



|       |                      |          |          |
|-------|----------------------|----------|----------|
|       | 40°C/Normal Voltage  | -0.00229 | -0.00064 |
|       | 50°C/Normal Voltage  | -0.00021 | -0.00010 |
|       | 60°C/Normal Voltage  | -0.00154 | -0.00259 |
|       | 70°C/Normal Voltage  | -0.00208 | -0.00229 |
|       | 80°C/Normal Voltage  | -0.00301 | -0.00195 |
|       | 85°C/Normal Voltage  | -0.00432 | -0.00187 |
|       | 20°C/Min Voltage     | -0.00530 | -0.00226 |
|       | 20°C/Max Voltage     | -0.00360 | -0.00285 |
| 15MHz | -40°C/Normal Voltage | -0.00485 | -0.00018 |
|       | -30°C/Normal Voltage | -0.00390 | 0.00080  |
|       | -20°C/Normal Voltage | -0.00460 | -0.00331 |
|       | -10°C/Normal Voltage | -0.00395 | -0.00046 |
|       | 0°C/Normal Voltage   | -0.00290 | -0.00040 |
|       | 10°C/Normal Voltage  | -0.00181 | 0.00346  |
|       | 20°C/Normal Voltage  | -0.00136 | 0.00049  |
|       | 30°C/Normal Voltage  | -0.00043 | -0.00009 |
|       | 40°C/Normal Voltage  | -0.00198 | 0.00215  |
|       | 50°C/Normal Voltage  | -0.00343 | 0.00212  |
|       | 60°C/Normal Voltage  | -0.00082 | 0.00301  |
|       | 70°C/Normal Voltage  | -0.00200 | 0.00572  |
|       | 80°C/Normal Voltage  | -0.00182 | 0.00515  |
|       | 85°C/Normal Voltage  | -0.00277 | -0.00396 |
|       | 20°C/Min Voltage     | -0.00148 | -0.00195 |
|       | 20°C/Max Voltage     | -0.00359 | -0.00301 |
| 20MHz | -40°C/Normal Voltage | 0.00114  | 0.00435  |
|       | -30°C/Normal Voltage | -0.00106 | 0.00396  |
|       | -20°C/Normal Voltage | -0.00316 | 0.00235  |
|       | -10°C/Normal Voltage | 0.00012  | 0.00256  |
|       | 0°C/Normal Voltage   | 0.00135  | 0.00223  |
|       | 10°C/Normal Voltage  | 0.00097  | 0.00421  |
|       | 20°C/Normal Voltage  | 0.00222  | 0.00327  |
|       | 30°C/Normal Voltage  | -0.00184 | 0.00301  |
|       | 40°C/Normal Voltage  | -0.00004 | 0.00408  |
|       | 50°C/Normal Voltage  | -0.00102 | 0.00639  |
|       | 60°C/Normal Voltage  | -0.00186 | 0.00576  |
|       | 70°C/Normal Voltage  | 0.00230  | 0.00338  |
|       | 80°C/Normal Voltage  | -0.00037 | 0.00271  |
|       | 85°C/Normal Voltage  | -0.00040 | 0.00432  |
|       | 20°C/Min Voltage     | -0.00101 | 0.00422  |
|       | 20°C/Max Voltage     | -0.00295 | 0.00636  |

| LTE Band 25              |         |                   |                    |           |                          |
|--------------------------|---------|-------------------|--------------------|-----------|--------------------------|
| (QPSK, 20MHz BANDWIDTH)  |         |                   |                    |           |                          |
| Condition                |         | 1850              | 1915               | Delta(Hz) | Frequency Stability(ppm) |
| Temperature              | Voltage | F low@-13dBm(MHz) | F high@-13dBm(MHz) |           |                          |
| Normal (25°C)            | Normal  | 1851.1788         | 1914.8258          | 7.71      | 0.00410                  |
| Extreme (85°C)           |         | 1851.1791         | 1914.8255          | 2.64      | 0.00140                  |
| Extreme (80°C)           |         | 1851.1794         | 1914.8252          | 17.23     | 0.00916                  |
| Extreme (70°C)           |         | 1851.1789         | 1914.8257          | -7.62     | -0.00405                 |
| Extreme (60°C)           |         | 1851.1783         | 1914.8253          | 1.43      | 0.00076                  |
| Extreme (50°C)           |         | 1851.1868         | 1914.8338          | 5.81      | 0.00309                  |
| Extreme (40°C)           |         | 1851.1822         | 1914.8292          | -12.33    | -0.00656                 |
| Extreme (30°C)           |         | 1851.1829         | 1914.8299          | 6.42      | 0.00341                  |
| Extreme (20°C)           |         | 1851.1832         | 1914.8302          | 2.39      | 0.00127                  |
| Extreme (10C)            |         | 1851.1797         | 1914.8267          | 17.45     | 0.00928                  |
| Extreme (0°C)            |         | 1851.1856         | 1914.8326          | 8.46      | 0.00450                  |
| Extreme (-10°C)          |         | 1851.1793         | 1914.8263          | -13.02    | -0.00693                 |
| Extreme (-20°C)          |         | 1851.1834         | 1914.8304          | 12.35     | 0.00657                  |
| Extreme (-30°C)          |         | 1851.1781         | 1914.8252          | 9.76      | 0.00519                  |
| Extreme (-40°C)          |         | 1851.1788         | 1914.8258          | 5.25      | 0.00279                  |
| 25°C                     | LV      | 1851.1832         | 1914.8302          | -2.64     | -0.00140                 |
|                          | HV      | 1851.1781         | 1914.8251          | 9.16      | 0.00487                  |
| (16QAM, 20MHz BANDWIDTH) |         |                   |                    |           |                          |
| Condition                |         | 1850              | 1915               | Delta(Hz) | Frequency Stability(ppm) |
| Temperature              | Voltage | F low@-13dBm(MHz) | F high@-13dBm(MHz) |           |                          |
| Normal (25°C)            | Normal  | 1851.1742         | 1914.8212          | -5.48     | -0.00291                 |
| Extreme (85°C)           |         | 1851.1745         | 1914.8209          | 3.14      | 0.00167                  |
| Extreme (80°C)           |         | 1851.1748         | 1914.8206          | 7.68      | 0.00409                  |
| Extreme (70°C)           |         | 1851.1743         | 1914.8211          | 9.24      | 0.00491                  |
| Extreme (60°C)           |         | 1851.1747         | 1914.8217          | -15.33    | -0.00815                 |
| Extreme (50°C)           |         | 1851.1662         | 1914.8132          | 4.25      | 0.00226                  |
| Extreme (40°C)           |         | 1851.1708         | 1914.8178          | 8.13      | 0.00432                  |
| Extreme (30°C)           |         | 1851.1701         | 1914.8171          | -2.54     | -0.00135                 |
| Extreme (20°C)           |         | 1851.1698         | 1914.8168          | 14.10     | 0.00750                  |
| Extreme (10C)            |         | 1851.1733         | 1914.8203          | 6.10      | 0.00324                  |
| Extreme (0°C)            |         | 1851.1674         | 1914.8144          | 2.84      | 0.00151                  |
| Extreme (-10°C)          |         | 1851.1737         | 1914.8207          | 13.64     | 0.00726                  |
| Extreme (-20°C)          |         | 1851.1696         | 1914.8166          | -6.49     | -0.00345                 |
| Extreme (-30°C)          |         | 1851.1753         | 1914.8222          | 2.01      | 0.00107                  |



|                 |    |           |           |      |         |
|-----------------|----|-----------|-----------|------|---------|
| Extreme (-40°C) |    | 1851.1742 | 1914.8212 | 7.38 | 0.00393 |
| 25°C            | LV | 1851.1698 | 1914.8168 | 4.32 | 0.00230 |
|                 | HV | 1851.1749 | 1914.8219 | 3.96 | 0.00211 |

## 5.7. Spurious Emissions at Antenna Terminals

### Ambient condition

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 23°C ~25°C  | 45%~50%           | 101.5kPa |

### Method of Measurement

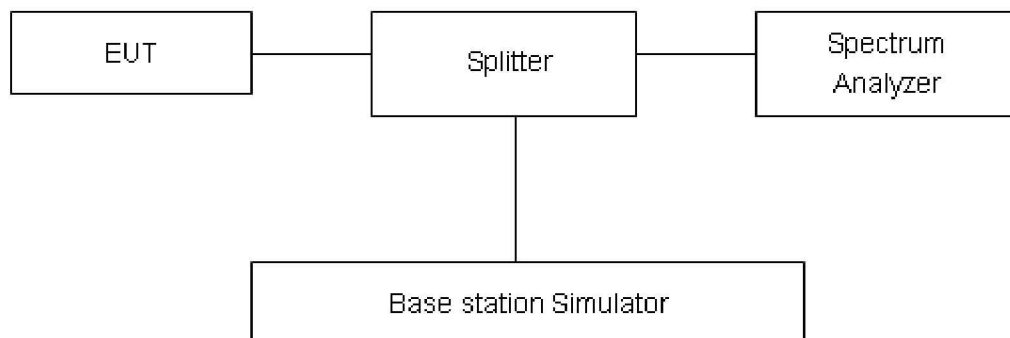
The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.

RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz

RBW is set to 1MHz, VBW is set to 3MHz for above 1GHz, Sweep is set to ATUO.

The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

### Test setup



### Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10} (P)$  dB.”

| Limit | -13 dBm |
|-------|---------|
|-------|---------|

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

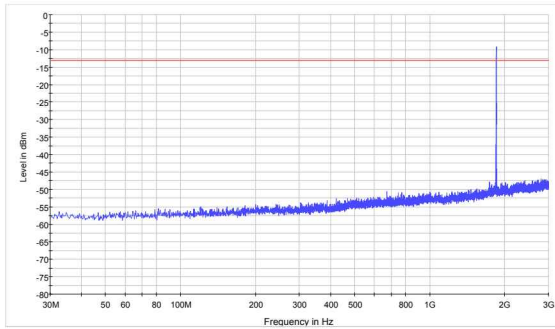
| Frequency  | Uncertainty |
|------------|-------------|
| 9kHz-1GHz  | 0.684 dB    |
| 1GHz-20GHz | 1.407 dB    |

## Test Result

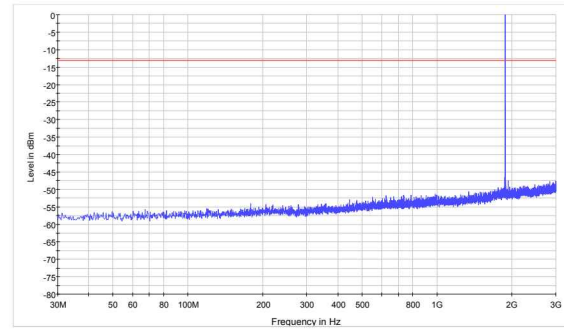
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

