

LTE Band 2



LTE Band 4



LTE Band 5



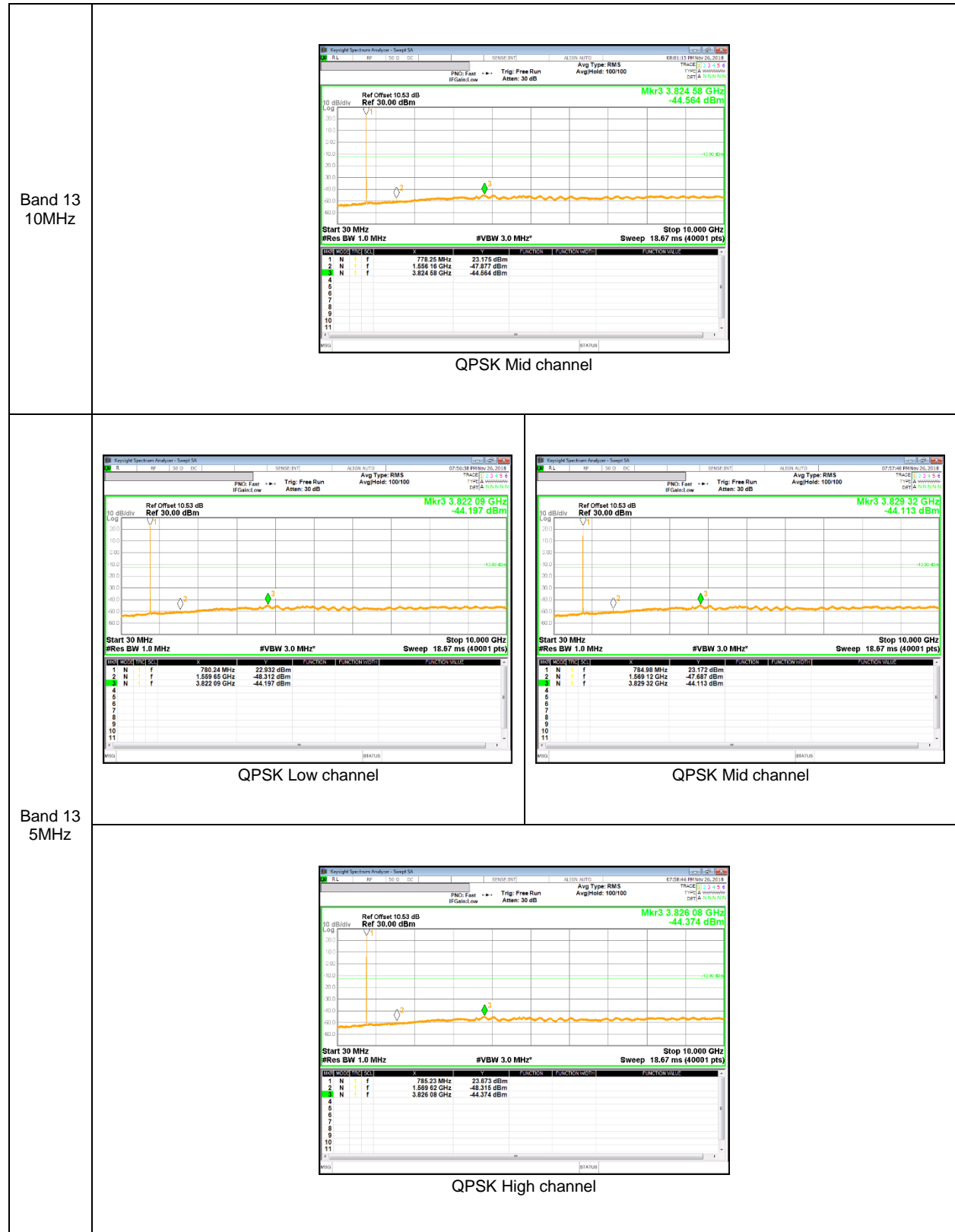
LTE Band 7



LTE Band 12



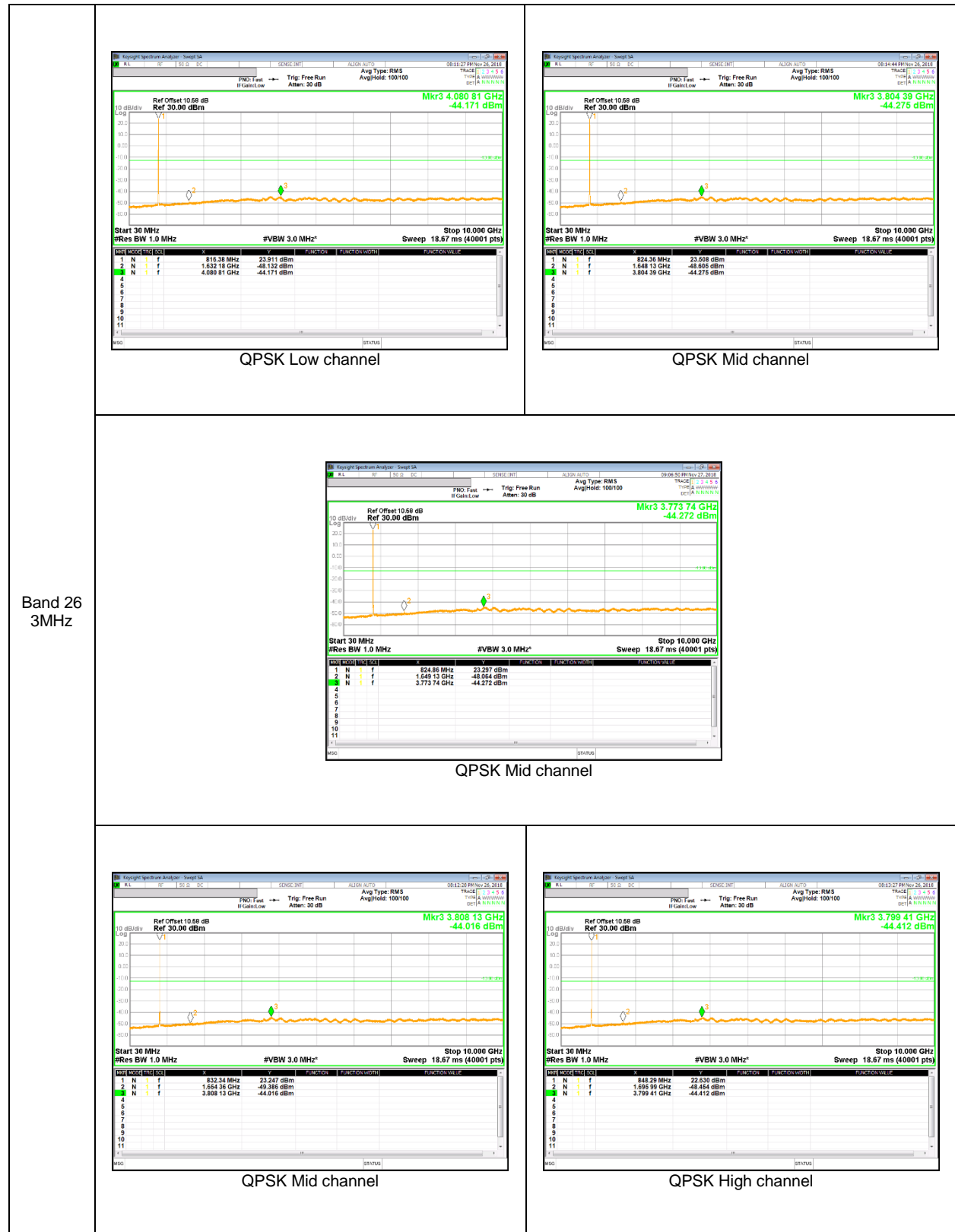
LTE Band 13



LTE Band 25



LTE Band 26



LTE Band 41



LTE Band 66



9.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.213

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

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

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

§90.213 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01

RESULTS

See the following pages.

NOTE : Test were performed each lowest or highest frequency on the modulation condition of more wide bandwidth.(Please refer to section 9.1.1 OBW results)

9.4.1. FREQUENCY STABILITY RESULTS

GSM 850, Channel 190, Frequency 836.6 MHz

| Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20°C | | | | | | | |
|--|------------------------------|---|--------------|---------------------|--------------|-------------|----|
| Limit: +/- 2.5 ppm = | | Low Channel | 2060.500 | Hz | High Channel | 2122.000 | Hz |
| Power Supply [Vdc] | Environment Temperature [°C] | Frequency Deviation Measured with Time Elapse | | | | Limit [ppm] | |
| | | Low Channel | | High Channel | | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | | |
| 3.80 | 50 | 824.19997790 | 0.000 | 848.79997841 | -0.001 | 2.5 | |
| 3.80 | 40 | 824.19998177 | -0.004 | 848.79997986 | -0.003 | 2.5 | |
| 3.80 | 30 | 824.19997576 | 0.003 | 848.79997952 | -0.003 | 2.5 | |
| 3.80 | 20 | 824.19997819 | 0.000 | 848.79997717 | 0.000 | 2.5 | |
| 3.80 | 10 | 824.19998259 | -0.005 | 848.79998177 | -0.005 | 2.5 | |
| 3.80 | 0 | 824.19998249 | -0.005 | 848.79997662 | 0.001 | 2.5 | |
| 3.80 | -10 | 824.19997925 | -0.001 | 848.79997813 | -0.001 | 2.5 | |
| 3.80 | -20 | 824.19997606 | 0.003 | 848.79997985 | -0.003 | 2.5 | |
| 3.80 | -30 | 824.19998162 | -0.004 | 848.79998165 | -0.005 | 2.5 | |

| Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20°C | | | | | | | |
|--|------------------------------|---|-------------|--------------|--------------|-------------|----|
| Limit: +/- 2.5 ppm = | | Low Channel | 2060.500 | Hz | High Channel | 2122.000 | Hz |
| Power Supply [Vdc] | Environment Temperature [°C] | Frequency Deviation Measured with Time Elapse | | | | Limit [ppm] | |
| | | Low Channel | | High Channel | | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | | |
| 3.80 | 20 | 824.19997819 | 0 | 848.79997717 | 0 | 2.5 | |
| 4.30 | 20 | 824.19997971 | -0.002 | 848.79997567 | 0.002 | 2.5 | |
| 3.60 | 20 | 824.19997644 | 0.002 | 848.79998228 | -0.006 | 2.5 | |

GSM 1900, Channel 661, Frequency 1880.0 MHz

| Limit | | 1850 | 1910 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------------|---------------------------|------------|---------------------------|
| Condition | | F low @ End of OBW (MHz) | F high @ End of OBW (MHz) | | |
| Temperature | Voltage | | | | |
| Normal (20C) | Normal | 1850.0783 | 1909.9226 | | |
| Extreme (50C) | | 1850.0783 | 1909.9227 | 25.6 | 0.014 |
| Extreme (40C) | | 1850.0783 | 1909.9227 | 30.7 | 0.016 |
| Extreme (30C) | | 1850.0783 | 1909.9227 | 30.5 | 0.016 |
| Extreme (10C) | | 1850.0783 | 1909.9227 | 24.4 | 0.013 |
| Extreme (0C) | | 1850.0783 | 1909.9227 | 22.8 | 0.012 |
| Extreme (-10C) | | 1850.0783 | 1909.9227 | 30.2 | 0.016 |
| Extreme (-20C) | | 1850.0783 | 1909.9227 | 25.9 | 0.014 |
| Extreme (-30C) | | 1850.0783 | 1909.9227 | 27.9 | 0.015 |
| 20C | | 15% | 1850.0783 | 1909.9227 | 24.2 |
| | -15% | 1850.0783 | 1909.9227 | 30.1 | 0.016 |
| | End Point | 1850.0783 | 1909.9227 | 26.5 | 0.014 |

WCDMA Band 5 (HSDPA)

| Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20°C | | | | | | | |
|--|------------------------------|---|--------------|---------------------|--------------|------------|-------------|
| Limit: +/- 2.5 ppm = | | Low Channel | 2066.000 | Hz | High Channel | 2116.500 | Hz |
| Power Supply [Vdc] | Environment Temperature [°C] | Frequency Deviation Measured with Time Elapse | | | | | Limit [ppm] |
| | | Low Channel | | High Channel | | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | | |
| 3.80 | 50 | 826.40000610 | 0.008 | 846.60001072 | -0.006 | 2.5 | |
| 3.80 | 40 | 826.40001409 | -0.001 | 846.60000641 | -0.001 | 2.5 | |
| 3.80 | 30 | 826.40001522 | -0.003 | 846.60000623 | 0.000 | 2.5 | |
| 3.80 | 20 | 826.40001301 | 0.000 | 846.60000586 | 0.000 | 2.5 | |
| 3.80 | 10 | 826.40001094 | 0.003 | 846.60000726 | -0.002 | 2.5 | |
| 3.80 | 0 | 826.40000582 | 0.009 | 846.60000519 | 0.001 | 2.5 | |
| 3.80 | -10 | 826.40000686 | 0.007 | 846.60001384 | -0.009 | 2.5 | |
| 3.80 | -20 | 826.40001552 | -0.003 | 846.60000567 | 0.000 | 2.5 | |
| 3.80 | -30 | 826.40000761 | 0.007 | 846.60001284 | -0.008 | 2.5 | |

| Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20°C | | | | | | | |
|--|------------------------------|---|-------------|--------------|--------------|----------|-------------|
| Limit: +/- 2.5 ppm = | | Low Channel | 2066.000 | Hz | High Channel | 2116.500 | Hz |
| Power Supply [Vdc] | Environment Temperature [°C] | Frequency Deviation Measured with Time Elapse | | | | | Limit [ppm] |
| | | Low Channel | | High Channel | | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | | |
| 3.80 | 20 | 826.40001301 | 0 | 846.60000586 | 0 | 2.5 | |
| 4.30 | 20 | 826.40001550 | -0.003 | 846.60000648 | -0.001 | 2.5 | |
| 3.60 | 20 | 826.40000951 | 0.004 | 846.60000665 | -0.001 | 2.5 | |

WCDMA Band 4 (HSDPA)

| Limit | | 1710 | 1755 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------|---------------------|------------|---------------------------|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 1712.3979 | 1752.6021 | | |
| Extreme (50C) | | 1712.3979 | 1752.6021 | 27.4 | 0.016 |
| Extreme (40C) | | 1712.3979 | 1752.6021 | 30.8 | 0.018 |
| Extreme (30C) | | 1712.3979 | 1752.6021 | 29.5 | 0.017 |
| Extreme (10C) | | 1712.3979 | 1752.6021 | 24.3 | 0.014 |
| Extreme (0C) | | 1712.3979 | 1752.6021 | 24.4 | 0.014 |
| Extreme (-10C) | | 1712.3979 | 1752.6021 | 27.9 | 0.016 |
| Extreme (-20C) | | 1712.3979 | 1752.6021 | 21.6 | 0.012 |
| Extreme (-30C) | | 1712.3979 | 1752.6021 | 20.2 | 0.012 |
| 20C | | 15% | 1712.3979 | 1752.6021 | 20.4 |
| | -15% | 1712.3979 | 1752.6021 | 28.5 | 0.016 |
| | End Point | 1712.3979 | 1752.6021 | 24.2 | 0.014 |

WCDMA Band 2 (HSDPA)

| Limit | | 1850 | 1910 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------|---------------------|------------|---------------------------|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 1852.3979 | 1907.6021 | | |
| Extreme (50C) | | 1852.3979 | 1907.6021 | 23.6 | 0.013 |
| Extreme (40C) | | 1852.3979 | 1907.6021 | 28.7 | 0.015 |
| Extreme (30C) | | 1852.3979 | 1907.6021 | 27.6 | 0.015 |
| Extreme (10C) | | 1852.3979 | 1907.6021 | 24.9 | 0.013 |
| Extreme (0C) | | 1852.3979 | 1907.6021 | 29.2 | 0.016 |
| Extreme (-10C) | | 1852.3979 | 1907.6021 | 20.7 | 0.011 |
| Extreme (-20C) | | 1852.3979 | 1907.6021 | 21.3 | 0.011 |
| Extreme (-30C) | | 1852.3979 | 1907.6021 | 20.8 | 0.011 |
| | | | | | |
| 20C | 15% | 1852.3979 | 1907.6021 | 22.2 | 0.012 |
| | -15% | 1852.3979 | 1907.6021 | 27.2 | 0.014 |
| | End Point | 1852.3979 | 1907.6021 | 23.4 | 0.012 |

LTE Band 2 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

| Limit | | 1850 | 1910 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------------|---------------------------|------------|---------------------------|
| Condition | | F low @ End of OBW (MHz) | F high @ End of OBW (MHz) | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 1850.6995 | 1909.3005 | | |
| Extreme (50C) | | 1850.6994 | 1909.3005 | -32.4 | -0.017 |
| Extreme (40C) | | 1850.6994 | 1909.3005 | -33.4 | -0.018 |
| Extreme (30C) | | 1850.6994 | 1909.3005 | -29.1 | -0.016 |
| Extreme (10C) | | 1850.6994 | 1909.3005 | -30.9 | -0.016 |
| Extreme (0C) | | 1850.6994 | 1909.3005 | -37.2 | -0.020 |
| Extreme (-10C) | | 1850.6994 | 1909.3005 | -32.9 | -0.018 |
| Extreme (-20C) | | 1850.6994 | 1909.3005 | -33.2 | -0.018 |
| Extreme (-30C) | | 1850.6994 | 1909.3005 | -38.0 | -0.020 |
| 20C | | 15% | 1850.6994 | 1909.3005 | -30.4 |
| | -15% | 1850.6994 | 1909.3005 | -38.8 | -0.021 |
| | End Point | 1850.6994 | 1909.3005 | -33.0 | -0.018 |

LTE Band 4 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

| Limit | | 1710 | 1755 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------------|---------------------------|------------|---------------------------|
| Condition | | F low @ End of OBW (MHz) | F high @ End of OBW (MHz) | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 1852.3995 | 1907.6005 | | |
| Extreme (50C) | | 1852.3994 | 1907.6005 | -27.0 | -0.016 |
| Extreme (40C) | | 1852.3994 | 1907.6005 | -27.6 | -0.016 |
| Extreme (30C) | | 1852.3994 | 1907.6005 | -26.8 | -0.015 |
| Extreme (10C) | | 1852.3994 | 1907.6005 | -28.2 | -0.016 |
| Extreme (0C) | | 1852.3994 | 1907.6005 | -29.7 | -0.017 |
| Extreme (-10C) | | 1852.3994 | 1907.6005 | -21.4 | -0.012 |
| Extreme (-20C) | | 1852.3994 | 1907.6005 | -24.9 | -0.014 |
| Extreme (-30C) | | 1852.3994 | 1907.6005 | -24.5 | -0.014 |
| 20C | | 15% | 1852.3994 | 1907.6005 | -23.5 |
| | -15% | 1852.3994 | 1907.6005 | -25.2 | -0.015 |
| | End Point | 1852.3994 | 1907.6005 | -23.0 | -0.013 |

