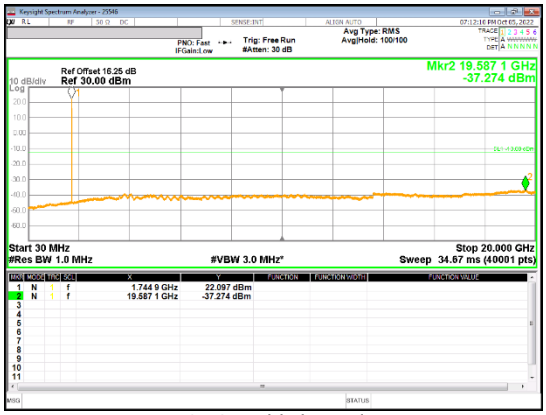
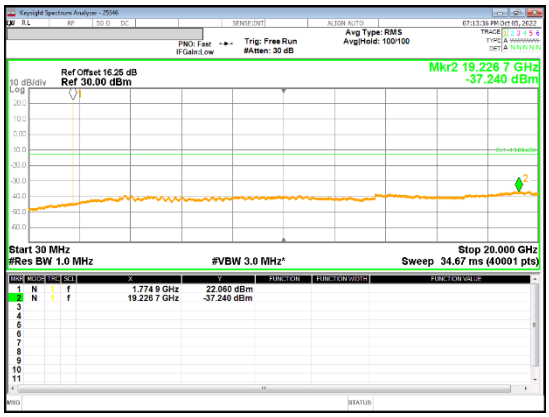
**LTE Band 66**

| | | |
|---|---|---|
| 10 MHz | <br>QPSK Low channel |  <br>QPSK Mid channel |
| |  <br>QPSK High channel | |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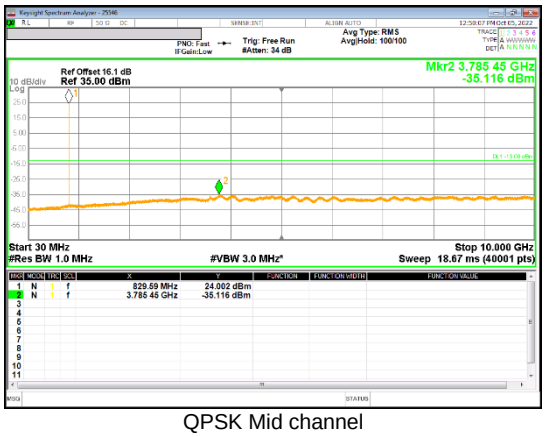
**NR Band n5**

| | | |
|---|---|---|
| 15 MHz | <br>QPSK Low channel |  <br>QPSK Mid channel |
| | <br>QPSK High channel | |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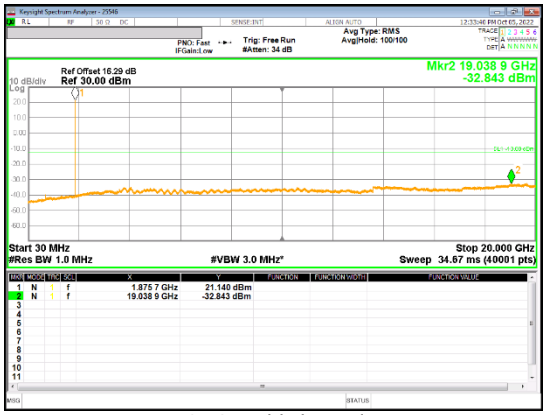
**NR Band n25**

| | | |
|---|---|---|
| 15 MHz | <br>QPSK Low channel |  <br>QPSK Mid channel |
| | <br>QPSK High channel | |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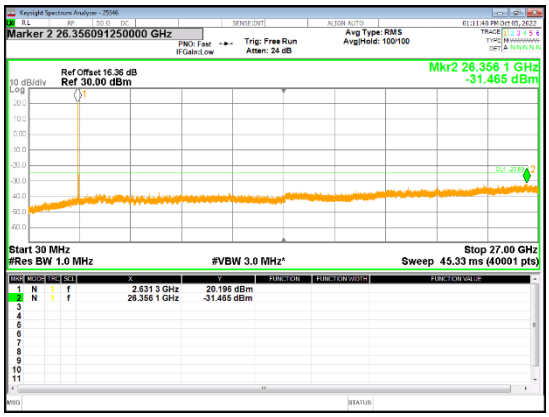
**NR Band n41**

| | | |
|---|---|---|
| 40 MHz | <br>QPSK Low channel | <br>QPSK Mid channel |
| |  <br>QPSK High channel | |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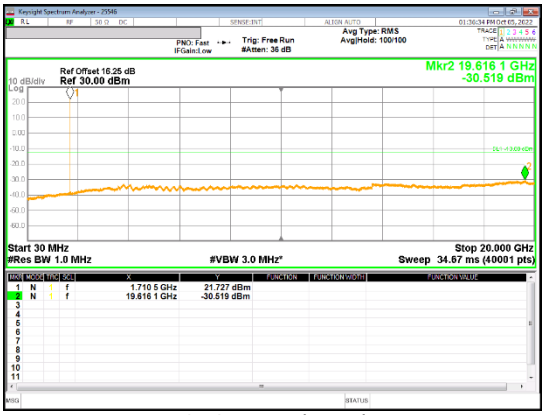
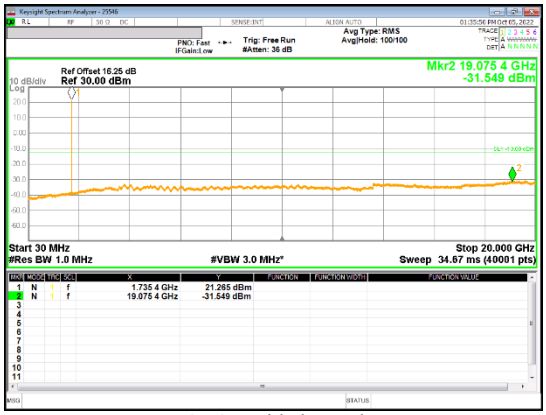
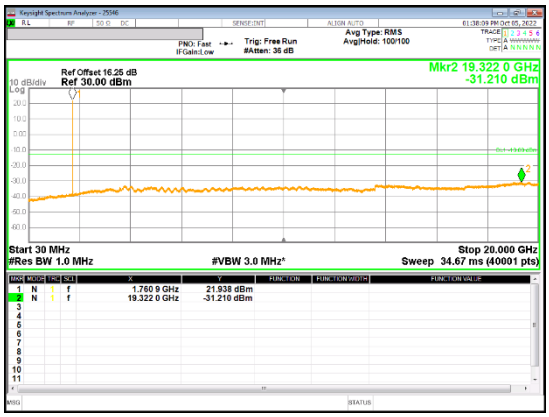
**NR Band n66**

| | | |
|---|---|---|
| 20 MHz |  <br>QPSK Low channel |  <br>QPSK Mid channel |
| |  <br>QPSK High channel | |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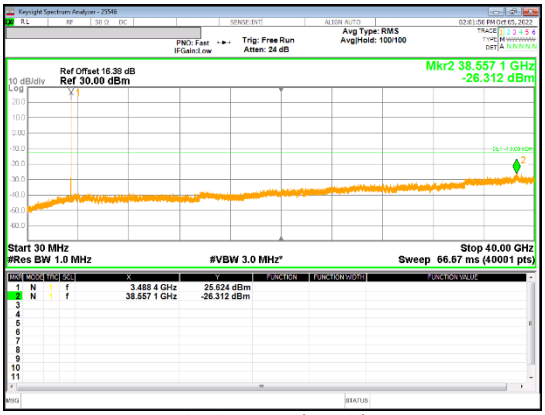
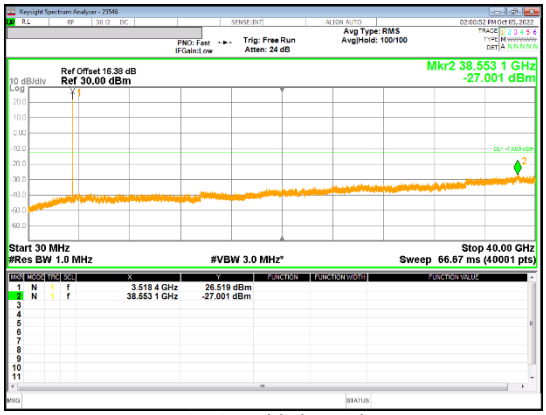
**NR Band n77 (3450 – 3550 MHz)**

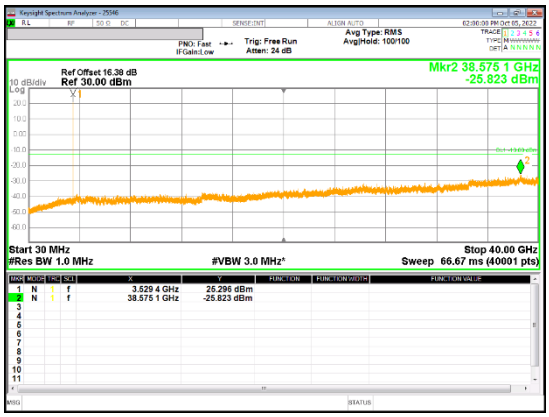
40MHz




QPSK Low channel




QPSK Mid channel




QPSK High channel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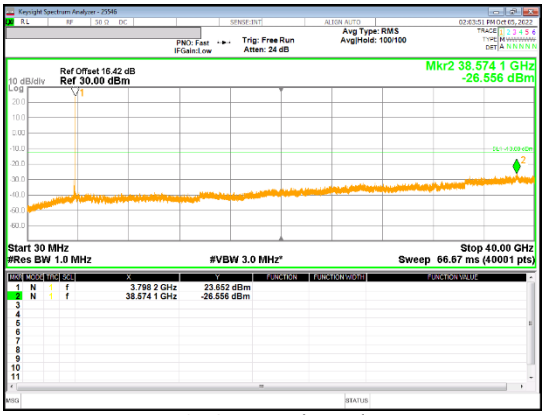
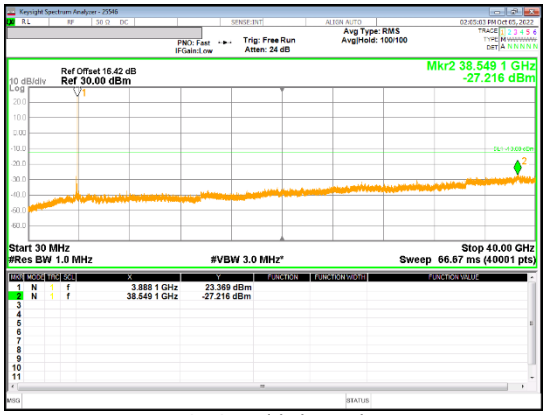
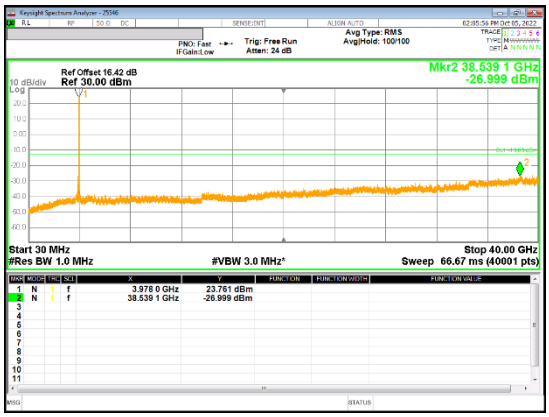
**NR Band n77 (3700 – 3980 MHz)**

| | | |
|---|---|---|
| 100MHz |  <br>QPSK Low channel |  <br>QPSK Mid channel |
| |  <br>QPSK High channel | |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## 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)


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## 9.4.1. FREQUENCY STABILITY RESULTS

### GSM 850, Channel 128/251, Frequency 824.2/848.8 MHz

| | |
|---|---|
| Test Date | 2022-09-01 |
| Test Engineer | 25546 |

| Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20ºC | | | | | | |
|---|---|---|---|---|---|---|
| Limit: +- 2.5 ppm = | Low Channel | 2060.500 | Hz | High Channel | 2122.000 | Hz |
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | |
| | | Low Channel | | High Channel | | Limit [ppm] |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| 3.88 | 50 | 824.20004023 | 0.002 | 848.80003845 | 0.003 | 2.5 |
| 3.88 | 40 | 824.20003926 | 0.003 | 848.80003532 | 0.006 | 2.5 |
| 3.88 | 30 | 824.20004136 | 0.001 | 848.80004512 | -0.005 | 2.5 |
| ***3.88*** | ***20*** | ***824.20004208*** | ***0.000*** | ***848.80004081*** | ***0.000*** | ***2.5*** |
| 3.88 | 10 | 824.20003468 | 0.009 | 848.80003741 | 0.004 | 2.5 |
| 3.88 | 0 | 824.20004233 | 0.000 | 848.80004029 | 0.001 | 2.5 |
| 3.88 | -10 | 824.20003842 | 0.004 | 848.80003924 | 0.002 | 2.5 |
| 3.88 | -20 | 824.20004152 | 0.001 | 848.80004298 | -0.003 | 2.5 |
| *3.88* | -30 | 824.20003865 | 0.004 | 848.80003625 | 0.005 | 2.5 |

| Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20ºC | | | | | | |
|---|---|---|---|---|---|---|
| Limit: +- 2.5 ppm = | Low Channel | 2060.500 | Hz | High Channel | 2122.000 | Hz |
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | |
| | | Low Channel | | High Channel | | Limit [ppm] |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| ***3.88*** | ***20*** | **824.20004208** | ***0*** | **848.80004081** | ***0*** | ***2.5*** |
| 4.40 | 20 | 824.20003990 | 0.003 | 848.80003893 | 0.002 | 2.5 |
| 3.70 | 20 | 824.20004249 | 0.000 | 848.80004300 | -0.003 | 2.5 |

### GSM 1900, Channel 512/810, Frequency 1850.0/1910.0 MHz (Lowest Frequency:GPRS / Highest Frequency: EGPRS)

| | |
|---|---|
| Test Date | 2022-09-01 |
| Test Engineer | 25546 |

| 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 | 1850.0778 | 1909.9219 | | |
| Extreme (50C) | | 1850.0779 | 1909.9220 | 56.3 | 0.030 |
| Extreme (40C) | | 1850.0779 | 1909.9220 | 48.4 | 0.026 |
| Extreme (30C) | | 1850.0779 | 1909.9220 | 45.7 | 0.024 |
| Extreme (10C) | | 1850.0779 | 1909.9220 | 42.8 | 0.023 |
| Extreme (0C) | | 1850.0779 | 1909.9220 | 43.3 | 0.023 |
| Extreme (-10C) | | 1850.0779 | 1909.9220 | 49.4 | 0.026 |
| Extreme (-20C) | | 1850.0779 | 1909.9220 | 51.0 | 0.027 |
| Extreme (-30C) | | 1850.0779 | 1909.9220 | 52.5 | 0.028 |
| | | | | | |
| 20C | 15% | 1850.0779 | 1909.9220 | 42.1 | 0.022 |
| | -15% | 1850.0779 | 1909.9220 | 49.1 | 0.026 |
| | End Point | 1850.0779 | 1909.9220 | 55.8 | 0.030 |


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## WCDMA Band 5

| | |
|---|---|
| Test Date | 2022-09-05 |
| Test Engineer | 25546 |

| Limit: +- 2.5 ppm = | Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20ºC<br>Low Channel 2066.000 Hz | | | High Channel 2116.500 Hz | | |
|---|---|---|---|---|---|---|
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | Limit [ppm] |
| | | Low Channel | | High Channel | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| 3.88 | 50 | 826.40002342 | -0.005 | 846.60001538 | 0.010 | 2.5 |
| 3.88 | 40 | 826.40001765 | 0.002 | 846.60001873 | 0.006 | 2.5 |
| 3.88 | 30 | 826.40001964 | 0.000 | 846.60002143 | 0.003 | 2.5 |
| ***3.88*** | ***20*** | ***826.40001948*** | ***0.000*** | ***846.60002381*** | ***0.000*** | ***2.5*** |
| 3.88 | 10 | 826.40002321 | -0.005 | 846.60002116 | 0.003 | 2.5 |
| 3.88 | 0 | 826.40001746 | 0.002 | 846.60001643 | 0.009 | 2.5 |
| 3.88 | -10 | 826.40001954 | 0.000 | 846.60002295 | 0.001 | 2.5 |
| 3.88 | -20 | 826.40002012 | -0.001 | 846.60002342 | 0.000 | 2.5 |
| 3.88 | -30 | 826.40001965 | 0.000 | 846.60002069 | 0.004 | 2.5 |

| Limit: +- 2.5 ppm = | Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20ºC<br>Low Channel 2066.000 Hz | | | High Channel 2116.500 Hz | | |
|---|---|---|---|---|---|---|
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | Limit [ppm] |
| | | Low Channel | | High Channel | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| ***3.88*** | ***20*** | **826.40001948** | ***0*** | **846.60002381** | ***0*** | ***2.5*** |
| 4.40 | 20 | 826.40000919 | 0.012 | 846.60000511 | 0.022 | 2.5 |
| 3.70 | 20 | 826.40001050 | 0.011 | 846.60000543 | 0.022 | 2.5 |

## WCDMA Band 4 (Lowest Frequency: HSDPA/ Highest Frequency: HSDPA)

| | |
|---|---|
| Test Date | 2022-09-02 |
| Test Engineer | 25546 |

| 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 | 1710.3209 | 1754.6817 | | |
| Extreme (50C) | | 1710.3209 | 1754.6817 | 32.5 | 0.019 |
| Extreme (40C) | | 1710.3209 | 1754.6817 | 30.3 | 0.017 |
| Extreme (30C) | | 1710.3209 | 1754.6817 | 29.5 | 0.017 |
| Extreme (10C) | | 1710.3209 | 1754.6817 | 33.5 | 0.019 |
| Extreme (0C) | | 1710.3209 | 1754.6817 | 35.8 | 0.021 |
| Extreme (-10C) | | 1710.3209 | 1754.6817 | 29.6 | 0.017 |
| Extreme (-20C) | | 1710.3209 | 1754.6817 | 32.2 | 0.019 |
| Extreme (-30C) | | 1710.3209 | 1754.6817 | 33.5 | 0.019 |
| | | | | | |
| 20C | 15% | 1710.3209 | 1754.6817 | 21.9 | 0.013 |
| | -15% | 1710.3209 | 1754.6817 | 20.9 | 0.012 |
| | End Point | 1710.3209 | 1754.6817 | 22.5 | 0.013 |