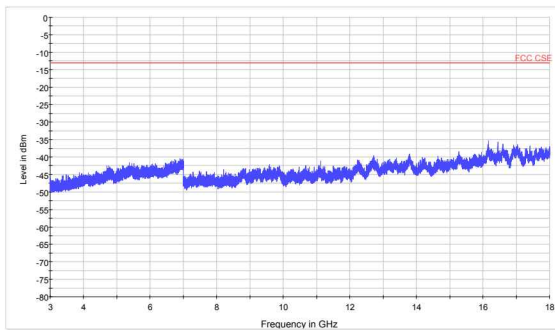
GSM 1900 CH-Low 30MHz~3GHz



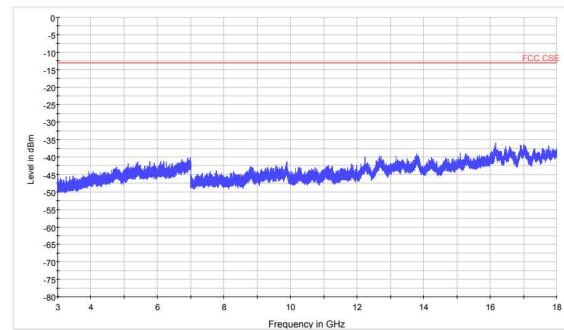
GSM 1900 CH-Middle 30MHz~3GHz



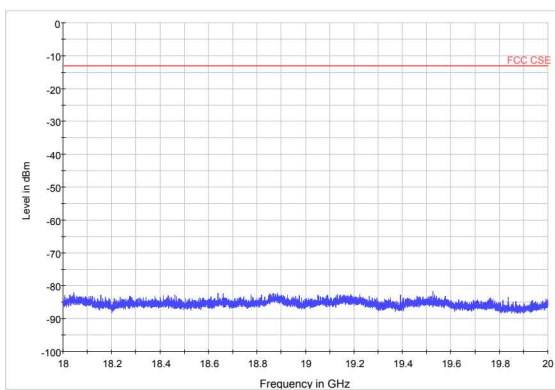
GSM 1900 CH-Low 3GHz~18GHz



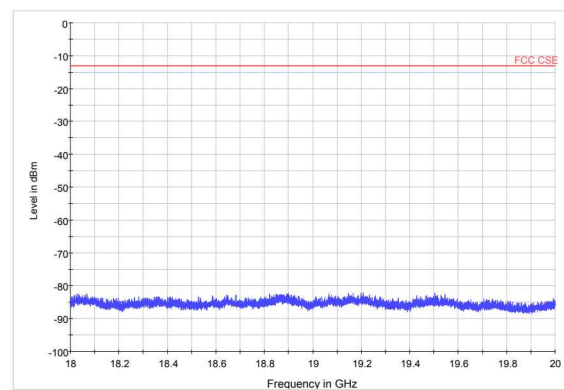
GSM 1900 CH-Middle 3GHz~18GHz



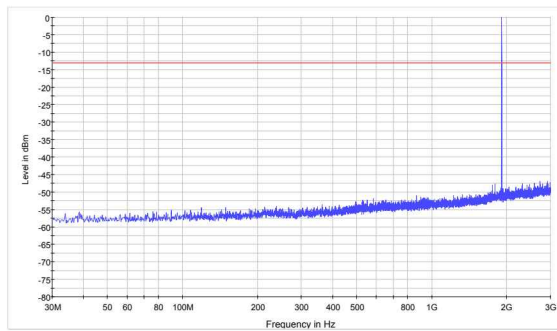
GSM 1900 CH-Low 18GHz~20GHz



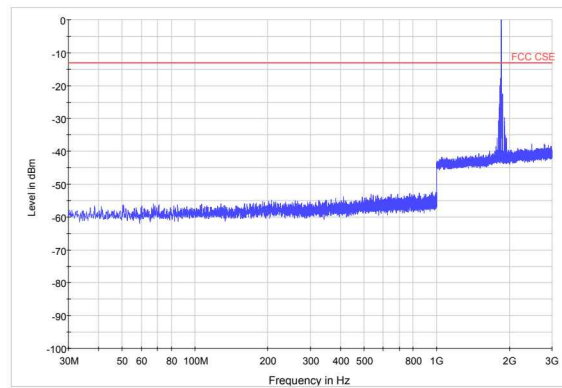
GSM 1900 CH-Middle 18GHz~20GHz



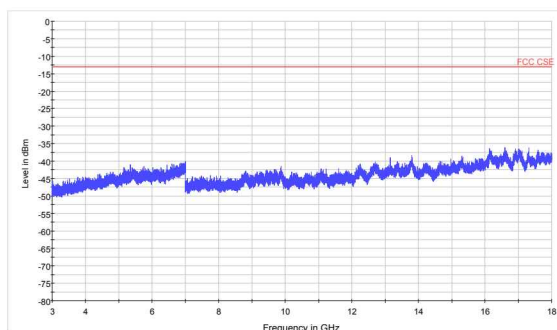
GSM 1900 CH-High 30MHz~3GHz



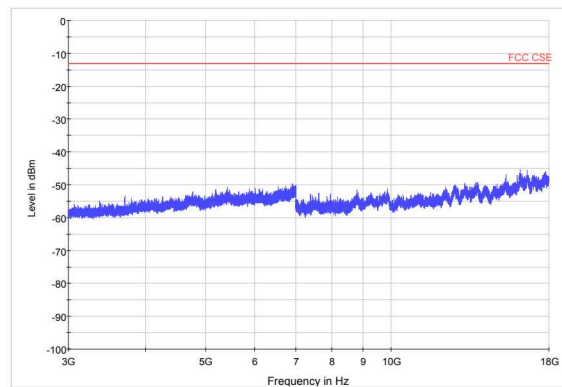
LTE Band 2 1.4MHz CH-Low 30MHz~3GHz



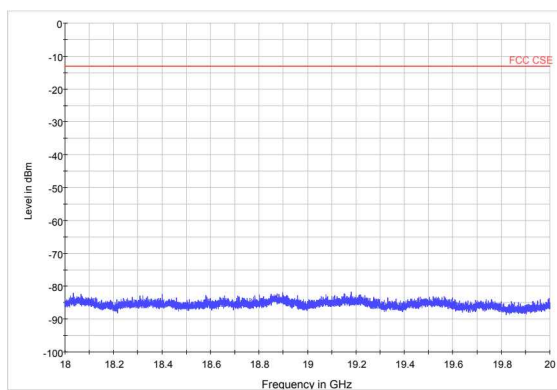
GSM 1900 CH-High 3GHz~18GHz



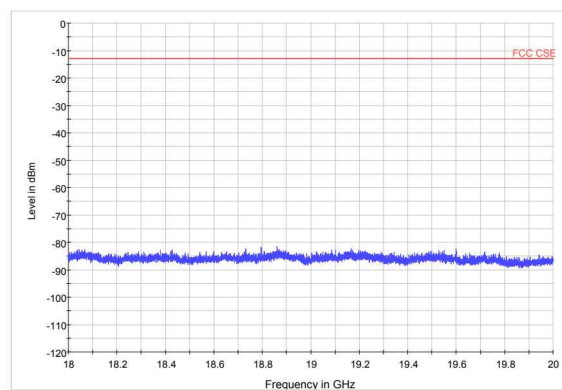
LTE Band 2 1.4MHz CH-Low 3GHz~18GHz



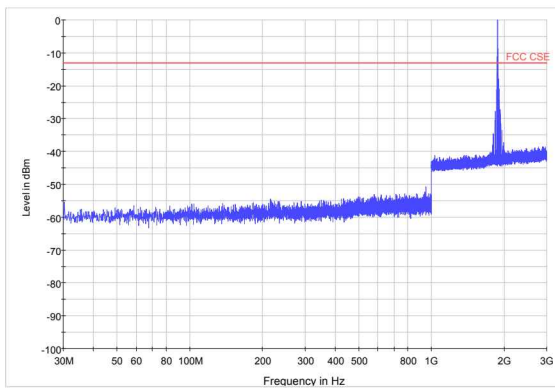
GSM 1900 CH-High 18GHz~20GHz



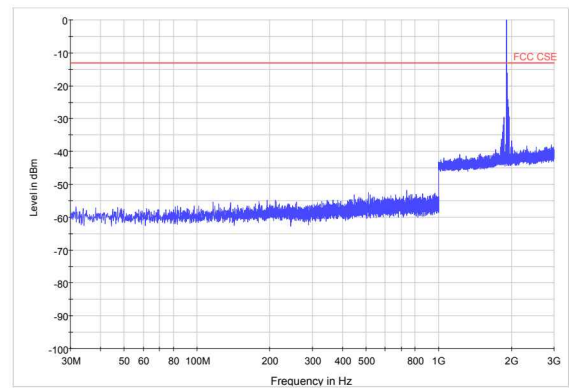
LTE Band 2 1.4MHz CH-Low 18GHz~20GHz



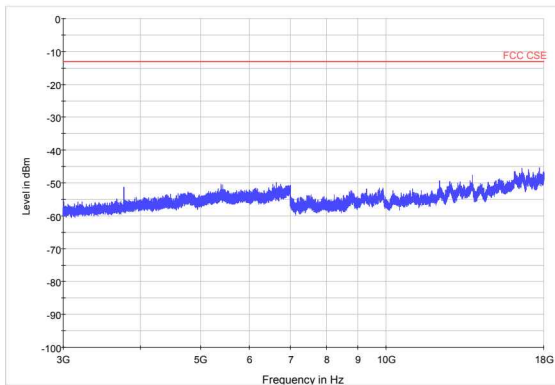