LTE Band 5 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

| Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20°C | | | | | | | |
|--|------------------------------|---|--------------|---------------------|--------------|------------|-------------|
| Limit: +/- 2.5 ppm = | | Low Channel | 2061.750 | Hz | High Channel | 2120.750 | Hz |
| Power Supply [Vdc] | Environment Temperature [°C] | Frequency Deviation Measured with Time Elapse | | | | | Limit [ppm] |
| | | Low Channel | | High Channel | | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | | |
| 3.80 | 50 | 824.69998496 | -0.013 | 848.29998115 | 0.004 | 2.5 | |
| 3.80 | 40 | 824.69998460 | -0.013 | 848.29997531 | 0.011 | 2.5 | |
| 3.80 | 30 | 824.69997413 | 0.000 | 848.29998381 | 0.001 | 2.5 | |
| 3.80 | 20 | 824.69997429 | 0.000 | 848.29998462 | 0.000 | 2.5 | |
| 3.80 | 10 | 824.69997792 | -0.004 | 848.29997496 | 0.011 | 2.5 | |
| 3.80 | 0 | 824.69998010 | -0.007 | 848.29997578 | 0.010 | 2.5 | |
| 3.80 | -10 | 824.69997549 | -0.001 | 848.29998040 | 0.005 | 2.5 | |
| 3.80 | -20 | 824.69997999 | -0.007 | 848.29997579 | 0.010 | 2.5 | |
| 3.80 | -30 | 824.69998019 | -0.007 | 848.29998101 | 0.004 | 2.5 | |

| Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20°C | | | | | | | |
|--|------------------------------|---|-------------|--------------|--------------|----------|-------------|
| Limit: +/- 2.5 ppm = | | Low Channel | 2061.750 | Hz | High Channel | 2120.750 | Hz |
| Power Supply [Vdc] | Environment Temperature [°C] | Frequency Deviation Measured with Time Elapse | | | | | Limit [ppm] |
| | | Low Channel | | High Channel | | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | | |
| 3.80 | 20 | 824.69997429 | 0 | 848.29998462 | 0 | 2.5 | |
| 4.30 | 20 | 824.69998246 | -0.010 | 848.29998254 | 0.002 | 2.5 | |
| 3.60 | 20 | 824.69998466 | -0.013 | 848.29997692 | 0.009 | 2.5 | |

LTE Band 7 (QPSK)

| Limit | | 2500 | 2570 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------------|---------------------------|------------|---------------------------|
| Condition | | F low @ End of OBW (MHz) | F high @ End of OBW (MHz) | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 2502.4977 | 2567.5022 | | |
| Extreme (50C) | | 2502.4977 | 2567.5022 | -24.6 | -0.010 |
| Extreme (40C) | | 2502.4977 | 2567.5022 | -17.8 | -0.007 |
| Extreme (30C) | | 2502.4977 | 2567.5022 | -28.6 | -0.011 |
| Extreme (10C) | | 2502.4977 | 2567.5022 | -20.4 | -0.008 |
| Extreme (0C) | | 2502.4977 | 2567.5022 | -21.6 | -0.009 |
| Extreme (-10C) | | 2502.4977 | 2567.5022 | -20.3 | -0.008 |
| Extreme (-20C) | | 2502.4977 | 2567.5022 | -18.6 | -0.007 |
| Extreme (-30C) | | 2502.4977 | 2567.5022 | -28.3 | -0.011 |
| 20C | | 15% | 2502.4977 | 2567.5022 | -22.0 |
| | -15% | 2502.4977 | 2567.5022 | -19.1 | -0.008 |
| | End Point | 2502.4977 | 2567.5022 | -19.1 | -0.008 |

LTE Band 12 (16QAM)

| Limit | | 699 | 716 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------|---------------------|------------|---------------------------|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 699.6995 | 715.3005 | | |
| Extreme (50C) | | 699.6994 | 715.3005 | -10.8 | -0.015 |
| Extreme (40C) | | 699.6994 | 715.3005 | -10.0 | -0.014 |
| Extreme (30C) | | 699.6994 | 715.3005 | -18.5 | -0.026 |
| Extreme (10C) | | 699.6994 | 715.3005 | -15.9 | -0.022 |
| Extreme (0C) | | 699.6994 | 715.3005 | -13.0 | -0.018 |
| Extreme (-10C) | | 699.6994 | 715.3005 | -12.4 | -0.018 |
| Extreme (-20C) | | 699.6994 | 715.3005 | -9.2 | -0.013 |
| Extreme (-30C) | | 699.6994 | 715.3005 | -18.9 | -0.027 |
| 20C | | 15% | 699.6994 | 715.3005 | -18.0 |
| | -15% | 699.6994 | 715.3005 | -17.8 | -0.025 |
| | End Point | 699.6994 | 715.3005 | -11.5 | -0.016 |

LTE Band 13 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

| Limit | | 777 | 787 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------|---------------------|------------|---------------------------|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 779.4977 | 784.5023 | | |
| Extreme (50C) | | 779.4978 | 784.5023 | 17.4 | 0.022 |
| Extreme (40C) | | 779.4978 | 784.5023 | 20.1 | 0.026 |
| Extreme (30C) | | 779.4978 | 784.5023 | 11.4 | 0.015 |
| Extreme (10C) | | 779.4978 | 784.5023 | 17.2 | 0.022 |
| Extreme (0C) | | 779.4978 | 784.5023 | 10.4 | 0.013 |
| Extreme (-10C) | | 779.4978 | 784.5023 | 16.4 | 0.021 |
| Extreme (-20C) | | 779.4978 | 784.5023 | 15.5 | 0.020 |
| Extreme (-30C) | | 779.4978 | 784.5023 | 20.3 | 0.026 |
| 20C | | 15% | 779.4978 | 784.5023 | 16.8 |
| | -15% | 779.4978 | 784.5023 | 12.9 | 0.017 |
| | End Point | 779.4978 | 784.5023 | 16.1 | 0.021 |

LTE Band 25 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

| Limit | | 1850 | 1915 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------|---------------------|------------|---------------------------|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 1850.6995 | 1914.3005 | | |
| Extreme (50C) | | 1850.6994 | 1914.3005 | -10.5 | -0.006 |
| Extreme (40C) | | 1850.6994 | 1914.3005 | -12.6 | -0.007 |
| Extreme (30C) | | 1850.6994 | 1914.3005 | -16.7 | -0.009 |
| Extreme (10C) | | 1850.6994 | 1914.3005 | -12.4 | -0.007 |
| Extreme (0C) | | 1850.6994 | 1914.3005 | -18.1 | -0.010 |
| Extreme (-10C) | | 1850.6994 | 1914.3005 | -19.5 | -0.010 |
| Extreme (-20C) | | 1850.6994 | 1914.3005 | -19.2 | -0.010 |
| Extreme (-30C) | | 1850.6994 | 1914.3005 | -10.3 | -0.005 |
| 20C | | 15% | 1850.6994 | 1914.3005 | -14.8 |
| | -15% | 1850.6994 | 1914.3005 | -14.9 | -0.008 |
| | End Point | 1850.6994 | 1914.3005 | -12.8 | -0.007 |

LTE Band 26 (QPSK)

| Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20°C | | | | | | |
|---|---|--------------|---------------------|--------------|-------------|-------------|
| Low Channel | | 2036.750 | Hz | High Channel | 2120.750 | Hz |
| Environment Temperature [°C] | Frequency Deviation Measured with Time Elapse | | | | | Limit [ppm] |
| | Low Channel | | High Channel | | Limit [ppm] | |
| | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | | |
| 50 | 814.70001507 | 0.000 | 848.30002363 | -0.008 | 2.5 | |
| 40 | 814.70001698 | -0.003 | 848.30001962 | -0.003 | 2.5 | |
| 30 | 814.70001835 | -0.004 | 848.30002266 | -0.007 | 2.5 | |
| 20 | 814.70001477 | 0.000 | 848.30001709 | 0.000 | 2.5 | |
| 10 | 814.70001989 | -0.006 | 848.30002323 | -0.007 | 2.5 | |
| 0 | 814.70001628 | -0.002 | 848.30001388 | 0.004 | 2.5 | |
| -10 | 814.70001385 | 0.001 | 848.30001782 | -0.001 | 2.5 | |
| -20 | 814.70001936 | -0.006 | 848.30002110 | -0.005 | 2.5 | |
| -30 | 814.70001495 | 0.000 | 848.30002013 | -0.004 | 2.5 | |

| Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20°C | | | | | | |
|---|---|-------------|---------------------|--------------|-------------|-------------|
| Low Channel | | 2036.750 | Hz | High Channel | 2120.750 | Hz |
| Environment Temperature [°C] | Frequency Deviation Measured with Time Elapse | | | | | Limit [ppm] |
| | Low Channel | | High Channel | | Limit [ppm] | |
| | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | | |
| 20 | 814.70001477 | 0 | 848.30001709 | 0 | 2.5 | |
| 20 | 814.70001499 | 0.000 | 848.30002119 | -0.005 | 2.5 | |
| 20 | 814.70001360 | 0.001 | 848.30002240 | -0.006 | 2.5 | |

LTE Band 38[Single carrier]

LTE Band 38[Single carrier] (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2496-2690 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 41 (16QAM)

| Limit | | 2496 | 2690 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------|---------------------|------------|---------------------------|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 2498.4978 | 2687.5022 | | |
| Extreme (50C) | | 2498.4977 | 2687.5022 | -31.5 | -0.012 |
| Extreme (40C) | | 2498.4977 | 2687.5022 | -33.8 | -0.013 |
| Extreme (30C) | | 2498.4977 | 2687.5022 | -31.8 | -0.012 |
| Extreme (10C) | | 2498.4977 | 2687.5022 | -35.0 | -0.013 |
| Extreme (0C) | | 2498.4977 | 2687.5022 | -31.1 | -0.012 |
| Extreme (-10C) | | 2498.4977 | 2687.5022 | -30.3 | -0.012 |
| Extreme (-20C) | | 2498.4977 | 2687.5022 | -27.5 | -0.011 |
| Extreme (-30C) | | 2498.4977 | 2687.5022 | -27.7 | -0.011 |
| 20C | | 15% | 2498.4977 | 2687.5022 | -28.4 |
| | -15% | 2498.4977 | 2687.5022 | -33.8 | -0.013 |
| | End Point | 2498.4977 | 2687.5022 | -28.2 | -0.011 |

LTE Band 66 (16QAM)

| Limit | | 1710 | 1780 | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|--------------------|---------------------|------------|---------------------------|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 1710.6995 | 1779.3005 | | |
| Extreme (50C) | | 1710.6995 | 1779.3006 | 19.8 | 0.011 |
| Extreme (40C) | | 1710.6995 | 1779.3006 | 10.9 | 0.006 |
| Extreme (30C) | | 1710.6995 | 1779.3006 | 14.2 | 0.008 |
| Extreme (10C) | | 1710.6995 | 1779.3006 | 13.6 | 0.008 |
| Extreme (0C) | | 1710.6995 | 1779.3006 | 20.0 | 0.011 |
| Extreme (-10C) | | 1710.6995 | 1779.3006 | 12.7 | 0.007 |
| Extreme (-20C) | | 1710.6995 | 1779.3006 | 10.1 | 0.006 |
| Extreme (-30C) | | 1710.6995 | 1779.3006 | 18.0 | 0.010 |
| 20C | | 15% | 1710.6995 | 1779.3006 | 18.4 |
| | -15% | 1710.6995 | 1779.3006 | 10.2 | 0.006 |
| | End Point | 1710.6995 | 1779.3006 | 16.6 | 0.009 |

LTE Band 17

LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10. RADIATED TEST RESULTS

10.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 and §27.53

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50:

(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

(c) (10) - Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

(d) (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

(h) The following power limits shall apply in the BRS and EBS:

(2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

Part 90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603 E Clause 2.2.17; ESU40 setting reference to 971168 D01 v03r01

For radiated output power measurement with a ESU40:

a) Set the RBW \geq OBW; b) Set VBW \geq 3 \times RBW; c) Set span \geq 2 \times RBW; d) Sweep time = auto couple; e) Detector = rms; f) Ensure that the number of measurement points \geq span/RBW; g) Trace mode = max hold(GSM, WCDMA), average(LTE);

TEST RESULTS

10.1.1. ERP/EIRP Results

GSM

| Band | Mode | Channel | f [MHz] | ERP / EIRP | |
|---------|-------|---------|---------|--------------|---------------|
| | | | | [dBm] | [mW] |
| GSM850 | GPRS | 512 | 824.2 | 26.63 | 460.26 |
| | | 661 | 836.6 | 28.02 | 633.87 |
| | | 810 | 848.8 | 26.35 | 431.52 |
| | EGPRS | 512 | 824.2 | 23.81 | 240.44 |
| | | 661 | 836.6 | 23.63 | 230.67 |
| | | 810 | 848.8 | 22.91 | 195.43 |
| GSM1900 | GPRS | 512 | 1850.2 | 26.85 | 484.17 |
| | | 661 | 1880.0 | 28.62 | 727.78 |
| | | 810 | 1909.8 | 27.76 | 597.04 |
| | EGPRS | 512 | 1850.2 | 24.78 | 300.61 |
| | | 661 | 1880.0 | 27.22 | 527.23 |
| | | 810 | 1909.8 | 25.74 | 374.97 |

WCDMA

| Band | Mode | Channel | f [MHz] | ERP / EIRP | |
|--------|-------|---------|---------|--------------|---------------|
| | | | | [dBm] | [mW] |
| Band 5 | REL99 | 4132 | 826.4 | 18.12 | 64.86 |
| | | 4183 | 836.6 | 19.07 | 80.72 |
| | | 4233 | 846.6 | 18.35 | 68.39 |
| | HSDPA | 4132 | 826.4 | 17.19 | 52.36 |
| | | 4183 | 836.6 | 18.28 | 67.30 |
| | | 4233 | 846.6 | 17.66 | 58.34 |
| Band 4 | REL99 | 1312 | 1712.4 | 23.96 | 248.89 |
| | | 1413 | 1732.6 | 24.32 | 270.40 |
| | | 1513 | 1752.6 | 23.78 | 238.78 |
| | HSDPA | 1312 | 1712.4 | 23.95 | 248.31 |
| | | 1413 | 1732.6 | 23.56 | 226.99 |
| | | 1513 | 1752.6 | 23.66 | 232.27 |
| Band 2 | REL99 | 9262 | 1852.4 | 19.45 | 88.10 |
| | | 9400 | 1880.0 | 22.22 | 166.72 |
| | | 9538 | 1907.6 | 21.23 | 132.74 |
| | HSDPA | 9262 | 1852.4 | 19.17 | 82.60 |
| | | 9400 | 1880.0 | 21.42 | 138.68 |
| | | 9538 | 1907.6 | 20.62 | 115.35 |

LTE Band 2

| Band | BW | Mode | RB Size/ | f [MHz] | ERP / EIRP | |
|--------|-------|-------|-----------|---------|--------------|---------------|
| | [MHz] | | RB Offset | | [dBm] | [mW] |
| Band 2 | 20 | QPSK | 1 / 0 | 1860.0 | 23.34 | 215.77 |
| | | | 1 / 0 | 1880.0 | 22.78 | 189.67 |
| | | | 1 / 0 | 1900.0 | 23.41 | 219.28 |
| | | 16QAM | 1 / 0 | 1860.0 | 21.40 | 138.04 |
| | | | 1 / 0 | 1880.0 | 21.34 | 136.14 |
| | | | 1 / 0 | 1900.0 | 21.96 | 157.04 |
| | 15 | QPSK | 1 / 37 | 1857.5 | 22.44 | 175.39 |
| | | | 1 / 0 | 1880.0 | 22.69 | 185.78 |
| | | | 1 / 37 | 1902.5 | 22.98 | 198.61 |
| | | 16QAM | 1 / 37 | 1857.5 | 21.10 | 128.82 |
| | | | 1 / 0 | 1880.0 | 21.40 | 138.04 |
| | | | 1 / 37 | 1902.5 | 21.38 | 137.40 |
| | 10 | QPSK | 1 / 0 | 1855.0 | 23.08 | 203.24 |
| | | | 1 / 0 | 1880.0 | 22.70 | 186.21 |
| | | | 1 / 0 | 1905.0 | 22.80 | 190.55 |
| | | 16QAM | 1 / 0 | 1855.0 | 21.74 | 149.28 |
| | | | 1 / 0 | 1880.0 | 21.09 | 128.53 |
| | | | 1 / 0 | 1905.0 | 21.10 | 128.82 |
| | 5 | QPSK | 1 / 12 | 1852.5 | 22.94 | 196.79 |
| | | | 1 / 24 | 1880.0 | 22.83 | 191.87 |
| | | | 1 / 0 | 1907.5 | 22.72 | 187.07 |
| | | 16QAM | 1 / 0 | 1852.5 | 21.48 | 140.60 |
| | | | 1 / 12 | 1880.0 | 21.04 | 127.06 |
| | | | 1 / 12 | 1907.5 | 21.34 | 136.14 |
| | 3 | QPSK | 1 / 8 | 1851.5 | 22.87 | 193.64 |
| | | | 1 / 0 | 1880.0 | 22.80 | 190.55 |
| | | | 1 / 8 | 1908.5 | 22.54 | 179.47 |
| | | 16QAM | 1 / 8 | 1851.5 | 21.13 | 129.72 |
| | | | 1 / 0 | 1880.0 | 21.40 | 138.04 |
| | | | 1 / 8 | 1908.5 | 21.01 | 126.18 |
| | 1.4 | QPSK | 1 / 0 | 1850.7 | 23.16 | 207.01 |
| | | | 1 / 0 | 1880.0 | 22.98 | 198.61 |
| | | | 1 / 0 | 1909.3 | 22.76 | 188.80 |
| | | 16QAM | 1 / 0 | 1850.7 | 21.67 | 146.89 |
| | | | 1 / 0 | 1880.0 | 21.54 | 142.56 |
| | | | 1 / 3 | 1909.3 | 20.54 | 113.24 |

LTE Band 4

| Band | BW | Mode | RB Size/ | f [MHz] | ERP / EIRP | |
|--------|-------|-------|-----------|---------|--------------|---------------|
| | [MHz] | | RB Offset | | [dBm] | [mW] |
| Band 4 | 20 | QPSK | 1 / 0 | 1720.0 | 20.96 | 124.74 |
| | | | 1 / 0 | 1732.5 | 21.63 | 145.55 |
| | | | 1 / 0 | 1745.0 | 22.28 | 169.04 |
| | | 16QAM | 1 / 0 | 1720.0 | 19.41 | 87.30 |
| | | | 1 / 0 | 1732.5 | 19.86 | 96.83 |
| | | | 1 / 0 | 1745.0 | 20.81 | 120.50 |
| | 15 | QPSK | 1 / 37 | 1717.5 | 21.26 | 133.66 |
| | | | 1 / 37 | 1732.5 | 22.24 | 167.49 |
| | | | 1 / 37 | 1747.5 | 21.97 | 157.40 |
| | | 16QAM | 1 / 37 | 1717.5 | 19.63 | 91.83 |
| | | | 1 / 0 | 1732.5 | 20.59 | 114.55 |
| | | | 1 / 0 | 1747.5 | 20.26 | 106.17 |
| | 10 | QPSK | 1 / 25 | 1715.0 | 21.03 | 126.77 |
| | | | 1 / 49 | 1732.5 | 21.96 | 157.04 |
| | | | 1 / 0 | 1750.0 | 21.84 | 152.76 |
| | | 16QAM | 1 / 49 | 1715.0 | 19.72 | 93.76 |
| | | | 1 / 49 | 1732.5 | 20.26 | 106.17 |
| | | | 1 / 0 | 1750.0 | 20.07 | 101.62 |
| | 5 | QPSK | 1 / 24 | 1712.5 | 21.82 | 152.05 |
| | | | 1 / 24 | 1732.5 | 22.43 | 174.98 |
| | | | 1 / 24 | 1752.5 | 21.25 | 133.35 |
| | | 16QAM | 1 / 12 | 1712.5 | 20.17 | 103.99 |
| | | | 1 / 12 | 1732.5 | 20.50 | 112.20 |
| | | | 1 / 12 | 1752.5 | 19.90 | 97.72 |
| | 3 | QPSK | 1 / 8 | 1711.5 | 21.87 | 153.82 |
| | | | 1 / 0 | 1732.5 | 22.39 | 173.38 |
| | | | 1 / 0 | 1753.5 | 21.33 | 135.83 |
| | | 16QAM | 1 / 8 | 1711.5 | 20.37 | 108.89 |
| | | | 1 / 14 | 1732.5 | 20.58 | 114.29 |
| | | | 1 / 14 | 1753.5 | 19.80 | 95.50 |
| 1.4 | QPSK | 1 / 0 | 1710.7 | 21.38 | 137.40 | |
| | | 1 / 0 | 1732.5 | 22.32 | 170.61 | |
| | | 1 / 0 | 1754.3 | 21.39 | 137.72 | |
| | 16QAM | 1 / 3 | 1710.7 | 20.05 | 101.16 | |
| | | 1 / 0 | 1732.5 | 20.72 | 118.03 | |
| | | 1 / 0 | 1754.3 | 19.93 | 98.40 | |

