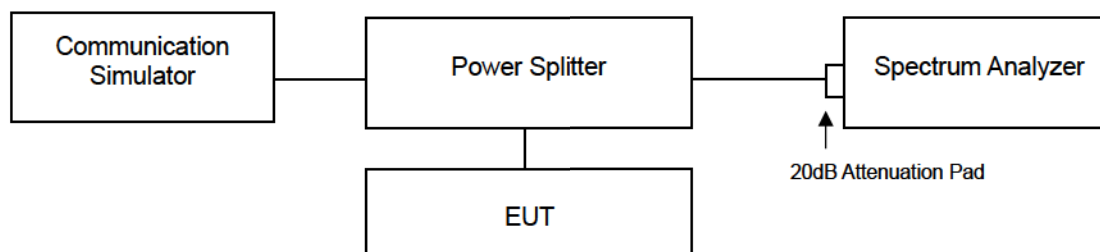


## 4.5 Band Edge Measurement

### 4.5.1 Limits of Band Edge Measurement

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. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

### 4.5.2 Test Setup



### 4.5.3 Test Procedures

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 10kHz and VB of the spectrum is 30kHz (GPRS / EDGE).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 15kHz and VB of the spectrum is 51kHz (LTE Channel Bandwidth 1.4MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 3MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (LTE Channel Bandwidth 5MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Channel Bandwidth 15MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 200kHz and VB of the spectrum is 1MHz (LTE Channel Bandwidth 20MHz).
- Record the max trace plot into the test report.