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## WCDMA Band 2 (Lowest Frequency: HSDPA / Highest Frequency: Rel99)

| | |
|---|---|
| Test Date | 2022-09-02 |
| Test Engineer | 25546 |

| 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 | 1850.3219 | 1909.6705 | | |
| Extreme (50C) | | 1850.3219 | 1909.6705 | 30.3 | 0.016 |
| Extreme (40C) | | 1850.3219 | 1909.6705 | 35.5 | 0.019 |
| Extreme (30C) | | 1850.3219 | 1909.6705 | 29.5 | 0.016 |
| Extreme (10C) | | 1850.3219 | 1909.6705 | 25.7 | 0.014 |
| Extreme (0C) | | 1850.3219 | 1909.6705 | 31.9 | 0.017 |
| Extreme (-10C) | | 1850.3219 | 1909.6705 | 33.4 | 0.018 |
| Extreme (-20C) | | 1850.3219 | 1909.6705 | 32.4 | 0.017 |
| Extreme (-30C) | | 1850.3219 | 1909.6705 | 27.7 | 0.015 |
| | | | | | |
| 20C | 15% | 1850.3219 | 1909.6705 | 15.1 | 0.008 |
| | -15% | 1850.3219 | 1909.6705 | 21.5 | 0.011 |
| | End Point | 1850.3219 | 1909.6705 | 24.5 | 0.013 |

## LTE Band 5

| | |
|---|---|
| Test Date | 2022-09-05 |
| Test Engineer | 25546 |

| Limit: +- 2.5 ppm = | Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20ºC<br>Low Channel 2061.750 Hz High Channel 2120.750 Hz | | | | | |
|---|---|---|---|---|---|---|
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | Limit [ppm] |
| | | Low Channel | | High Channel | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| 3.88 | 50 | 824.70002069 | 0.001 | 848.30002169 | 0.003 | 2.5 |
| 3.88 | 40 | 824.70003522 | -0.017 | 848.30002115 | 0.003 | 2.5 |
| 3.88 | 30 | 824.70003591 | -0.017 | 848.30002505 | -0.001 | 2.5 |
| ***3.88*** | ***20*** | ***824.70002154*** | ***0.000*** | ***848.30002410*** | ***0.000*** | ***2.5*** |
| 3.88 | 10 | 824.70001928 | 0.003 | 848.30002907 | -0.006 | 2.5 |
| 3.88 | 0 | 824.70003452 | -0.016 | 848.30002997 | -0.007 | 2.5 |
| 3.88 | -10 | 824.70003207 | -0.013 | 848.30002588 | -0.002 | 2.5 |
| 3.88 | -20 | 824.70001806 | 0.004 | 848.30001954 | 0.005 | 2.5 |
| 3.88 | -30 | 824.70001760 | 0.005 | 848.30002211 | 0.002 | 2.5 |

| Limit: +- 2.5 ppm = | Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20ºC<br>Low Channel 2061.750 Hz High Channel 2120.750 Hz | | | | | |
|---|---|---|---|---|---|---|
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | Limit [ppm] |
| | | Low Channel | | High Channel | | |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| ***3.88*** | ***20*** | **824.70001680** | ***0*** | **848.30000845** | ***0*** | ***2.5*** |
| 4.40 | 20 | 824.70001061 | 0.008 | 848.30002839 | -0.024 | 2.5 |
| 3.70 | 20 | 824.70002649 | -0.012 | #VALUE! | #VALUE! | 2.5 |


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**LTE Band 12 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)**

| | |
|---|---|
| Test Date | 2022-09-06 |
| Test Engineer | 25546 |

| 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 | 699.1548 | 715.8457 | | |
| Extreme (50C) | | 699.1548 | 715.8457 | 23.3 | 0.033 |
| Extreme (40C) | | 699.1548 | 715.8457 | 25.5 | 0.036 |
| Extreme (30C) | | 699.1548 | 715.8457 | 22.2 | 0.031 |
| Extreme (10C) | | 699.1548 | 715.8457 | 19.6 | 0.028 |
| Extreme (0C) | | 699.1548 | 715.8457 | 22.8 | 0.032 |
| Extreme (-10C) | | 699.1548 | 715.8457 | 23.6 | 0.033 |
| Extreme (-20C) | | 699.1548 | 715.8457 | 21.5 | 0.030 |
| Extreme (-30C) | | 699.1548 | 715.8457 | 22.9 | 0.032 |
| | | | | | |
| 20C | 15% | 699.1548 | 715.8457 | 15.4 | 0.022 |
| | -15% | 699.1548 | 715.8457 | 20.3 | 0.029 |
| | End Point | 699.1548 | 715.8457 | 23.7 | 0.033 |

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

| | |
|---|---|
| Test Date | 2022-09-06 |
| Test Engineer | 25546 |

| 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 | 777.2550 | 786.7481 | | |
| Extreme (50C) | | 777.2550 | 786.7481 | 12.4 | 0.016 |
| Extreme (40C) | | 777.2550 | 786.7481 | 16.5 | 0.021 |
| Extreme (30C) | | 777.2550 | 786.7481 | 17.6 | 0.023 |
| Extreme (10C) | | 777.2550 | 786.7481 | 15.4 | 0.020 |
| Extreme (0C) | | 777.2550 | 786.7481 | 13.7 | 0.017 |
| Extreme (-10C) | | 777.2550 | 786.7481 | 15.5 | 0.020 |
| Extreme (-20C) | | 777.2550 | 786.7481 | 16.6 | 0.021 |
| Extreme (-30C) | | 777.2550 | 786.7481 | 18.6 | 0.024 |
| | | | | | |
| 20C | 15% | 777.2550 | 786.7481 | 6.1 | 0.008 |
| | -15% | 777.2550 | 786.7481 | 9.0 | 0.011 |
| | End Point | 777.2550 | 786.7481 | 9.8 | 0.013 |


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

| | |
|---|---|
| Test Date | 2022-09-07 |
| Test Engineer | 25546 |

| 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 | 1850.1517 | 1914.8465 | | |
| Extreme (50C) | | 1850.1517 | 1914.8465 | 35.7 | 0.019 |
| Extreme (40C) | | 1850.1517 | 1914.8465 | 38.5 | 0.020 |
| Extreme (30C) | | 1850.1517 | 1914.8465 | 32.7 | 0.017 |
| Extreme (10C) | | 1850.1517 | 1914.8465 | 33.5 | 0.018 |
| Extreme (0C) | | 1850.1517 | 1914.8465 | 30.1 | 0.016 |
| Extreme (-10C) | | 1850.1517 | 1914.8465 | 29.4 | 0.016 |
| Extreme (-20C) | | 1850.1517 | 1914.8465 | 28.9 | 0.015 |
| Extreme (-30C) | | 1850.1517 | 1914.8465 | 31.3 | 0.017 |
| | | | | | |
| 20C | 15% | 1850.1517 | 1914.8465 | 27.3 | 0.014 |
| | -15% | 1850.1517 | 1914.8465 | 16.4 | 0.009 |
| | End Point | 1850.1517 | 1914.8465 | 23.8 | 0.013 |

## LTE Band 26

| | |
|---|---|
| Test Date | 2022-09-07 |
| Test Engineer | 25546 |

| Limit: +- 2.5 ppm = | Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20ºC<br>Low Channel 2036.750 Hz High Channel 2120.750 Hz | | | | | |
|---|---|---|---|---|---|---|
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | |
| | | Low Channel | | High Channel | | Limit [ppm] |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| 3.88 | 50 | 814.70002365 | -0.001 | 848.30002534 | 0.000 | 2.5 |
| 3.88 | 40 | 814.70002832 | -0.007 | 848.30002759 | -0.002 | 2.5 |
| 3.88 | 30 | 814.70003213 | -0.012 | 848.30003065 | -0.006 | 2.5 |
| ***3.88*** | ***20*** | ***814.70002245*** | ***0.000*** | ***848.30002574*** | ***0.000*** | ***2.5*** |
| 3.88 | 10 | 814.70002332 | -0.001 | 848.30002049 | 0.006 | 2.5 |
| 3.88 | 0 | 814.70001935 | 0.004 | 848.30002336 | 0.003 | 2.5 |
| 3.88 | -10 | 814.70002045 | 0.002 | 848.30001974 | 0.007 | 2.5 |
| 3.88 | -20 | 814.70002164 | 0.001 | 848.30001905 | 0.008 | 2.5 |
| 3.88 | -30 | 814.70002530 | -0.003 | 848.30002432 | 0.002 | 2.5 |

| Limit: +- 2.5 ppm = | Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20ºC<br>Low Channel 2036.750 Hz High Channel 2120.750 Hz | | | | | |
|---|---|---|---|---|---|---|
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | |
| | | Low Channel | | High Channel | | Limit [ppm] |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| ***3.88*** | ***20*** | **814.70002245** | ***0*** | **848.30002574** | ***0*** | ***2.5*** |
| 4.40 | 20 | 814.70002065 | 0.002 | 848.30002225 | 0.004 | 2.5 |
| 3.70 | 20 | 814.70002311 | -0.001 | 848.30002333 | 0.003 | 2.5 |


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**LTE Band 41(PC2) (Lowest Frequency: 16QAM / Highest Frequency: QPSK)**

| | |
|---|---|
| Test Date | 2022-09-08 |
| Test Engineer | 25546 |

| 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 | 2496.2575 | 2689.7508 | | |
| Extreme (50C) | | 2496.2575 | 2689.7508 | 30.5 | 0.012 |
| Extreme (40C) | | 2496.2575 | 2689.7508 | 25.5 | 0.010 |
| Extreme (30C) | | 2496.2575 | 2689.7508 | 27.7 | 0.011 |
| Extreme (10C) | | 2496.2575 | 2689.7508 | 29.0 | 0.011 |
| Extreme (0C) | | 2496.2575 | 2689.7508 | 30.4 | 0.012 |
| Extreme (-10C) | | 2496.2575 | 2689.7508 | 31.4 | 0.012 |
| Extreme (-20C) | | 2496.2575 | 2689.7508 | 30.7 | 0.012 |
| Extreme (-30C) | | 2496.2575 | 2689.7508 | 28.8 | 0.011 |
| | | | | | |
| 20C | 15% | 2496.2575 | 2689.7508 | 18.0 | 0.007 |
| | -15% | 2496.2575 | 2689.7508 | 16.0 | 0.006 |
| | End Point | 2496.2575 | 2689.7508 | 15.9 | 0.006 |

**LTE Band 66 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)**

| | |
|---|---|
| Test Date | 2022-09-08 |
| Test Engineer | 25546 |

| 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 | 1710.1542 | 1779.8411 | | |
| Extreme (50C) | | 1710.1542 | 1779.8411 | 33.5 | 0.019 |
| Extreme (40C) | | 1710.1542 | 1779.8411 | 36.0 | 0.021 |
| Extreme (30C) | | 1710.1542 | 1779.8411 | 37.5 | 0.021 |
| Extreme (10C) | | 1710.1542 | 1779.8411 | 35.1 | 0.020 |
| Extreme (0C) | | 1710.1542 | 1779.8411 | 34.0 | 0.019 |
| Extreme (-10C) | | 1710.1542 | 1779.8411 | 30.7 | 0.018 |
| Extreme (-20C) | | 1710.1542 | 1779.8411 | 31.5 | 0.018 |
| Extreme (-30C) | | 1710.1542 | 1779.8411 | 32.7 | 0.019 |
| | | | | | |
| 20C | 15% | 1710.1542 | 1779.8411 | 25.7 | 0.015 |
| | -15% | 1710.1542 | 1779.8411 | 24.9 | 0.014 |
| | End Point | 1710.1542 | 1779.8411 | 29.9 | 0.017 |


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## 5G NR Band n5

| | |
|---|---|
| Test Date | 2022-09-12 |
| Test Engineer | 25546 |

| Limit: +- 2.5 ppm = | Reference Frequency : n5 Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20ºC<br>Low Channel 2066.250 Hz | | | High Channel 2116.250 Hz | | |
|---|---|---|---|---|---|---|
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | |
| | | Low Channel | | High Channel | | Limit [ppm] |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| 3.88 | 50 | 826.50002346 | 0.010 | 846.50003068 | 0.002 | 2.5 |
| 3.88 | 40 | 826.50002864 | 0.004 | 846.50002641 | 0.007 | 2.5 |
| 3.88 | 30 | 826.50002169 | 0.012 | 846.50002974 | 0.003 | 2.5 |
| ***3.88*** | ***20*** | ***826.50003197*** | ***0.000*** | ***846.50003269*** | ***0.000*** | ***2.5*** |
| 3.88 | 10 | 826.50002665 | 0.006 | 846.50002812 | 0.005 | 2.5 |
| 3.88 | 0 | 826.50002943 | 0.003 | 846.50003365 | -0.001 | 2.5 |
| 3.88 | -10 | 826.50003542 | -0.004 | 846.50003247 | 0.000 | 2.5 |
| 3.88 | -20 | 826.50003269 | -0.001 | 846.50003009 | 0.003 | 2.5 |
| 3.88 | -30 | 826.50003370 | -0.002 | 846.50003187 | 0.001 | 2.5 |

| Limit: +- 2.5 ppm = | Reference Frequency : n5 Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20ºC<br>Low Channel 2066.250 Hz | | | High Channel 2116.250 Hz | | |
|---|---|---|---|---|---|---|
| Power Supply [Vdc] | Environment Temperature [*C] | Frequency Deviation Measureed with Time Elapse | | | | |
| | | Low Channel | | High Channel | | Limit [ppm] |
| | | [MHz] | Delta [ppm] | [MHz] | Delta [ppm] | |
| ***3.88*** | ***20*** | **826.50003197** | ***0*** | **846.50003269** | ***0*** | ***2.5*** |
| 4.40 | 20 | 826.50001123 | 0.025 | 846.50002549 | 0.009 | 2.5 |
| 3.70 | 20 | 826.50002558 | 0.008 | 846.50000772 | 0.029 | 2.5 |

## 5G NR Band n25 (Lowest Frequency:16QAM / Highest Frequency: 16QAM)

| | |
|---|---|
| Test Date | 2022-09-13 |
| Test Engineer | 25546 |

| 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 | 1850.2466 | 1914.7501 | | |
| Extreme (50C) | | 1850.2466 | 1914.7501 | 23.7 | 0.013 |
| Extreme (40C) | | 1850.2466 | 1914.7501 | 29.4 | 0.016 |
| Extreme (30C) | | 1850.2466 | 1914.7501 | 31.7 | 0.017 |
| Extreme (10C) | | 1850.2466 | 1914.7501 | 28.6 | 0.015 |
| Extreme (0C) | | 1850.2466 | 1914.7501 | 29.5 | 0.016 |
| Extreme (-10C) | | 1850.2466 | 1914.7501 | 33.8 | 0.018 |
| Extreme (-20C) | | 1850.2466 | 1914.7501 | 30.5 | 0.016 |
| Extreme (-30C) | | 1850.2466 | 1914.7501 | 31.9 | 0.017 |
| | | | | | |
| 20C | 15% | 1850.2466 | 1914.7501 | 25.5 | 0.014 |
| | -15% | 1850.2466 | 1914.7501 | 17.5 | 0.009 |
| | End Point | 1850.2466 | 1914.7501 | 14.3 | 0.008 |


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**5G NR Band n41 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)**

| | |
|---|---|
| Test Date | 2022-09-13 |
| Test Engineer | 25546 |

| Normal (20C) | | 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 | 2501.6945 | 2684.3126 | | |
| Extreme (50C) | | 2501.6945 | 2684.3126 | 16.7 | 0.006 |
| Extreme (40C) | | 2501.6945 | 2684.3126 | 19.5 | 0.008 |
| Extreme (30C) | | 2501.6945 | 2684.3126 | 23.0 | 0.009 |
| Extreme (10C) | | 2501.6945 | 2684.3126 | 24.6 | 0.009 |
| Extreme (0C) | | 2501.6945 | 2684.3126 | 22.5 | 0.009 |
| Extreme (-10C) | | 2501.6945 | 2684.3126 | 23.1 | 0.009 |
| Extreme (-20C) | | 2501.6945 | 2684.3126 | 25.1 | 0.010 |
| Extreme (-30C) | | 2501.6945 | 2684.3126 | 24.3 | 0.009 |
| | | | | | |
| 20C | 15% | 2501.6945 | 2684.3126 | 20.1 | 0.008 |
| | -15% | 2501.6945 | 2684.3126 | 18.9 | 0.007 |
| | End Point | 2501.6945 | 2684.3126 | 18.0 | 0.007 |

**5G NR Band n66 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)**

| | |
|---|---|
| Test Date | 9/14/2022 |
| Test Engineer | 25546 |

| 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 | 1710.2534 | 1779.7412 | | |
| Extreme (50C) | | 1710.2534 | 1779.7412 | 36.0 | 0.021 |
| Extreme (40C) | | 1710.2534 | 1779.7412 | 37.4 | 0.021 |
| Extreme (30C) | | 1710.2534 | 1779.7412 | 35.1 | 0.020 |
| Extreme (10C) | | 1710.2534 | 1779.7412 | 30.5 | 0.017 |
| Extreme (0C) | | 1710.2534 | 1779.7412 | 29.6 | 0.017 |
| Extreme (-10C) | | 1710.2534 | 1779.7412 | 31.3 | 0.018 |
| Extreme (-20C) | | 1710.2534 | 1779.7412 | 28.7 | 0.016 |
| Extreme (-30C) | | 1710.2534 | 1779.7412 | 28.0 | 0.016 |
| | | | | | |
| 20C | 15% | 1710.2534 | 1779.7412 | 23.2 | 0.013 |
| | -15% | 1710.2534 | 1779.7412 | 24.6 | 0.014 |
| | End Point | 1710.2534 | 1779.7412 | 27.8 | 0.016 |


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**NR Band n77 (Lowest Frequency:16QAM / Highest Frequency: QPSK)**

| | |
|---|---|
| Test Date | 2022-09-14 |
| Test Engineer | 25546 |

| Limit | | 3450 | 3550 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 3455.6863 | 3544.3148 | | |
| Extreme (50C) | | 3455.6863 | 3544.3148 | 27.7 | 0.008 |
| Extreme (40C) | | 3455.6863 | 3544.3148 | 27.0 | 0.008 |
| Extreme (30C) | | 3455.6863 | 3544.3148 | 26.4 | 0.008 |
| Extreme (10C) | | 3455.6863 | 3544.3148 | 23.9 | 0.007 |
| Extreme (0C) | | 3455.6863 | 3544.3148 | 24.0 | 0.007 |
| Extreme (-10C) | | 3455.6863 | 3544.3148 | 26.7 | 0.008 |
| Extreme (-20C) | | 3455.6863 | 3544.3148 | 35.2 | 0.010 |
| Extreme (-30C) | | 3455.6863 | 3544.3148 | 32.7 | 0.009 |
| | | | | | |
| 20C | 15% | 3455.6863 | 3544.3148 | 22.7 | 0.006 |
| | -15% | 3455.6863 | 3544.3148 | 24.1 | 0.007 |
| | End Point | 3455.6863 | 3544.3148 | 24.0 | 0.007 |

| | |
|---|---|
| Test Date | 2022-09-15 |
| Test Engineer | 25546 |

| Limit | | 3700 | 3980 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ End of OBW | F high @ End of OBW | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | Normal | 3700.8865 | 3979.1275 | | |
| Extreme (50C) | | 3700.8865 | 3979.1275 | 29.0 | 0.008 |
| Extreme (40C) | | 3700.8865 | 3979.1275 | 26.7 | 0.007 |
| Extreme (30C) | | 3700.8865 | 3979.1275 | 29.4 | 0.008 |
| Extreme (10C) | | 3700.8865 | 3979.1275 | 32.1 | 0.008 |
| Extreme (0C) | | 3700.8865 | 3979.1275 | 33.6 | 0.009 |
| Extreme (-10C) | | 3700.8865 | 3979.1275 | 35.4 | 0.009 |
| Extreme (-20C) | | 3700.8865 | 3979.1275 | 36.9 | 0.010 |
| Extreme (-30C) | | 3700.8865 | 3979.1275 | 30.9 | 0.008 |
| | | | | | |
| 20C | 15% | 3700.8865 | 3979.1275 | 23.3 | 0.006 |
| | -15% | 3700.8865 | 3979.1275 | 24.4 | 0.006 |
| | End Point | 3700.8865 | 3979.1275 | 24.3 | 0.006 |


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## 9.5. RADIATED POWER (ERP & EIRP)

**RULE PART(S)**

FCC: §2.1046, §22.913, §24.232, §27.50, and §90.635

**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.

(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.