LTE Band 5

| Band | BW | Mode | RB Size/ | f [MHz] | ERP / EIRP | |
|--------|-------|-------|-----------|---------|------------|--------|
| | [MHz] | | RB Offset | | [dBm] | [mW] |
| Band 5 | 10 | QPSK | 1 / 0 | 829.0 | 19.14 | 82.04 |
| | | | 1 / 0 | 836.5 | 19.66 | 92.47 |
| | | | 1 / 0 | 844.0 | 18.52 | 71.12 |
| | | 16QAM | 1 / 0 | 829.0 | 16.45 | 44.16 |
| | | | 1 / 0 | 836.5 | 17.21 | 52.60 |
| | | | 1 / 0 | 844.0 | 16.32 | 42.85 |
| | 5 | QPSK | 1 / 0 | 826.5 | 19.26 | 84.33 |
| | | | 1 / 12 | 836.5 | 19.95 | 98.86 |
| | | | 1 / 0 | 846.5 | 20.08 | 101.86 |
| | | 16QAM | 1 / 12 | 826.5 | 16.48 | 44.46 |
| | | | 1 / 24 | 836.5 | 17.22 | 52.72 |
| | | | 1 / 12 | 846.5 | 17.45 | 55.59 |
| | 3 | QPSK | 1 / 8 | 825.5 | 18.76 | 75.16 |
| | | | 1 / 8 | 836.5 | 19.91 | 97.95 |
| | | | 1 / 0 | 847.5 | 19.27 | 84.53 |
| | | 16QAM | 1 / 14 | 825.5 | 16.36 | 43.25 |
| | | | 1 / 8 | 836.5 | 17.27 | 53.33 |
| | | | 1 / 8 | 847.5 | 16.71 | 46.88 |
| | 1.4 | QPSK | 1 / 0 | 824.7 | 19.33 | 85.70 |
| | | | 1 / 0 | 836.5 | 20.22 | 105.20 |
| | | | 1 / 0 | 848.3 | 18.98 | 79.07 |
| 16QAM | | 1 / 0 | 824.7 | 16.14 | 41.11 | |
| | | 1 / 0 | 836.5 | 17.47 | 55.85 | |
| | | 1 / 0 | 848.3 | 16.38 | 43.45 | |

LTE Band 7

| Band | BW | Mode | RB Size/ | f [MHz] | ERP / EIRP | |
|--------|-------|-------|-----------|---------|--------------|---------------|
| | [MHz] | | RB Offset | | [dBm] | [mW] |
| Band 7 | 20 | QPSK | 1 / 0 | 2510.0 | 23.12 | 205.12 |
| | | | 1 / 0 | 2535.0 | 22.45 | 175.79 |
| | | | 1 / 0 | 2560.0 | 22.78 | 189.67 |
| | | 16QAM | 1 / 0 | 2510.0 | 21.11 | 129.12 |
| | | | 1 / 0 | 2535.0 | 20.78 | 119.67 |
| | | | 1 / 0 | 2560.0 | 20.41 | 109.90 |
| | 15 | QPSK | 1 / 37 | 2507.5 | 22.77 | 189.23 |
| | | | 1 / 0 | 2535.0 | 22.55 | 179.89 |
| | | | 1 / 37 | 2562.5 | 22.32 | 170.61 |
| | | 16QAM | 1 / 37 | 2507.5 | 20.68 | 116.95 |
| | | | 1 / 0 | 2535.0 | 20.60 | 114.82 |
| | | | 1 / 37 | 2562.5 | 20.17 | 103.99 |
| | 10 | QPSK | 1 / 0 | 2505.0 | 23.05 | 201.84 |
| | | | 1 / 0 | 2535.0 | 22.67 | 184.93 |
| | | | 1 / 0 | 2565.0 | 22.46 | 176.20 |
| | | 16QAM | 1 / 0 | 2505.0 | 21.09 | 128.53 |
| | | | 1 / 0 | 2535.0 | 20.88 | 122.46 |
| | | | 1 / 0 | 2565.0 | 20.50 | 112.20 |
| | 5 | QPSK | 1 / 12 | 2502.5 | 22.85 | 192.75 |
| | | | 1 / 24 | 2535.0 | 22.58 | 181.13 |
| | | | 1 / 12 | 2567.5 | 22.23 | 167.11 |
| | | 16QAM | 1 / 12 | 2502.5 | 20.71 | 117.76 |
| | | | 1 / 12 | 2535.0 | 20.23 | 105.44 |
| | | | 1 / 24 | 2567.5 | 20.22 | 105.20 |

LTE Band 12

| Band | BW | Mode | RB Size/ | f [MHz] | ERP / EIRP | |
|---------|-------|-------|-----------|---------|--------------|--------------|
| | [MHz] | | RB Offset | | [dBm] | [mW] |
| Band 12 | 10 | QPSK | 1 / 0 | 704.0 | 15.33 | 34.12 |
| | | | 1 / 0 | 707.5 | 16.23 | 41.98 |
| | | | 1 / 0 | 711.0 | 15.87 | 38.64 |
| | | 16QAM | 1 / 0 | 704.0 | 13.30 | 21.38 |
| | | | 1 / 0 | 707.5 | 13.72 | 23.55 |
| | | | 1 / 0 | 711.0 | 13.63 | 23.07 |
| | 5 | QPSK | 1 / 24 | 701.5 | 15.27 | 33.65 |
| | | | 1 / 0 | 707.5 | 15.95 | 39.36 |
| | | | 1 / 0 | 713.5 | 16.01 | 39.90 |
| | | 16QAM | 1 / 12 | 701.5 | 13.59 | 22.86 |
| | | | 1 / 12 | 707.5 | 13.51 | 22.44 |
| | | | 1 / 12 | 713.5 | 14.03 | 25.29 |
| | 3 | QPSK | 1 / 8 | 700.5 | 15.35 | 34.28 |
| | | | 1 / 8 | 707.5 | 15.86 | 38.55 |
| | | | 1 / 0 | 714.5 | 16.09 | 40.64 |
| | | 16QAM | 1 / 8 | 700.5 | 12.88 | 19.41 |
| | | | 1 / 8 | 707.5 | 14.02 | 25.23 |
| | | | 1 / 0 | 714.5 | 13.94 | 24.77 |
| | 1.4 | QPSK | 1 / 0 | 699.7 | 15.15 | 32.73 |
| | | | 1 / 0 | 707.5 | 15.80 | 38.02 |
| | | | 1 / 0 | 715.3 | 16.23 | 41.98 |
| | | 16QAM | 1 / 0 | 699.7 | 12.80 | 19.05 |
| | | | 1 / 0 | 707.5 | 13.63 | 23.07 |
| | | | 1 / 0 | 715.3 | 13.94 | 24.77 |

LTE Band 13

| Band | BW | Mode | RB size / RB Offset | f [MHz] | ERP / EIRP | |
|---------|-------|--------|------------------------|--------------|--------------|--------------|
| | [MHz] | | | | [dBm] | [mW] |
| Band 13 | 10 | QPSK | 1 / 0 | 782.0 | 18.71 | 74.30 |
| | | 16QAM | 1 / 0 | 782.0 | 16.50 | 44.67 |
| | 5 | QPSK | 1 / 12 | 779.5 | 19.61 | 91.41 |
| | | | 1 / 24 | 782.0 | 18.84 | 76.56 |
| | | | 1 / 12 | 784.5 | 10.47 | 11.14 |
| | 16QAM | 1 / 12 | 779.5 | 17.63 | 57.94 | |
| | | 1 / 12 | 782.0 | 16.55 | 45.19 | |
| | | 1 / 12 | 784.5 | 17.06 | 50.82 | |

LTE Band 25

| Band | BW | Mode | RB Size/ | f [MHz] | ERP / EIRP | |
|---------|-------|-------|-----------|--------------|--------------|---------------|
| | [MHz] | | RB Offset | | [dBm] | [mW] |
| Band 25 | 20 | QPSK | 1 / 0 | 1860.0 | 19.84 | 96.38 |
| | | | 1 / 0 | 1882.5 | 21.87 | 153.82 |
| | | | 1 / 0 | 1905.0 | 21.62 | 145.21 |
| | | 16QAM | 1 / 0 | 1860.0 | 18.62 | 72.78 |
| | | | 1 / 0 | 1882.5 | 20.87 | 122.18 |
| | | | 1 / 0 | 1905.0 | 20.55 | 113.50 |
| | 15 | QPSK | 1 / 37 | 1857.5 | 19.52 | 89.54 |
| | | | 1 / 37 | 1882.5 | 21.99 | 158.12 |
| | | | 1 / 37 | 1907.5 | 20.99 | 125.60 |
| | | 16QAM | 1 / 0 | 1857.5 | 18.92 | 77.98 |
| | | | 1 / 37 | 1882.5 | 20.90 | 123.03 |
| | | | 1 / 37 | 1907.5 | 19.90 | 97.72 |
| | 10 | QPSK | 1 / 0 | 1855.0 | 19.42 | 87.50 |
| | | | 1 / 0 | 1882.5 | 21.94 | 156.31 |
| | | | 1 / 0 | 1910.0 | 20.79 | 119.95 |
| | | 16QAM | 1 / 0 | 1855.0 | 18.65 | 73.28 |
| | | | 1 / 0 | 1882.5 | 20.93 | 123.88 |
| | | | 1 / 0 | 1910.0 | 19.57 | 90.57 |
| | 5 | QPSK | 1 / 0 | 1852.5 | 19.36 | 86.30 |
| | | | 1 / 24 | 1882.5 | 21.72 | 148.59 |
| | | | 1 / 24 | 1912.5 | 20.38 | 109.14 |
| | | 16QAM | 1 / 12 | 1852.5 | 17.85 | 60.95 |
| | | | 1 / 12 | 1882.5 | 20.68 | 116.95 |
| | | | 1 / 12 | 1912.5 | 19.28 | 84.72 |
| | 3 | QPSK | 1 / 8 | 1851.5 | 19.12 | 81.66 |
| | | | 1 / 8 | 1882.5 | 22.07 | 161.06 |
| | | | 1 / 8 | 1913.5 | 20.61 | 115.08 |
| | | 16QAM | 1 / 0 | 1851.5 | 18.43 | 69.66 |
| | | | 1 / 8 | 1882.5 | 20.89 | 122.74 |
| | | | 1 / 0 | 1913.5 | 19.48 | 88.72 |
| 1.4 | QPSK | 1 / 0 | 1850.7 | 19.12 | 81.66 | |
| | | 1 / 0 | 1882.5 | 21.85 | 153.11 | |
| | | 1 / 0 | 1914.3 | 20.55 | 113.50 | |
| | 16QAM | 1 / 0 | 1850.7 | 18.08 | 64.27 | |
| | | 1 / 5 | 1882.5 | 20.27 | 106.41 | |
| | | 1 / 3 | 1914.3 | 19.37 | 86.50 | |

LTE Band 26

| Band | BW [MHz] | Mode | RB Size/ RB Offset | f [MHz] | ERP/EIRP | | |
|---------|----------|-------|-----------------------|--------------|--------------|---------------|--------------|
| | | | | | [dBm] | [mW] | |
| Band 26 | 15 | QPSK | 1 / 37 | 821.5 | 17.92 | 61.94 | |
| | | | 1 / 37 | 831.5 | 20.12 | 102.80 | |
| | | | 1 / 37 | 841.5 | 20.75 | 118.85 | |
| | | 16QAM | 1 / 37 | 821.5 | 16.53 | 44.98 | |
| | | | 1 / 37 | 831.5 | 18.95 | 78.52 | |
| | | | 1 / 0 | 841.5 | 19.28 | 84.72 | |
| | 10 | QPSK | 1 / 0 | 819.0 | 16.89 | 48.87 | |
| | | | 1 / 0 | 829.0 | 18.52 | 71.12 | |
| | | | 1 / 0 | 831.5 | 18.86 | 76.91 | |
| | | | 1 / 0 | 844.0 | 18.82 | 76.21 | |
| | | 16QAM | 1 / 0 | 819.0 | 15.28 | 33.73 | |
| | | | 1 / 0 | 829.0 | 16.97 | 49.77 | |
| | | | 1 / 0 | 831.5 | 17.14 | 51.76 | |
| | | | 1 / 0 | 844.0 | 17.03 | 50.47 | |
| | | 5 | QPSK | 1 / 24 | 816.5 | 17.13 | 51.64 |
| | | | | 1 / 12 | 821.5 | 17.18 | 52.24 |
| | | | | 1 / 12 | 826.5 | 18.30 | 67.61 |
| | | | | 1 / 0 | 831.5 | 19.01 | 79.62 |
| | 16QAM | | 1 / 12 | 846.5 | 18.37 | 68.71 | |
| | | | 1 / 12 | 816.5 | 15.10 | 32.36 | |
| | | | 1 / 0 | 821.5 | 15.75 | 37.58 | |
| | | | 1 / 24 | 826.5 | 14.39 | 27.48 | |
| | | | 1 / 0 | 831.5 | 17.17 | 52.12 | |
| | | | 1 / 12 | 846.5 | 16.86 | 48.53 | |
| | 3 | QPSK | 1 / 8 | 815.5 | 16.64 | 46.13 | |
| | | | 1 / 14 | 822.5 | 17.74 | 59.43 | |
| | | | 1 / 0 | 825.5 | 18.12 | 64.86 | |
| | | | 1 / 8 | 831.5 | 19.07 | 80.72 | |
| | | 16QAM | 1 / 8 | 847.5 | 18.53 | 71.29 | |
| | | | 1 / 14 | 815.5 | 15.47 | 35.24 | |
| | | | 1 / 14 | 822.5 | 16.01 | 39.90 | |
| | | | 1 / 0 | 825.5 | 16.80 | 47.86 | |
| | | | 1 / 8 | 831.5 | 17.31 | 53.83 | |
| | | | 1 / 8 | 847.5 | 16.56 | 45.29 | |
| | 1.4 | QPSK | 1 / 0 | 814.7 | 16.46 | 44.26 | |
| | | | 1 / 0 | 823.3 | 17.84 | 60.81 | |
| | | | 1 / 0 | 824.7 | 17.92 | 61.94 | |
| | | | 1 / 0 | 831.5 | 18.89 | 77.45 | |
| | | 16QAM | 1 / 0 | 848.3 | 18.29 | 67.45 | |
| | | | 1 / 0 | 814.7 | 14.72 | 29.65 | |
| 1 / 3 | | | 823.3 | 15.91 | 38.99 | | |
| 1 / 3 | | | 824.7 | 16.25 | 42.17 | | |
| 1 / 0 | | | 831.5 | 17.20 | 52.48 | | |
| 1 / 0 | | | 848.3 | 16.99 | 50.00 | | |

LTE Band 41

| Band | BW | Mode | RB Size/ | f [MHz] | ERP / EIRP | |
|---------|-------|-------|-----------|---------|--------------|---------------|
| | [MHz] | | RB Offset | | [dBm] | [mW] |
| Band 41 | 20 | QPSK | 1 / 0 | 2506.0 | 23.19 | 208.45 |
| | | | 1 / 0 | 2593.0 | 22.13 | 163.31 |
| | | | 1 / 0 | 2680.0 | 22.39 | 173.38 |
| | | 16QAM | 1 / 49 | 2506.0 | 22.20 | 165.96 |
| | | | 1 / 49 | 2593.0 | 20.50 | 112.20 |
| | | | 1 / 0 | 2680.0 | 21.76 | 149.97 |
| | 15 | QPSK | 1 / 0 | 2503.5 | 24.13 | 258.82 |
| | | | 1 / 0 | 2593.0 | 21.64 | 145.88 |
| | | | 1 / 0 | 2682.5 | 22.14 | 163.68 |
| | | 16QAM | 1 / 0 | 2503.5 | 22.00 | 158.49 |
| | | | 1 / 0 | 2593.0 | 20.13 | 103.04 |
| | | | 1 / 0 | 2682.5 | 21.96 | 157.04 |
| | 10 | QPSK | 1 / 0 | 2501.0 | 19.81 | 95.72 |
| | | | 1 / 0 | 2593.0 | 19.05 | 80.35 |
| | | | 1 / 0 | 2685.0 | 22.65 | 184.08 |
| | | 16QAM | 1 / 0 | 2501.0 | 17.57 | 57.15 |
| | | | 1 / 0 | 2593.0 | 17.17 | 52.12 |
| | | | 1 / 0 | 2685.0 | 21.49 | 140.93 |
| | 5 | QPSK | 1 / 0 | 2498.5 | 22.96 | 197.70 |
| | | | 1 / 0 | 2593.0 | 22.35 | 171.79 |
| | | | 1 / 0 | 2687.5 | 22.34 | 171.40 |
| | | 16QAM | 1 / 0 | 2498.5 | 21.83 | 152.41 |
| | | | 1 / 0 | 2593.0 | 20.69 | 117.22 |
| | | | 1 / 0 | 2687.5 | 21.38 | 137.40 |

LTE Band 17

LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 38[Single carrier]