LTE Band 2 1.4MHz CH-Middle 30MHz~3GHz



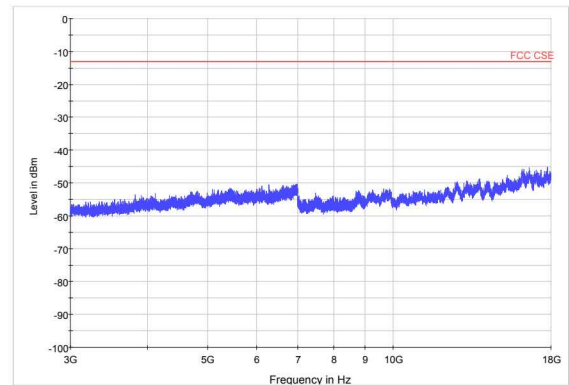
LTE Band 2 1.4MHz CH-High 30MHz~3GHz



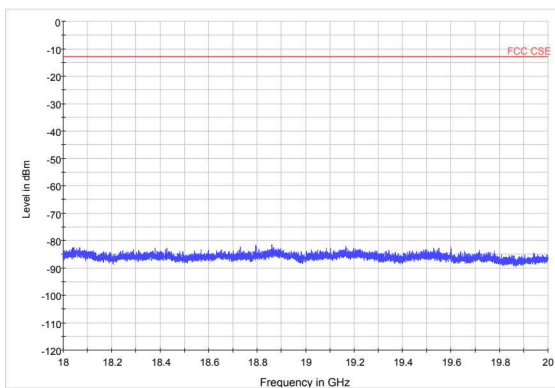
LTE Band 2 1.4MHz CH-Middle 3GHz~18GHz



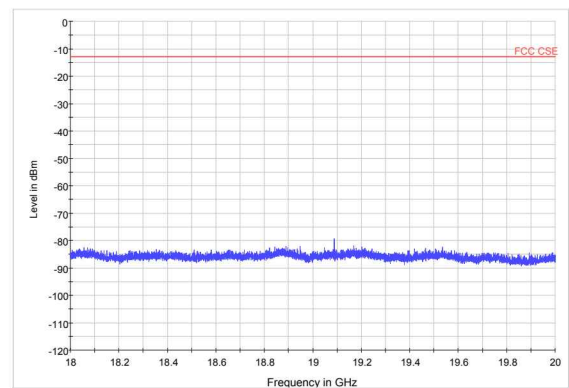
LTE Band 2 1.4MHz CH-High 3GHz~18GHz



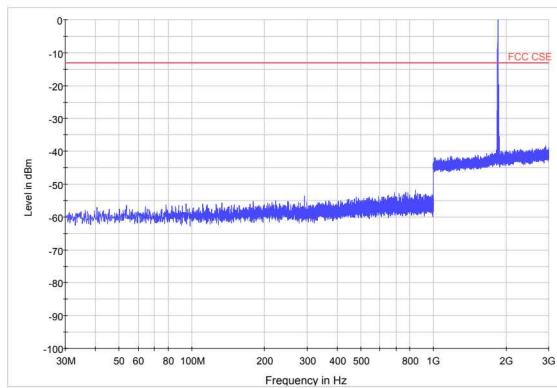
LTE Band 2 1.4MHz CH-Middle 18GHz~20GHz



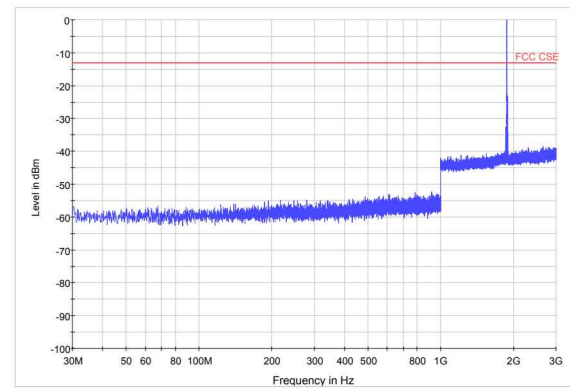
LTE Band 2 1.4MHz CH-High 18GHz~20GHz



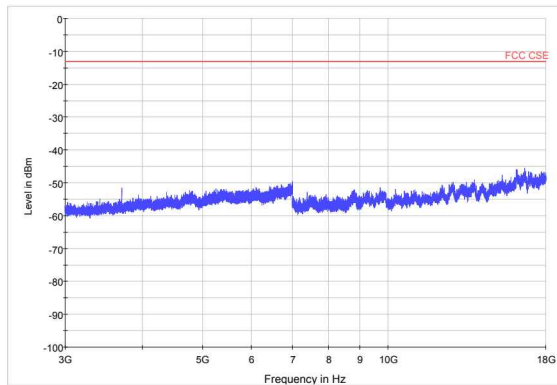
LTE Band 2 3MHz CH-Low 30MHz~3GHz



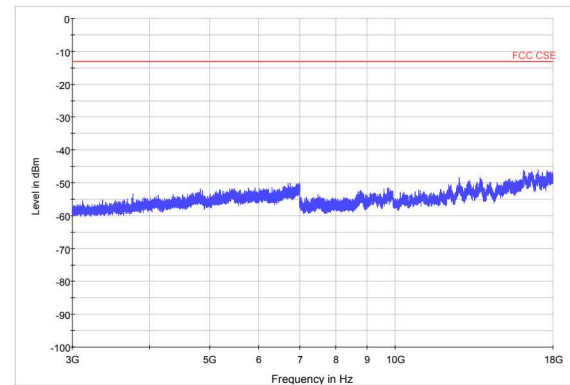
LTE Band 2 3MHz CH-Middle 30MHz~3GHz



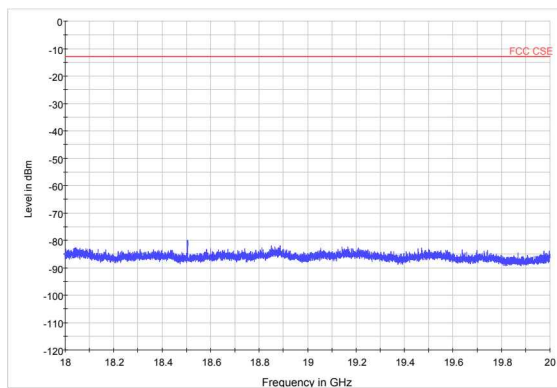
LTE Band 2 3MHz CH-Low 3GHz~18GHz



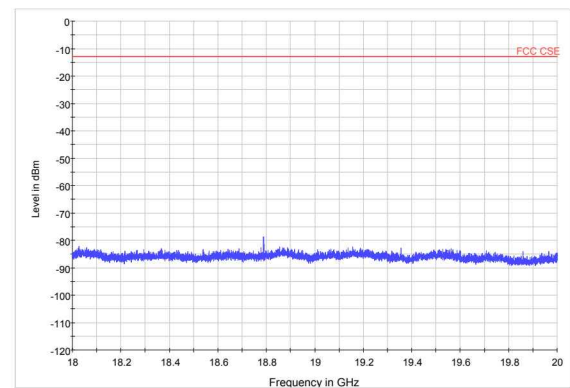
LTE Band 2 3MHz CH-Middle 3GHz~18GHz



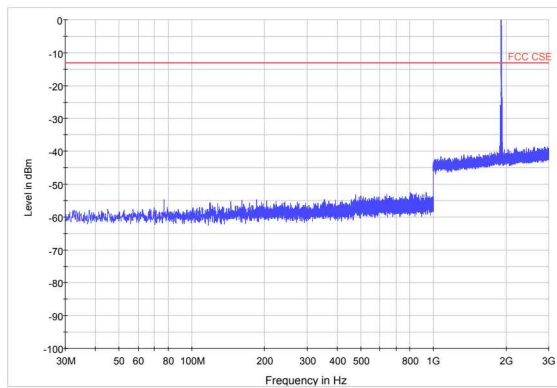
LTE Band 2 3MHz CH-Low 18GHz~20GHz



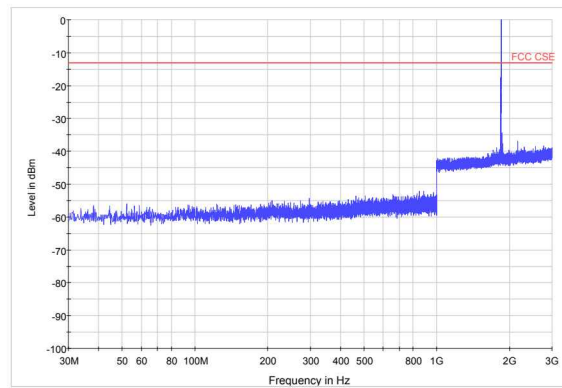
LTE Band 2 3MHz CH-Middle 18GHz~20GHz