(j)(3) Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(k)(3) Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

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

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 ≥ OBW;
b) Set VBW ≥ 3 × RBW;
c) Set span ≥ 2 x RBW;
d) Sweep time = auto couple or 1 second;
e) Detector = rms;
f) Ensure that the number of measurement points ≥ span/RBW;
g) Trace mode = max hold(GSM,WCDMA), average(LTE, 5G NR);

**TEST RESULTS**

See the following pages.


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### 9.5.1. ERP/EIRP Results

**GSM**

| Band | Mode | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | ERP (dBm) | ERP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| GSM 850 | GPRS | 824.20 | 29.25 | V | 3.11 | -0.82 | 25.32 | 340.41 | 38.50 | -13.18 |
| | | 824.20 | 32.43 | H | 3.11 | -0.82 | 28.51 | 709.58 | 38.50 | -9.99 |
| | | 836.60 | 27.35 | V | 3.13 | -0.93 | 23.29 | 213.30 | 38.50 | -15.21 |
| | | 836.60 | 31.77 | H | 3.13 | -0.93 | 27.71 | 590.20 | 38.50 | -10.79 |
| | | 848.80 | 25.27 | V | 3.15 | -1.04 | 21.08 | 128.23 | 38.50 | -17.42 |
| | | 848.80 | 31.60 | H | 3.15 | -1.04 | 27.41 | 550.81 | 38.50 | -11.09 |
| | EGPRS | 824.20 | 24.88 | V | 3.11 | -0.82 | 20.95 | 124.45 | 38.50 | -17.55 |
| | | 824.20 | 27.49 | H | 3.11 | -0.82 | 23.57 | 227.51 | 38.50 | -14.93 |
| | | 836.60 | 22.42 | V | 3.13 | -0.93 | 18.36 | 68.55 | 38.50 | -20.14 |
| | | 836.60 | 27.03 | H | 3.13 | -0.93 | 22.97 | 198.15 | 38.50 | -15.53 |
| | | 848.80 | 20.24 | V | 3.15 | -1.04 | 16.05 | 40.27 | 38.50 | -22.45 |
| | | 848.80 | 26.58 | H | 3.15 | -1.04 | 22.39 | 173.38 | 38.50 | -16.11 |

| Band | Mode | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| GSM 1900 | GPRS | 1850.20 | 12.76 | V | 4.62 | 9.52 | 17.66 | 58.34 | 33.00 | -15.34 |
| | | 1850.20 | 23.72 | H | 4.62 | 9.52 | 28.62 | 727.78 | 33.00 | -4.38 |
| | | 1880.00 | 12.63 | V | 4.65 | 9.29 | 17.26 | 53.21 | 33.00 | -15.74 |
| | | 1880.00 | 25.69 | H | 4.65 | 9.29 | 30.33 | 1078.95 | 33.00 | -2.67 |
| | | 1909.80 | 10.33 | V | 4.68 | 9.00 | 14.65 | 29.17 | 33.00 | -18.35 |
| | | 1909.80 | 27.17 | H | 4.68 | 9.00 | 31.49 | 1409.29 | 33.00 | -1.51 |
| | EGPRS | 1850.20 | 10.23 | V | 4.62 | 9.52 | 15.13 | 32.58 | 33.00 | -17.87 |
| | | 1850.20 | 20.63 | H | 4.62 | 9.52 | 25.53 | 357.27 | 33.00 | -7.47 |
| | | 1880.00 | 9.61 | V | 4.65 | 9.29 | 14.24 | 26.55 | 33.00 | -18.76 |
| | | 1880.00 | 22.60 | H | 4.65 | 9.29 | 27.24 | 529.66 | 33.00 | -5.76 |
| | | 1909.80 | 7.06 | V | 4.68 | 9.00 | 11.38 | 13.74 | 33.00 | -21.62 |
| | | 1909.80 | 23.45 | H | 4.68 | 9.00 | 27.77 | 598.41 | 33.00 | -5.23 |


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**WCDMA**

| Band | Mode | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | ERP (dBm) | ERP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| Band 5 | REL99 | 826.40 | 20.68 | V | 3.11 | -0.84 | 16.73 | 47.10 | 38.50 | -21.77 |
| | | 826.40 | 23.67 | H | 3.11 | -0.84 | 19.73 | 93.97 | 38.50 | -18.77 |
| | | 836.60 | 19.43 | V | 3.13 | -0.93 | 15.37 | 34.43 | 38.50 | -23.13 |
| | | 836.60 | 23.98 | H | 3.13 | -0.93 | 19.92 | 98.17 | 38.50 | -18.58 |
| | | 846.60 | 17.53 | V | 3.14 | -1.02 | 13.37 | 21.73 | 38.50 | -25.13 |
| | | 846.60 | 23.55 | H | 3.14 | -1.02 | 19.39 | 86.90 | 38.50 | -19.11 |
| | HSDPA | 826.40 | 18.76 | V | 3.11 | -0.84 | 14.81 | 30.27 | 38.50 | -23.69 |
| | | 826.40 | 21.85 | H | 3.11 | -0.84 | 17.91 | 61.80 | 38.50 | -20.59 |
| | | 836.60 | 17.74 | V | 3.13 | -0.93 | 13.68 | 23.33 | 38.50 | -24.82 |
| | | 836.60 | 21.64 | H | 3.13 | -0.93 | 17.58 | 57.28 | 38.50 | -20.92 |
| | | 846.60 | 15.88 | V | 3.14 | -1.02 | 11.72 | 14.86 | 38.50 | -26.78 |
| | | 846.60 | 21.21 | H | 3.14 | -1.02 | 17.05 | 50.70 | 38.50 | -21.45 |

| Band | Mode | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| Band 4 | REL99 | 1712.40 | 20.16 | V | 4.44 | 9.51 | 25.23 | 333.43 | 30.00 | -4.77 |
| | | 1712.40 | 13.56 | H | 4.44 | 9.51 | 18.63 | 72.95 | 30.00 | -11.37 |
| | | 1732.60 | 20.04 | V | 4.46 | 9.60 | 25.18 | 329.61 | 30.00 | -4.82 |
| | | 1732.60 | 13.10 | H | 4.46 | 9.60 | 18.24 | 66.68 | 30.00 | -11.76 |
| | | 1752.60 | 19.87 | V | 4.48 | 9.68 | 25.07 | 321.37 | 30.00 | -4.93 |
| | | 1752.60 | 12.15 | H | 4.48 | 9.68 | 17.35 | 54.33 | 30.00 | -12.65 |
| | HSDPA | 1712.40 | 18.25 | V | 4.44 | 9.51 | 23.32 | 214.78 | 30.00 | -6.68 |
| | | 1712.40 | 11.65 | H | 4.44 | 9.51 | 16.72 | 46.99 | 30.00 | -13.28 |
| | | 1732.60 | 17.11 | V | 4.46 | 9.60 | 22.25 | 167.88 | 30.00 | -7.75 |
| | | 1732.60 | 10.83 | H | 4.46 | 9.60 | 15.97 | 39.54 | 30.00 | -14.03 |
| | | 1752.60 | 16.80 | V | 4.48 | 9.68 | 22.00 | 158.49 | 30.00 | -8.00 |
| | | 1752.60 | 10.27 | H | 4.48 | 9.68 | 15.47 | 35.24 | 30.00 | -14.53 |

| Band | Mode | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| Band 2 | REL99 | 1852.40 | 7.71 | V | 4.62 | 9.51 | 12.59 | 18.16 | 33.00 | -20.41 |
| | | 1852.40 | 18.54 | H | 4.62 | 9.51 | 23.43 | 220.29 | 33.00 | -9.57 |
| | | 1880.00 | 7.22 | V | 4.65 | 9.29 | 11.85 | 15.31 | 33.00 | -21.15 |
| | | 1880.00 | 20.20 | H | 4.65 | 9.29 | 24.84 | 304.79 | 33.00 | -8.16 |
| | | 1907.60 | 5.92 | V | 4.68 | 9.03 | 10.26 | 10.62 | 33.00 | -22.74 |
| | | 1907.60 | 21.27 | H | 4.68 | 9.03 | 25.61 | 363.92 | 33.00 | -7.39 |
| | HSDPA | 1852.40 | 6.73 | V | 4.62 | 9.51 | 11.61 | 14.49 | 33.00 | -21.39 |
| | | 1852.40 | 17.53 | H | 4.62 | 9.51 | 22.42 | 174.58 | 33.00 | -10.58 |
| | | 1880.00 | 6.30 | V | 4.65 | 9.29 | 10.93 | 12.39 | 33.00 | -22.07 |
| | | 1880.00 | 19.35 | H | 4.65 | 9.29 | 23.99 | 250.61 | 33.00 | -9.01 |
| | | 1907.60 | 4.80 | V | 4.68 | 9.03 | 9.14 | 8.20 | 33.00 | -23.86 |
| | | 1907.60 | 20.35 | H | 4.68 | 9.03 | 24.69 | 294.44 | 33.00 | -8.31 |


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## LTE Band 5

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | ERP (dBm) | ERP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.4 | QPSK | 824.70 | 24.05 | H | 3.11 | -0.82 | 20.12 | 102.80 | 38.50 | -18.38 | 1/3 |
| | | 836.50 | 23.49 | H | 3.13 | -0.93 | 19.43 | 87.70 | 38.50 | -19.07 | 1/3 |
| | | 848.30 | 22.73 | H | 3.15 | -1.03 | 18.54 | 71.45 | 38.50 | -19.96 | 1/3 |
| | 16-QAM | 824.70 | 20.99 | H | 3.11 | -0.82 | 17.06 | 50.82 | 38.50 | -21.44 | 1/5 |
| | | 836.50 | 22.38 | H | 3.13 | -0.93 | 18.32 | 67.92 | 38.50 | -20.18 | 1/3 |
| | | 848.30 | 21.65 | H | 3.15 | -1.03 | 17.46 | 55.72 | 38.50 | -21.04 | 1/3 |
| 3 | QPSK | 825.50 | 23.78 | H | 3.10 | -0.83 | 19.85 | 96.61 | 38.50 | -18.65 | 1/8 |
| | | 836.50 | 23.28 | H | 3.13 | -0.93 | 19.22 | 83.56 | 38.50 | -19.28 | 1/8 |
| | | 847.50 | 22.52 | H | 3.15 | -1.03 | 18.34 | 68.23 | 38.50 | -20.16 | 1/8 |
| | 16-QAM | 825.50 | 22.59 | H | 3.10 | -0.83 | 18.66 | 73.45 | 38.50 | -19.84 | 1/8 |
| | | 836.50 | 22.32 | H | 3.13 | -0.93 | 18.26 | 66.99 | 38.50 | -20.24 | 1/8 |
| | | 847.50 | 21.65 | H | 3.15 | -1.03 | 17.47 | 55.85 | 38.50 | -21.03 | 1/8 |
| 5 | QPSK | 826.50 | 23.93 | H | 3.11 | -0.84 | 19.98 | 99.54 | 38.50 | -18.52 | 1/12 |
| | | 836.50 | 23.65 | H | 3.13 | -0.93 | 19.59 | 90.99 | 38.50 | -18.91 | 1/12 |
| | | 846.50 | 22.83 | H | 3.14 | -1.02 | 18.67 | 73.62 | 38.50 | -19.83 | 1/12 |
| | 16-QAM | 826.50 | 22.80 | H | 3.11 | -0.84 | 18.85 | 76.74 | 38.50 | -19.65 | 1/12 |
| | | 836.50 | 22.39 | H | 3.13 | -0.93 | 18.33 | 68.08 | 38.50 | -20.17 | 1/12 |
| | | 846.50 | 21.77 | H | 3.14 | -1.02 | 17.61 | 57.68 | 38.50 | -20.89 | 1/12 |
| 10 | QPSK | 829.00 | 23.76 | H | 3.11 | -0.86 | 19.78 | 95.06 | 38.50 | -18.72 | 1/0 |
| | | 836.50 | 23.80 | H | 3.13 | -0.93 | 19.74 | 94.19 | 38.50 | -18.76 | 1/0 |
| | | 844.00 | 22.88 | H | 3.14 | -1.00 | 18.74 | 74.82 | 38.50 | -19.76 | 1/0 |
| | 16-QAM | 829.00 | 22.44 | H | 3.11 | -0.86 | 18.46 | 70.15 | 38.50 | -20.04 | 1/25 |
| | | 836.50 | 22.41 | H | 3.13 | -0.93 | 18.35 | 68.39 | 38.50 | -20.15 | 1/0 |
| | | 844.00 | 21.76 | H | 3.14 | -1.00 | 17.62 | 57.81 | 38.50 | -20.88 | 1/0 |

## LTE Band 12

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | ERP (dBm) | ERP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.4 | QPSK | 699.70 | 22.88 | H | 2.87 | -0.80 | 19.21 | 83.37 | 34.77 | -15.56 | 1/3 |
| | | 707.50 | 22.33 | H | 2.89 | -0.79 | 18.66 | 73.45 | 34.77 | -16.11 | 1/3 |
| | | 715.30 | 21.31 | H | 2.90 | -0.77 | 17.64 | 58.08 | 34.77 | -17.13 | 1/3 |
| | 16-QAM | 699.70 | 21.90 | H | 2.87 | -0.80 | 18.23 | 66.53 | 34.77 | -16.54 | 1/3 |
| | | 707.50 | 21.09 | H | 2.89 | -0.79 | 17.42 | 55.21 | 34.77 | -17.35 | 1/3 |
| | | 715.30 | 20.38 | H | 2.90 | -0.77 | 16.71 | 46.88 | 34.77 | -18.06 | 1/0 |
| 3 | QPSK | 700.50 | 22.77 | H | 2.88 | -0.80 | 19.10 | 81.28 | 34.77 | -15.67 | 1/8 |
| | | 707.50 | 22.42 | H | 2.89 | -0.79 | 18.75 | 74.99 | 34.77 | -16.02 | 1/8 |
| | | 714.50 | 21.46 | H | 2.90 | -0.77 | 17.79 | 60.12 | 34.77 | -16.98 | 1/8 |
| | 16-QAM | 700.50 | 22.03 | H | 2.88 | -0.80 | 18.36 | 68.55 | 34.77 | -16.41 | 1/8 |
| | | 707.50 | 21.25 | H | 2.89 | -0.79 | 17.58 | 57.28 | 34.77 | -17.19 | 1/8 |
| | | 714.50 | 20.50 | H | 2.90 | -0.77 | 16.83 | 48.19 | 34.77 | -17.94 | 1/8 |
| 5 | QPSK | 701.50 | 22.78 | H | 2.88 | -0.80 | 19.10 | 81.28 | 34.77 | -15.67 | 1/12 |
| | | 707.50 | 22.36 | H | 2.89 | -0.79 | 18.69 | 73.96 | 34.77 | -16.08 | 1/12 |
| | | 713.50 | 21.96 | H | 2.90 | -0.77 | 18.28 | 67.30 | 34.77 | -16.49 | 1/12 |
| | 16-QAM | 701.50 | 21.63 | H | 2.88 | -0.80 | 17.95 | 62.37 | 34.77 | -16.82 | 1/12 |
| | | 707.50 | 21.16 | H | 2.89 | -0.79 | 17.49 | 56.10 | 34.77 | -17.28 | 1/12 |
| | | 713.50 | 20.45 | H | 2.90 | -0.77 | 16.77 | 47.53 | 34.77 | -18.00 | 1/12 |
| 10 | QPSK | 704.00 | 22.71 | H | 2.88 | -0.79 | 19.04 | 80.17 | 34.77 | -15.73 | 1/25 |
| | | 707.50 | 21.92 | H | 2.89 | -0.79 | 18.25 | 66.83 | 34.77 | -16.52 | 1/49 |
| | | 711.00 | 21.83 | H | 2.89 | -0.78 | 18.15 | 65.31 | 34.77 | -16.62 | 1/49 |
| | 16-QAM | 704.00 | 21.66 | H | 2.88 | -0.79 | 17.99 | 62.95 | 34.77 | -16.78 | 1/49 |
| | | 707.50 | 20.89 | H | 2.89 | -0.79 | 17.22 | 52.72 | 34.77 | -17.55 | 1/49 |
| | | 711.00 | 20.81 | H | 2.89 | -0.78 | 17.13 | 51.64 | 34.77 | -17.64 | 1/49 |