LTE Band 38[Single carrier] (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2496-2690 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 66

| Band | BW | Mode | RB Size/ | f [MHz] | ERP / EIRP | |
|---------|-------|-------|-----------|--------------|---------------|---------------|
| | [MHz] | | RB Offset | | [dBm] | [mW] |
| Band 66 | 20 | QPSK | 1 / 0 | 1720.0 | 24.82 | 303.39 |
| | | | 1 / 0 | 1745.0 | 23.74 | 236.59 |
| | | | 1 / 0 | 1770.0 | 24.30 | 269.15 |
| | | 16QAM | 1 / 0 | 1720.0 | 22.88 | 194.09 |
| | | | 1 / 0 | 1745.0 | 21.90 | 154.88 |
| | | | 1 / 0 | 1770.0 | 22.19 | 165.58 |
| | 15 | QPSK | 1 / 37 | 1717.5 | 24.28 | 267.92 |
| | | | 1 / 37 | 1747.5 | 24.36 | 272.90 |
| | | | 1 / 37 | 1772.5 | 22.50 | 177.83 |
| | | 16QAM | 1 / 37 | 1717.5 | 22.06 | 160.69 |
| | | | 1 / 0 | 1747.5 | 22.84 | 192.31 |
| | | | 1 / 37 | 1772.5 | 24.02 | 252.35 |
| | 10 | QPSK | 1 / 0 | 1715.0 | 24.65 | 291.74 |
| | | | 1 / 0 | 1745.0 | 24.78 | 300.61 |
| | | | 1 / 0 | 1775.0 | 24.28 | 267.92 |
| | | 16QAM | 1 / 49 | 1715.0 | 22.80 | 190.55 |
| | | | 1 / 0 | 1745.0 | 22.57 | 180.72 |
| | | | 1 / 0 | 1775.0 | 21.63 | 145.55 |
| | 5 | QPSK | 1 / 24 | 1712.5 | 24.73 | 297.17 |
| | | | 1 / 24 | 1745.0 | 25.34 | 341.98 |
| | | | 1 / 24 | 1777.5 | 23.65 | 231.74 |
| | | 16QAM | 1 / 12 | 1712.5 | 22.75 | 188.36 |
| | | | 1 / 0 | 1745.0 | 22.87 | 193.64 |
| | | | 1 / 12 | 1777.5 | 21.44 | 139.32 |
| | 3 | QPSK | 1 / 8 | 1711.5 | 24.70 | 295.12 |
| | | | 1 / 0 | 1745.0 | 24.82 | 303.39 |
| | | | 1 / 0 | 1778.5 | 24.05 | 254.10 |
| | | 16QAM | 1 / 0 | 1711.5 | 23.46 | 221.82 |
| | | | 1 / 8 | 1745.0 | 23.25 | 211.35 |
| | | | 1 / 14 | 1778.5 | 21.76 | 149.97 |
| 1.4 | QPSK | 1 / 0 | 1710.7 | 24.44 | 277.97 | |
| | | 1 / 0 | 1745.0 | 24.54 | 284.45 | |
| | | 1 / 0 | 1779.3 | 23.49 | 223.36 | |
| | 16QAM | 1 / 0 | 1710.7 | 22.62 | 182.81 | |
| | | 1 / 0 | 1745.0 | 22.57 | 180.72 | |
| | | 1 / 0 | 1779.3 | 21.45 | 139.64 | |

10.1.2. ERP/EIRP DATA

GSM850

| | | | | | | | | | |
|---------------------|---|-------------------|------------------|-------------------|---------------------|--------------|--------------|--------------|--------------|
| GSM850 GPRS | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-15 Test Engineer: 45585 Configuration: EUT Location: Chamber 2 Mode: GPRS 850 MHz Fundamentals <u>Test Equipment:</u> Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f | SG reading | Ant. Pol. | Cable Loss | Antenna Gain | ERP | Limit | Delta | Notes |
| | MHz | (dBm) | (H/V) | (dB) | (dBd) | (dBm) | (dBm) | (dB) | |
| | Low Ch | | | | | | | | |
| | 824.20 | 23.61 | V | 3.0 | -1.5 | 19.12 | 38.5 | -19.4 | |
| | 824.20 | 31.12 | H | 3.0 | -1.5 | 26.63 | 38.5 | -11.9 | |
| | Mid Ch | | | | | | | | |
| | 836.60 | 24.80 | V | 3.0 | -1.4 | 20.34 | 38.5 | -18.2 | |
| | 836.60 | 32.48 | H | 3.0 | -1.4 | 28.02 | 38.5 | -10.5 | |
| | High Ch | | | | | | | | |
| | 848.80 | 23.54 | V | 3.1 | -1.4 | 19.10 | 38.5 | -19.4 | |
| | 848.80 | 30.79 | H | 3.1 | -1.4 | 26.35 | 38.5 | -12.2 | |
| GSM850 EGPRS | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 45585 Configuration: EUT Location: Chamber 2 Mode: EGPRS 850 MHz Fundamentals <u>Test Equipment:</u> Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f | SG reading | Ant. Pol. | Cable Loss | Antenna Gain | ERP | Limit | Delta | Notes |
| | MHz | (dBm) | (H/V) | (dB) | (dBd) | (dBm) | (dBm) | (dB) | |
| | Low Ch | | | | | | | | |
| | 824.20 | 20.73 | V | 3.0 | -1.5 | 16.24 | 38.5 | -22.3 | |
| | 824.20 | 28.30 | H | 3.0 | -1.5 | 23.81 | 38.5 | -14.7 | |
| | Mid Ch | | | | | | | | |
| | 836.60 | 24.80 | V | 3.0 | -1.4 | 20.34 | 38.5 | -18.2 | |
| | 836.60 | 28.09 | H | 3.0 | -1.4 | 23.63 | 38.5 | -14.9 | |
| | High Ch | | | | | | | | |
| | 848.80 | 19.98 | V | 3.1 | -1.4 | 15.54 | 38.5 | -23.0 | |
| | 848.80 | 27.35 | H | 3.1 | -1.4 | 22.91 | 38.5 | -15.6 | |

GSM1900

| GSM1900 GPRS | <p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-15 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: GPRS 1900 MHz Fundamentals</p> <p>Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1850.20</td> <td>21.93</td> <td>V</td> <td>4.5</td> <td>9.4</td> <td>26.85</td> <td>33.0</td> <td>-6.1</td> <td></td> </tr> <tr> <td>1850.20</td> <td>15.29</td> <td>H</td> <td>4.5</td> <td>9.4</td> <td>20.21</td> <td>33.0</td> <td>-12.8</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1880.00</td> <td>23.96</td> <td>V</td> <td>4.5</td> <td>9.2</td> <td>28.62</td> <td>33.0</td> <td>-4.4</td> <td></td> </tr> <tr> <td>1880.00</td> <td>14.92</td> <td>H</td> <td>4.5</td> <td>9.2</td> <td>19.59</td> <td>33.0</td> <td>-13.4</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1909.80</td> <td>23.40</td> <td>V</td> <td>4.6</td> <td>8.9</td> <td>27.76</td> <td>33.0</td> <td>-5.2</td> <td></td> </tr> <tr> <td>1909.80</td> <td>16.59</td> <td>H</td> <td>4.6</td> <td>8.9</td> <td>20.95</td> <td>33.0</td> <td>-12.1</td> <td></td> </tr> </tbody> </table> | | | | | | | | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1850.20 | 21.93 | V | 4.5 | 9.4 | 26.85 | 33.0 | -6.1 | | 1850.20 | 15.29 | H | 4.5 | 9.4 | 20.21 | 33.0 | -12.8 | | Mid Ch | | | | | | | | | 1880.00 | 23.96 | V | 4.5 | 9.2 | 28.62 | 33.0 | -4.4 | | 1880.00 | 14.92 | H | 4.5 | 9.2 | 19.59 | 33.0 | -13.4 | | High Ch | | | | | | | | | 1909.80 | 23.40 | V | 4.6 | 8.9 | 27.76 | 33.0 | -5.2 | | 1909.80 | 16.59 | H | 4.6 | 8.9 | 20.95 | 33.0 | -12.1 | |
|------------------|---|------------------|-----------------|--------------------|--------------------|-------------|-------------|------------|-------|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|-------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|------|--|---------|-------|---|-----|-----|-------|------|-------|--|
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1850.20 | 21.93 | V | 4.5 | 9.4 | 26.85 | 33.0 | -6.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1850.20 | 15.29 | H | 4.5 | 9.4 | 20.21 | 33.0 | -12.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1880.00 | 23.96 | V | 4.5 | 9.2 | 28.62 | 33.0 | -4.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1880.00 | 14.92 | H | 4.5 | 9.2 | 19.59 | 33.0 | -13.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1909.80 | 23.40 | V | 4.6 | 8.9 | 27.76 | 33.0 | -5.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1909.80 | 16.59 | H | 4.6 | 8.9 | 20.95 | 33.0 | -12.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GSM1900 EGPRS | <p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-15 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: EGPRS 1900 MHz Fundamentals</p> <p>Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1850.20</td> <td>19.86</td> <td>V</td> <td>4.5</td> <td>9.4</td> <td>24.78</td> <td>33.0</td> <td>-8.2</td> <td></td> </tr> <tr> <td>1850.20</td> <td>9.21</td> <td>H</td> <td>4.5</td> <td>9.4</td> <td>14.13</td> <td>33.0</td> <td>-18.9</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1880.00</td> <td>22.56</td> <td>V</td> <td>4.5</td> <td>9.2</td> <td>27.22</td> <td>33.0</td> <td>-5.8</td> <td></td> </tr> <tr> <td>1880.00</td> <td>12.62</td> <td>H</td> <td>4.5</td> <td>9.2</td> <td>17.29</td> <td>33.0</td> <td>-15.7</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1909.80</td> <td>21.38</td> <td>V</td> <td>4.6</td> <td>8.9</td> <td>25.74</td> <td>33.0</td> <td>-7.3</td> <td></td> </tr> <tr> <td>1909.80</td> <td>14.63</td> <td>H</td> <td>4.6</td> <td>8.9</td> <td>18.99</td> <td>33.0</td> <td>-14.0</td> <td></td> </tr> </tbody> </table> | | | | | | | | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1850.20 | 19.86 | V | 4.5 | 9.4 | 24.78 | 33.0 | -8.2 | | 1850.20 | 9.21 | H | 4.5 | 9.4 | 14.13 | 33.0 | -18.9 | | Mid Ch | | | | | | | | | 1880.00 | 22.56 | V | 4.5 | 9.2 | 27.22 | 33.0 | -5.8 | | 1880.00 | 12.62 | H | 4.5 | 9.2 | 17.29 | 33.0 | -15.7 | | High Ch | | | | | | | | | 1909.80 | 21.38 | V | 4.6 | 8.9 | 25.74 | 33.0 | -7.3 | | 1909.80 | 14.63 | H | 4.6 | 8.9 | 18.99 | 33.0 | -14.0 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1850.20 | 19.86 | V | 4.5 | 9.4 | 24.78 | 33.0 | -8.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1850.20 | 9.21 | H | 4.5 | 9.4 | 14.13 | 33.0 | -18.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1880.00 | 22.56 | V | 4.5 | 9.2 | 27.22 | 33.0 | -5.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1880.00 | 12.62 | H | 4.5 | 9.2 | 17.29 | 33.0 | -15.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1909.80 | 21.38 | V | 4.6 | 8.9 | 25.74 | 33.0 | -7.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1909.80 | 14.63 | H | 4.6 | 8.9 | 18.99 | 33.0 | -14.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

WCDMA Band 5

| WCDMA Band 5 REL99 | <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-15 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 1 Mode: Rel99 Band 5 Fundamentals</p> <p><u>Test Equipment:</u> Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>826.40</td><td>22.60</td><td>V</td><td>3.0</td><td>-1.5</td><td>18.12</td><td>38.5</td><td>-20.4</td><td></td></tr> <tr><td>826.40</td><td>14.12</td><td>H</td><td>3.0</td><td>-1.5</td><td>9.64</td><td>38.5</td><td>-28.9</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>836.60</td><td>23.53</td><td>V</td><td>3.0</td><td>-1.4</td><td>19.07</td><td>38.5</td><td>-19.4</td><td></td></tr> <tr><td>836.60</td><td>15.61</td><td>H</td><td>3.0</td><td>-1.4</td><td>11.14</td><td>38.5</td><td>-27.4</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>846.60</td><td>22.80</td><td>V</td><td>3.1</td><td>-1.4</td><td>18.35</td><td>38.5</td><td>-20.1</td><td></td></tr> <tr><td>846.60</td><td>15.40</td><td>H</td><td>3.1</td><td>-1.4</td><td>10.95</td><td>38.5</td><td>-27.5</td><td></td></tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 826.40 | 22.60 | V | 3.0 | -1.5 | 18.12 | 38.5 | -20.4 | | 826.40 | 14.12 | H | 3.0 | -1.5 | 9.64 | 38.5 | -28.9 | | Mid Ch | | | | | | | | | 836.60 | 23.53 | V | 3.0 | -1.4 | 19.07 | 38.5 | -19.4 | | 836.60 | 15.61 | H | 3.0 | -1.4 | 11.14 | 38.5 | -27.4 | | High Ch | | | | | | | | | 846.60 | 22.80 | V | 3.1 | -1.4 | 18.35 | 38.5 | -20.1 | | 846.60 | 15.40 | H | 3.1 | -1.4 | 10.95 | 38.5 | -27.5 | |
|------------------------------|---|---------------------|---------------------|-----------------------|-----------------------|-----------------------|----------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|------|-------|------|-------|--|--------|-------|---|-----|------|------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|------|-------|------|-------|--|--------|-------|---|-----|------|-------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|------|-------|------|-------|--|--------|-------|---|-----|------|-------|------|-------|--|
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 826.40 | 22.60 | V | 3.0 | -1.5 | 18.12 | 38.5 | -20.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 826.40 | 14.12 | H | 3.0 | -1.5 | 9.64 | 38.5 | -28.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 23.53 | V | 3.0 | -1.4 | 19.07 | 38.5 | -19.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 15.61 | H | 3.0 | -1.4 | 11.14 | 38.5 | -27.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 846.60 | 22.80 | V | 3.1 | -1.4 | 18.35 | 38.5 | -20.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 846.60 | 15.40 | H | 3.1 | -1.4 | 10.95 | 38.5 | -27.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WCDMA Band 5 HSDPA | <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-15 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 1 Mode: HSDPA Band 5 Fundamentals</p> <p><u>Test Equipment:</u> Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>826.40</td><td>21.67</td><td>V</td><td>3.0</td><td>-1.5</td><td>17.19</td><td>38.5</td><td>-21.3</td><td></td></tr> <tr><td>826.40</td><td>12.59</td><td>H</td><td>3.0</td><td>-1.5</td><td>8.11</td><td>38.5</td><td>-30.4</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>836.60</td><td>22.74</td><td>V</td><td>3.0</td><td>-1.4</td><td>18.28</td><td>38.5</td><td>-20.2</td><td></td></tr> <tr><td>836.60</td><td>14.22</td><td>H</td><td>3.0</td><td>-1.4</td><td>9.75</td><td>38.5</td><td>-28.7</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>846.60</td><td>22.11</td><td>V</td><td>3.1</td><td>-1.4</td><td>17.66</td><td>38.5</td><td>-20.8</td><td></td></tr> <tr><td>846.60</td><td>14.10</td><td>H</td><td>3.1</td><td>-1.4</td><td>9.65</td><td>38.5</td><td>-28.8</td><td></td></tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 826.40 | 21.67 | V | 3.0 | -1.5 | 17.19 | 38.5 | -21.3 | | 826.40 | 12.59 | H | 3.0 | -1.5 | 8.11 | 38.5 | -30.4 | | Mid Ch | | | | | | | | | 836.60 | 22.74 | V | 3.0 | -1.4 | 18.28 | 38.5 | -20.2 | | 836.60 | 14.22 | H | 3.0 | -1.4 | 9.75 | 38.5 | -28.7 | | High Ch | | | | | | | | | 846.60 | 22.11 | V | 3.1 | -1.4 | 17.66 | 38.5 | -20.8 | | 846.60 | 14.10 | H | 3.1 | -1.4 | 9.65 | 38.5 | -28.8 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 826.40 | 21.67 | V | 3.0 | -1.5 | 17.19 | 38.5 | -21.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 826.40 | 12.59 | H | 3.0 | -1.5 | 8.11 | 38.5 | -30.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 22.74 | V | 3.0 | -1.4 | 18.28 | 38.5 | -20.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 14.22 | H | 3.0 | -1.4 | 9.75 | 38.5 | -28.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 846.60 | 22.11 | V | 3.1 | -1.4 | 17.66 | 38.5 | -20.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 846.60 | 14.10 | H | 3.1 | -1.4 | 9.65 | 38.5 | -28.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

WCDMA Band 4

| WCDMA Band 4 REL99 | <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-15 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: Rel99 Band 4 Fundamentals</p> <p><u>Test Equipment:</u> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1712.40</td> <td>10.62</td> <td>V</td> <td>4.3</td> <td>9.4</td> <td>15.71</td> <td>30.0</td> <td>-14.3</td> <td></td> </tr> <tr> <td>1712.40</td> <td>18.88</td> <td>H</td> <td>4.3</td> <td>9.4</td> <td>23.96</td> <td>30.0</td> <td>-6.0</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.60</td> <td>13.16</td> <td>V</td> <td>4.3</td> <td>9.5</td> <td>18.30</td> <td>30.0</td> <td>-11.7</td> <td></td> </tr> <tr> <td>1732.60</td> <td>19.19</td> <td>H</td> <td>4.3</td> <td>9.5</td> <td>24.32</td> <td>30.0</td> <td>-5.7</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1752.60</td> <td>12.89</td> <td>V</td> <td>4.4</td> <td>9.5</td> <td>18.06</td> <td>30.0</td> <td>-11.9</td> <td></td> </tr> <tr> <td>1752.60</td> <td>18.61</td> <td>H</td> <td>4.4</td> <td>9.5</td> <td>23.78</td> <td>30.0</td> <td>-6.2</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1712.40 | 10.62 | V | 4.3 | 9.4 | 15.71 | 30.0 | -14.3 | | 1712.40 | 18.88 | H | 4.3 | 9.4 | 23.96 | 30.0 | -6.0 | | Mid Ch | | | | | | | | | 1732.60 | 13.16 | V | 4.3 | 9.5 | 18.30 | 30.0 | -11.7 | | 1732.60 | 19.19 | H | 4.3 | 9.5 | 24.32 | 30.0 | -5.7 | | High Ch | | | | | | | | | 1752.60 | 12.89 | V | 4.4 | 9.5 | 18.06 | 30.0 | -11.9 | | 1752.60 | 18.61 | H | 4.4 | 9.5 | 23.78 | 30.0 | -6.2 | |
|------------------------------|---|---------------------|---------------------|-----------------------|-----------------------|-----------------------|----------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1712.40 | 10.62 | V | 4.3 | 9.4 | 15.71 | 30.0 | -14.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1712.40 | 18.88 | H | 4.3 | 9.4 | 23.96 | 30.0 | -6.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1732.60 | 13.16 | V | 4.3 | 9.5 | 18.30 | 30.0 | -11.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1732.60 | 19.19 | H | 4.3 | 9.5 | 24.32 | 30.0 | -5.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1752.60 | 12.89 | V | 4.4 | 9.5 | 18.06 | 30.0 | -11.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1752.60 | 18.61 | H | 4.4 | 9.5 | 23.78 | 30.0 | -6.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WCDMA Band 4 HSDPA | <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-15 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: HSDPA Band 4 Fundamentals</p> <p><u>Test Equipment:</u> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1712.40</td> <td>11.09</td> <td>V</td> <td>4.3</td> <td>9.4</td> <td>16.18</td> <td>30.0</td> <td>-13.8</td> <td></td> </tr> <tr> <td>1712.40</td> <td>18.87</td> <td>H</td> <td>4.3</td> <td>9.4</td> <td>23.95</td> <td>30.0</td> <td>-6.0</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.60</td> <td>11.52</td> <td>V</td> <td>4.3</td> <td>9.5</td> <td>16.66</td> <td>30.0</td> <td>-13.3</td> <td></td> </tr> <tr> <td>1732.60</td> <td>18.43</td> <td>H</td> <td>4.3</td> <td>9.5</td> <td>23.56</td> <td>30.0</td> <td>-6.4</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1752.60</td> <td>13.09</td> <td>V</td> <td>4.4</td> <td>9.5</td> <td>18.26</td> <td>30.0</td> <td>-11.7</td> <td></td> </tr> <tr> <td>1752.60</td> <td>18.49</td> <td>H</td> <td>4.4</td> <td>9.5</td> <td>23.66</td> <td>30.0</td> <td>-6.3</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1712.40 | 11.09 | V | 4.3 | 9.4 | 16.18 | 30.0 | -13.8 | | 1712.40 | 18.87 | H | 4.3 | 9.4 | 23.95 | 30.0 | -6.0 | | Mid Ch | | | | | | | | | 1732.60 | 11.52 | V | 4.3 | 9.5 | 16.66 | 30.0 | -13.3 | | 1732.60 | 18.43 | H | 4.3 | 9.5 | 23.56 | 30.0 | -6.4 | | High Ch | | | | | | | | | 1752.60 | 13.09 | V | 4.4 | 9.5 | 18.26 | 30.0 | -11.7 | | 1752.60 | 18.49 | H | 4.4 | 9.5 | 23.66 | 30.0 | -6.3 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1712.40 | 11.09 | V | 4.3 | 9.4 | 16.18 | 30.0 | -13.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1712.40 | 18.87 | H | 4.3 | 9.4 | 23.95 | 30.0 | -6.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1732.60 | 11.52 | V | 4.3 | 9.5 | 16.66 | 30.0 | -13.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1732.60 | 18.43 | H | 4.3 | 9.5 | 23.56 | 30.0 | -6.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1752.60 | 13.09 | V | 4.4 | 9.5 | 18.26 | 30.0 | -11.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1752.60 | 18.49 | H | 4.4 | 9.5 | 23.66 | 30.0 | -6.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