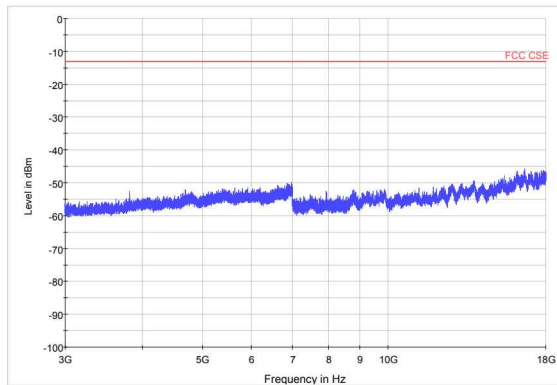
LTE Band 2 3MHz CH-High 30MHz~3GHz



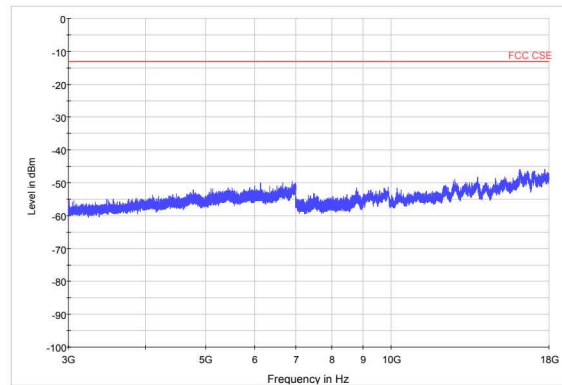
LTE Band 2 5MHz CH-Low 30MHz~3GHz



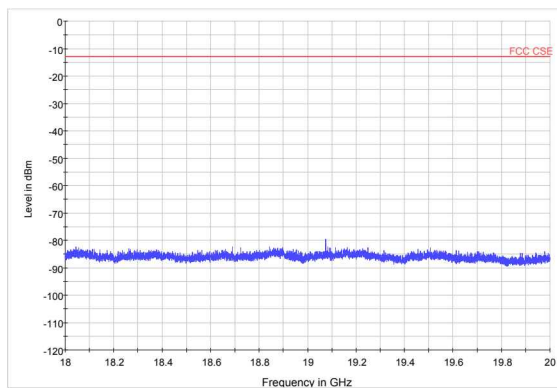
LTE Band 2 3MHz CH-High 3GHz~18GHz



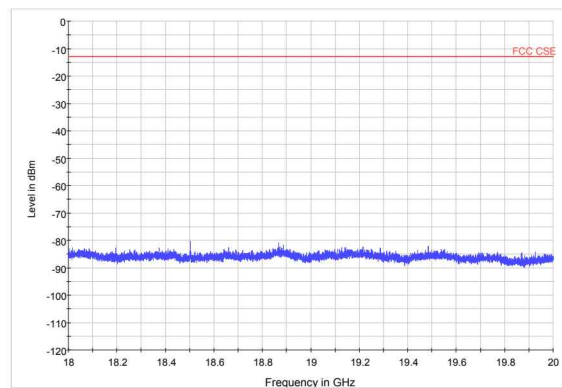
LTE Band 2 5MHz CH-Low 3GHz~18GHz



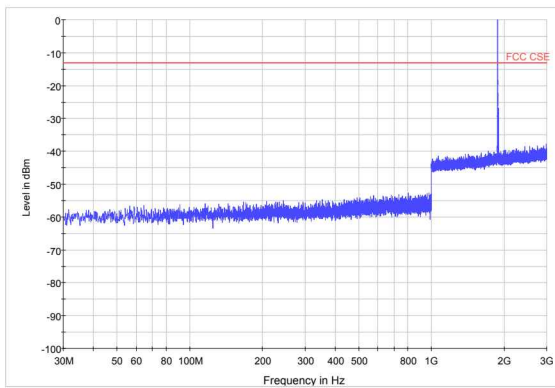
LTE Band 2 3MHz CH-High 18GHz~20GHz



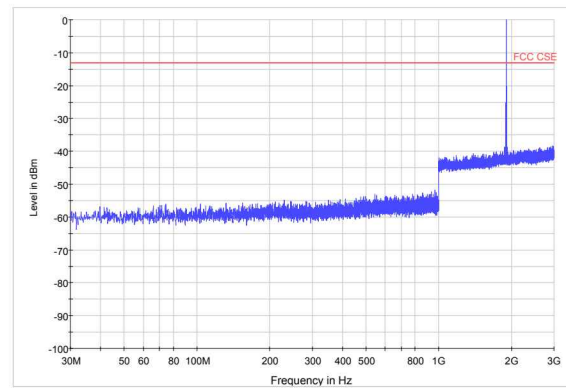
LTE Band 2 5MHz CH-Low 18GHz~20GHz



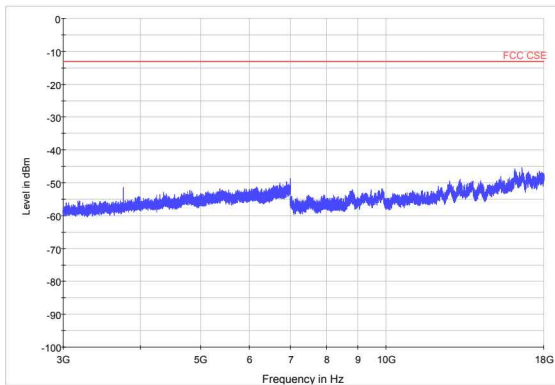
LTE Band 2 5MHz CH-Middle 30MHz~3GHz



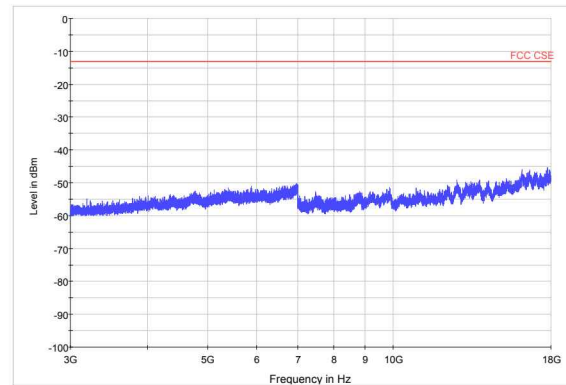
LTE Band 2 5MHz CH-High 30MHz~3GHz



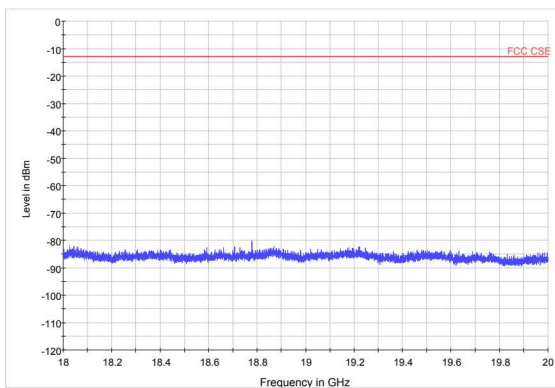
LTE Band 2 5MHz CH-Middle 3GHz~18GHz



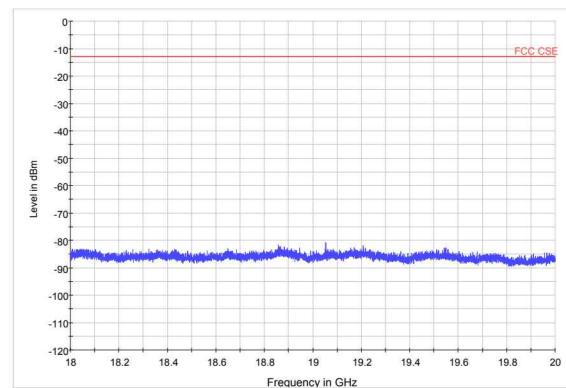
LTE Band 2 5MHz CH-High 3GHz~18GHz



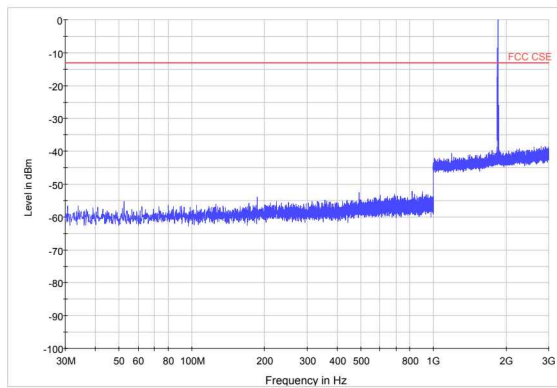
LTE Band 2 5MHz CH-Middle 18GHz~20GHz



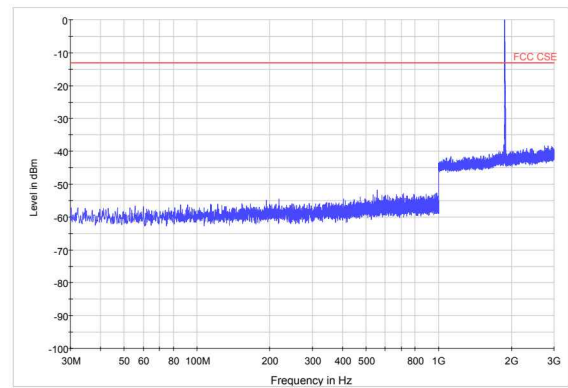