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## LTE Band 13

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | ERP (dBm) | ERP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | QPSK | 779.50 | 23.56 | H | 3.02 | -0.64 | 19.90 | 97.77 | 34.77 | -14.87 | 1/12 |
| | | 782.00 | 23.04 | H | 3.02 | -0.64 | 19.38 | 86.78 | 34.77 | -15.39 | 1/12 |
| | | 784.50 | 22.75 | H | 3.04 | -0.63 | 19.08 | 81.00 | 34.77 | -15.69 | 1/12 |
| | 16-QAM | 779.50 | 22.32 | H | 3.02 | -0.64 | 18.66 | 73.48 | 34.77 | -16.11 | 1/12 |
| | | 782.00 | 21.89 | H | 3.02 | -0.64 | 18.23 | 66.59 | 34.77 | -16.54 | 1/12 |
| | | 784.50 | 21.92 | H | 3.04 | -0.63 | 18.25 | 66.91 | 34.77 | -16.52 | 1/12 |
| 10 | QPSK | 782.00 | 23.16 | H | 3.02 | -0.64 | 19.50 | 89.22 | 34.77 | -15.27 | 1/49 |
| | 16-QAM | 782.00 | 22.26 | H | 3.02 | -0.64 | 18.60 | 72.52 | 34.77 | -16.17 | 1/49 |

## LTE Band 25

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.4 | QPSK | 1850.70 | 17.18 | H | 4.62 | 9.52 | 22.08 | 161.44 | 33.00 | -10.92 | 1/3 |
| | | 1882.50 | 19.56 | H | 4.65 | 9.27 | 24.17 | 261.22 | 33.00 | -8.83 | 1/5 |
| | | 1914.30 | 19.16 | H | 4.70 | 8.94 | 23.40 | 218.78 | 33.00 | -9.60 | 1/5 |
| | 16-QAM | 1850.70 | 16.41 | H | 4.62 | 9.52 | 21.31 | 135.21 | 33.00 | -11.69 | 1/3 |
| | | 1882.50 | 18.65 | H | 4.65 | 9.27 | 23.26 | 211.84 | 33.00 | -9.74 | 1/3 |
| | | 1914.30 | 18.01 | H | 4.70 | 8.94 | 22.25 | 167.88 | 33.00 | -10.75 | 1/3 |
| 3 | QPSK | 1851.50 | 17.61 | H | 4.62 | 9.51 | 22.49 | 177.42 | 33.00 | -10.51 | 1/8 |
| | | 1882.50 | 19.68 | H | 4.65 | 9.27 | 24.29 | 268.53 | 33.00 | -8.71 | 1/8 |
| | | 1913.50 | 19.11 | H | 4.69 | 8.95 | 23.36 | 216.77 | 33.00 | -9.64 | 1/8 |
| | 16-QAM | 1851.50 | 16.43 | H | 4.62 | 9.51 | 21.31 | 135.21 | 33.00 | -11.69 | 1/8 |
| | | 1882.50 | 18.67 | H | 4.65 | 9.27 | 23.28 | 212.81 | 33.00 | -9.72 | 1/8 |
| | | 1913.50 | 18.14 | H | 4.69 | 8.95 | 22.39 | 173.38 | 33.00 | -10.61 | 1/8 |
| 5 | QPSK | 1852.50 | 17.54 | H | 4.62 | 9.50 | 22.42 | 174.58 | 33.00 | -10.58 | 1/12 |
| | | 1882.50 | 19.59 | H | 4.65 | 9.27 | 24.20 | 263.03 | 33.00 | -8.80 | 1/12 |
| | | 1912.50 | 19.52 | H | 4.69 | 8.96 | 23.79 | 239.33 | 33.00 | -9.21 | 1/12 |
| | 16-QAM | 1852.50 | 16.62 | H | 4.62 | 9.50 | 21.50 | 141.25 | 33.00 | -11.50 | 1/12 |
| | | 1882.50 | 18.69 | H | 4.65 | 9.27 | 23.30 | 213.80 | 33.00 | -9.70 | 1/12 |
| | | 1912.50 | 18.60 | H | 4.69 | 8.96 | 22.87 | 193.64 | 33.00 | -10.13 | 1/12 |
| 10 | QPSK | 1855.00 | 17.71 | H | 4.62 | 9.48 | 22.57 | 180.72 | 33.00 | -10.43 | 1/25 |
| | | 1882.50 | 19.69 | H | 4.65 | 9.27 | 24.30 | 269.15 | 33.00 | -8.70 | 1/25 |
| | | 1910.00 | 20.52 | H | 4.68 | 8.99 | 24.84 | 304.79 | 33.00 | -8.16 | 1/25 |
| | 16-QAM | 1855.00 | 16.63 | H | 4.62 | 9.48 | 21.49 | 140.93 | 33.00 | -11.51 | 1/0 |
| | | 1882.50 | 18.75 | H | 4.65 | 9.27 | 23.36 | 216.77 | 33.00 | -9.64 | 1/49 |
| | | 1910.00 | 19.51 | H | 4.68 | 8.99 | 23.83 | 241.55 | 33.00 | -9.17 | 1/25 |
| 15 | QPSK | 1857.50 | 17.47 | H | 4.63 | 9.47 | 22.31 | 170.22 | 33.00 | -10.69 | 1/0 |
| | | 1882.50 | 19.47 | H | 4.65 | 9.27 | 24.08 | 255.86 | 33.00 | -8.92 | 1/0 |
| | | 1907.50 | 20.29 | H | 4.69 | 9.03 | 24.64 | 291.07 | 33.00 | -8.36 | 1/37 |
| | 16-QAM | 1857.50 | 16.49 | H | 4.63 | 9.47 | 21.33 | 135.83 | 33.00 | -11.67 | 1/0 |
| | | 1882.50 | 18.34 | H | 4.65 | 9.27 | 22.95 | 197.24 | 33.00 | -10.05 | 1/0 |
| | | 1907.50 | 19.45 | H | 4.69 | 9.03 | 23.80 | 239.88 | 33.00 | -9.20 | 1/37 |
| 20 | QPSK | 1860.00 | 17.51 | H | 4.63 | 9.45 | 22.33 | 171.00 | 33.00 | -10.67 | 1/0 |
| | | 1882.50 | 19.10 | H | 4.65 | 9.27 | 23.71 | 234.96 | 33.00 | -9.29 | 1/0 |
| | | 1905.00 | 20.40 | H | 4.68 | 9.06 | 24.78 | 300.61 | 33.00 | -8.22 | 1/99 |
| | 16-QAM | 1860.00 | 16.51 | H | 4.63 | 9.45 | 21.33 | 135.83 | 33.00 | -11.67 | 1/0 |
| | | 1882.50 | 18.17 | H | 4.65 | 9.27 | 22.78 | 189.67 | 33.00 | -10.22 | 1/0 |
| | | 1905.00 | 19.38 | H | 4.68 | 9.06 | 23.76 | 237.68 | 33.00 | -9.24 | 1/49 |


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**LTE Band 26**

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | ERP (dBm) | ERP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.4 | QPSK | 814.70 | 24.33 | H | 3.09 | -0.73 | 20.51 | 112.46 | 50.00 | -29.49 | 1/3 |
| | | 823.30 | 23.53 | H | 3.10 | -0.81 | 19.62 | 91.62 | 50.00 | -30.38 | 1/3 |
| | | 824.70 | 23.92 | H | 3.11 | -0.82 | 19.99 | 99.77 | 38.50 | -18.51 | 1/3 |
| | | 831.50 | 23.05 | H | 3.11 | -0.88 | 19.05 | 80.35 | 38.50 | -19.45 | 1/3 |
| | | 848.30 | 22.00 | H | 3.15 | -1.03 | 17.82 | 60.53 | 38.50 | -20.68 | 1/5 |
| | 16-QAM | 814.70 | 23.16 | H | 3.09 | -0.73 | 19.34 | 85.90 | 50.00 | -30.66 | 1/3 |
| | | 822.50 | 22.49 | H | 3.10 | -0.81 | 18.58 | 72.11 | 50.00 | -31.42 | 1/3 |
| | | 824.70 | 22.74 | H | 3.11 | -0.82 | 18.81 | 76.03 | 38.50 | -19.69 | 1/3 |
| | | 831.50 | 22.09 | H | 3.11 | -0.88 | 18.09 | 64.42 | 38.50 | -20.41 | 1/3 |
| | | 848.30 | 21.01 | H | 3.15 | -1.03 | 16.83 | 48.19 | 38.50 | -21.67 | 1/5 |
| 3 | QPSK | 815.50 | 24.28 | H | 3.08 | -0.74 | 20.46 | 111.17 | 50.00 | -29.54 | 1/8 |
| | | 822.50 | 23.87 | H | 3.10 | -0.80 | 19.96 | 99.08 | 50.00 | -30.04 | 1/8 |
| | | 825.50 | 23.67 | H | 3.10 | -0.83 | 19.73 | 93.97 | 38.50 | -18.77 | 1/8 |
| | | 831.50 | 23.54 | H | 3.11 | -0.88 | 19.54 | 89.95 | 38.50 | -18.96 | 1/8 |
| | | 847.50 | 22.72 | H | 3.15 | -1.03 | 18.54 | 71.45 | 38.50 | -19.96 | 1/8 |
| | 16-QAM | 815.50 | 23.13 | H | 3.08 | -0.74 | 19.31 | 85.31 | 50.00 | -30.69 | 1/8 |
| | | 822.50 | 23.04 | H | 3.10 | -0.79 | 19.14 | 82.04 | 50.00 | -30.86 | 1/8 |
| | | 825.50 | 22.68 | H | 3.10 | -0.83 | 18.74 | 74.82 | 38.50 | -19.76 | 1/8 |
| | | 831.50 | 22.54 | H | 3.11 | -0.88 | 18.54 | 71.45 | 38.50 | -19.96 | 1/8 |
| | | 847.50 | 21.57 | H | 3.15 | -1.03 | 17.39 | 54.83 | 38.50 | -21.11 | 1/8 |
| 5 | QPSK | 816.50 | 24.10 | H | 3.09 | -0.75 | 20.26 | 106.17 | 50.00 | -29.74 | 1/12 |
| | | 821.50 | 23.91 | H | 3.10 | -0.79 | 20.01 | 100.23 | 50.00 | -29.99 | 1/12 |
| | | 826.50 | 23.88 | H | 3.11 | -0.84 | 19.93 | 98.40 | 38.50 | -18.57 | 1/12 |
| | | 831.50 | 23.58 | H | 3.11 | -0.88 | 19.58 | 90.78 | 38.50 | -18.92 | 1/12 |
| | | 846.50 | 22.79 | H | 3.14 | -1.02 | 18.63 | 72.95 | 38.50 | -19.87 | 1/12 |
| | 16-QAM | 816.50 | 23.20 | H | 3.09 | -0.75 | 19.36 | 86.30 | 50.00 | -30.64 | 1/12 |
| | | 821.50 | 23.02 | H | 3.11 | -0.88 | 19.02 | 79.80 | 50.00 | -30.98 | 1/12 |
| | | 826.50 | 22.70 | H | 3.11 | -0.84 | 18.75 | 74.99 | 38.50 | -19.75 | 1/12 |
| | | 831.50 | 22.43 | H | 3.11 | -0.88 | 18.43 | 69.66 | 38.50 | -20.07 | 1/12 |
| | | 846.50 | 21.59 | H | 3.14 | -1.02 | 17.43 | 55.34 | 38.50 | -21.07 | 1/0 |
| 10 | QPSK | 819.00 | 24.25 | H | 3.09 | -0.77 | 20.38 | 109.14 | 50.00 | -29.62 | 1/0 |
| | | 829.00 | 23.70 | H | 3.11 | -0.86 | 19.72 | 93.76 | 38.50 | -18.78 | 1/0 |
| | | 831.50 | 23.57 | H | 3.11 | -0.88 | 19.57 | 90.57 | 38.50 | -18.93 | 1/0 |
| | | 844.00 | 23.33 | H | 3.14 | -1.00 | 19.19 | 82.99 | 38.50 | -19.31 | 1/0 |
| | 16-QAM | 819.00 | 23.36 | H | 3.09 | -0.77 | 19.49 | 88.92 | 50.00 | -30.51 | 1/0 |
| | | 829.00 | 22.49 | H | 3.11 | -0.86 | 18.51 | 70.96 | 38.50 | -19.99 | 1/0 |
| | | 831.50 | 22.59 | H | 3.11 | -0.88 | 18.59 | 72.28 | 38.50 | -19.91 | 1/0 |
| | | 844.00 | 22.27 | H | 3.14 | -1.00 | 18.13 | 65.01 | 38.50 | -20.37 | 1/0 |
| 15 | QPSK | 821.50 | 23.93 | H | 3.10 | -0.79 | 20.03 | 100.69 | 50.00 | -29.97 | 1/0 |
| | | 831.50 | 23.56 | H | 3.11 | -0.88 | 19.56 | 90.36 | 38.50 | -18.94 | 1/0 |
| | | 841.50 | 23.30 | H | 3.13 | -0.97 | 19.19 | 82.99 | 38.50 | -19.31 | 1/0 |
| | 16-QAM | 821.50 | 22.91 | H | 3.10 | -0.79 | 19.01 | 79.62 | 50.00 | -30.99 | 1/0 |
| | | 831.50 | 22.40 | H | 3.11 | -0.88 | 18.40 | 69.18 | 38.50 | -20.10 | 1/0 |
| | | 841.50 | 22.25 | H | 3.13 | -0.97 | 18.14 | 65.16 | 38.50 | -20.36 | 1/0 |

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain #REF! | ERP (dBm) | ERP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.4 | QPSK | 824.00 | 23.33 | H | 3.10 | -0.82 | 19.41 | 87.30 | 38.50 | -19.09 | 1/5 |
| | 16-QAM | | 22.16 | H | 3.10 | -0.82 | 18.24 | 66.68 | 38.50 | -20.26 | 1/5 |
| 3 | QPSK | | 23.50 | H | 3.10 | -0.82 | 19.58 | 90.78 | 38.50 | -18.92 | 1/8 |
| | 16-QAM | | 22.52 | H | 3.10 | -0.82 | 18.60 | 72.44 | 38.50 | -19.90 | 1/0 |
| 5 | QPSK | | 23.75 | H | 3.10 | -0.82 | 19.83 | 96.16 | 38.50 | -18.67 | 1/12 |
| | 16-QAM | | 22.53 | H | 3.10 | -0.82 | 18.61 | 72.61 | 38.50 | -19.89 | 1/24 |
| 10 | QPSK | | 23.77 | H | 3.10 | -0.82 | 19.85 | 96.61 | 38.50 | -18.65 | 1/0 |
| | 16-QAM | | 22.74 | H | 3.10 | -0.82 | 18.82 | 76.21 | 38.50 | -19.68 | 1/0 |
| 15 | QPSK | | 23.65 | H | 3.10 | -0.82 | 19.73 | 93.97 | 38.50 | -18.77 | 1/0 |
| | 16-QAM | | 22.54 | H | 3.10 | -0.82 | 18.62 | 72.78 | 38.50 | -19.88 | 1/0 |


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## LTE Band 41(PC2)

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | QPSK | 2498.50 | 19.12 | H | 5.36 | 10.18 | 23.93 | 247.17 | 33.00 | -9.07 | 1/0 |
| | | 2593.00 | 20.06 | H | 5.47 | 10.03 | 24.62 | 289.73 | 33.00 | -8.38 | 1/0 |
| | | 2687.50 | 21.22 | H | 5.57 | 10.05 | 25.71 | 372.39 | 33.00 | -7.29 | 1/0 |
| | 16-QAM | 2498.50 | 18.37 | H | 5.36 | 10.18 | 23.18 | 207.97 | 33.00 | -9.82 | 1/12 |
| | | 2593.00 | 19.25 | H | 5.47 | 10.03 | 23.81 | 240.44 | 33.00 | -9.19 | 1/12 |
| | | 2687.50 | 20.60 | H | 5.57 | 10.05 | 25.09 | 322.85 | 33.00 | -7.91 | 1/0 |
| 10 | QPSK | 2501.00 | 19.38 | H | 5.38 | 10.17 | 24.17 | 261.22 | 33.00 | -8.83 | 1/25 |
| | | 2593.00 | 20.33 | H | 5.47 | 10.03 | 24.89 | 308.32 | 33.00 | -8.11 | 1/25 |
| | | 2685.00 | 21.35 | H | 5.56 | 10.05 | 25.85 | 384.59 | 33.00 | -7.15 | 1/0 |
| | 16-QAM | 2501.00 | 18.64 | H | 5.38 | 10.17 | 23.43 | 220.29 | 33.00 | -9.57 | 1/25 |
| | | 2593.00 | 19.03 | H | 5.47 | 10.03 | 23.59 | 228.56 | 33.00 | -9.41 | 1/49 |
| | | 2685.00 | 20.60 | H | 5.56 | 10.05 | 25.10 | 323.59 | 33.00 | -7.90 | 1/0 |
| 15 | QPSK | 2503.50 | 19.85 | H | 5.37 | 10.17 | 24.65 | 291.74 | 33.00 | -8.35 | 1/74 |
| | | 2593.00 | 20.02 | H | 5.47 | 10.03 | 24.58 | 287.08 | 33.00 | -8.42 | 1/74 |
| | | 2682.50 | 21.46 | H | 5.56 | 10.05 | 25.95 | 393.55 | 33.00 | -7.05 | 1/0 |
| | 16-QAM | 2503.50 | 19.10 | H | 5.37 | 10.17 | 23.90 | 245.47 | 33.00 | -9.10 | 1/74 |
| | | 2593.00 | 19.25 | H | 5.47 | 10.03 | 23.81 | 240.44 | 33.00 | -9.19 | 1/74 |
| | | 2682.50 | 20.77 | H | 5.56 | 10.05 | 25.26 | 335.74 | 33.00 | -7.74 | 1/0 |
| 20 | QPSK | 2506.00 | 20.00 | H | 5.37 | 10.16 | 24.79 | 301.30 | 33.00 | -8.21 | 1/99 |
| | | 2593.00 | 20.15 | H | 5.47 | 10.03 | 24.71 | 295.80 | 33.00 | -8.29 | 1/99 |
| | | 2680.00 | 21.61 | H | 5.56 | 10.05 | 26.10 | 407.38 | 33.00 | -6.90 | 1/0 |
| | 16-QAM | 2506.00 | 18.88 | H | 5.37 | 10.16 | 23.67 | 232.81 | 33.00 | -9.33 | 1/49 |
| | | 2593.00 | 19.47 | H | 5.47 | 10.03 | 24.03 | 252.93 | 33.00 | -8.97 | 1/49 |
| | | 2680.00 | 20.86 | H | 5.56 | 10.05 | 25.35 | 342.77 | 33.00 | -7.65 | 1/0 |