WCDMA Band 2

| WCDMA Band 2 REL99 | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---|-----------------|------------------|--------------------|-----------------|--------------------|------------|-------------|------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|------|---|-----|-----|-------|------|-------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|------|---|-----|-----|-------|------|-------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: Rel99 Band 2 Fundamentals <u>Test Equipment:</u> Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1852.40</td> <td>14.55</td> <td>V</td> <td>4.5</td> <td>9.4</td> <td>19.45</td> <td>33.0</td> <td>-13.5</td> <td></td> </tr> <tr> <td>1852.40</td> <td>7.39</td> <td>H</td> <td>4.5</td> <td>9.4</td> <td>12.29</td> <td>33.0</td> <td>-20.7</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1880.00</td> <td>17.56</td> <td>V</td> <td>4.5</td> <td>9.2</td> <td>22.22</td> <td>33.0</td> <td>-10.8</td> <td></td> </tr> <tr> <td>1880.00</td> <td>9.65</td> <td>H</td> <td>4.5</td> <td>9.2</td> <td>14.32</td> <td>33.0</td> <td>-18.7</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1907.60</td> <td>16.84</td> <td>V</td> <td>4.6</td> <td>9.0</td> <td>21.23</td> <td>33.0</td> <td>-11.8</td> <td></td> </tr> <tr> <td>1907.60</td> <td>10.37</td> <td>H</td> <td>4.6</td> <td>9.0</td> <td>14.76</td> <td>33.0</td> <td>-18.2</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1852.40 | 14.55 | V | 4.5 | 9.4 | 19.45 | 33.0 | -13.5 | | 1852.40 | 7.39 | H | 4.5 | 9.4 | 12.29 | 33.0 | -20.7 | | Mid Ch | | | | | | | | | 1880.00 | 17.56 | V | 4.5 | 9.2 | 22.22 | 33.0 | -10.8 | | 1880.00 | 9.65 | H | 4.5 | 9.2 | 14.32 | 33.0 | -18.7 | | High Ch | | | | | | | | | 1907.60 | 16.84 | V | 4.6 | 9.0 | 21.23 | 33.0 | -11.8 | | 1907.60 | 10.37 | H | 4.6 | 9.0 | 14.76 | 33.0 | -18.2 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1852.40 | 14.55 | V | 4.5 | 9.4 | 19.45 | 33.0 | -13.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1852.40 | 7.39 | H | 4.5 | 9.4 | 12.29 | 33.0 | -20.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1880.00 | 17.56 | V | 4.5 | 9.2 | 22.22 | 33.0 | -10.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1880.00 | 9.65 | H | 4.5 | 9.2 | 14.32 | 33.0 | -18.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1907.60 | 16.84 | V | 4.6 | 9.0 | 21.23 | 33.0 | -11.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1907.60 | 10.37 | H | 4.6 | 9.0 | 14.76 | 33.0 | -18.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WCDMA Band 2 HSDPA | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: HSDPA Band 2 Fundamentals <u>Test Equipment:</u> Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1852.40</td> <td>14.27</td> <td>V</td> <td>4.5</td> <td>9.4</td> <td>19.17</td> <td>33.0</td> <td>-13.8</td> <td></td> </tr> <tr> <td>1852.40</td> <td>7.14</td> <td>H</td> <td>4.5</td> <td>9.4</td> <td>12.04</td> <td>33.0</td> <td>-21.0</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1880.00</td> <td>16.76</td> <td>V</td> <td>4.5</td> <td>9.2</td> <td>21.42</td> <td>33.0</td> <td>-11.6</td> <td></td> </tr> <tr> <td>1880.00</td> <td>9.20</td> <td>H</td> <td>4.5</td> <td>9.2</td> <td>13.87</td> <td>33.0</td> <td>-19.1</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1907.60</td> <td>16.23</td> <td>V</td> <td>4.6</td> <td>9.0</td> <td>20.62</td> <td>33.0</td> <td>-12.4</td> <td></td> </tr> <tr> <td>1907.60</td> <td>9.80</td> <td>H</td> <td>4.6</td> <td>9.0</td> <td>14.19</td> <td>33.0</td> <td>-18.8</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1852.40 | 14.27 | V | 4.5 | 9.4 | 19.17 | 33.0 | -13.8 | | 1852.40 | 7.14 | H | 4.5 | 9.4 | 12.04 | 33.0 | -21.0 | | Mid Ch | | | | | | | | | 1880.00 | 16.76 | V | 4.5 | 9.2 | 21.42 | 33.0 | -11.6 | | 1880.00 | 9.20 | H | 4.5 | 9.2 | 13.87 | 33.0 | -19.1 | | High Ch | | | | | | | | | 1907.60 | 16.23 | V | 4.6 | 9.0 | 20.62 | 33.0 | -12.4 | | 1907.60 | 9.80 | H | 4.6 | 9.0 | 14.19 | 33.0 | -18.8 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1852.40 | 14.27 | V | 4.5 | 9.4 | 19.17 | 33.0 | -13.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1852.40 | 7.14 | H | 4.5 | 9.4 | 12.04 | 33.0 | -21.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1880.00 | 16.76 | V | 4.5 | 9.2 | 21.42 | 33.0 | -11.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1880.00 | 9.20 | H | 4.5 | 9.2 | 13.87 | 33.0 | -19.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1907.60 | 16.23 | V | 4.6 | 9.0 | 20.62 | 33.0 | -12.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1907.60 | 9.80 | H | 4.6 | 9.0 | 14.19 | 33.0 | -18.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

LTE Band 2

| LTE Band 2 20MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|---------------------------------|---|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1860.00 | 18.40 | V | 4.5 | 9.4 | 23.34 | 33.0 | -9.7 | |
| | 1860.00 | 4.60 | H | 4.5 | 9.4 | 9.53 | 33.0 | -23.5 | |
| | Mid Ch | | | | | | | | |
| | 1880.00 | 18.00 | V | 4.5 | 9.3 | 22.78 | 33.0 | -10.2 | |
| | 1880.00 | 13.13 | H | 4.5 | 9.3 | 17.90 | 33.0 | -15.1 | |
| High Ch | | | | | | | | | |
| 1900.00 | 18.80 | V | 4.6 | 9.2 | 23.41 | 33.0 | -9.6 | | |
| 1900.00 | 13.78 | H | 4.6 | 9.2 | 18.40 | 33.0 | -14.6 | | |
| LTE Band 2 20MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1860.00 | 16.46 | V | 4.5 | 9.4 | 21.40 | 33.0 | -11.6 | |
| | 1860.00 | 3.02 | H | 4.5 | 9.4 | 7.95 | 33.0 | -25.0 | |
| | Mid Ch | | | | | | | | |
| | 1880.00 | 16.56 | V | 4.5 | 9.3 | 21.34 | 33.0 | -11.7 | |
| | 1880.00 | 11.43 | H | 4.5 | 9.3 | 16.20 | 33.0 | -16.8 | |
| High Ch | | | | | | | | | |
| 1900.00 | 17.35 | V | 4.6 | 9.2 | 21.96 | 33.0 | -11.0 | | |
| 1900.00 | 12.21 | H | 4.6 | 9.2 | 16.83 | 33.0 | -16.2 | | |

| LTE Band 2 15MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|---|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1857.50 | 17.49 | V | 4.5 | 9.5 | 22.44 | 33.0 | -10.6 | | |
| | 1857.50 | 12.07 | H | 4.5 | 9.5 | 17.02 | 33.0 | -16.0 | | |
| | Mid Ch | | | | | | | | | |
| | 1880.00 | 17.91 | V | 4.5 | 9.3 | 22.69 | 33.0 | -10.3 | | |
| | 1880.00 | 13.05 | H | 4.5 | 9.3 | 17.82 | 33.0 | -15.2 | | |
| High Ch | | | | | | | | | | |
| 1902.50 | 18.39 | V | 4.6 | 9.1 | 22.98 | 33.0 | -10.0 | | | |
| 1902.50 | 13.15 | H | 4.6 | 9.1 | 17.73 | 33.0 | -15.3 | | | |
| LTE Band 2 15MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1857.50 | 16.15 | V | 4.5 | 9.5 | 21.10 | 33.0 | -11.9 | | |
| | 1857.50 | 10.30 | H | 4.5 | 9.5 | 15.25 | 33.0 | -17.7 | | |
| | Mid Ch | | | | | | | | | |
| | 1880.00 | 16.62 | V | 4.5 | 9.3 | 21.40 | 33.0 | -11.6 | | |
| | 1880.00 | 11.74 | H | 4.5 | 9.3 | 16.51 | 33.0 | -16.5 | | |
| High Ch | | | | | | | | | | |
| 1902.50 | 16.79 | V | 4.6 | 9.1 | 21.38 | 33.0 | -11.6 | | | |
| 1902.50 | 11.39 | H | 4.6 | 9.1 | 15.97 | 33.0 | -17.0 | | | |

| LTE Band 2 10MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|---------------------------------|---|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1855.00 | 18.11 | V | 4.5 | 9.5 | 23.08 | 33.0 | -9.9 | |
| | 1855.00 | 12.52 | H | 4.5 | 9.5 | 17.49 | 33.0 | -15.5 | |
| | Mid Ch | | | | | | | | |
| | 1880.00 | 17.92 | V | 4.5 | 9.3 | 22.70 | 33.0 | -10.3 | |
| | 1880.00 | 11.30 | H | 4.5 | 9.3 | 16.07 | 33.0 | -16.9 | |
| High Ch | | | | | | | | | |
| 1905.00 | 18.25 | V | 4.6 | 9.1 | 22.80 | 33.0 | -10.2 | | |
| 1905.00 | 13.24 | H | 4.6 | 9.1 | 17.79 | 33.0 | -15.2 | | |
| LTE Band 2 10MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1855.00 | 16.77 | V | 4.5 | 9.5 | 21.74 | 33.0 | -11.3 | |
| | 1855.00 | 11.18 | H | 4.5 | 9.5 | 16.15 | 33.0 | -16.8 | |
| | Mid Ch | | | | | | | | |
| | 1880.00 | 16.31 | V | 4.5 | 9.3 | 21.09 | 33.0 | -11.9 | |
| | 1880.00 | 9.93 | H | 4.5 | 9.3 | 14.70 | 33.0 | -18.3 | |
| High Ch | | | | | | | | | |
| 1905.00 | 16.55 | V | 4.6 | 9.1 | 21.10 | 33.0 | -11.9 | | |
| 1905.00 | 11.65 | H | 4.6 | 9.1 | 16.20 | 33.0 | -16.8 | | |

| LTE Band 2 5MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|--------------------------------|--|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1852.50 | 17.94 | V | 4.5 | 9.5 | 22.94 | 33.0 | -10.1 | |
| | 1852.50 | 8.75 | H | 4.5 | 9.5 | 13.75 | 33.0 | -19.3 | |
| | Mid Ch | | | | | | | | |
| | 1880.00 | 18.05 | V | 4.5 | 9.3 | 22.83 | 33.0 | -10.2 | |
| | 1880.00 | 13.24 | H | 4.5 | 9.3 | 18.01 | 33.0 | -15.0 | |
| High Ch | | | | | | | | | |
| 1907.50 | 18.20 | V | 4.6 | 9.1 | 22.72 | 33.0 | -10.3 | | |
| 1907.50 | 12.57 | H | 4.6 | 9.1 | 17.09 | 33.0 | -15.9 | | |
| LTE Band 2 5MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1852.50 | 16.48 | V | 4.5 | 9.5 | 21.48 | 33.0 | -11.5 | |
| | 1852.50 | 3.50 | H | 4.5 | 9.5 | 8.50 | 33.0 | -24.5 | |
| | Mid Ch | | | | | | | | |
| | 1880.00 | 16.26 | V | 4.5 | 9.3 | 21.04 | 33.0 | -12.0 | |
| | 1880.00 | 11.24 | H | 4.5 | 9.3 | 16.01 | 33.0 | -17.0 | |
| High Ch | | | | | | | | | |
| 1907.50 | 16.82 | V | 4.6 | 9.1 | 21.34 | 33.0 | -11.7 | | |
| 1907.50 | 10.91 | H | 4.6 | 9.1 | 15.43 | 33.0 | -17.6 | | |

| LTE Band 2 3MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|--------------------------------|--|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1851.50 | 17.86 | V | 4.5 | 9.5 | 22.87 | 33.0 | -10.1 | | |
| | 1851.50 | 12.01 | H | 4.5 | 9.5 | 17.01 | 33.0 | -16.0 | | |
| | Mid Ch | | | | | | | | | |
| | 1880.00 | 18.02 | V | 4.5 | 9.3 | 22.80 | 33.0 | -10.2 | | |
| | 1880.00 | 13.30 | H | 4.5 | 9.3 | 18.07 | 33.0 | -14.9 | | |
| High Ch | | | | | | | | | | |
| 1908.50 | 18.03 | V | 4.6 | 9.1 | 22.54 | 33.0 | -10.5 | | | |
| 1908.50 | 11.34 | H | 4.6 | 9.1 | 15.84 | 33.0 | -17.2 | | | |
| LTE Band 2 3MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1851.50 | 16.12 | V | 4.5 | 9.5 | 21.13 | 33.0 | -11.9 | | |
| | 1851.50 | 10.28 | H | 4.5 | 9.5 | 15.28 | 33.0 | -17.7 | | |
| | Mid Ch | | | | | | | | | |
| | 1880.00 | 16.62 | V | 4.5 | 9.3 | 21.40 | 33.0 | -11.6 | | |
| | 1880.00 | 11.68 | H | 4.5 | 9.3 | 16.45 | 33.0 | -16.5 | | |
| High Ch | | | | | | | | | | |
| 1908.50 | 16.50 | V | 4.6 | 9.1 | 21.01 | 33.0 | -12.0 | | | |
| 1908.50 | 9.82 | H | 4.6 | 9.1 | 14.32 | 33.0 | -18.7 | | | |

| LTE Band 2 1.4MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|----------------------------------|--|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1850.70 | 18.15 | V | 4.5 | 9.5 | 23.16 | 33.0 | -9.8 | |
| | 1850.70 | 12.37 | H | 4.5 | 9.5 | 17.38 | 33.0 | -15.6 | |
| | Mid Ch | | | | | | | | |
| | 1880.00 | 18.20 | V | 4.5 | 9.3 | 22.98 | 33.0 | -10.0 | |
| | 1880.00 | 13.46 | H | 4.5 | 9.3 | 18.23 | 33.0 | -14.8 | |
| High Ch | | | | | | | | | |
| 1909.30 | 18.27 | V | 4.6 | 9.1 | 22.76 | 33.0 | -10.2 | | |
| 1909.30 | 11.65 | H | 4.6 | 9.1 | 16.14 | 33.0 | -16.9 | | |
| LTE Band 2 1.4MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1850.70 | 16.66 | V | 4.5 | 9.5 | 21.67 | 33.0 | -11.3 | |
| | 1850.70 | 10.48 | H | 4.5 | 9.5 | 15.49 | 33.0 | -17.5 | |
| | Mid Ch | | | | | | | | |
| | 1880.00 | 16.76 | V | 4.5 | 9.3 | 21.54 | 33.0 | -11.5 | |
| | 1880.00 | 11.67 | H | 4.5 | 9.3 | 16.44 | 33.0 | -16.6 | |
| High Ch | | | | | | | | | |
| 1909.30 | 16.05 | V | 4.6 | 9.1 | 20.54 | 33.0 | -12.5 | | |
| 1909.30 | 10.08 | H | 4.6 | 9.1 | 14.57 | 33.0 | -18.4 | | |