LTE Band 2 5MHz CH-High 18GHz~20GHz



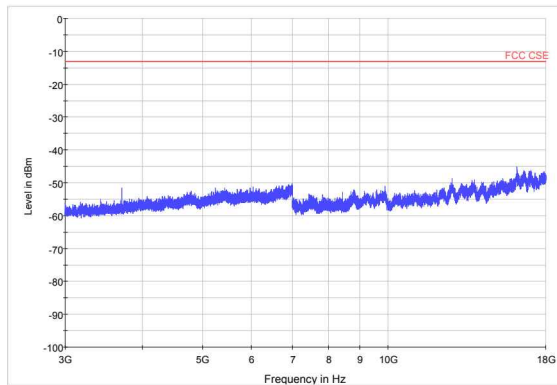
LTE Band 2 10MHz CH-Low 30MHz~3GHz



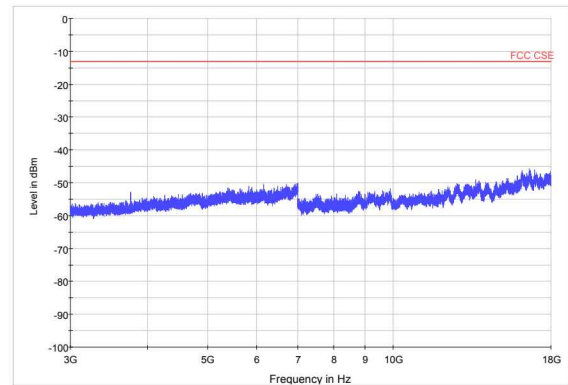
LTE Band 2 10MHz CH-Middle 30MHz~3GHz



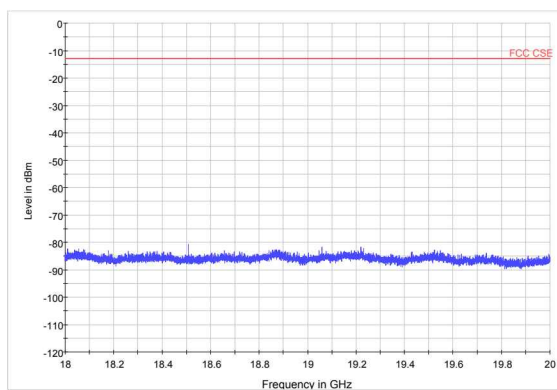
LTE Band 2 10MHz CH-Low 3GHz~18GHz



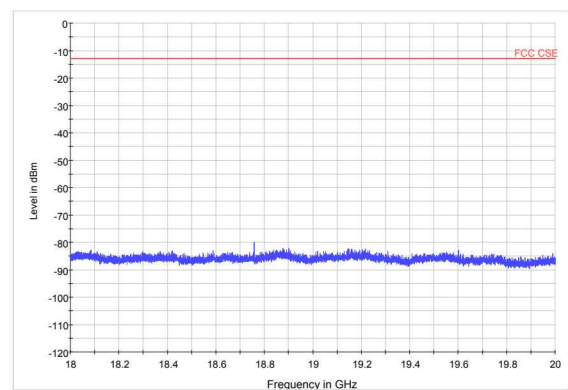
LTE Band 2 10MHz CH-Middle 3GHz~18GHz



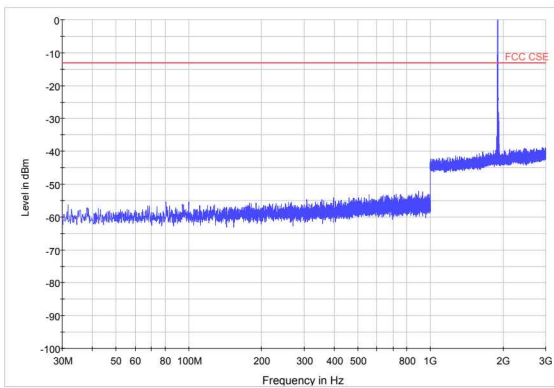
LTE Band 2 10MHz CH-Low 18GHz~20GHz



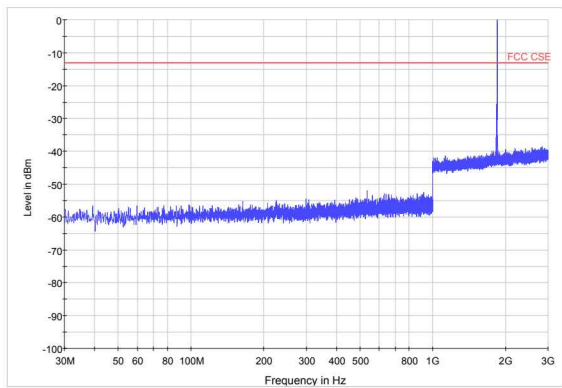
LTE Band 2 10MHz CH-Middle 18GHz~20GHz



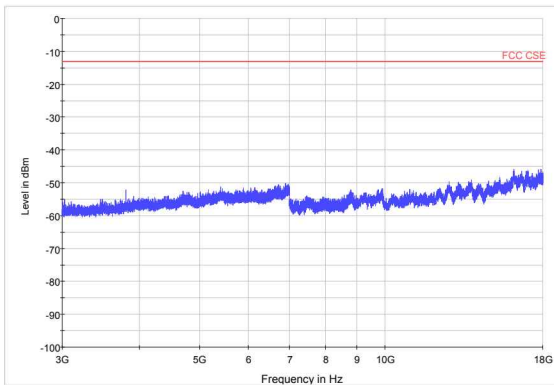
LTE Band 2 10MHz CH-High 30MHz~3GHz



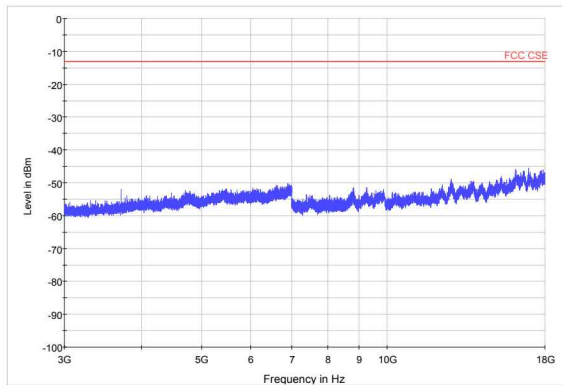
LTE Band 2 15MHz CH-Low 30MHz~3GHz



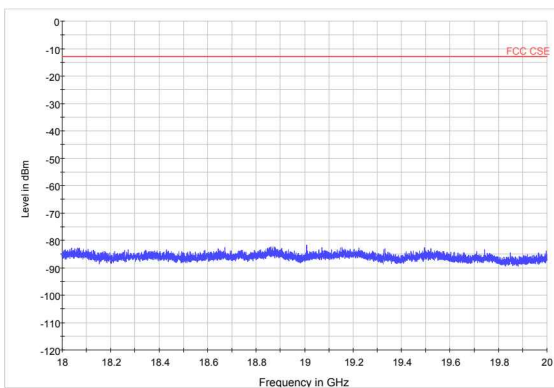
LTE Band 2 10MHz CH-High 3GHz~18GHz



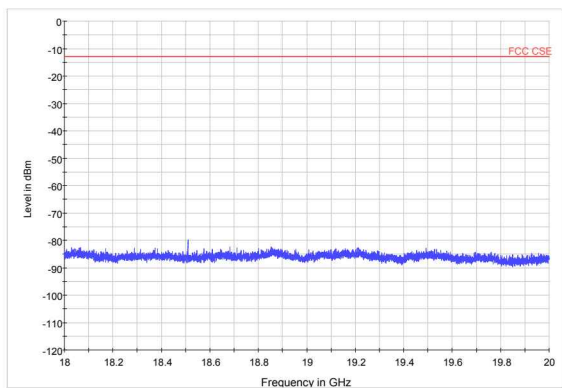
LTE Band 2 15MHz CH-Low 3GHz~18GHz



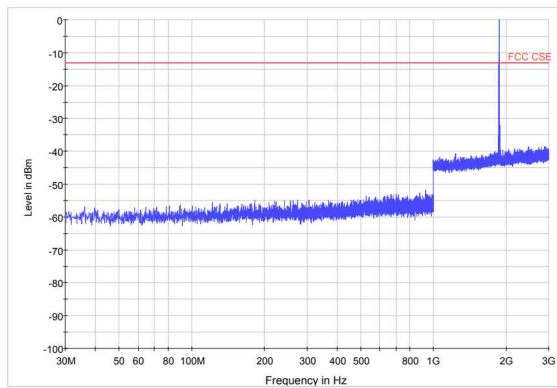
LTE Band 2 10MHz CH-High 18GHz~20GHz



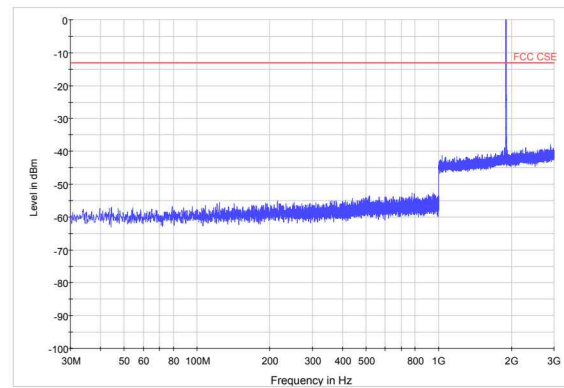