## LTE Band 66

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.4 | QPSK | 1710.70 | 18.63 | V | 4.43 | 9.50 | 23.70 | 234.42 | 30.00 | -6.30 | 1/3 |
| | | 1745.00 | 18.12 | V | 4.47 | 9.66 | 23.30 | 213.80 | 30.00 | -6.70 | 1/3 |
| | | 1779.30 | 17.11 | V | 4.52 | 9.68 | 22.27 | 168.66 | 30.00 | -7.73 | 1/5 |
| | 16-QAM | 1710.70 | 17.74 | V | 4.43 | 9.50 | 22.81 | 190.99 | 30.00 | -7.19 | 1/3 |
| | | 1745.00 | 17.10 | V | 4.47 | 9.66 | 22.28 | 169.04 | 30.00 | -7.72 | 1/5 |
| | | 1779.30 | 16.19 | V | 4.52 | 9.68 | 21.35 | 136.46 | 30.00 | -8.65 | 1/3 |
| 3 | QPSK | 1711.50 | 18.60 | V | 4.44 | 9.51 | 23.67 | 232.81 | 30.00 | -6.33 | 1/8 |
| | | 1745.00 | 17.97 | V | 4.47 | 9.66 | 23.15 | 206.54 | 30.00 | -6.85 | 1/8 |
| | | 1778.50 | 17.36 | V | 4.52 | 9.68 | 22.52 | 178.65 | 30.00 | -7.48 | 1/8 |
| | 16-QAM | 1711.50 | 17.70 | V | 4.44 | 9.51 | 22.77 | 189.23 | 30.00 | -7.23 | 1/8 |
| | | 1745.00 | 17.14 | V | 4.47 | 9.66 | 22.32 | 170.61 | 30.00 | -7.68 | 1/8 |
| | | 1778.50 | 16.38 | V | 4.52 | 9.68 | 21.54 | 142.56 | 30.00 | -8.46 | 1/8 |
| 5 | QPSK | 1712.50 | 18.63 | V | 4.44 | 9.51 | 23.71 | 234.96 | 30.00 | -6.29 | 1/12 |
| | | 1745.00 | 18.11 | V | 4.47 | 9.66 | 23.29 | 213.30 | 30.00 | -6.71 | 1/12 |
| | | 1777.50 | 17.38 | V | 4.52 | 9.68 | 22.54 | 179.47 | 30.00 | -7.46 | 1/12 |
| | 16-QAM | 1712.50 | 17.81 | V | 4.44 | 9.51 | 22.89 | 194.54 | 30.00 | -7.11 | 1/12 |
| | | 1745.00 | 17.14 | V | 4.47 | 9.66 | 22.32 | 170.61 | 30.00 | -7.68 | 1/12 |
| | | 1777.50 | 16.44 | V | 4.52 | 9.68 | 21.60 | 144.54 | 30.00 | -8.40 | 1/12 |
| 10 | QPSK | 1715.00 | 18.42 | V | 4.44 | 9.52 | 23.51 | 224.39 | 30.00 | -6.49 | 1/49 |
| | | 1745.00 | 18.11 | V | 4.47 | 9.66 | 23.29 | 213.30 | 30.00 | -6.71 | 1/25 |
| | | 1775.00 | 17.32 | V | 4.51 | 9.68 | 22.49 | 177.42 | 30.00 | -7.51 | 1/25 |
| | 16-QAM | 1715.00 | 17.51 | V | 4.44 | 9.52 | 22.60 | 181.97 | 30.00 | -7.40 | 1/49 |
| | | 1745.00 | 17.18 | V | 4.47 | 9.66 | 22.36 | 172.19 | 30.00 | -7.64 | 1/25 |
| | | 1775.00 | 16.15 | V | 4.51 | 9.68 | 21.32 | 135.52 | 30.00 | -8.68 | 1/49 |
| 15 | QPSK | 1717.50 | 18.21 | V | 4.44 | 9.53 | 23.30 | 213.80 | 30.00 | -6.70 | 1/74 |
| | | 1745.00 | 17.77 | V | 4.47 | 9.66 | 22.95 | 197.24 | 30.00 | -7.05 | 1/37 |
| | | 1772.50 | 17.31 | V | 4.51 | 9.68 | 22.48 | 177.01 | 30.00 | -7.52 | 1/37 |
| | 16-QAM | 1717.50 | 17.25 | V | 4.44 | 9.53 | 22.34 | 171.40 | 30.00 | -7.66 | 1/74 |
| | | 1745.00 | 16.84 | V | 4.47 | 9.66 | 22.02 | 159.22 | 30.00 | -7.98 | 1/37 |
| | | 1772.50 | 16.42 | V | 4.51 | 9.68 | 21.59 | 144.21 | 30.00 | -8.41 | 1/37 |
| 20 | QPSK | 1720.00 | 18.39 | V | 4.44 | 9.55 | 23.49 | 223.36 | 30.00 | -6.51 | 1/99 |
| | | 1745.00 | 18.01 | V | 4.47 | 9.66 | 23.19 | 208.45 | 30.00 | -6.81 | 1/49 |
| | | 1770.00 | 17.93 | V | 4.51 | 9.68 | 23.11 | 204.64 | 30.00 | -6.89 | 1/0 |
| | 16-QAM | 1720.00 | 17.48 | V | 4.44 | 9.55 | 22.58 | 181.13 | 30.00 | -7.42 | 1/99 |
| | | 1745.00 | 17.11 | V | 4.47 | 9.66 | 22.29 | 169.43 | 30.00 | -7.71 | 1/49 |
| | | 1770.00 | 16.91 | V | 4.51 | 9.68 | 22.09 | 161.81 | 30.00 | -7.91 | 1/49 |


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## 5G NR n5

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | ERP (dBm) | ERP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | QPSK | 826.50 | 25.29 | V | 3.11 | -0.84 | 21.34 | 136.14 | 38.50 | -17.16 | 1/1 |
| | | 836.50 | 24.10 | V | 3.13 | -0.93 | 20.04 | 100.93 | 38.50 | -18.46 | 1/1 |
| | | 846.50 | 23.53 | V | 3.14 | -1.02 | 19.36 | 86.30 | 38.50 | -19.14 | 1/1 |
| | 16-QAM | 826.50 | 23.82 | V | 3.11 | -0.84 | 19.87 | 97.05 | 38.50 | -18.63 | 1/1 |
| | | 836.50 | 22.59 | V | 3.13 | -0.93 | 18.53 | 71.29 | 38.50 | -19.97 | 1/1 |
| | | 846.50 | 22.37 | V | 3.14 | -1.02 | 18.20 | 66.07 | 38.50 | -20.30 | 1/1 |
| 10 | QPSK | 829.00 | 25.28 | V | 3.11 | -0.86 | 21.31 | 135.21 | 38.50 | -17.19 | 1/1 |
| | | 836.50 | 23.63 | V | 3.13 | -0.93 | 19.57 | 90.57 | 38.50 | -18.93 | 1/1 |
| | | 844.00 | 23.52 | V | 3.14 | -1.00 | 19.38 | 86.70 | 38.50 | -19.12 | 1/1 |
| | 16-QAM | 829.00 | 23.99 | V | 3.11 | -0.86 | 20.02 | 100.46 | 38.50 | -18.48 | 1/1 |
| | | 836.50 | 22.40 | V | 3.13 | -0.93 | 18.34 | 68.23 | 38.50 | -20.16 | 1/1 |
| | | 844.00 | 22.01 | V | 3.14 | -1.00 | 17.87 | 61.24 | 38.50 | -20.63 | 1/1 |
| 15 | QPSK | 831.50 | 25.35 | V | 3.11 | -0.88 | 21.35 | 136.46 | 38.50 | -17.15 | 1/1 |
| | | 836.50 | 23.67 | V | 3.13 | -0.93 | 19.61 | 91.41 | 38.50 | -18.89 | 1/1 |
| | | 841.50 | 23.53 | V | 3.13 | -0.97 | 19.42 | 87.50 | 38.50 | -19.08 | 1/1 |
| | 16-QAM | 831.50 | 24.43 | V | 3.11 | -0.88 | 20.43 | 110.41 | 38.50 | -18.07 | 1/1 |
| | | 836.50 | 22.58 | V | 3.13 | -0.93 | 18.52 | 71.12 | 38.50 | -19.98 | 1/1 |
| | | 841.50 | 22.56 | V | 3.13 | -0.97 | 18.45 | 69.98 | 38.50 | -20.05 | 1/1 |
| 20 | QPSK | 834.00 | 24.14 | V | 3.12 | -0.91 | 20.11 | 102.57 | 38.50 | -18.39 | 1/1 |
| | | 836.50 | 23.62 | V | 3.13 | -0.93 | 19.56 | 90.36 | 38.50 | -18.94 | 1/1 |
| | | 839.00 | 23.35 | V | 3.13 | -0.95 | 19.26 | 84.33 | 38.50 | -19.24 | 1/1 |
| | 16-QAM | 834.00 | 22.89 | V | 3.12 | -0.91 | 18.86 | 76.91 | 38.50 | -19.64 | 1/1 |
| | | 836.50 | 22.72 | V | 3.13 | -0.93 | 18.66 | 73.45 | 38.50 | -19.84 | 1/1 |
| | | 839.00 | 22.32 | V | 3.13 | -0.95 | 18.23 | 66.53 | 38.50 | -20.27 | 1/1 |

## 5G NR n25

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | QPSK | 1852.50 | 17.10 | H | 4.62 | 9.50 | 21.98 | 157.76 | 33.00 | -11.02 | 1/23 |
| | | 1882.50 | 18.84 | H | 4.65 | 9.27 | 23.45 | 221.31 | 33.00 | -9.55 | 1/1 |
| | | 1912.50 | 19.50 | H | 4.69 | 8.96 | 23.77 | 238.23 | 33.00 | -9.23 | 1/1 |
| | 16-QAM | 1852.50 | 16.03 | H | 4.62 | 9.50 | 20.91 | 123.31 | 33.00 | -12.09 | 1/23 |
| | | 1882.50 | 17.84 | H | 4.65 | 9.27 | 22.45 | 175.79 | 33.00 | -10.55 | 1/1 |
| | | 1912.50 | 18.56 | H | 4.69 | 8.96 | 22.83 | 191.87 | 33.00 | -10.17 | 1/1 |
| 10 | QPSK | 1855.00 | 17.33 | H | 4.62 | 9.48 | 22.19 | 165.58 | 33.00 | -10.81 | 1/26 |
| | | 1882.50 | 18.77 | H | 4.65 | 9.27 | 23.38 | 217.77 | 33.00 | -9.62 | 1/26 |
| | | 1910.00 | 19.73 | H | 4.68 | 8.99 | 24.05 | 254.10 | 33.00 | -8.95 | 1/26 |
| | 16-QAM | 1855.00 | 16.27 | H | 4.62 | 9.48 | 21.13 | 129.72 | 33.00 | -11.87 | 1/26 |
| | | 1882.50 | 17.73 | H | 4.65 | 9.27 | 22.34 | 171.40 | 33.00 | -10.66 | 1/26 |
| | | 1910.00 | 18.75 | H | 4.68 | 8.99 | 23.07 | 202.77 | 33.00 | -9.93 | 1/26 |
| 15 | QPSK | 1857.50 | 17.33 | H | 4.63 | 9.47 | 22.17 | 164.82 | 33.00 | -10.83 | 1/40 |
| | | 1882.50 | 18.63 | H | 4.65 | 9.27 | 23.24 | 210.86 | 33.00 | -9.76 | 1/1 |
| | | 1907.50 | 20.02 | H | 4.69 | 9.03 | 24.37 | 273.53 | 33.00 | -8.63 | 1/40 |
| | 16-QAM | 1857.50 | 16.33 | H | 4.63 | 9.47 | 21.17 | 130.92 | 33.00 | -11.83 | 1/40 |
| | | 1882.50 | 17.79 | H | 4.65 | 9.27 | 22.40 | 173.78 | 33.00 | -10.60 | 1/1 |
| | | 1907.50 | 18.95 | H | 4.69 | 9.03 | 23.30 | 213.80 | 33.00 | -9.70 | 1/40 |
| 20 | QPSK | 1860.00 | 17.39 | H | 4.63 | 9.45 | 22.21 | 166.34 | 33.00 | -10.79 | 1/104 |
| | | 1882.50 | 18.73 | H | 4.65 | 9.27 | 23.34 | 215.77 | 33.00 | -9.66 | 1/104 |
| | | 1905.00 | 19.85 | H | 4.68 | 9.06 | 24.23 | 264.85 | 33.00 | -8.77 | 1/1 |
| | 16-QAM | 1860.00 | 15.75 | H | 4.63 | 9.45 | 20.57 | 114.02 | 33.00 | -12.43 | 1/1 |
| | | 1882.50 | 17.84 | H | 4.65 | 9.27 | 22.45 | 175.79 | 33.00 | -10.55 | 1/1 |
| | | 1905.00 | 18.81 | H | 4.68 | 9.06 | 23.19 | 208.45 | 33.00 | -9.81 | 1/1 |