LTE Band 4

| LTE Band 4 20MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|---------------------------------|---|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1720.00 | 12.47 | V | 4.3 | 9.4 | 17.49 | 30.0 | -12.5 | |
| | 1720.00 | 15.93 | H | 4.3 | 9.4 | 20.96 | 30.0 | -9.0 | |
| | Mid Ch | | | | | | | | |
| | 1732.50 | 13.62 | V | 4.3 | 9.4 | 18.68 | 30.0 | -11.3 | |
| | 1732.50 | 16.57 | H | 4.3 | 9.4 | 21.63 | 30.0 | -8.4 | |
| High Ch | | | | | | | | | |
| 1745.00 | 13.41 | V | 4.4 | 9.4 | 18.50 | 30.0 | -11.5 | | |
| 1745.00 | 17.20 | H | 4.4 | 9.4 | 22.28 | 30.0 | -7.7 | | |
| LTE Band 4 20MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1720.00 | 10.87 | V | 4.3 | 9.4 | 15.89 | 30.0 | -14.1 | |
| | 1720.00 | 14.38 | H | 4.3 | 9.4 | 19.41 | 30.0 | -10.6 | |
| | Mid Ch | | | | | | | | |
| | 1732.50 | 11.90 | V | 4.3 | 9.4 | 16.96 | 30.0 | -13.0 | |
| | 1732.50 | 14.80 | H | 4.3 | 9.4 | 19.86 | 30.0 | -10.1 | |
| High Ch | | | | | | | | | |
| 1745.00 | 12.02 | V | 4.4 | 9.4 | 17.11 | 30.0 | -12.9 | | |
| 1745.00 | 15.73 | H | 4.4 | 9.4 | 20.81 | 30.0 | -9.2 | | |

| LTE Band 4 15MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|---|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1717.50 | 12.99 | V | 4.3 | 9.3 | 18.02 | 30.0 | -12.0 | | |
| | 1717.50 | 16.24 | H | 4.3 | 9.3 | 21.26 | 30.0 | -8.7 | | |
| | Mid Ch | | | | | | | | | |
| | 1732.50 | 13.85 | V | 4.3 | 9.4 | 18.91 | 30.0 | -11.1 | | |
| | 1732.50 | 17.18 | H | 4.3 | 9.4 | 22.24 | 30.0 | -7.8 | | |
| High Ch | | | | | | | | | | |
| 1747.50 | 11.41 | V | 4.4 | 9.5 | 16.51 | 30.0 | -13.5 | | | |
| 1747.50 | 16.88 | H | 4.4 | 9.5 | 21.97 | 30.0 | -8.0 | | | |
| LTE Band 4 15MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1717.50 | 11.35 | V | 4.3 | 9.3 | 16.38 | 30.0 | -13.6 | | |
| | 1717.50 | 14.61 | H | 4.3 | 9.3 | 19.63 | 30.0 | -10.4 | | |
| | Mid Ch | | | | | | | | | |
| | 1732.50 | 12.13 | V | 4.3 | 9.4 | 17.19 | 30.0 | -12.8 | | |
| | 1732.50 | 15.53 | H | 4.3 | 9.4 | 20.59 | 30.0 | -9.4 | | |
| High Ch | | | | | | | | | | |
| 1747.50 | 9.81 | V | 4.4 | 9.5 | 14.91 | 30.0 | -15.1 | | | |
| 1747.50 | 15.17 | H | 4.4 | 9.5 | 20.26 | 30.0 | -9.7 | | | |

| LTE Band 4 10MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|---|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1715.00 | 12.68 | V | 4.3 | 9.3 | 17.70 | 30.0 | -12.3 | | |
| | 1715.00 | 16.01 | H | 4.3 | 9.3 | 21.03 | 30.0 | -9.0 | | |
| | Mid Ch | | | | | | | | | |
| | 1732.50 | 13.80 | V | 4.3 | 9.4 | 18.86 | 30.0 | -11.1 | | |
| | 1732.50 | 16.90 | H | 4.3 | 9.4 | 21.96 | 30.0 | -8.0 | | |
| High Ch | | | | | | | | | | |
| 1750.00 | 11.85 | V | 4.4 | 9.5 | 16.95 | 30.0 | -13.0 | | | |
| 1750.00 | 16.74 | H | 4.4 | 9.5 | 21.84 | 30.0 | -8.2 | | | |
| LTE Band 4 10MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1715.00 | 11.22 | V | 4.3 | 9.3 | 16.24 | 30.0 | -13.8 | | |
| | 1715.00 | 14.70 | H | 4.3 | 9.3 | 19.72 | 30.0 | -10.3 | | |
| | Mid Ch | | | | | | | | | |
| | 1732.50 | 11.87 | V | 4.3 | 9.4 | 16.93 | 30.0 | -13.1 | | |
| | 1732.50 | 15.20 | H | 4.3 | 9.4 | 20.26 | 30.0 | -9.7 | | |
| High Ch | | | | | | | | | | |
| 1750.00 | 10.19 | V | 4.4 | 9.5 | 15.29 | 30.0 | -14.7 | | | |
| 1750.00 | 14.97 | H | 4.4 | 9.5 | 20.07 | 30.0 | -9.9 | | | |

| LTE Band 4 5MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|--------------------------------|--|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1712.50 | 12.62 | V | 4.3 | 9.3 | 17.64 | 30.0 | -12.4 | | |
| | 1712.50 | 16.80 | H | 4.3 | 9.3 | 21.82 | 30.0 | -8.2 | | |
| | Mid Ch | | | | | | | | | |
| | 1732.50 | 13.47 | V | 4.3 | 9.4 | 18.53 | 30.0 | -11.5 | | |
| | 1732.50 | 17.37 | H | 4.3 | 9.4 | 22.43 | 30.0 | -7.6 | | |
| High Ch | | | | | | | | | | |
| 1752.50 | 11.21 | V | 4.4 | 9.5 | 16.31 | 30.0 | -13.7 | | | |
| 1752.50 | 16.15 | H | 4.4 | 9.5 | 21.25 | 30.0 | -8.7 | | | |
| LTE Band 4 5MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1712.50 | 10.47 | V | 4.3 | 9.3 | 15.49 | 30.0 | -14.5 | | |
| | 1712.50 | 15.15 | H | 4.3 | 9.3 | 20.17 | 30.0 | -9.8 | | |
| | Mid Ch | | | | | | | | | |
| | 1732.50 | 11.76 | V | 4.3 | 9.4 | 16.82 | 30.0 | -13.2 | | |
| | 1732.50 | 15.44 | H | 4.3 | 9.4 | 20.50 | 30.0 | -9.5 | | |
| High Ch | | | | | | | | | | |
| 1752.50 | 10.13 | V | 4.4 | 9.5 | 15.23 | 30.0 | -14.8 | | | |
| 1752.50 | 14.80 | H | 4.4 | 9.5 | 19.90 | 30.0 | -10.1 | | | |

| LTE Band 4 3MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|---|-----------------|------------------|--------------------|-----------------|--------------------|------------|-------------|------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1711.50</td> <td>12.26</td> <td>V</td> <td>4.3</td> <td>9.3</td> <td>17.27</td> <td>30.0</td> <td>-12.7</td> <td></td> </tr> <tr> <td>1711.50</td> <td>16.86</td> <td>H</td> <td>4.3</td> <td>9.3</td> <td>21.87</td> <td>30.0</td> <td>-8.1</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.50</td> <td>13.80</td> <td>V</td> <td>4.3</td> <td>9.4</td> <td>18.86</td> <td>30.0</td> <td>-11.1</td> <td></td> </tr> <tr> <td>1732.50</td> <td>17.33</td> <td>H</td> <td>4.3</td> <td>9.4</td> <td>22.39</td> <td>30.0</td> <td>-7.6</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1753.50</td> <td>12.12</td> <td>V</td> <td>4.4</td> <td>9.5</td> <td>17.22</td> <td>30.0</td> <td>-12.8</td> <td></td> </tr> <tr> <td>1753.50</td> <td>16.23</td> <td>H</td> <td>4.4</td> <td>9.5</td> <td>21.33</td> <td>30.0</td> <td>-8.7</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1711.50 | 12.26 | V | 4.3 | 9.3 | 17.27 | 30.0 | -12.7 | | 1711.50 | 16.86 | H | 4.3 | 9.3 | 21.87 | 30.0 | -8.1 | | Mid Ch | | | | | | | | | 1732.50 | 13.80 | V | 4.3 | 9.4 | 18.86 | 30.0 | -11.1 | | 1732.50 | 17.33 | H | 4.3 | 9.4 | 22.39 | 30.0 | -7.6 | | High Ch | | | | | | | | | 1753.50 | 12.12 | V | 4.4 | 9.5 | 17.22 | 30.0 | -12.8 | | 1753.50 | 16.23 | H | 4.4 | 9.5 | 21.33 | 30.0 | -8.7 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1711.50 | 12.26 | V | 4.3 | 9.3 | 17.27 | 30.0 | -12.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1711.50 | 16.86 | H | 4.3 | 9.3 | 21.87 | 30.0 | -8.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1732.50 | 13.80 | V | 4.3 | 9.4 | 18.86 | 30.0 | -11.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1732.50 | 17.33 | H | 4.3 | 9.4 | 22.39 | 30.0 | -7.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1753.50 | 12.12 | V | 4.4 | 9.5 | 17.22 | 30.0 | -12.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1753.50 | 16.23 | H | 4.4 | 9.5 | 21.33 | 30.0 | -8.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE Band 4 3MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1711.50</td> <td>10.95</td> <td>V</td> <td>4.3</td> <td>9.3</td> <td>15.96</td> <td>30.0</td> <td>-14.0</td> <td></td> </tr> <tr> <td>1711.50</td> <td>15.36</td> <td>H</td> <td>4.3</td> <td>9.3</td> <td>20.37</td> <td>30.0</td> <td>-9.6</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.50</td> <td>12.20</td> <td>V</td> <td>4.3</td> <td>9.4</td> <td>17.26</td> <td>30.0</td> <td>-12.7</td> <td></td> </tr> <tr> <td>1732.50</td> <td>15.52</td> <td>H</td> <td>4.3</td> <td>9.4</td> <td>20.58</td> <td>30.0</td> <td>-9.4</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1753.50</td> <td>10.55</td> <td>V</td> <td>4.4</td> <td>9.5</td> <td>15.65</td> <td>30.0</td> <td>-14.4</td> <td></td> </tr> <tr> <td>1753.50</td> <td>14.70</td> <td>H</td> <td>4.4</td> <td>9.5</td> <td>19.80</td> <td>30.0</td> <td>-10.2</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1711.50 | 10.95 | V | 4.3 | 9.3 | 15.96 | 30.0 | -14.0 | | 1711.50 | 15.36 | H | 4.3 | 9.3 | 20.37 | 30.0 | -9.6 | | Mid Ch | | | | | | | | | 1732.50 | 12.20 | V | 4.3 | 9.4 | 17.26 | 30.0 | -12.7 | | 1732.50 | 15.52 | H | 4.3 | 9.4 | 20.58 | 30.0 | -9.4 | | High Ch | | | | | | | | | 1753.50 | 10.55 | V | 4.4 | 9.5 | 15.65 | 30.0 | -14.4 | | 1753.50 | 14.70 | H | 4.4 | 9.5 | 19.80 | 30.0 | -10.2 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1711.50 | 10.95 | V | 4.3 | 9.3 | 15.96 | 30.0 | -14.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1711.50 | 15.36 | H | 4.3 | 9.3 | 20.37 | 30.0 | -9.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1732.50 | 12.20 | V | 4.3 | 9.4 | 17.26 | 30.0 | -12.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1732.50 | 15.52 | H | 4.3 | 9.4 | 20.58 | 30.0 | -9.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1753.50 | 10.55 | V | 4.4 | 9.5 | 15.65 | 30.0 | -14.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1753.50 | 14.70 | H | 4.4 | 9.5 | 19.80 | 30.0 | -10.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| LTE Band 4 1.4MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|----------------------------------|--|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1710.70 | 12.38 | V | 4.3 | 9.3 | 17.39 | 30.0 | -12.6 | | |
| | 1710.70 | 16.37 | H | 4.3 | 9.3 | 21.38 | 30.0 | -8.6 | | |
| | Mid Ch | | | | | | | | | |
| | 1732.50 | 13.96 | V | 4.3 | 9.4 | 19.02 | 30.0 | -11.0 | | |
| | 1732.50 | 17.26 | H | 4.3 | 9.4 | 22.32 | 30.0 | -7.7 | | |
| High Ch | | | | | | | | | | |
| 1754.30 | 12.24 | V | 4.4 | 9.5 | 17.34 | 30.0 | -12.7 | | | |
| 1754.30 | 16.29 | H | 4.4 | 9.5 | 21.39 | 30.0 | -8.6 | | | |
| LTE Band 4 1.4MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1710.70 | 10.95 | V | 4.3 | 9.3 | 15.96 | 30.0 | -14.0 | | |
| | 1710.70 | 15.04 | H | 4.3 | 9.3 | 20.05 | 30.0 | -10.0 | | |
| | Mid Ch | | | | | | | | | |
| | 1732.50 | 12.38 | V | 4.3 | 9.4 | 17.44 | 30.0 | -12.6 | | |
| | 1732.50 | 15.66 | H | 4.3 | 9.4 | 20.72 | 30.0 | -9.3 | | |
| High Ch | | | | | | | | | | |
| 1754.30 | 10.43 | V | 4.4 | 9.5 | 15.53 | 30.0 | -14.5 | | | |
| 1754.30 | 14.83 | H | 4.4 | 9.5 | 19.93 | 30.0 | -10.1 | | | |

LTE Band 5

| LTE Band 5 10MHz QPSK | <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth</p> <p><u>Test Equipment:</u> Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>829.00</td> <td>23.62</td> <td>V</td> <td>3.0</td> <td>-1.5</td> <td>19.14</td> <td>38.5</td> <td>-19.4</td> <td></td> </tr> <tr> <td>829.00</td> <td>13.48</td> <td>H</td> <td>3.0</td> <td>-1.5</td> <td>9.00</td> <td>38.5</td> <td>-29.5</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>836.50</td> <td>24.12</td> <td>V</td> <td>3.0</td> <td>-1.4</td> <td>19.66</td> <td>38.5</td> <td>-18.8</td> <td></td> </tr> <tr> <td>836.50</td> <td>14.33</td> <td>H</td> <td>3.0</td> <td>-1.4</td> <td>9.86</td> <td>38.5</td> <td>-28.6</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>844.00</td> <td>22.97</td> <td>V</td> <td>3.1</td> <td>-1.4</td> <td>18.52</td> <td>38.5</td> <td>-20.0</td> <td></td> </tr> <tr> <td>844.00</td> <td>13.74</td> <td>H</td> <td>3.1</td> <td>-1.4</td> <td>9.29</td> <td>38.5</td> <td>-29.2</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 829.00 | 23.62 | V | 3.0 | -1.5 | 19.14 | 38.5 | -19.4 | | 829.00 | 13.48 | H | 3.0 | -1.5 | 9.00 | 38.5 | -29.5 | | Mid Ch | | | | | | | | | 836.50 | 24.12 | V | 3.0 | -1.4 | 19.66 | 38.5 | -18.8 | | 836.50 | 14.33 | H | 3.0 | -1.4 | 9.86 | 38.5 | -28.6 | | High Ch | | | | | | | | | 844.00 | 22.97 | V | 3.1 | -1.4 | 18.52 | 38.5 | -20.0 | | 844.00 | 13.74 | H | 3.1 | -1.4 | 9.29 | 38.5 | -29.2 | |
|---------------------------------|--|------------------|------------------|--------------------|--------------------|--------------------|-------------|-------------|------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|------|-------|------|-------|--|--------|-------|---|-----|------|------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|------|-------|------|-------|--|--------|-------|---|-----|------|------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|------|-------|------|-------|--|--------|-------|---|-----|------|------|------|-------|--|
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 829.00 | 23.62 | V | 3.0 | -1.5 | 19.14 | 38.5 | -19.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 829.00 | 13.48 | H | 3.0 | -1.5 | 9.00 | 38.5 | -29.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.50 | 24.12 | V | 3.0 | -1.4 | 19.66 | 38.5 | -18.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.50 | 14.33 | H | 3.0 | -1.4 | 9.86 | 38.5 | -28.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 844.00 | 22.97 | V | 3.1 | -1.4 | 18.52 | 38.5 | -20.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 844.00 | 13.74 | H | 3.1 | -1.4 | 9.29 | 38.5 | -29.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE Band 5 10MHz 16QAM | <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth</p> <p><u>Test Equipment:</u> Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>829.00</td> <td>20.93</td> <td>V</td> <td>3.0</td> <td>-1.5</td> <td>16.45</td> <td>38.5</td> <td>-22.0</td> <td></td> </tr> <tr> <td>829.00</td> <td>11.92</td> <td>H</td> <td>3.0</td> <td>-1.5</td> <td>7.44</td> <td>38.5</td> <td>-31.1</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>836.50</td> <td>21.67</td> <td>V</td> <td>3.0</td> <td>-1.4</td> <td>17.21</td> <td>38.5</td> <td>-21.3</td> <td></td> </tr> <tr> <td>836.50</td> <td>12.09</td> <td>H</td> <td>3.0</td> <td>-1.4</td> <td>7.62</td> <td>38.5</td> <td>-30.9</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>844.00</td> <td>20.77</td> <td>V</td> <td>3.1</td> <td>-1.4</td> <td>16.32</td> <td>38.5</td> <td>-22.2</td> <td></td> </tr> <tr> <td>844.00</td> <td>11.49</td> <td>H</td> <td>3.1</td> <td>-1.4</td> <td>7.04</td> <td>38.5</td> <td>-31.5</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 829.00 | 20.93 | V | 3.0 | -1.5 | 16.45 | 38.5 | -22.0 | | 829.00 | 11.92 | H | 3.0 | -1.5 | 7.44 | 38.5 | -31.1 | | Mid Ch | | | | | | | | | 836.50 | 21.67 | V | 3.0 | -1.4 | 17.21 | 38.5 | -21.3 | | 836.50 | 12.09 | H | 3.0 | -1.4 | 7.62 | 38.5 | -30.9 | | High Ch | | | | | | | | | 844.00 | 20.77 | V | 3.1 | -1.4 | 16.32 | 38.5 | -22.2 | | 844.00 | 11.49 | H | 3.1 | -1.4 | 7.04 | 38.5 | -31.5 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 829.00 | 20.93 | V | 3.0 | -1.5 | 16.45 | 38.5 | -22.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 829.00 | 11.92 | H | 3.0 | -1.5 | 7.44 | 38.5 | -31.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.50 | 21.67 | V | 3.0 | -1.4 | 17.21 | 38.5 | -21.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.50 | 12.09 | H | 3.0 | -1.4 | 7.62 | 38.5 | -30.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 844.00 | 20.77 | V | 3.1 | -1.4 | 16.32 | 38.5 | -22.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 844.00 | 11.49 | H | 3.1 | -1.4 | 7.04 | 38.5 | -31.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| LTE Band 5 5MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|--------------------------------|--|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 826.50 | 23.75 | V | 3.0 | -1.5 | 19.26 | 38.5 | -19.2 | | |
| | 826.50 | 13.53 | H | 3.0 | -1.5 | 9.05 | 38.5 | -29.5 | | |
| | Mid Ch | | | | | | | | | |
| | 836.50 | 24.41 | V | 3.0 | -1.4 | 19.95 | 38.5 | -18.6 | | |
| | 836.50 | 14.80 | H | 3.0 | -1.4 | 10.33 | 38.5 | -28.2 | | |
| High Ch | | | | | | | | | | |
| 846.50 | 24.53 | V | 3.1 | -1.4 | 20.08 | 38.5 | -18.4 | | | |
| 846.50 | 14.70 | H | 3.1 | -1.4 | 10.25 | 38.5 | -28.2 | | | |
| LTE Band 5 5MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 826.50 | 20.97 | V | 3.0 | -1.5 | 16.48 | 38.5 | -22.0 | | |
| | 826.50 | 10.81 | H | 3.0 | -1.5 | 6.33 | 38.5 | -32.2 | | |
| | Mid Ch | | | | | | | | | |
| | 836.50 | 21.68 | V | 3.0 | -1.4 | 17.22 | 38.5 | -21.3 | | |
| | 836.50 | 12.77 | H | 3.0 | -1.4 | 8.30 | 38.5 | -30.2 | | |
| High Ch | | | | | | | | | | |
| 846.50 | 21.90 | V | 3.1 | -1.4 | 17.45 | 38.5 | -21.0 | | | |
| 846.50 | 12.60 | H | 3.1 | -1.4 | 8.15 | 38.5 | -30.3 | | | |

| LTE Band 5 3MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|--------------------------------|--|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|---------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 825.50 | 23.24 | V | 3.0 | -1.5 | 18.76 | 38.5 | -19.7 | |
| | 825.50 | 13.91 | H | 3.0 | -1.5 | 9.42 | 38.5 | -29.1 | |
| | Mid Ch | | | | | | | | |
| | 836.50 | 24.37 | V | 3.0 | -1.4 | 19.91 | 38.5 | -18.6 | |
| | 836.50 | 14.34 | H | 3.0 | -1.4 | 9.87 | 38.5 | -28.6 | |
| High Ch | | | | | | | | | |
| 847.50 | 23.71 | V | 3.1 | -1.4 | 19.27 | 38.5 | -19.2 | | |
| 847.50 | 14.60 | H | 3.1 | -1.4 | 10.16 | 38.5 | -28.3 | | |
| LTE Band 5 3MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 825.50 | 20.84 | V | 3.0 | -1.5 | 16.36 | 38.5 | -22.1 | |
| | 825.50 | 11.58 | H | 3.0 | -1.5 | 7.09 | 38.5 | -31.4 | |
| | Mid Ch | | | | | | | | |
| | 836.50 | 21.73 | V | 3.0 | -1.4 | 17.27 | 38.5 | -21.2 | |
| | 836.50 | 13.50 | H | 3.0 | -1.4 | 9.03 | 38.5 | -29.5 | |
| High Ch | | | | | | | | | |
| 847.50 | 21.15 | V | 3.1 | -1.4 | 16.71 | 38.5 | -21.8 | | |
| 847.50 | 11.82 | H | 3.1 | -1.4 | 7.38 | 38.5 | -31.1 | | |

| LTE Band 5 1.4MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|----------------------------------|--|------------------|-----------------|-----------------|--------------------|-----------|-------------|------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 824.70 | 23.81 | V | 3.0 | -1.5 | 19.33 | 38.5 | -19.2 | |
| | 824.70 | 13.28 | H | 3.0 | -1.5 | 8.79 | 38.5 | -29.7 | |
| | Mid Ch | | | | | | | | |
| | 836.50 | 24.68 | V | 3.0 | -1.4 | 20.22 | 38.5 | -18.3 | |
| | 836.50 | 15.40 | H | 3.0 | -1.4 | 10.93 | 38.5 | -27.6 | |
| High Ch | | | | | | | | | |
| 848.30 | 23.42 | V | 3.1 | -1.4 | 18.98 | 38.5 | -19.5 | | |
| 848.30 | 14.87 | H | 3.1 | -1.4 | 10.43 | 38.5 | -28.1 | | |
| LTE Band 5 1.4MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-16 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 824.70 | 20.62 | V | 3.0 | -1.5 | 16.14 | 38.5 | -22.4 | |
| | 824.70 | 10.89 | H | 3.0 | -1.5 | 6.40 | 38.5 | -32.1 | |
| | Mid Ch | | | | | | | | |
| | 836.50 | 21.93 | V | 3.0 | -1.4 | 17.47 | 38.5 | -21.0 | |
| | 836.50 | 11.98 | H | 3.0 | -1.4 | 7.51 | 38.5 | -31.0 | |
| High Ch | | | | | | | | | |
| 848.30 | 20.82 | V | 3.1 | -1.4 | 16.38 | 38.5 | -22.1 | | |
| 848.30 | 11.83 | H | 3.1 | -1.4 | 7.39 | 38.5 | -31.1 | | |