LTE Band 2 15MHz CH-Low 18GHz~20GHz



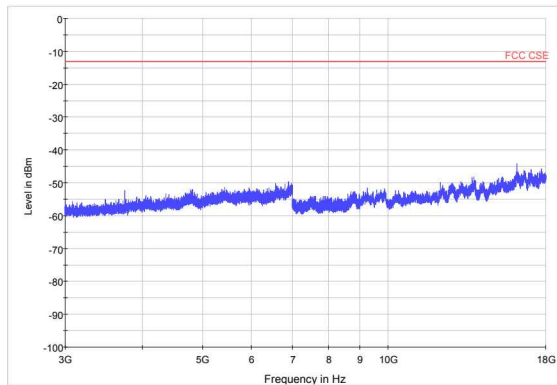
LTE Band 2 15MHz CH-Middle 30MHz~3GHz



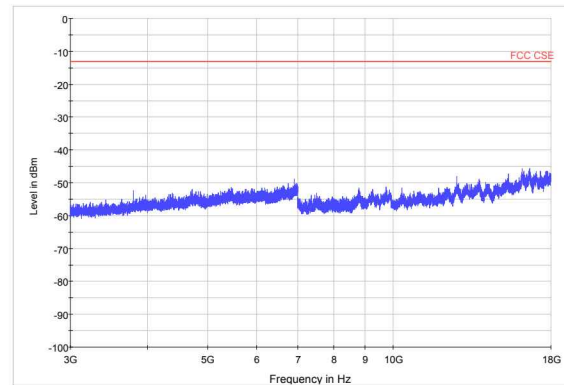
LTE Band 2 15MHz CH-High 30MHz~3GHz



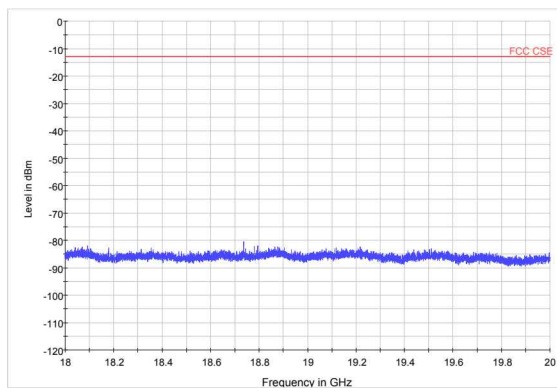
LTE Band 2 15MHz CH-Middle 3GHz~18GHz



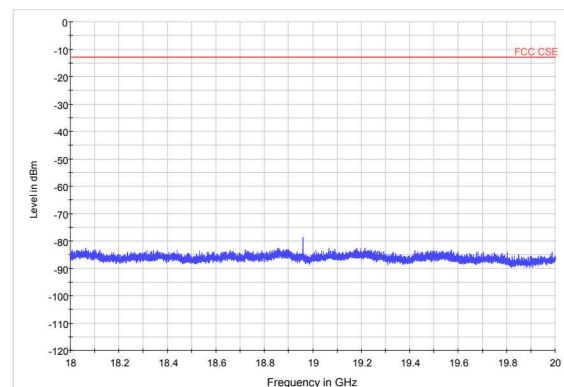
LTE Band 2 15MHz CH-High 3GHz~18GHz



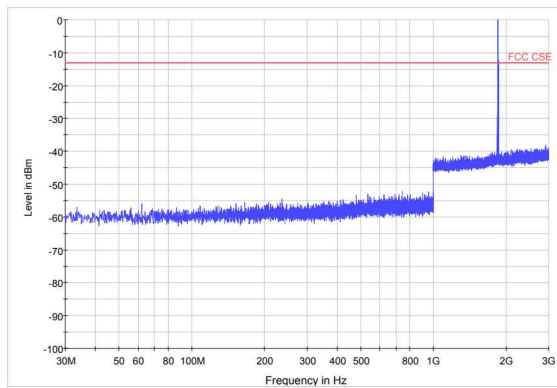
LTE Band 2 15MHz CH-Middle 18GHz~20GHz



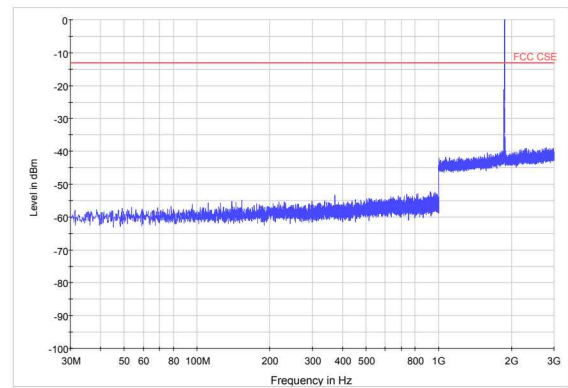
LTE Band 2 15MHz CH-High 18GHz~20GHz



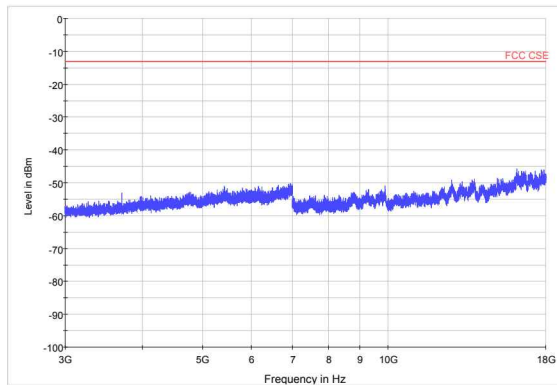
LTE Band 2 20MHz CH-Low 30MHz~3GHz



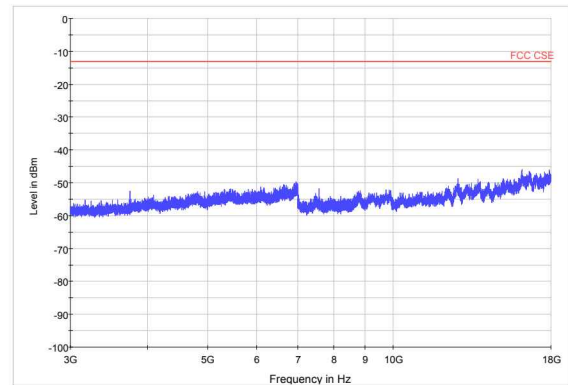
LTE Band 2 20MHz CH-Middle 30MHz~3GHz



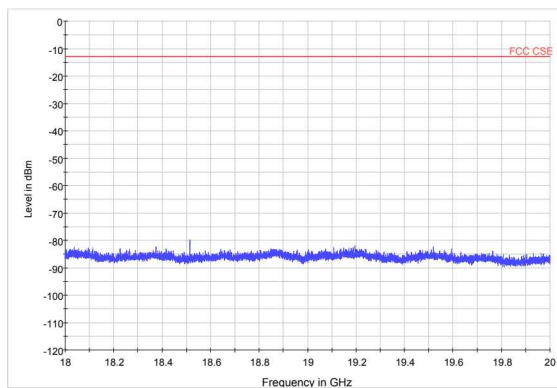
LTE Band 2 20MHz CH-Low 3GHz~18GHz



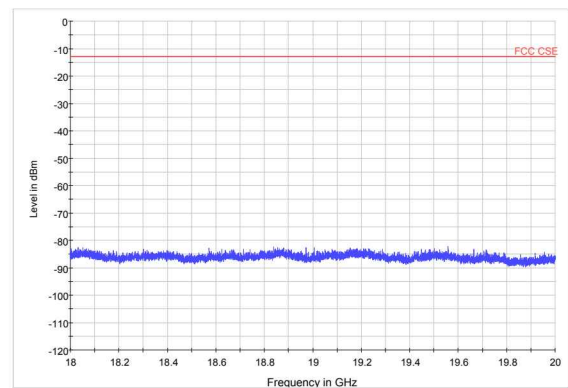
LTE Band 2 20MHz CH-Middle 3GHz~18GHz



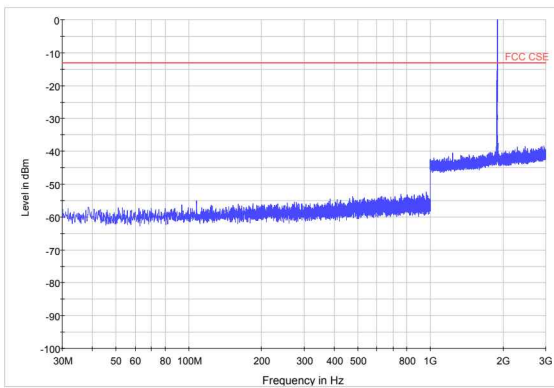
LTE Band 2 20MHz CH-Low 18GHz~20GHz