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**5G NR n41**

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | QPSK | 2501.01 | 16.41 | H | 5.38 | 10.00 | 21.03 | 126.77 | 33.00 | -11.97 | 1/1 |
| | | 2592.99 | 16.20 | H | 5.47 | 9.91 | 20.64 | 115.88 | 33.00 | -12.36 | 1/1 |
| | | 2685.00 | 16.77 | H | 5.56 | 9.87 | 21.09 | 128.53 | 33.00 | -11.91 | 1/12 |
| | 16-QAM | 2501.01 | 15.62 | H | 5.38 | 10.00 | 20.24 | 105.68 | 33.00 | -12.76 | 1/1 |
| | | 2592.99 | 15.14 | H | 5.47 | 9.91 | 19.58 | 90.78 | 33.00 | -13.42 | 1/1 |
| | | 2685.00 | 16.08 | H | 5.56 | 9.87 | 20.40 | 109.65 | 33.00 | -12.60 | 1/12 |
| 15 | QPSK | 2503.51 | 16.59 | H | 5.37 | 9.99 | 21.21 | 132.13 | 33.00 | -11.79 | 1/1 |
| | | 2592.99 | 16.45 | H | 5.47 | 9.91 | 20.89 | 122.74 | 33.00 | -12.11 | 1/1 |
| | | 2682.50 | 17.02 | H | 5.56 | 9.87 | 21.34 | 136.14 | 33.00 | -11.66 | 1/36 |
| | 16-QAM | 2503.51 | 15.74 | H | 5.37 | 9.99 | 20.36 | 108.64 | 33.00 | -12.64 | 1/1 |
| | | 2592.99 | 15.55 | H | 5.47 | 9.91 | 19.99 | 99.77 | 33.00 | -13.01 | 1/1 |
| | | 2682.50 | 16.05 | H | 5.56 | 9.87 | 20.37 | 108.89 | 33.00 | -12.63 | 1/36 |
| 20 | QPSK | 2506.01 | 16.61 | H | 5.37 | 9.99 | 21.23 | 132.74 | 33.00 | -11.77 | 1/1 |
| | | 2592.99 | 17.42 | H | 5.47 | 9.91 | 21.86 | 153.46 | 33.00 | -11.14 | 1/1 |
| | | 2680.00 | 17.14 | H | 5.56 | 9.87 | 21.46 | 139.96 | 33.00 | -11.54 | 1/49 |
| | 16-QAM | 2506.01 | 15.90 | H | 5.37 | 9.99 | 20.52 | 112.72 | 33.00 | -12.48 | 1/1 |
| | | 2592.99 | 16.73 | H | 5.47 | 9.91 | 21.17 | 130.92 | 33.00 | -11.83 | 1/1 |
| | | 2680.00 | 16.21 | H | 5.56 | 9.87 | 20.53 | 112.98 | 33.00 | -12.47 | 1/49 |
| 30 | QPSK | 2511.01 | 16.68 | H | 5.39 | 9.98 | 21.27 | 133.97 | 33.00 | -11.73 | 1/1 |
| | | 2592.99 | 17.68 | H | 5.47 | 9.91 | 22.12 | 162.93 | 33.00 | -10.88 | 1/76 |
| | | 2675.00 | 17.33 | H | 5.56 | 9.87 | 21.64 | 145.88 | 33.00 | -11.36 | 1/76 |
| | 16-QAM | 2511.01 | 15.91 | H | 5.39 | 9.98 | 20.50 | 112.20 | 33.00 | -12.50 | 1/1 |
| | | 2592.99 | 16.81 | H | 5.47 | 9.91 | 21.25 | 133.35 | 33.00 | -11.75 | 1/76 |
| | | 2675.00 | 16.48 | H | 5.56 | 9.87 | 20.79 | 119.95 | 33.00 | -12.21 | 1/76 |
| 40 | QPSK | 2516.01 | 16.73 | H | 5.38 | 9.97 | 21.32 | 135.52 | 33.00 | -11.68 | 1/1 |
| | | 2592.99 | 17.72 | H | 5.47 | 9.91 | 22.16 | 164.44 | 33.00 | -10.84 | 1/104 |
| | | 2670.00 | 17.29 | H | 5.55 | 9.87 | 21.62 | 145.21 | 33.00 | -11.38 | 1/104 |
| | 16-QAM | 2516.01 | 15.80 | H | 5.38 | 9.97 | 20.39 | 109.40 | 33.00 | -12.61 | 1/1 |
| | | 2592.99 | 16.86 | H | 5.47 | 9.91 | 21.30 | 134.90 | 33.00 | -11.70 | 1/104 |
| | | 2670.00 | 16.40 | H | 5.55 | 9.87 | 20.73 | 118.30 | 33.00 | -12.27 | 1/104 |
| 50 | QPSK | 2521.01 | 17.17 | H | 5.40 | 9.96 | 21.74 | 149.28 | 33.00 | -11.26 | 1/67 |
| | | 2592.99 | 17.55 | H | 5.47 | 9.91 | 21.99 | 158.12 | 33.00 | -11.01 | 1/131 |
| | | 2665.00 | 16.93 | H | 5.55 | 9.87 | 21.25 | 133.35 | 33.00 | -11.75 | 1/131 |
| | 16-QAM | 2521.01 | 16.37 | H | 5.40 | 9.96 | 20.94 | 124.17 | 33.00 | -12.06 | 1/67 |
| | | 2592.99 | 16.56 | H | 5.47 | 9.91 | 21.00 | 125.89 | 33.00 | -12.00 | 1/131 |
| | | 2665.00 | 16.17 | H | 5.55 | 9.87 | 20.49 | 111.94 | 33.00 | -12.51 | 1/131 |
| 60 | QPSK | 2526.01 | 17.53 | H | 5.38 | 9.95 | 22.10 | 162.18 | 33.00 | -10.90 | 1/81 |
| | | 2592.99 | 18.06 | H | 5.47 | 9.91 | 22.50 | 177.83 | 33.00 | -10.50 | 1/81 |
| | | 2660.00 | 17.41 | H | 5.56 | 9.87 | 21.72 | 148.59 | 33.00 | -11.28 | 1/1 |
| | 16-QAM | 2526.01 | 16.54 | H | 5.38 | 9.95 | 21.11 | 129.12 | 33.00 | -11.89 | 1/81 |
| | | 2592.99 | 17.03 | H | 5.47 | 9.91 | 21.47 | 140.28 | 33.00 | -11.53 | 1/81 |
| | | 2660.00 | 16.64 | H | 5.56 | 9.87 | 20.95 | 124.45 | 33.00 | -12.05 | 1/1 |
| 70 | QPSK | 2531.01 | 16.74 | H | 5.39 | 9.94 | 21.29 | 134.59 | 33.00 | -11.71 | 1/1 |
| | | 2592.99 | 16.89 | H | 5.47 | 9.91 | 21.33 | 135.83 | 33.00 | -11.67 | 1/1 |
| | | 2655.00 | 16.81 | H | 5.54 | 9.87 | 21.14 | 130.02 | 33.00 | -11.86 | 1/1 |
| | 16-QAM | 2531.01 | 15.91 | H | 5.39 | 9.94 | 20.46 | 111.17 | 33.00 | -12.54 | 1/1 |
| | | 2592.99 | 15.88 | H | 5.47 | 9.91 | 20.32 | 107.65 | 33.00 | -12.68 | 1/1 |
| | | 2655.00 | 15.76 | H | 5.54 | 9.87 | 20.08 | 101.86 | 33.00 | -12.92 | 1/1 |
| 80 | QPSK | 2536.01 | 16.95 | H | 5.41 | 9.93 | 21.48 | 140.60 | 33.00 | -11.52 | 1/1 |
| | | 2592.99 | 17.52 | H | 5.47 | 9.91 | 21.96 | 157.04 | 33.00 | -11.04 | 1/215 |
| | | 2650.00 | 16.65 | H | 5.53 | 9.87 | 20.99 | 125.60 | 33.00 | -12.01 | 1/215 |
| | 16-QAM | 2536.01 | 15.95 | H | 5.41 | 9.93 | 20.48 | 111.69 | 33.00 | -12.52 | 1/1 |
| | | 2592.99 | 16.49 | H | 5.47 | 9.91 | 20.93 | 123.88 | 33.00 | -12.07 | 1/215 |
| | | 2650.00 | 15.94 | H | 5.53 | 9.87 | 20.28 | 106.66 | 33.00 | -12.72 | 1/215 |
| 90 | QPSK | 2541.01 | 17.02 | H | 5.43 | 9.92 | 21.52 | 141.91 | 33.00 | -11.48 | 1/1 |
| | | 2592.99 | 17.56 | H | 5.47 | 9.91 | 22.00 | 158.49 | 33.00 | -11.00 | 1/243 |
| | | 2645.00 | 16.86 | H | 5.53 | 9.87 | 21.20 | 131.83 | 33.00 | -11.80 | 1/243 |
| | 16-QAM | 2541.01 | 16.32 | H | 5.43 | 9.92 | 20.82 | 120.78 | 33.00 | -12.18 | 1/1 |
| | | 2592.99 | 16.69 | H | 5.47 | 9.91 | 21.13 | 129.72 | 33.00 | -11.87 | 1/243 |
| | | 2645.00 | 16.05 | H | 5.53 | 9.87 | 20.39 | 109.40 | 33.00 | -12.61 | 1/243 |
| 100 | QPSK | 2546.01 | 17.13 | H | 5.42 | 9.91 | 21.62 | 145.21 | 33.00 | -11.38 | 1/1 |
| | | 2592.99 | 17.40 | H | 5.47 | 9.91 | 21.84 | 152.76 | 33.00 | -11.16 | 1/271 |
| | | 2640.00 | 16.84 | H | 5.52 | 9.88 | 21.20 | 131.83 | 33.00 | -11.80 | 1/271 |
| | 16-QAM | 2546.01 | 16.36 | H | 5.42 | 9.91 | 20.85 | 121.62 | 33.00 | -12.15 | 1/271 |
| | | 2592.99 | 16.48 | H | 5.47 | 9.91 | 20.92 | 123.59 | 33.00 | -12.08 | 1/1 |
| | | 2640.00 | 16.05 | H | 5.52 | 9.88 | 20.41 | 109.90 | 33.00 | -12.59 | 1/271 |


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**5G NR n41(SRS1)**

| BW (MHz) | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 2501.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2685.00 | | | | | | | | |
| 15 | 2503.51 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2682.50 | | | | | | | | |
| 20 | 2506.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2680.00 | | | | | | | | |
| 30 | 2511.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2675.00 | | | | | | | | |
| 40 | 2516.01 | 11.76 | H | 5.38 | 9.97 | 16.35 | 43.15 | 33.00 | -16.65 |
| | 2592.99 | 12.18 | H | 5.47 | 9.91 | 16.62 | 45.92 | 33.00 | -16.38 |
| | 2670.00 | 12.65 | H | 5.55 | 9.87 | 16.98 | 49.89 | 33.00 | -16.02 |
| 50 | 2521.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2665.00 | | | | | | | | |
| 60 | 2526.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2660.00 | | | | | | | | |
| 70 | 2530.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2655.00 | | | | | | | | |
| 80 | 2536.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2650.00 | | | | | | | | |
| 90 | 2541.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2645.00 | | | | | | | | |
| 100 | 2546.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2640.00 | | | | | | | | |


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**5G NR n41(SRS2)**

| BW (MHz) | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 2501.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2685.00 | | | | | | | | |
| 15 | 2503.51 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2682.50 | | | | | | | | |
| 20 | 2506.01 | 9.75 | H | 5.37 | 9.99 | 14.37 | 27.35 | 33.00 | -18.63 |
| | 2592.99 | 9.88 | H | 5.47 | 9.91 | 14.32 | 27.04 | 33.00 | -18.68 |
| | 2680.00 | 10.84 | H | 5.56 | 9.87 | 15.15 | 32.73 | 33.00 | -17.85 |
| 30 | 2511.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2675.00 | | | | | | | | |
| 40 | 2516.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2670.00 | | | | | | | | |
| 50 | 2521.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2665.00 | | | | | | | | |
| 60 | 2526.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2660.00 | | | | | | | | |
| 70 | 2530.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2655.00 | | | | | | | | |
| 80 | 2536.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2650.00 | | | | | | | | |
| 90 | 2541.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2645.00 | | | | | | | | |
| 100 | 2546.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2640.00 | | | | | | | | |


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**5G NR n41(SRS3)**

| BW (MHz) | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 2501.01 | 3.63 | V | 5.38 | 10.00 | 8.25 | 6.68 | 33.00 | -24.75 |
| | 2592.99 | 6.72 | H | 5.47 | 9.91 | 11.17 | 13.09 | 33.00 | -21.83 |
| | 2685.00 | 1.05 | H | 5.56 | 9.87 | 5.36 | 3.44 | 33.00 | -27.64 |
| 15 | 2503.51 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2682.50 | | | | | | | | |
| 20 | 2506.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2680.00 | | | | | | | | |
| 30 | 2511.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2675.00 | | | | | | | | |
| 40 | 2516.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2670.00 | | | | | | | | |
| 50 | 2521.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2665.00 | | | | | | | | |
| 60 | 2526.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2660.00 | | | | | | | | |
| 70 | 2530.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2655.00 | | | | | | | | |
| 80 | 2536.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2650.00 | | | | | | | | |
| 90 | 2541.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2645.00 | | | | | | | | |
| 100 | 2546.01 | | | | | | | | |
| | 2592.99 | | | | | | | | |
| | 2640.00 | | | | | | | | |


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## 5G NR n66(Main1 Ant)

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | QPSK | 1712.50 | 17.34 | V | 4.44 | 9.51 | 22.42 | 174.58 | 30.00 | -7.58 | 1/13 |
| | | 1745.00 | 17.44 | V | 4.47 | 9.66 | 22.63 | 183.23 | 30.00 | -7.37 | 1/1 |
| | | 1777.50 | 16.68 | V | 4.52 | 9.68 | 21.84 | 152.76 | 30.00 | -8.16 | 1/1 |
| | 16-QAM | 1712.50 | 16.23 | V | 4.44 | 9.51 | 21.31 | 135.21 | 30.00 | -8.69 | 1/13 |
| | | 1745.00 | 16.54 | V | 4.47 | 9.66 | 21.73 | 148.94 | 30.00 | -8.27 | 1/1 |
| | | 1777.50 | 15.73 | V | 4.52 | 9.68 | 20.89 | 122.74 | 30.00 | -9.11 | 1/1 |
| 10 | QPSK | 1715.00 | 17.54 | V | 4.44 | 9.52 | 22.63 | 183.23 | 30.00 | -7.37 | 1/50 |
| | | 1745.00 | 17.47 | V | 4.47 | 9.66 | 22.66 | 184.50 | 30.00 | -7.34 | 1/26 |
| | | 1775.00 | 16.94 | V | 4.51 | 9.68 | 22.11 | 162.55 | 30.00 | -7.89 | 1/1 |
| | 16-QAM | 1715.00 | 16.47 | V | 4.44 | 9.52 | 21.56 | 143.22 | 30.00 | -8.44 | 1/50 |
| | | 1745.00 | 16.60 | V | 4.47 | 9.66 | 21.78 | 150.66 | 30.00 | -8.22 | 1/26 |
| | | 1775.00 | 16.09 | V | 4.51 | 9.68 | 21.26 | 133.66 | 30.00 | -8.74 | 1/1 |
| 15 | QPSK | 1717.50 | 17.56 | V | 4.44 | 9.53 | 22.65 | 184.08 | 30.00 | -7.35 | 1/77 |
| | | 1745.00 | 17.78 | V | 4.47 | 9.66 | 22.96 | 197.70 | 30.00 | -7.04 | 1/1 |
| | | 1772.50 | 16.55 | V | 4.51 | 9.68 | 21.72 | 148.59 | 30.00 | -8.28 | 1/77 |
| | 16-QAM | 1717.50 | 16.83 | V | 4.44 | 9.53 | 21.92 | 155.60 | 30.00 | -8.08 | 1/77 |
| | | 1745.00 | 16.76 | V | 4.47 | 9.66 | 21.94 | 156.31 | 30.00 | -8.06 | 1/1 |
| | | 1772.50 | 15.65 | V | 4.51 | 9.68 | 20.82 | 120.78 | 30.00 | -9.18 | 1/77 |
| 20 | QPSK | 1720.00 | 18.08 | V | 4.44 | 9.55 | 23.18 | 207.97 | 30.00 | -6.82 | 1/1 |
| | | 1745.00 | 17.73 | V | 4.47 | 9.66 | 22.91 | 195.43 | 30.00 | -7.09 | 1/1 |
| | | 1770.00 | 16.57 | V | 4.51 | 9.68 | 21.75 | 149.62 | 30.00 | -8.25 | 1/104 |
| | 16-QAM | 1720.00 | 16.94 | V | 4.44 | 9.55 | 22.04 | 159.96 | 30.00 | -7.96 | 1/1 |
| | | 1745.00 | 16.72 | V | 4.47 | 9.66 | 21.90 | 154.88 | 30.00 | -8.10 | 1/1 |
| | | 1770.00 | 15.81 | V | 4.51 | 9.68 | 20.99 | 125.60 | 30.00 | -9.01 | 1/1 |

## 5G NR n66(Sub2 Ant)

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | QPSK | | | | | | | | | | |
| | 16-QAM | | | | | | | | | | |
| 10 | QPSK | 1715.00 | 15.21 | V | 4.44 | 9.52 | 20.30 | 107.15 | 30.00 | -9.70 | 1/26 |
| | | 1745.00 | 15.49 | V | 4.47 | 9.66 | 20.67 | 116.68 | 30.00 | -9.33 | 1/26 |
| | | 1775.00 | 14.92 | V | 4.51 | 9.68 | 20.09 | 102.09 | 30.00 | -9.91 | 1/26 |
| | 16-QAM | 1715.00 | 14.17 | V | 4.44 | 9.52 | 19.26 | 84.33 | 30.00 | -10.74 | 1/26 |
| | | 1745.00 | 14.48 | V | 4.47 | 9.66 | 19.66 | 92.47 | 30.00 | -10.34 | 1/26 |
| | | 1775.00 | 13.91 | V | 4.51 | 9.68 | 19.08 | 80.91 | 30.00 | -10.92 | 1/26 |
| 15 | QPSK | | | | | | | | | | |
| | 16-QAM | | | | | | | | | | |
| 20 | QPSK | | | | | | | | | | |
| | 16-QAM | | | | | | | | | | |


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## 5G NR n77 (3450 ~ 3550 MHz)