LTE Band 7

| LTE Band 7 20MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|---------------------------------|---|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 7 Fundamentals, 20MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 2510.00 | 15.32 | V | 5.3 | 10.1 | 20.14 | 33.0 | -12.9 | |
| | 2510.00 | 18.30 | H | 5.3 | 10.1 | 23.12 | 33.0 | -9.9 | |
| | Mid Ch | | | | | | | | |
| | 2535.00 | 15.07 | V | 5.3 | 10.0 | 19.83 | 33.0 | -13.2 | |
| | 2535.00 | 17.68 | H | 5.3 | 10.0 | 22.45 | 33.0 | -10.6 | |
| High Ch | | | | | | | | | |
| 2560.00 | 14.85 | V | 5.3 | 10.0 | 19.56 | 33.0 | -13.4 | | |
| 2560.00 | 18.08 | H | 5.3 | 10.0 | 22.78 | 33.0 | -10.2 | | |
| LTE Band 7 20MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 7 Fundamentals, 20MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 2510.00 | 13.25 | V | 5.3 | 10.1 | 18.07 | 33.0 | -14.9 | |
| | 2510.00 | 16.29 | H | 5.3 | 10.1 | 21.11 | 33.0 | -11.9 | |
| | Mid Ch | | | | | | | | |
| | 2535.00 | 12.83 | V | 5.3 | 10.0 | 17.59 | 33.0 | -15.4 | |
| | 2535.00 | 16.01 | H | 5.3 | 10.0 | 20.78 | 33.0 | -12.2 | |
| High Ch | | | | | | | | | |
| 2560.00 | 12.83 | V | 5.3 | 10.0 | 17.54 | 33.0 | -15.5 | | |
| 2560.00 | 15.71 | H | 5.3 | 10.0 | 20.41 | 33.0 | -12.6 | | |

| LTE Band 7 15MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|---|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 7 Fundamentals, 15MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 2507.50 | 14.83 | V | 5.3 | 10.1 | 19.66 | 33.0 | -13.3 | | |
| | 2507.50 | 17.94 | H | 5.3 | 10.1 | 22.77 | 33.0 | -10.2 | | |
| | Mid Ch | | | | | | | | | |
| | 2535.00 | 14.79 | V | 5.3 | 10.0 | 19.55 | 33.0 | -13.4 | | |
| | 2535.00 | 17.78 | H | 5.3 | 10.0 | 22.55 | 33.0 | -10.5 | | |
| High Ch | | | | | | | | | | |
| 2562.50 | 14.22 | V | 5.3 | 10.0 | 18.92 | 33.0 | -14.1 | | | |
| 2562.50 | 17.61 | H | 5.3 | 10.0 | 22.32 | 33.0 | -10.7 | | | |
| LTE Band 7 15MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 7 Fundamentals, 15MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 2507.50 | 12.57 | V | 5.3 | 10.1 | 17.40 | 33.0 | -15.6 | | |
| | 2507.50 | 15.85 | H | 5.3 | 10.1 | 20.68 | 33.0 | -12.3 | | |
| | Mid Ch | | | | | | | | | |
| | 2535.00 | 12.82 | V | 5.3 | 10.0 | 17.58 | 33.0 | -15.4 | | |
| | 2535.00 | 15.83 | H | 5.3 | 10.0 | 20.60 | 33.0 | -12.4 | | |
| High Ch | | | | | | | | | | |
| 2562.50 | 11.94 | V | 5.3 | 10.0 | 16.64 | 33.0 | -16.4 | | | |
| 2562.50 | 15.46 | H | 5.3 | 10.0 | 20.17 | 33.0 | -12.8 | | | |

| LTE Band 7 10MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|--|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 7 Fundamentals, 10MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 2505.00 | 15.15 | V | 5.2 | 10.1 | 19.98 | 33.0 | -13.0 | | |
| | 2505.00 | 18.22 | H | 5.2 | 10.1 | 23.05 | 33.0 | -9.9 | | |
| | Mid Ch | | | | | | | | | |
| | 2535.00 | 14.63 | V | 5.3 | 10.0 | 19.39 | 33.0 | -13.6 | | |
| | 2535.00 | 17.90 | H | 5.3 | 10.0 | 22.67 | 33.0 | -10.3 | | |
| High Ch | | | | | | | | | | |
| 2565.00 | 14.55 | V | 5.3 | 10.0 | 19.25 | 33.0 | -13.7 | | | |
| 2565.00 | 17.76 | H | 5.3 | 10.0 | 22.46 | 33.0 | -10.5 | | | |
| LTE Band 7 10MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 7 Fundamentals, 10MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 2505.00 | 13.25 | V | 5.2 | 10.1 | 18.08 | 33.0 | -14.9 | | |
| | 2505.00 | 16.26 | H | 5.2 | 10.1 | 21.09 | 33.0 | -11.9 | | |
| | Mid Ch | | | | | | | | | |
| | 2535.00 | 12.66 | V | 5.3 | 10.0 | 17.42 | 33.0 | -15.6 | | |
| | 2535.00 | 16.11 | H | 5.3 | 10.0 | 20.88 | 33.0 | -12.1 | | |
| High Ch | | | | | | | | | | |
| 2565.00 | 12.50 | V | 5.3 | 10.0 | 17.20 | 33.0 | -15.8 | | | |
| 2565.00 | 15.80 | H | 5.3 | 10.0 | 20.50 | 33.0 | -12.5 | | | |

| LTE Band 7 5MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|---|-----------------|------------------|--------------------|-----------------|--------------------|------------|-------------|------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|------|-------|------|-------|--|---------|-------|---|-----|------|-------|------|-------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|------|-------|------|-------|--|---------|-------|---|-----|------|-------|------|-------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|------|-------|------|-------|--|---------|-------|---|-----|------|-------|------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 7 Fundamentals, 5MHz Bandwidth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>2502.50</td> <td>15.25</td> <td>V</td> <td>5.2</td> <td>10.1</td> <td>20.09</td> <td>33.0</td> <td>-12.9</td> <td></td> </tr> <tr> <td>2502.50</td> <td>18.01</td> <td>H</td> <td>5.2</td> <td>10.1</td> <td>22.85</td> <td>33.0</td> <td>-10.2</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>2535.00</td> <td>14.59</td> <td>V</td> <td>5.3</td> <td>10.0</td> <td>19.35</td> <td>33.0</td> <td>-13.6</td> <td></td> </tr> <tr> <td>2535.00</td> <td>17.81</td> <td>H</td> <td>5.3</td> <td>10.0</td> <td>22.58</td> <td>33.0</td> <td>-10.4</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>2567.50</td> <td>14.15</td> <td>V</td> <td>5.3</td> <td>10.0</td> <td>18.84</td> <td>33.0</td> <td>-14.2</td> <td></td> </tr> <tr> <td>2567.50</td> <td>17.54</td> <td>H</td> <td>5.3</td> <td>10.0</td> <td>22.23</td> <td>33.0</td> <td>-10.8</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 2502.50 | 15.25 | V | 5.2 | 10.1 | 20.09 | 33.0 | -12.9 | | 2502.50 | 18.01 | H | 5.2 | 10.1 | 22.85 | 33.0 | -10.2 | | Mid Ch | | | | | | | | | 2535.00 | 14.59 | V | 5.3 | 10.0 | 19.35 | 33.0 | -13.6 | | 2535.00 | 17.81 | H | 5.3 | 10.0 | 22.58 | 33.0 | -10.4 | | High Ch | | | | | | | | | 2567.50 | 14.15 | V | 5.3 | 10.0 | 18.84 | 33.0 | -14.2 | | 2567.50 | 17.54 | H | 5.3 | 10.0 | 22.23 | 33.0 | -10.8 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2502.50 | 15.25 | V | 5.2 | 10.1 | 20.09 | 33.0 | -12.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2502.50 | 18.01 | H | 5.2 | 10.1 | 22.85 | 33.0 | -10.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2535.00 | 14.59 | V | 5.3 | 10.0 | 19.35 | 33.0 | -13.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2535.00 | 17.81 | H | 5.3 | 10.0 | 22.58 | 33.0 | -10.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2567.50 | 14.15 | V | 5.3 | 10.0 | 18.84 | 33.0 | -14.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2567.50 | 17.54 | H | 5.3 | 10.0 | 22.23 | 33.0 | -10.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE Band 7 5MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-14 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 7 Fundamentals, 5MHz Bandwidth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>2502.50</td> <td>12.94</td> <td>V</td> <td>5.2</td> <td>10.1</td> <td>17.78</td> <td>33.0</td> <td>-15.2</td> <td></td> </tr> <tr> <td>2502.50</td> <td>15.87</td> <td>H</td> <td>5.2</td> <td>10.1</td> <td>20.71</td> <td>33.0</td> <td>-12.3</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>2535.00</td> <td>12.29</td> <td>V</td> <td>5.3</td> <td>10.0</td> <td>17.05</td> <td>33.0</td> <td>-15.9</td> <td></td> </tr> <tr> <td>2535.00</td> <td>15.46</td> <td>H</td> <td>5.3</td> <td>10.0</td> <td>20.23</td> <td>33.0</td> <td>-12.8</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>2567.50</td> <td>12.11</td> <td>V</td> <td>5.3</td> <td>10.0</td> <td>16.80</td> <td>33.0</td> <td>-16.2</td> <td></td> </tr> <tr> <td>2567.50</td> <td>15.53</td> <td>H</td> <td>5.3</td> <td>10.0</td> <td>20.22</td> <td>33.0</td> <td>-12.8</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 2502.50 | 12.94 | V | 5.2 | 10.1 | 17.78 | 33.0 | -15.2 | | 2502.50 | 15.87 | H | 5.2 | 10.1 | 20.71 | 33.0 | -12.3 | | Mid Ch | | | | | | | | | 2535.00 | 12.29 | V | 5.3 | 10.0 | 17.05 | 33.0 | -15.9 | | 2535.00 | 15.46 | H | 5.3 | 10.0 | 20.23 | 33.0 | -12.8 | | High Ch | | | | | | | | | 2567.50 | 12.11 | V | 5.3 | 10.0 | 16.80 | 33.0 | -16.2 | | 2567.50 | 15.53 | H | 5.3 | 10.0 | 20.22 | 33.0 | -12.8 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2502.50 | 12.94 | V | 5.2 | 10.1 | 17.78 | 33.0 | -15.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2502.50 | 15.87 | H | 5.2 | 10.1 | 20.71 | 33.0 | -12.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2535.00 | 12.29 | V | 5.3 | 10.0 | 17.05 | 33.0 | -15.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2535.00 | 15.46 | H | 5.3 | 10.0 | 20.23 | 33.0 | -12.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2567.50 | 12.11 | V | 5.3 | 10.0 | 16.80 | 33.0 | -16.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2567.50 | 15.53 | H | 5.3 | 10.0 | 20.22 | 33.0 | -12.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

LTE Band 12

| LTE Band 12 10MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|----------------------------------|--|------------------|-----------------|-----------------|--------------------|-----------|-------------|------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-17 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 704.00 | 11.77 | V | 2.8 | -1.6 | 7.39 | 34.8 | -27.4 | |
| | 704.00 | 19.72 | H | 2.8 | -1.6 | 15.33 | 34.8 | -19.5 | |
| | Mid Ch | | | | | | | | |
| | 707.50 | 12.04 | V | 2.8 | -1.6 | 7.66 | 34.8 | -27.1 | |
| | 707.50 | 20.61 | H | 2.8 | -1.6 | 16.23 | 34.8 | -18.6 | |
| High Ch | | | | | | | | | |
| 711.00 | 12.44 | V | 2.8 | -1.6 | 8.04 | 34.8 | -26.8 | | |
| 711.00 | 20.27 | H | 2.8 | -1.6 | 15.87 | 34.8 | -18.9 | | |
| LTE Band 12 10MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-17 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 704.00 | 9.19 | V | 2.8 | -1.6 | 4.81 | 34.8 | -30.0 | |
| | 704.00 | 17.69 | H | 2.8 | -1.6 | 13.30 | 34.8 | -21.5 | |
| | Mid Ch | | | | | | | | |
| | 707.50 | 11.24 | V | 2.8 | -1.6 | 6.86 | 34.8 | -27.9 | |
| | 707.50 | 18.10 | H | 2.8 | -1.6 | 13.72 | 34.8 | -21.1 | |
| High Ch | | | | | | | | | |
| 711.00 | 10.07 | V | 2.8 | -1.6 | 5.67 | 34.8 | -29.1 | | |
| 711.00 | 18.03 | H | 2.8 | -1.6 | 13.63 | 34.8 | -21.2 | | |

| LTE Band 12 5MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
|---------------------------------|--|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|---------------|-------|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-17 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 701.50 | 11.40 | V | 2.8 | -1.6 | 7.02 | 34.8 | -27.8 | |
| | 701.50 | 19.65 | H | 2.8 | -1.6 | 15.27 | 34.8 | -19.5 | |
| | Mid Ch | | | | | | | | |
| | 707.50 | 12.23 | V | 2.8 | -1.6 | 7.85 | 34.8 | -27.0 | |
| | 707.50 | 20.33 | H | 2.8 | -1.6 | 15.95 | 34.8 | -18.9 | |
| High Ch | | | | | | | | | |
| 713.50 | 12.86 | V | 2.8 | -1.6 | 8.46 | 34.8 | -26.3 | | |
| 713.50 | 20.40 | H | 2.8 | -1.6 | 16.01 | 34.8 | -18.8 | | |
| LTE Band 12 5MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-17 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 701.50 | 9.24 | V | 2.8 | -1.6 | 4.86 | 34.8 | -29.9 | |
| | 701.50 | 17.97 | H | 2.8 | -1.6 | 13.59 | 34.8 | -21.2 | |
| | Mid Ch | | | | | | | | |
| | 707.50 | 10.06 | V | 2.8 | -1.6 | 5.68 | 34.8 | -29.1 | |
| | 707.50 | 17.89 | H | 2.8 | -1.6 | 13.51 | 34.8 | -21.3 | |
| High Ch | | | | | | | | | |
| 713.50 | 9.92 | V | 2.8 | -1.6 | 5.52 | 34.8 | -29.3 | | |
| 713.50 | 18.42 | H | 2.8 | -1.6 | 14.03 | 34.8 | -20.8 | | |

| LTE Band 12 3MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|--|------------------|-----------------|-----------------|--------------------|-----------|-------------|------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-17 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 700.50 | 10.85 | V | 2.8 | -1.6 | 6.47 | 34.8 | -28.3 | | |
| | 700.50 | 19.73 | H | 2.8 | -1.6 | 15.35 | 34.8 | -19.5 | | |
| | Mid Ch | | | | | | | | | |
| | 707.50 | 11.62 | V | 2.8 | -1.6 | 7.24 | 34.8 | -27.6 | | |
| | 707.50 | 20.24 | H | 2.8 | -1.6 | 15.86 | 34.8 | -18.9 | | |
| High Ch | | | | | | | | | | |
| 714.50 | 12.30 | V | 2.8 | -1.6 | 7.90 | 34.8 | -26.9 | | | |
| 714.50 | 20.49 | H | 2.8 | -1.6 | 16.09 | 34.8 | -18.7 | | | |
| LTE Band 12 3MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-17 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 700.50 | 8.76 | V | 2.8 | -1.6 | 4.38 | 34.8 | -30.4 | | |
| | 700.50 | 17.26 | H | 2.8 | -1.6 | 12.88 | 34.8 | -21.9 | | |
| | Mid Ch | | | | | | | | | |
| | 707.50 | 10.24 | V | 2.8 | -1.6 | 5.86 | 34.8 | -28.9 | | |
| | 707.50 | 18.40 | H | 2.8 | -1.6 | 14.02 | 34.8 | -20.8 | | |
| High Ch | | | | | | | | | | |
| 714.50 | 10.08 | V | 2.8 | -1.6 | 5.68 | 34.8 | -29.1 | | | |
| 714.50 | 18.34 | H | 2.8 | -1.6 | 13.94 | 34.8 | -20.9 | | | |

| LTE Band 12 1.4MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|-----------------------------------|---|------------------|-----------------|-----------------|--------------------|-----------|-------------|------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-17 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 699.70 | 11.63 | V | 2.8 | -1.6 | 7.25 | 34.8 | -27.6 | | |
| | 699.70 | 19.52 | H | 2.8 | -1.6 | 15.15 | 34.8 | -19.7 | | |
| | Mid Ch | | | | | | | | | |
| | 707.50 | 11.99 | V | 2.8 | -1.6 | 7.61 | 34.8 | -27.2 | | |
| | 707.50 | 20.18 | H | 2.8 | -1.6 | 15.80 | 34.8 | -19.0 | | |
| High Ch | | | | | | | | | | |
| 715.30 | 13.08 | V | 2.8 | -1.6 | 8.68 | 34.8 | -26.1 | | | |
| 715.30 | 20.63 | H | 2.8 | -1.6 | 16.23 | 34.8 | -18.6 | | | |
| LTE Band 12 1.4MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-17 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 699.70 | 9.46 | V | 2.8 | -1.6 | 5.08 | 34.8 | -29.7 | | |
| | 699.70 | 17.17 | H | 2.8 | -1.6 | 12.80 | 34.8 | -22.0 | | |
| | Mid Ch | | | | | | | | | |
| | 707.50 | 10.10 | V | 2.8 | -1.6 | 5.72 | 34.8 | -29.1 | | |
| | 707.50 | 18.01 | H | 2.8 | -1.6 | 13.63 | 34.8 | -21.2 | | |
| High Ch | | | | | | | | | | |
| 715.30 | 10.28 | V | 2.8 | -1.6 | 5.88 | 34.8 | -28.9 | | | |
| 715.30 | 18.34 | H | 2.8 | -1.6 | 13.94 | 34.8 | -20.9 | | | |