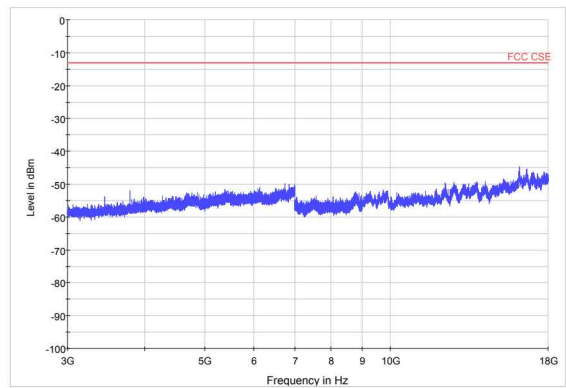
LTE Band 2 20MHz CH-Middle 18GHz~20GHz



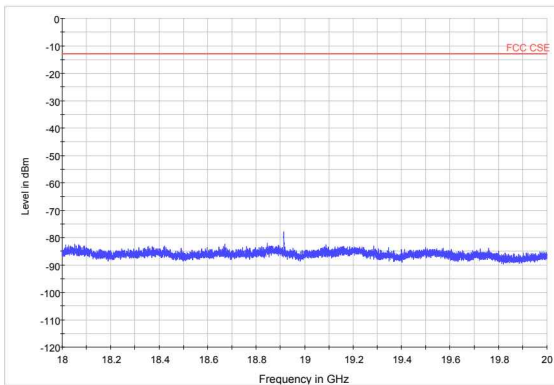
LTE Band 2 20MHz CH-High 30MHz~3GHz



LTE Band 2 20MHz CH-High 3GHz~18GHz

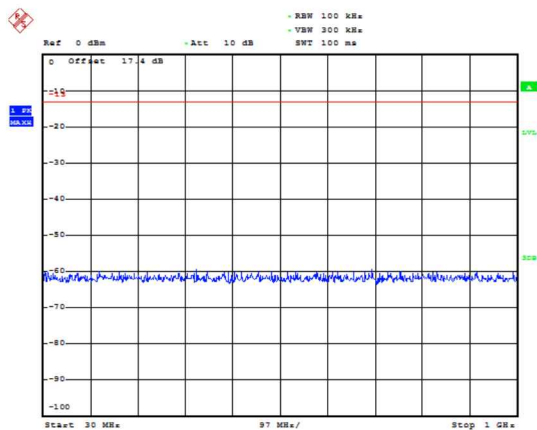


LTE Band 2 20MHz CH-High 18GHz~20GHz



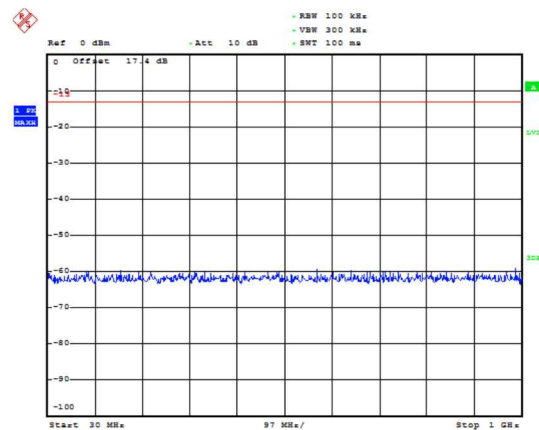


## LTE Band 25 1.4MHz CH-Low 30MHz~1GHz



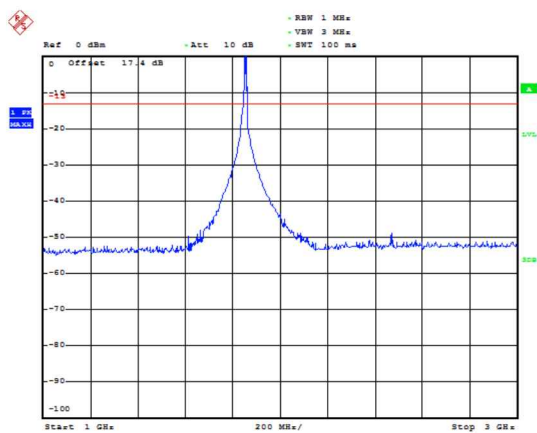
Date: 8.DEC.2018 10:24:49

## LTE Band 25 1.4MHz CH-Middle 30MHz~1GHz



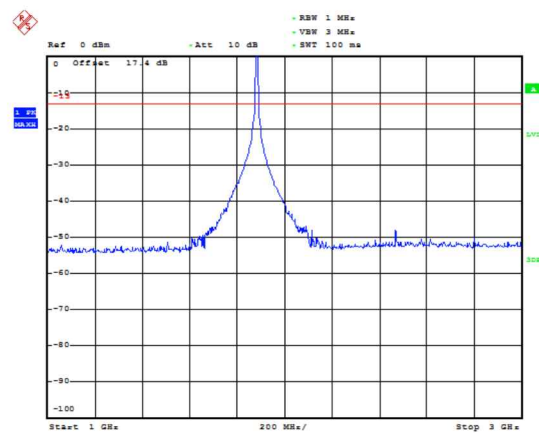
Date: 8.DEC.2018 10:25:27

## LTE Band 25 1.4MHz CH-Low 1GHz~3GHz



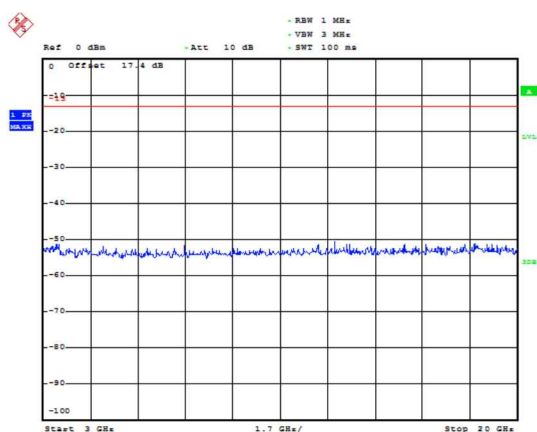
Date: 8.DEC.2018 10:22:21

## LTE Band 25 1.4MHz CH-Middle 1GHz~3GHz



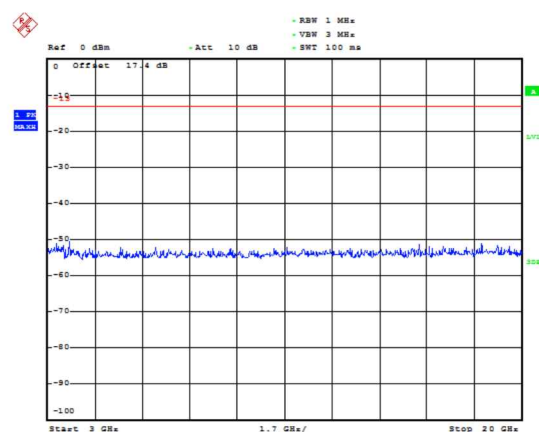
Date: 8.DEC.2018 10:29:35

## LTE Band 25 1.4MHz CH-Low 3GHz~20GHz



Date: 8.DEC.2018 10:22:42

## LTE Band 25 1.4MHz CH-Middle 3GHz~20GHz



Date: 8.DEC.2018 10:48:26