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | QPSK | 3455.01 | 20.32 | H | 6.31 | 10.61 | 24.63 | 290.40 | 30.00 | -5.37 | 1/22 |
| | | 3499.98 | 20.62 | H | 6.36 | 10.67 | 24.93 | 311.17 | 30.00 | -5.07 | 1/1 |
| | | 3544.98 | 21.08 | H | 6.39 | 10.75 | 25.43 | 349.14 | 30.00 | -4.57 | 1/22 |
| | 16-QAM | 3455.01 | 19.32 | H | 6.31 | 10.61 | 23.63 | 230.67 | 30.00 | -6.37 | 1/22 |
| | | 3499.98 | 19.77 | H | 6.36 | 10.67 | 24.08 | 255.86 | 30.00 | -5.92 | 1/1 |
| | | 3544.98 | 20.14 | H | 6.39 | 10.75 | 24.49 | 281.19 | 30.00 | -5.51 | 1/22 |
| 15 | QPSK | 3457.50 | 20.51 | H | 6.31 | 10.62 | 24.81 | 302.69 | 30.00 | -5.19 | 1/36 |
| | | 3499.98 | 21.27 | H | 6.36 | 10.67 | 25.58 | 361.41 | 30.00 | -4.42 | 1/36 |
| | | 3542.49 | 21.35 | H | 6.39 | 10.75 | 25.70 | 371.54 | 30.00 | -4.30 | 1/19 |
| | 16-QAM | 3457.50 | 19.52 | H | 6.31 | 10.62 | 23.82 | 240.99 | 30.00 | -6.18 | 1/36 |
| | | 3499.98 | 20.33 | H | 6.36 | 10.67 | 24.64 | 291.07 | 30.00 | -5.36 | 1/36 |
| | | 3542.49 | 20.22 | H | 6.39 | 10.75 | 24.57 | 286.42 | 30.00 | -5.43 | 1/19 |
| 20 | QPSK | 3460.01 | 20.33 | H | 6.32 | 10.62 | 24.63 | 290.40 | 30.00 | -5.37 | 1/1 |
| | | 3499.98 | 21.05 | H | 6.36 | 10.67 | 25.36 | 343.56 | 30.00 | -4.64 | 1/49 |
| | | 3540.00 | 21.56 | H | 6.38 | 10.74 | 25.93 | 391.74 | 30.00 | -4.07 | 1/1 |
| | 16-QAM | 3460.01 | 19.45 | H | 6.32 | 10.62 | 23.75 | 237.14 | 30.00 | -6.25 | 1/1 |
| | | 3499.98 | 20.24 | H | 6.36 | 10.67 | 24.55 | 285.10 | 30.00 | -5.45 | 1/49 |
| | | 3540.00 | 20.54 | H | 6.38 | 10.74 | 24.91 | 309.74 | 30.00 | -5.09 | 1/1 |
| 30 | QPSK | 3465.00 | 20.79 | H | 6.32 | 10.63 | 25.09 | 322.85 | 30.00 | -4.91 | 1/76 |
| | | 3499.98 | 20.64 | H | 6.36 | 10.67 | 24.95 | 312.61 | 30.00 | -5.05 | 1/1 |
| | | 3535.02 | 18.91 | H | 6.38 | 10.73 | 23.26 | 211.84 | 30.00 | -6.74 | 1/1 |
| | 16-QAM | 3465.00 | 20.06 | H | 6.32 | 10.63 | 24.36 | 272.90 | 30.00 | -5.64 | 1/76 |
| | | 3499.98 | 20.05 | H | 6.36 | 10.67 | 24.36 | 272.90 | 30.00 | -5.64 | 1/1 |
| | | 3535.02 | 18.01 | H | 6.38 | 10.73 | 22.36 | 172.19 | 30.00 | -7.64 | 1/1 |
| 40 | QPSK | 3470.01 | 20.55 | H | 6.33 | 10.63 | 24.85 | 305.49 | 30.00 | -5.15 | 1/104 |
| | | 3499.98 | 21.64 | H | 6.36 | 10.67 | 25.95 | 393.55 | 30.00 | -4.05 | 1/104 |
| | | 3529.98 | 21.27 | H | 6.38 | 10.72 | 25.62 | 364.75 | 30.00 | -4.38 | 1/53 |
| | 16-QAM | 3470.01 | 19.57 | H | 6.33 | 10.63 | 23.87 | 243.78 | 30.00 | -6.13 | 1/104 |
| | | 3499.98 | 20.61 | H | 6.36 | 10.67 | 24.92 | 310.46 | 30.00 | -5.08 | 1/104 |
| | | 3529.98 | 20.52 | H | 6.38 | 10.72 | 24.87 | 306.90 | 30.00 | -5.13 | 1/53 |
| 50 | QPSK | 3480.00 | 21.00 | H | 6.34 | 10.65 | 25.30 | 338.84 | 30.00 | -4.70 | 1/131 |
| | | 3499.98 | 20.44 | H | 6.36 | 10.67 | 24.75 | 298.54 | 30.00 | -5.25 | 1/1 |
| | | 3519.99 | 20.90 | H | 6.38 | 10.71 | 25.23 | 333.43 | 30.00 | -4.77 | 1/1 |
| | 16-QAM | 3480.00 | 19.98 | H | 6.34 | 10.65 | 24.28 | 267.92 | 30.00 | -5.72 | 1/131 |
| | | 3499.98 | 19.57 | H | 6.36 | 10.67 | 23.88 | 244.34 | 30.00 | -6.12 | 1/1 |
| | | 3519.99 | 19.98 | H | 6.38 | 10.71 | 24.31 | 269.77 | 30.00 | -5.69 | 1/1 |
| 60 | QPSK | 3480.00 | 20.70 | H | 6.34 | 10.65 | 25.00 | 316.23 | 30.00 | -5.00 | 1/81 |
| | | 3499.98 | 20.75 | H | 6.36 | 10.67 | 25.06 | 320.63 | 30.00 | -4.94 | 1/81 |
| | | 3519.99 | 21.20 | H | 6.38 | 10.71 | 25.53 | 357.27 | 30.00 | -4.47 | 1/81 |
| | 16-QAM | 3480.00 | 19.56 | H | 6.34 | 10.65 | 23.56 | 226.99 | 30.00 | -6.14 | 1/81 |
| | | 3499.98 | 19.63 | H | 6.36 | 10.67 | 23.94 | 247.74 | 30.00 | -6.06 | 1/81 |
| | | 3519.99 | 20.26 | H | 6.38 | 10.71 | 24.59 | 287.74 | 30.00 | -5.41 | 1/81 |
| 70 | QPSK | 3485.01 | 20.38 | H | 6.34 | 10.65 | 24.68 | 293.76 | 30.00 | -5.32 | 1/109 |
| | | 3499.98 | 20.69 | H | 6.36 | 10.67 | 25.00 | 316.23 | 30.00 | -5.00 | 1/109 |
| | | 3514.98 | 20.36 | H | 6.37 | 10.70 | 24.68 | 293.76 | 30.00 | -5.32 | 1/1 |
| | 16-QAM | 3485.01 | 19.24 | H | 6.34 | 10.65 | 23.54 | 225.94 | 30.00 | -6.46 | 1/109 |
| | | 3499.98 | 19.84 | H | 6.36 | 10.67 | 24.15 | 260.02 | 30.00 | -5.85 | 1/109 |
| | | 3514.98 | 19.41 | H | 6.37 | 10.70 | 23.73 | 236.05 | 30.00 | -6.27 | 1/1 |
| 80 | QPSK | 3490.02 | 21.42 | H | 6.35 | 10.66 | 25.73 | 374.11 | 30.00 | -4.27 | 1/215 |
| | | 3499.98 | 20.96 | H | 6.36 | 10.67 | 25.27 | 336.51 | 30.00 | -4.73 | 1/109 |
| | | 3510.00 | 21.20 | H | 6.37 | 10.69 | 25.52 | 356.45 | 30.00 | -4.48 | 1/109 |
| | 16-QAM | 3490.02 | 20.37 | H | 6.35 | 10.66 | 24.68 | 293.76 | 30.00 | -5.32 | 1/215 |
| | | 3499.98 | 20.06 | H | 6.36 | 10.67 | 24.37 | 273.53 | 30.00 | -5.63 | 1/109 |
| | | 3510.00 | 20.20 | H | 6.37 | 10.69 | 24.52 | 283.14 | 30.00 | -5.48 | 1/109 |
| 90 | QPSK | 3495.00 | 20.76 | H | 6.35 | 10.66 | 25.07 | 321.37 | 30.00 | -4.93 | 1/123 |
| | | 3499.98 | 20.84 | H | 6.36 | 10.67 | 25.15 | 327.34 | 30.00 | -4.85 | 1/123 |
| | | 3504.99 | 21.02 | H | 6.37 | 10.68 | 25.33 | 341.19 | 30.00 | -4.67 | 1/123 |
| | 16-QAM | 3495.00 | 19.87 | H | 6.35 | 10.66 | 24.18 | 261.82 | 30.00 | -5.82 | 1/123 |
| | | 3499.98 | 19.87 | H | 6.36 | 10.67 | 24.18 | 261.82 | 30.00 | -5.82 | 1/123 |
| | | 3504.99 | 20.12 | H | 6.37 | 10.68 | 24.43 | 277.33 | 30.00 | -5.57 | 1/123 |
| 100 | QPSK | 3499.98 | 20.96 | H | 6.36 | 10.67 | 25.27 | 336.51 | 30.00 | -4.73 | 1/137 |
| | 16-QAM | 3499.98 | 19.98 | H | 6.36 | 10.67 | 24.29 | 268.53 | 30.00 | -5.71 | 1/271 |


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**5G NR n77 (3450 ~ 3550 MHz, SRS1)**

| BW (MHz) | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 3455.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3544.98 | | | | | | | | |
| 15 | 3457.50 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3542.49 | | | | | | | | |
| 20 | 3460.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3540.00 | | | | | | | | |
| 30 | 3465.00 | 14.21 | H | 6.32 | 10.63 | 18.51 | 70.96 | 30.00 | -11.49 |
| | 3499.98 | 12.60 | H | 6.36 | 10.67 | 16.91 | 49.09 | 30.00 | -13.09 |
| | 3535.02 | 11.79 | H | 6.38 | 10.73 | 16.14 | 41.11 | 30.00 | -13.86 |
| 40 | 3470.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3529.98 | | | | | | | | |
| 50 | 3475.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3525.00 | | | | | | | | |
| 60 | 3480.00 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3519.99 | | | | | | | | |
| 70 | 3485.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3514.98 | | | | | | | | |
| 80 | 3490.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3510.00 | | | | | | | | |
| 90 | 3495.00 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3504.99 | | | | | | | | |
| 100 | 3499.98 | | | | | | | | |


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**5G NR n77 (3450 ~ 3550 MHz, SRS2)**

| BW (MHz) | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 3455.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3544.98 | | | | | | | | |
| 15 | 3457.50 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3542.49 | | | | | | | | |
| 20 | 3460.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3540.00 | | | | | | | | |
| 30 | 3465.00 | 12.74 | H | 6.32 | 10.63 | 17.04 | 50.58 | 30.00 | -12.96 |
| | 3499.98 | 11.57 | H | 6.36 | 10.67 | 15.88 | 38.73 | 30.00 | -14.12 |
| | 3535.02 | 10.67 | H | 6.38 | 10.73 | 15.02 | 31.77 | 30.00 | -14.98 |
| 40 | 3470.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3529.98 | | | | | | | | |
| 50 | 3475.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3525.00 | | | | | | | | |
| 60 | 3480.00 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3519.99 | | | | | | | | |
| 70 | 3485.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3514.98 | | | | | | | | |
| 80 | 3490.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3510.00 | | | | | | | | |
| 90 | 3495.00 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3504.99 | | | | | | | | |
| 100 | 3499.98 | | | | | | | | |


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**5G NR n77 (3450 ~ 3550 MHz, SRS3)**

| BW (MHz) | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 3455.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3544.98 | | | | | | | | |
| 15 | 3457.50 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3542.49 | | | | | | | | |
| 20 | 3460.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3540.00 | | | | | | | | |
| 30 | 3465.00 | 11.66 | V | 6.32 | 10.63 | 15.96 | 39.45 | 30.00 | -14.04 |
| | 3499.98 | 11.58 | V | 6.36 | 10.67 | 15.89 | 38.82 | 30.00 | -14.11 |
| | 3535.02 | 10.68 | V | 6.38 | 10.73 | 15.03 | 31.84 | 30.00 | -14.97 |
| 40 | 3470.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3529.98 | | | | | | | | |
| 50 | 3475.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3525.00 | | | | | | | | |
| 60 | 3480.00 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3519.99 | | | | | | | | |
| 70 | 3485.01 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3514.98 | | | | | | | | |
| 80 | 3490.02 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3510.00 | | | | | | | | |
| 90 | 3495.00 | | | | | | | | |
| | 3499.98 | | | | | | | | |
| | 3504.99 | | | | | | | | |
| 100 | 3499.98 | | | | | | | | |


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## 5G NR n77 (3700 ~ 3980 MHz)

| BW (MHz) | Modulation | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) | RB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | QPSK | 3705.00 | 18.86 | V | 6.54 | 10.74 | 23.07 | 202.77 | 30.00 | -6.93 | 1/22 |
| | | 3840.00 | 19.85 | V | 6.65 | 10.58 | 23.77 | 238.23 | 30.00 | -6.23 | 1/12 |
| | | 3975.00 | 17.85 | V | 6.77 | 10.46 | 21.54 | 142.56 | 30.00 | -8.46 | 1/22 |
| | 16-QAM | 3705.00 | 17.90 | V | 6.54 | 10.74 | 22.11 | 162.55 | 30.00 | -7.89 | 1/22 |
| | | 3840.00 | 18.90 | V | 6.65 | 10.58 | 22.82 | 191.43 | 30.00 | -7.18 | 1/12 |
| | | 3975.00 | 17.03 | V | 6.77 | 10.46 | 20.72 | 118.03 | 30.00 | -9.28 | 1/22 |
| 15 | QPSK | 3707.52 | 18.77 | V | 6.55 | 10.74 | 22.96 | 197.70 | 30.00 | -7.04 | 1/1 |
| | | 3840.00 | 19.88 | V | 6.65 | 10.58 | 23.80 | 239.88 | 30.00 | -6.20 | 1/36 |
| | | 3972.48 | 17.94 | V | 6.78 | 10.46 | 21.63 | 145.55 | 30.00 | -8.37 | 1/1 |
| | 16-QAM | 3707.52 | 17.87 | V | 6.55 | 10.74 | 22.06 | 160.69 | 30.00 | -7.94 | 1/1 |
| | | 3840.00 | 18.97 | V | 6.65 | 10.58 | 22.89 | 194.54 | 30.00 | -7.11 | 1/36 |
| | | 3972.48 | 17.06 | V | 6.78 | 10.46 | 20.75 | 118.85 | 30.00 | -9.25 | 1/1 |
| 20 | QPSK | 3710.01 | 19.26 | V | 6.55 | 10.74 | 23.45 | 221.31 | 30.00 | -6.55 | 1/49 |
| | | 3840.00 | 19.58 | V | 6.65 | 10.58 | 23.50 | 223.87 | 30.00 | -6.50 | 1/49 |
| | | 3969.99 | 17.63 | V | 6.77 | 10.46 | 21.32 | 135.52 | 30.00 | -8.68 | 1/49 |
| | 16-QAM | 3710.01 | 18.34 | V | 6.55 | 10.74 | 22.53 | 179.06 | 30.00 | -7.47 | 1/49 |
| | | 3840.00 | 18.77 | V | 6.65 | 10.58 | 22.69 | 185.78 | 30.00 | -7.31 | 1/49 |
| | | 3969.99 | 16.75 | V | 6.77 | 10.46 | 20.44 | 110.66 | 30.00 | -9.56 | 1/49 |
| 30 | QPSK | 3715.02 | 19.32 | V | 6.55 | 10.73 | 23.51 | 224.39 | 30.00 | -6.49 | 1/76 |
| | | 3840.00 | 19.87 | V | 6.65 | 10.58 | 23.79 | 239.33 | 30.00 | -6.21 | 1/39 |
| | | 3964.98 | 18.99 | V | 6.77 | 10.46 | 22.68 | 185.35 | 30.00 | -7.32 | 1/1 |
| | 16-QAM | 3715.02 | 18.34 | V | 6.55 | 10.73 | 22.53 | 179.06 | 30.00 | -7.47 | 1/76 |
| | | 3840.00 | 18.99 | V | 6.65 | 10.58 | 22.91 | 195.43 | 30.00 | -7.09 | 1/39 |
| | | 3964.98 | 18.01 | V | 6.77 | 10.46 | 21.70 | 147.91 | 30.00 | -8.30 | 1/1 |
| 40 | QPSK | 3720.02 | 19.56 | V | 6.55 | 10.73 | 23.73 | 236.05 | 30.00 | -6.27 | 1/104 |
| | | 3840.00 | 20.23 | V | 6.65 | 10.58 | 24.15 | 260.02 | 30.00 | -5.85 | 1/104 |
| | | 3960.00 | 19.21 | V | 6.77 | 10.47 | 22.90 | 194.98 | 30.00 | -7.10 | 1/1 |
| | 16-QAM | 3720.02 | 18.58 | V | 6.55 | 10.73 | 22.75 | 188.36 | 30.00 | -7.25 | 1/104 |
| | | 3840.00 | 19.30 | V | 6.65 | 10.58 | 23.22 | 209.89 | 30.00 | -6.78 | 1/104 |
| | | 3960.00 | 18.19 | V | 6.77 | 10.47 | 21.88 | 154.17 | 30.00 | -8.12 | 1/1 |
| 50 | QPSK | 3725.01 | 19.69 | V | 6.56 | 10.72 | 23.85 | 242.66 | 30.00 | -6.15 | 1/131 |
| | | 3840.00 | 20.08 | V | 6.65 | 10.58 | 24.00 | 251.19 | 30.00 | -6.00 | 1/131 |
| | | 3954.99 | 18.29 | V | 6.75 | 10.47 | 22.01 | 158.85 | 30.00 | -7.99 | 1/67 |
| | 16-QAM | 3725.01 | 18.77 | V | 6.56 | 10.72 | 22.93 | 196.34 | 30.00 | -7.07 | 1/131 |
| | | 3840.00 | 19.14 | V | 6.65 | 10.58 | 23.06 | 202.30 | 30.00 | -6.94 | 1/67 |
| | | 3954.99 | 17.19 | V | 6.75 | 10.47 | 20.91 | 123.31 | 30.00 | -9.09 | 1/67 |
| 60 | QPSK | 3730.02 | 19.90 | V | 6.56 | 10.72 | 24.05 | 254.10 | 30.00 | -5.95 | 1/160 |
| | | 3840.00 | 19.91 | V | 6.65 | 10.58 | 23.83 | 241.55 | 30.00 | -6.17 | 1/81 |
| | | 3949.98 | 18.64 | V | 6.75 | 10.47 | 22.36 | 172.19 | 30.00 | -7.64 | 1/81 |
| | 16-QAM | 3730.02 | 18.89 | V | 6.56 | 10.72 | 23.04 | 201.37 | 30.00 | -6.96 | 1/160 |
| | | 3840.00 | 19.00 | V | 6.65 | 10.58 | 22.92 | 195.88 | 30.00 | -7.08 | 1/81 |
| | | 3949.98 | 17.56 | V | 6.75 | 10.47 | 21.28 | 134.28 | 30.00 | -8.72 | 1/81 |
| 70 | QPSK | 3735.00 | 19.21 | V | 6.57 | 10.71 | 23.35 | 216.27 | 30.00 | -6.65 | 1/109 |
| | | 3840.00 | 19.04 | V | 6.65 | 10.58 | 22.96 | 197.70 | 30.00 | -7.04 | 1/188 |
| | | 3945.00 | 18.41 | V | 6.75 | 10.47 | 22.13 | 163.31 | 30.00 | -7.87 | 1/109 |
| | 16-QAM | 3735.00 | 18.36 | V | 6.57 | 10.71 | 22.50 | 177.83 | 30.00 | -7.50 | 1/109 |
| | | 3840.00 | 18.08 | V | 6.65 | 10.58 | 22.00 | 158.49 | 30.00 | -8.00 | 1/188 |
| | | 3945.00 | 17.47 | V | 6.75 | 10.47 | 21.19 | 131.52 | 30.00 | -8.81 | 1/109 |
| 80 | QPSK | 3740.01 | 19.82 | V | 6.58 | 10.70 | 23.95 | 248.31 | 30.00 | -6.05 | 1/215 |
| | | 3840.00 | 19.97 | V | 6.65 | 10.58 | 23.89 | 244.91 | 30.00 | -6.11 | 1/215 |
| | | 3939.99 | 18.71 | V | 6.74 | 10.47 | 22.44 | 175.39 | 30.00 | -7.56 | 1/109 |
| | 16-QAM | 3740.01 | 18.88 | V | 6.58 | 10.70 | 23.01 | 199.99 | 30.00 | -6.99 | 1/215 |
| | | 3840.00 | 19.07 | V | 6.65 | 10.58 | 22.99 | 199.07 | 30.00 | -7.01 | 1/215 |
| | | 3939.99 | 17.68 | V | 6.74 | 10.47 | 21.41 | 138.36 | 30.00 | -8.59 | 1/109 |
| 90 | QPSK | 3745.02 | 19.77 | V | 6.57 | 10.70 | 23.90 | 245.47 | 30.00 | -6.10 | 1/243 |
| | | 3840.00 | 19.89 | V | 6.65 | 10.58 | 23.81 | 240.44 | 30.00 | -6.19 | 1/243 |
| | | 3934.98 | 17.24 | V | 6.75 | 10.48 | 20.97 | 125.03 | 30.00 | -9.03 | 1/243 |
| | 16-QAM | 3745.02 | 18.77 | V | 6.57 | 10.70 | 22.90 | 194.98 | 30.00 | -7.10 | 1/243 |
| | | 3840.00 | 18.93 | V | 6.65 | 10.58 | 22.85 | 192.75 | 30.00 | -7.15 | 1/243 |
| | | 3934.98 | 16.38 | V | 6.75 | 10.48 | 20.11 | 102.57 | 30.00 | -9.89 | 1/243 |
| 100 | QPSK | 3750.00 | 20.11 | V | 6.58 | 10.69 | 24.23 | 264.85 | 30.00 | -5.77 | 1/271 |
| | | 3840.00 | 19.83 | V | 6.65 | 10.58 | 23.75 | 237.14 | 30.00 | -6.25 | 1/271 |
| | | 3930.00 | 17.98 | V | 6.75 | 10.48 | 21.71 | 148.25 | 30.00 | -8.29 | 1/271 |
| | 16-QAM | 3750.00 | 19.09 | V | 6.58 | 10.69 | 23.21 | 209.41 | 30.00 | -6.79 | 1/137 |
| | | 3840.00 | 18.96 | V | 6.65 | 10.58 | 22.88 | 194.09 | 30.00 | -7.12 | 1/271 |
| | | 3930.00 | 16.99 | V | 6.75 | 10.48 | 20.72 | 118.03 | 30.00 | -9.28 | 1/271 |