LTE Band 13

| LTE Band 13 10MHz QPSK | <p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p> Company: Samsung Project #: 4788725460 Date: 2018-11-20 Test Engineer: 45585 Configuration: EUT Location: Chamber 2 Mode: LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth </p> <p> Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>782.00</td> <td>23.21</td> <td>V</td> <td>2.9</td> <td>-1.6</td> <td>18.71</td> <td>34.8</td> <td>-16.1</td> <td></td> </tr> <tr> <td>782.00</td> <td>10.30</td> <td>H</td> <td>2.9</td> <td>-1.6</td> <td>5.80</td> <td>34.8</td> <td>-29.0</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | Mid Ch | | | | | | | | | 782.00 | 23.21 | V | 2.9 | -1.6 | 18.71 | 34.8 | -16.1 | | 782.00 | 10.30 | H | 2.9 | -1.6 | 5.80 | 34.8 | -29.0 | |
|----------------------------------|---|---------------------|---------------------|-----------------------|-----------------------|-----------------------|----------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|------|-------|------|-------|--|--------|-------|---|-----|------|------|------|-------|--|
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 782.00 | 23.21 | V | 2.9 | -1.6 | 18.71 | 34.8 | -16.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 782.00 | 10.30 | H | 2.9 | -1.6 | 5.80 | 34.8 | -29.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE Band 13 10MHz 16QAM | <p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p> Company: Samsung Project #: 4788725460 Date: 2018-11-20 Test Engineer: 45585 Configuration: EUT Location: Chamber 2 Mode: LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth </p> <p> Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>782.00</td> <td>21.00</td> <td>V</td> <td>2.9</td> <td>-1.6</td> <td>16.50</td> <td>34.8</td> <td>-18.3</td> <td></td> </tr> <tr> <td>782.00</td> <td>8.40</td> <td>H</td> <td>2.9</td> <td>-1.6</td> <td>3.90</td> <td>34.8</td> <td>-30.9</td> <td></td> </tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | Mid Ch | | | | | | | | | 782.00 | 21.00 | V | 2.9 | -1.6 | 16.50 | 34.8 | -18.3 | | 782.00 | 8.40 | H | 2.9 | -1.6 | 3.90 | 34.8 | -30.9 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 782.00 | 21.00 | V | 2.9 | -1.6 | 16.50 | 34.8 | -18.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 782.00 | 8.40 | H | 2.9 | -1.6 | 3.90 | 34.8 | -30.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| LTE Band 13 5MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|--|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-20 Test Engineer: 45585 Configuration: EUT Location: Chamber 2 Mode: LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 779.50 | 24.11 | V | 2.9 | -1.6 | 19.61 | 34.8 | -15.2 | | |
| | 779.50 | 10.49 | H | 2.9 | -1.6 | 5.99 | 34.8 | -28.8 | | |
| | Mid Ch | | | | | | | | | |
| | 782.00 | 23.34 | V | 2.9 | -1.6 | 18.84 | 34.8 | -15.9 | | |
| | 782.00 | 10.36 | H | 2.9 | -1.6 | 5.86 | 34.8 | -28.9 | | |
| High Ch | | | | | | | | | | |
| 784.50 | 14.97 | V | 2.9 | -1.6 | 10.47 | 34.8 | -24.3 | | | |
| 784.50 | 10.50 | H | 2.9 | -1.6 | 5.99 | 34.8 | -28.8 | | | |
| LTE Band 13 5MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-20 Test Engineer: 45585 Configuration: EUT Location: Chamber 2 Mode: LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 779.50 | 22.13 | V | 2.9 | -1.6 | 17.63 | 34.8 | -17.1 | | |
| | 779.50 | 8.70 | H | 2.9 | -1.6 | 4.20 | 34.8 | -30.6 | | |
| | Mid Ch | | | | | | | | | |
| | 782.00 | 21.05 | V | 2.9 | -1.6 | 16.55 | 34.8 | -18.2 | | |
| | 782.00 | 8.75 | H | 2.9 | -1.6 | 4.25 | 34.8 | -30.5 | | |
| High Ch | | | | | | | | | | |
| 784.50 | 21.56 | V | 2.9 | -1.6 | 17.06 | 34.8 | -17.7 | | | |
| 784.50 | 8.94 | H | 2.9 | -1.6 | 4.43 | 34.8 | -30.3 | | | |

LTE Band 25

| LTE Band 25 20MHz QPSK | <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 25 Fundamentals, 20MHz Bandwidth</p> <p><u>Test Equipment:</u> Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>1860.00</td><td>15.00</td><td>V</td><td>4.5</td><td>9.3</td><td>19.84</td><td>33.0</td><td>-13.2</td><td></td></tr> <tr><td>1860.00</td><td>8.45</td><td>H</td><td>4.5</td><td>9.3</td><td>13.29</td><td>33.0</td><td>-19.7</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>1882.50</td><td>17.22</td><td>V</td><td>4.5</td><td>9.2</td><td>21.87</td><td>33.0</td><td>-11.1</td><td></td></tr> <tr><td>1882.50</td><td>10.27</td><td>H</td><td>4.5</td><td>9.2</td><td>14.91</td><td>33.0</td><td>-18.1</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>1905.00</td><td>17.20</td><td>V</td><td>4.6</td><td>9.0</td><td>21.62</td><td>33.0</td><td>-11.4</td><td></td></tr> <tr><td>1905.00</td><td>10.44</td><td>H</td><td>4.6</td><td>9.0</td><td>14.87</td><td>33.0</td><td>-18.1</td><td></td></tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1860.00 | 15.00 | V | 4.5 | 9.3 | 19.84 | 33.0 | -13.2 | | 1860.00 | 8.45 | H | 4.5 | 9.3 | 13.29 | 33.0 | -19.7 | | Mid Ch | | | | | | | | | 1882.50 | 17.22 | V | 4.5 | 9.2 | 21.87 | 33.0 | -11.1 | | 1882.50 | 10.27 | H | 4.5 | 9.2 | 14.91 | 33.0 | -18.1 | | High Ch | | | | | | | | | 1905.00 | 17.20 | V | 4.6 | 9.0 | 21.62 | 33.0 | -11.4 | | 1905.00 | 10.44 | H | 4.6 | 9.0 | 14.87 | 33.0 | -18.1 | |
|----------------------------------|--|------------------|------------------|--------------------|--------------------|--------------------|-------------|-------------|------------|-------|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|------|---|-----|-----|-------|------|-------|--|--------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|--|--|--|--|--|--|--|--|---------|-------|---|-----|-----|-------|------|-------|--|---------|-------|---|-----|-----|-------|------|-------|--|
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1860.00 | 15.00 | V | 4.5 | 9.3 | 19.84 | 33.0 | -13.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1860.00 | 8.45 | H | 4.5 | 9.3 | 13.29 | 33.0 | -19.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1882.50 | 17.22 | V | 4.5 | 9.2 | 21.87 | 33.0 | -11.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1882.50 | 10.27 | H | 4.5 | 9.2 | 14.91 | 33.0 | -18.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1905.00 | 17.20 | V | 4.6 | 9.0 | 21.62 | 33.0 | -11.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1905.00 | 10.44 | H | 4.6 | 9.0 | 14.87 | 33.0 | -18.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE Band 25 20MHz 16QAM | <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 25 Fundamentals, 20MHz Bandwidth</p> <p><u>Test Equipment:</u> Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>1860.00</td><td>13.78</td><td>V</td><td>4.5</td><td>9.3</td><td>18.62</td><td>33.0</td><td>-14.4</td><td></td></tr> <tr><td>1860.00</td><td>7.24</td><td>H</td><td>4.5</td><td>9.3</td><td>12.08</td><td>33.0</td><td>-20.9</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>1882.50</td><td>16.22</td><td>V</td><td>4.5</td><td>9.2</td><td>20.87</td><td>33.0</td><td>-12.1</td><td></td></tr> <tr><td>1882.50</td><td>9.12</td><td>H</td><td>4.5</td><td>9.2</td><td>13.76</td><td>33.0</td><td>-19.2</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>1905.00</td><td>16.13</td><td>V</td><td>4.6</td><td>9.0</td><td>20.55</td><td>33.0</td><td>-12.4</td><td></td></tr> <tr><td>1905.00</td><td>9.45</td><td>H</td><td>4.6</td><td>9.0</td><td>13.88</td><td>33.0</td><td>-19.1</td><td></td></tr> </tbody> </table> | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1860.00 | 13.78 | V | 4.5 | 9.3 | 18.62 | 33.0 | -14.4 | | 1860.00 | 7.24 | H | 4.5 | 9.3 | 12.08 | 33.0 | -20.9 | | Mid Ch | | | | | | | | | 1882.50 | 16.22 | V | 4.5 | 9.2 | 20.87 | 33.0 | -12.1 | | 1882.50 | 9.12 | H | 4.5 | 9.2 | 13.76 | 33.0 | -19.2 | | High Ch | | | | | | | | | 1905.00 | 16.13 | V | 4.6 | 9.0 | 20.55 | 33.0 | -12.4 | | 1905.00 | 9.45 | H | 4.6 | 9.0 | 13.88 | 33.0 | -19.1 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1860.00 | 13.78 | V | 4.5 | 9.3 | 18.62 | 33.0 | -14.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1860.00 | 7.24 | H | 4.5 | 9.3 | 12.08 | 33.0 | -20.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1882.50 | 16.22 | V | 4.5 | 9.2 | 20.87 | 33.0 | -12.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1882.50 | 9.12 | H | 4.5 | 9.2 | 13.76 | 33.0 | -19.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1905.00 | 16.13 | V | 4.6 | 9.0 | 20.55 | 33.0 | -12.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1905.00 | 9.45 | H | 4.6 | 9.0 | 13.88 | 33.0 | -19.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| LTE Band 25 15MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|----------------------------------|--|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 25 Fundamentals, 15MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1857.50 | 14.66 | V | 4.5 | 9.4 | 19.52 | 33.0 | -13.5 | | |
| | 1857.50 | 8.46 | H | 4.5 | 9.4 | 13.32 | 33.0 | -19.7 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 17.34 | V | 4.5 | 9.2 | 21.99 | 33.0 | -11.0 | | |
| | 1882.50 | 9.38 | H | 4.5 | 9.2 | 14.02 | 33.0 | -19.0 | | |
| High Ch | | | | | | | | | | |
| 1907.50 | 16.60 | V | 4.6 | 9.0 | 20.99 | 33.0 | -12.0 | | | |
| 1907.50 | 9.08 | H | 4.6 | 9.0 | 13.47 | 33.0 | -19.5 | | | |
| LTE Band 25 15MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 25 Fundamentals, 15MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1857.50 | 14.06 | V | 4.5 | 9.4 | 18.92 | 33.0 | -14.1 | | |
| | 1857.50 | 6.88 | H | 4.5 | 9.4 | 11.74 | 33.0 | -21.3 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 16.25 | V | 4.5 | 9.2 | 20.90 | 33.0 | -12.1 | | |
| | 1882.50 | 8.52 | H | 4.5 | 9.2 | 13.16 | 33.0 | -19.8 | | |
| High Ch | | | | | | | | | | |
| 1907.50 | 15.51 | V | 4.6 | 9.0 | 19.90 | 33.0 | -13.1 | | | |
| 1907.50 | 8.81 | H | 4.6 | 9.0 | 13.20 | 33.0 | -19.8 | | | |

| LTE Band 25 10MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|----------------------------------|---|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 25 Fundamentals, 10MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1855.00 | 14.54 | V | 4.5 | 9.4 | 19.42 | 33.0 | -13.6 | | |
| | 1855.00 | 7.54 | H | 4.5 | 9.4 | 12.42 | 33.0 | -20.6 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 17.29 | V | 4.5 | 9.2 | 21.94 | 33.0 | -11.1 | | |
| | 1882.50 | 9.45 | H | 4.5 | 9.2 | 14.09 | 33.0 | -18.9 | | |
| High Ch | | | | | | | | | | |
| 1910.00 | 16.44 | V | 4.6 | 8.9 | 20.79 | 33.0 | -12.2 | | | |
| 1910.00 | 9.19 | H | 4.6 | 8.9 | 13.54 | 33.0 | -19.5 | | | |
| LTE Band 25 10MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 25 Fundamentals, 10MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1855.00 | 13.77 | V | 4.5 | 9.4 | 18.65 | 33.0 | -14.4 | | |
| | 1855.00 | 6.42 | H | 4.5 | 9.4 | 11.30 | 33.0 | -21.7 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 16.28 | V | 4.5 | 9.2 | 20.93 | 33.0 | -12.1 | | |
| | 1882.50 | 8.41 | H | 4.5 | 9.2 | 13.05 | 33.0 | -19.9 | | |
| High Ch | | | | | | | | | | |
| 1910.00 | 15.22 | V | 4.6 | 8.9 | 19.57 | 33.0 | -13.4 | | | |
| 1910.00 | 7.89 | H | 4.6 | 8.9 | 12.24 | 33.0 | -20.8 | | | |

| LTE Band 25 5MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|---|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 25 Fundamentals, 5MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1852.50 | 14.46 | V | 4.5 | 9.4 | 19.36 | 33.0 | -13.6 | | |
| | 1852.50 | 8.41 | H | 4.5 | 9.4 | 13.31 | 33.0 | -19.7 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 17.07 | V | 4.5 | 9.2 | 21.72 | 33.0 | -11.3 | | |
| | 1882.50 | 9.92 | H | 4.5 | 9.2 | 14.56 | 33.0 | -18.4 | | |
| High Ch | | | | | | | | | | |
| 1912.50 | 16.06 | V | 4.6 | 8.9 | 20.38 | 33.0 | -12.6 | | | |
| 1912.50 | 8.77 | H | 4.6 | 8.9 | 13.09 | 33.0 | -19.9 | | | |
| LTE Band 25 5MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 25 Fundamentals, 5MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1852.50 | 12.95 | V | 4.5 | 9.4 | 17.85 | 33.0 | -15.2 | | |
| | 1852.50 | 6.11 | H | 4.5 | 9.4 | 11.01 | 33.0 | -22.0 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 16.03 | V | 4.5 | 9.2 | 20.68 | 33.0 | -12.3 | | |
| | 1882.50 | 8.72 | H | 4.5 | 9.2 | 13.36 | 33.0 | -19.6 | | |
| High Ch | | | | | | | | | | |
| 1912.50 | 14.96 | V | 4.6 | 8.9 | 19.28 | 33.0 | -13.7 | | | |
| 1912.50 | 8.25 | H | 4.6 | 8.9 | 12.57 | 33.0 | -20.4 | | | |

| LTE Band 25 3MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|---------------------------------|---|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 25 Fundamentals, 3MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1851.50 | 14.21 | V | 4.5 | 9.4 | 19.12 | 33.0 | -13.9 | | |
| | 1851.50 | 7.78 | H | 4.5 | 9.4 | 12.69 | 33.0 | -20.3 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 17.42 | V | 4.5 | 9.2 | 22.07 | 33.0 | -10.9 | | |
| | 1882.50 | 9.57 | H | 4.5 | 9.2 | 14.21 | 33.0 | -18.8 | | |
| High Ch | | | | | | | | | | |
| 1913.50 | 16.30 | V | 4.6 | 8.9 | 20.61 | 33.0 | -12.4 | | | |
| 1913.50 | 8.72 | H | 4.6 | 8.9 | 13.03 | 33.0 | -20.0 | | | |
| LTE Band 25 3MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 25 Fundamentals, 3MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1851.50 | 13.52 | V | 4.5 | 9.4 | 18.43 | 33.0 | -14.6 | | |
| | 1851.50 | 7.21 | H | 4.5 | 9.4 | 12.12 | 33.0 | -20.9 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 16.24 | V | 4.5 | 9.2 | 20.89 | 33.0 | -12.1 | | |
| | 1882.50 | 8.47 | H | 4.5 | 9.2 | 13.11 | 33.0 | -19.9 | | |
| High Ch | | | | | | | | | | |
| 1913.50 | 15.17 | V | 4.6 | 8.9 | 19.48 | 33.0 | -13.5 | | | |
| 1913.50 | 7.73 | H | 4.6 | 8.9 | 12.04 | 33.0 | -21.0 | | | |

| LTE Band 25 1.4MHz QPSK | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
|-----------------------------------|---|------------------|-----------------|-----------------|--------------------|------------|-------------|------------|-------|--|
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 25 Fundamentals, 1.4MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1850.70 | 14.21 | V | 4.5 | 9.4 | 19.13 | 33.0 | -13.9 | | |
| | 1850.70 | 7.92 | H | 4.5 | 9.4 | 12.84 | 33.0 | -20.2 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 17.20 | V | 4.5 | 9.2 | 21.85 | 33.0 | -11.2 | | |
| | 1882.50 | 8.66 | H | 4.5 | 9.2 | 13.30 | 33.0 | -19.7 | | |
| High Ch | | | | | | | | | | |
| 1914.30 | 16.25 | V | 4.6 | 8.9 | 20.55 | 33.0 | -12.5 | | | |
| 1914.30 | 9.44 | H | 4.6 | 8.9 | 13.74 | 33.0 | -19.3 | | | |
| LTE Band 25 1.4MHz 16QAM | UL Verification Services, Inc. High Frequency Substitution Measurement | | | | | | | | | |
| | Company: Samsung Project #: 4788725460 Date: 2018-11-13 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 25 Fundamentals, 1.4MHz Bandwidth | | | | | | | | | |
| | Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 2.5m SMA-type Cable | | | | | | | | | |
| | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | |
| | Low Ch | | | | | | | | | |
| | 1850.70 | 13.16 | V | 4.5 | 9.4 | 18.08 | 33.0 | -14.9 | | |
| | 1850.70 | 6.48 | H | 4.5 | 9.4 | 11.40 | 33.0 | -21.6 | | |
| | Mid Ch | | | | | | | | | |
| | 1882.50 | 15.62 | V | 4.5 | 9.2 | 20.27 | 33.0 | -12.7 | | |
| | 1882.50 | 8.73 | H | 4.5 | 9.2 | 13.37 | 33.0 | -19.6 | | |
| High Ch | | | | | | | | | | |
| 1914.30 | 15.07 | V | 4.6 | 8.9 | 19.37 | 33.0 | -13.6 | | | |
| 1914.30 | 8.27 | H | 4.6 | 8.9 | 12.57 | 33.0 | -20.4 | | | |