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**5G NR n77 (3700 ~ 3980 MHz, SRS1)**

| BW (MHz) | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 3705.00 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3975.00 | | | | | | | | |
| 15 | 3707.52 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3972.48 | | | | | | | | |
| 20 | 3710.01 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3969.99 | | | | | | | | |
| 30 | 3715.02 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3964.98 | | | | | | | | |
| 40 | 3720.00 | 11.90 | H | 6.55 | 10.73 | 16.07 | 40.46 | 30.00 | -13.93 |
| | 3840.00 | 10.51 | H | 6.65 | 10.58 | 14.43 | 27.73 | 30.00 | -15.57 |
| | 3960.00 | 8.90 | H | 6.77 | 10.47 | 12.60 | 18.20 | 30.00 | -17.40 |
| 50 | 3725.01 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3954.99 | | | | | | | | |
| 60 | 3730.02 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3949.98 | | | | | | | | |
| 70 | 3735.02 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3944.98 | | | | | | | | |
| 80 | 3740.01 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3939.99 | | | | | | | | |
| 90 | 3745.02 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3934.98 | | | | | | | | |
| 100 | 3750.00 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3930.00 | | | | | | | | |


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**5G NR n77 (3700 ~ 3980 MHz, SRS2)**

| BW (MHz) | f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 3705.00 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3975.00 | | | | | | | | |
| 15 | 3707.52 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3972.48 | | | | | | | | |
| 20 | 3710.01 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3969.99 | | | | | | | | |
| 30 | 3715.02 | 9.59 | H | 6.55 | 10.73 | 13.78 | 23.88 | 30.00 | -16.22 |
| | 3840.00 | 9.20 | H | 6.65 | 10.58 | 13.12 | 20.51 | 30.00 | -16.88 |
| | 3964.98 | 8.71 | H | 6.77 | 10.46 | 12.40 | 17.38 | 30.00 | -17.60 |
| 40 | 3720.00 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3960.00 | | | | | | | | |
| 50 | 3725.01 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3954.99 | | | | | | | | |
| 60 | 3730.02 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3949.98 | | | | | | | | |
| 70 | 3735.02 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3944.98 | | | | | | | | |
| 80 | 3740.01 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3939.99 | | | | | | | | |
| 90 | 3745.02 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3934.98 | | | | | | | | |
| 100 | 3750.00 | | | | | | | | |
| | 3840.00 | | | | | | | | |
| | 3930.00 | | | | | | | | |


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**5G NR n77 (3700 ~ 3980 MHz, SRS3)**

| f (MHz) | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (dBm) | Delta (dB) |
|---|---|---|---|---|---|---|---|---|
| 3705.00 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3975.00 | | | | | | | | |
| 3707.52 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3972.48 | | | | | | | | |
| 3710.01 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3969.99 | | | | | | | | |
| 3715.02 | 10.08 | H | 6.55 | 10.73 | 14.27 | 26.73 | 30.00 | -15.73 |
| 3840.00 | 11.18 | H | 6.65 | 10.58 | 15.10 | 32.36 | 30.00 | -14.90 |
| 3964.98 | 11.34 | H | 6.77 | 10.46 | 15.03 | 31.84 | 30.00 | -14.97 |
| 3720.00 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3960.00 | | | | | | | | |
| 3725.01 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3954.99 | | | | | | | | |
| 3730.02 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3949.98 | | | | | | | | |
| 3735.02 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3944.98 | | | | | | | | |
| 3740.01 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3939.99 | | | | | | | | |
| 3745.02 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3934.98 | | | | | | | | |
| 3750.00 | | | | | | | | |
| 3840.00 | | | | | | | | |
| 3930.00 | | | | | | | | |


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## 9.6. FIELD STRENGTH OF SPURIOUS RADIATION

**RULE PART(S)**

FCC: §2.1053, §22.917, §24.238, §27. 53 and §90.691

**LIMIT**

Part 22.917(a) & Part 24.238(a) & Part 27.53(h) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Part 27.53:
(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB.

(h) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) dB.

(m) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

(l)(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(n)(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.


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Part 90.691(a):

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + $10Log_{10}$(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.(NOTE : Use 100kHz reference bandwidth)

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

**TEST PROCEDURE**

ANSI / TIA / EIA 603 E Clause 2.2.12; ESU40 setting reference to 971168 D01 v03r01

For peak power measurement with a ESU40:

a) Set the RBW = 100 KHz for emission below 1GHz and 1MHz for emissions above 1GHz
b) Set VBW ≥ 3 × RBW;
c) Set span ≥ 1.5 times the OBW;
d) Sweep time = auto couple;
e) Detector = rms;
f) Ensure that the number of measurement points ≥ span/RBW;
g) Trace mode = average(WCDMA, LTE FDD, 5G NR FDD), Maxhold(GSM, LTE TDD, 5G NR TDD);

**RESULTS**

See the following pages.

**NOTE1**

5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations ($\pi$/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

**NOTE2**

Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.


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## 9.6.1. SPURIOUS RADIATION PLOTS

**GSM850**

GSM850

GPRS

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 9/8/2022 |
| **Test Engineer:** | 25770 |
| **Configuration:** | EUT / AC Adapter, X-Position |
| **Location:** | Chamber 1 |
| **Mode:** | GPRS 850 MHz Harmonics |
| **Test Votage:** | AC 120 V, 60 Hz |

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 824.2MHz | | | | | | | | | |
| 1648.40 | -9.0 | V | 3.0 | 45.6 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 2472.60 | -6.4 | V | 3.0 | 45.4 | 1.0 | -50.8 | -13.0 | -37.8 | |
| 3296.80 | -4.7 | V | 3.0 | 45.7 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 1648.40 | -9.2 | H | 3.0 | 45.6 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 2472.60 | -6.3 | H | 3.0 | 45.4 | 1.0 | -50.7 | -13.0 | -37.7 | |
| 3296.80 | -4.4 | H | 3.0 | 45.7 | 1.0 | -49.1 | -13.0 | -36.1 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1673.20 | -10.3 | V | 3.0 | 45.6 | 1.0 | -54.9 | -13.0 | -41.9 | |
| 2509.80 | -5.0 | V | 3.0 | 45.5 | 1.0 | -49.5 | -13.0 | -36.5 | |
| 3346.40 | -4.6 | V | 3.0 | 45.7 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 1673.20 | -7.0 | H | 3.0 | 45.6 | 1.0 | -51.6 | -13.0 | -38.6 | |
| 2509.80 | -2.9 | H | 3.0 | 45.5 | 1.0 | -47.4 | -13.0 | -34.4 | |
| 3346.40 | -3.9 | H | 3.0 | 45.7 | 1.0 | -48.6 | -13.0 | -35.6 | |
| High Ch, 848.8MHz | | | | | | | | | |
| 1697.60 | -9.8 | V | 3.0 | 45.6 | 1.0 | -54.4 | -13.0 | -41.4 | |
| 2546.40 | -4.2 | V | 3.0 | 45.5 | 1.0 | -48.7 | -13.0 | -35.7 | |
| 3395.20 | -3.8 | V | 3.0 | 45.7 | 1.0 | -48.5 | -13.0 | -35.5 | |
| 1697.60 | -10.1 | H | 3.0 | 45.6 | 1.0 | -54.6 | -13.0 | -41.6 | |
| 2546.40 | -1.3 | H | 3.0 | 45.5 | 1.0 | -45.8 | -13.0 | -32.8 | |
| 3395.20 | -4.4 | H | 3.0 | 45.7 | 1.0 | -49.1 | -13.0 | -36.1 | |


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GSM850

EGPRS

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/8/2022
**Test Engineer:** 25770
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** EGPRS 850 MHz Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 824.2MHz | | | | | | | | | |
| 1648.40 | -10.0 | V | 3.0 | 45.6 | 1.0 | -54.6 | -13.0 | -41.6 | |
| 2472.60 | -6.6 | V | 3.0 | 45.4 | 1.0 | -51.1 | -13.0 | -38.1 | |
| 3296.80 | -4.6 | V | 3.0 | 45.7 | 1.0 | -49.2 | -13.0 | -36.2 | |
| 1648.40 | -11.3 | H | 3.0 | 45.6 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 2472.60 | -6.7 | H | 3.0 | 45.4 | 1.0 | -51.2 | -13.0 | -38.2 | |
| 3296.80 | -4.3 | H | 3.0 | 45.7 | 1.0 | -49.0 | -13.0 | -36.0 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1673.20 | -10.0 | V | 3.0 | 45.6 | 1.0 | -54.6 | -13.0 | -41.6 | |
| 2509.80 | -5.5 | V | 3.0 | 45.5 | 1.0 | -50.0 | -13.0 | -37.0 | |
| 3346.40 | -4.2 | V | 3.0 | 45.7 | 1.0 | -48.8 | -13.0 | -35.8 | |
| 1673.20 | -10.1 | H | 3.0 | 45.6 | 1.0 | -54.7 | -13.0 | -41.7 | |
| 2509.80 | -5.1 | H | 3.0 | 45.5 | 1.0 | -49.5 | -13.0 | -36.5 | |
| 3346.40 | -4.3 | H | 3.0 | 45.7 | 1.0 | -49.0 | -13.0 | -36.0 | |
| High Ch, 848.8MHz | | | | | | | | | |
| 1697.60 | -10.2 | V | 3.0 | 45.6 | 1.0 | -54.8 | -13.0 | -41.8 | |
| 2546.40 | -4.1 | V | 3.0 | 45.5 | 1.0 | -48.6 | -13.0 | -35.6 | |
| 3395.20 | -3.7 | V | 3.0 | 45.7 | 1.0 | -48.4 | -13.0 | -35.4 | |
| 1697.60 | -10.9 | H | 3.0 | 45.6 | 1.0 | -55.5 | -13.0 | -42.5 | |
| 2546.40 | -2.3 | H | 3.0 | 45.5 | 1.0 | -46.8 | -13.0 | -33.8 | |
| 3395.20 | -4.2 | H | 3.0 | 45.7 | 1.0 | -48.9 | -13.0 | -35.9 | |


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## GSM1900

GSM1900

GPRS

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/13/2022
**Test Engineer:** 19568
**Configuration:** EUT / AC Adapter, Z-Position
**Location:** Chamber 1
**Mode:** GPRS 1900 MHz Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1850.2MHz | | | | | | | | | |
| 3700.40 | -8.0 | V | 3.0 | 45.8 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 5550.60 | -2.9 | V | 3.0 | 45.7 | 1.0 | -47.6 | -13.0 | -34.6 | |
| 7400.80 | -2.9 | V | 3.0 | 44.6 | 1.0 | -46.5 | -13.0 | -33.5 | |
| 3700.40 | -8.4 | H | 3.0 | 45.8 | 1.0 | -53.3 | -13.0 | -40.3 | |
| 5550.60 | -1.3 | H | 3.0 | 45.7 | 1.0 | -46.1 | -13.0 | -33.1 | |
| 7400.80 | -2.4 | H | 3.0 | 44.6 | 1.0 | -46.0 | -13.0 | -33.0 | |
| Mid Ch, 1880MHz | | | | | | | | | |
| 3760.00 | -8.0 | V | 3.0 | 45.8 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 5640.00 | -1.6 | V | 3.0 | 45.7 | 1.0 | -46.3 | -13.0 | -33.3 | |
| 7520.00 | -2.8 | V | 3.0 | 44.5 | 1.0 | -46.3 | -13.0 | -33.3 | |
| 3760.00 | -8.2 | H | 3.0 | 45.8 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 5640.00 | 1.3 | H | 3.0 | 45.7 | 1.0 | -43.5 | -13.0 | -30.5 | |
| 7520.00 | -2.6 | H | 3.0 | 44.5 | 1.0 | -46.1 | -13.0 | -33.1 | |
| High Ch, 1909.8MHz | | | | | | | | | |
| 3819.60 | -8.1 | V | 3.0 | 45.8 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 5729.40 | -0.6 | V | 3.0 | 45.7 | 1.0 | -45.3 | -13.0 | -32.3 | |
| 7639.20 | -2.6 | V | 3.0 | 44.4 | 1.0 | -46.0 | -13.0 | -33.0 | |
| 3819.60 | -8.1 | H | 3.0 | 45.8 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 5729.40 | 0.2 | H | 3.0 | 45.7 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 7639.20 | -2.9 | H | 3.0 | 44.4 | 1.0 | -46.3 | -13.0 | -33.3 | |

GSM1900

EGPRS

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/14/2022
**Test Engineer:** 25546
**Configuration:** EUT / AC Adapter, Z-Position
**Location:** Chamber 1
**Mode:** EGPRS 1900 MHz Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1850.2MHz | | | | | | | | | |
| 3700.40 | -8.4 | V | 3.0 | 45.8 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 5550.60 | -4.4 | V | 3.0 | 45.7 | 1.0 | -49.2 | -13.0 | -36.2 | |
| 7400.80 | -3.1 | V | 3.0 | 44.6 | 1.0 | -46.6 | -13.0 | -33.6 | |
| 3700.40 | -8.4 | H | 3.0 | 45.8 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 5550.60 | -3.4 | H | 3.0 | 45.7 | 1.0 | -48.2 | -13.0 | -35.2 | |
| 7400.80 | -3.0 | H | 3.0 | 44.6 | 1.0 | -46.5 | -13.0 | -33.5 | |
| Mid Ch, 1880MHz | | | | | | | | | |
| 3760.00 | -8.0 | V | 3.0 | 45.8 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 5640.00 | -4.2 | V | 3.0 | 45.7 | 1.0 | -49.0 | -13.0 | -36.0 | |
| 7520.00 | -3.0 | V | 3.0 | 44.5 | 1.0 | -46.5 | -13.0 | -33.5 | |
| 3760.00 | -8.0 | H | 3.0 | 45.8 | 1.0 | -52.9 | -13.0 | -39.9 | |
| 5640.00 | -2.1 | H | 3.0 | 45.7 | 1.0 | -46.9 | -13.0 | -33.9 | |
| 7520.00 | -2.8 | H | 3.0 | 44.5 | 1.0 | -46.3 | -13.0 | -33.3 | |
| High Ch, 1909.8MHz | | | | | | | | | |
| 3819.60 | -8.1 | V | 3.0 | 45.8 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 5729.40 | -1.8 | V | 3.0 | 45.7 | 1.0 | -46.5 | -13.0 | -33.5 | |
| 7639.20 | -3.1 | V | 3.0 | 44.4 | 1.0 | -46.5 | -13.0 | -33.5 | |
| 3819.60 | -8.1 | H | 3.0 | 45.8 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 5729.40 | -1.9 | H | 3.0 | 45.7 | 1.0 | -46.6 | -13.0 | -33.6 | |
| 7639.20 | -2.8 | H | 3.0 | 44.4 | 1.0 | -46.3 | -13.0 | -33.3 | |


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## WCDMA Band 5

Band 5
REL99

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-09-08
**Test Engineer:** 25770
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** Rel99 Band 5 Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 826.4MHz | | | | | | | | | |
| 1652.80 | -15.6 | V | 3.0 | 45.6 | 1.0 | -60.2 | -13.0 | -47.2 | |
| 2479.20 | -12.5 | V | 3.0 | 45.5 | 1.0 | -57.0 | -13.0 | -44.0 | |
| 3305.60 | -9.9 | V | 3.0 | 45.7 | 1.0 | -54.6 | -13.0 | -41.6 | |
| 1652.80 | -16.6 | H | 3.0 | 45.6 | 1.0 | -61.2 | -13.0 | -48.2 | |
| 2479.20 | -12.9 | H | 3.0 | 45.5 | 1.0 | -57.3 | -13.0 | -44.3 | |
| 3305.60 | -9.8 | H | 3.0 | 45.7 | 1.0 | -54.5 | -13.0 | -41.5 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1673.20 | -15.6 | V | 3.0 | 45.6 | 1.0 | -60.2 | -13.0 | -47.2 | |
| 2509.80 | -12.7 | V | 3.0 | 45.5 | 1.0 | -57.2 | -13.0 | -44.2 | |
| 3346.40 | -10.1 | V | 3.0 | 45.7 | 1.0 | -54.7 | -13.0 | -41.7 | |
| 1673.20 | -16.0 | H | 3.0 | 45.6 | 1.0 | -60.6 | -13.0 | -47.6 | |
| 2509.80 | -12.8 | H | 3.0 | 45.5 | 1.0 | -57.3 | -13.0 | -44.3 | |
| 3346.40 | -9.7 | H | 3.0 | 45.7 | 1.0 | -54.4 | -13.0 | -41.4 | |
| High Ch, 846.6MHz | | | | | | | | | |
| 1693.20 | -15.3 | V | 3.0 | 45.6 | 1.0 | -59.9 | -13.0 | -46.9 | |
| 2539.80 | -12.4 | V | 3.0 | 45.5 | 1.0 | -56.9 | -13.0 | -43.9 | |
| 3386.40 | -9.7 | V | 3.0 | 45.7 | 1.0 | -54.4 | -13.0 | -41.4 | |
| 1693.20 | -16.0 | H | 3.0 | 45.6 | 1.0 | -60.6 | -13.0 | -47.6 | |
| 2539.80 | -12.4 | H | 3.0 | 45.5 | 1.0 | -56.8 | -13.0 | -43.8 | |
| 3386.40 | -9.7 | H | 3.0 | 45.7 | 1.0 | -54.4 | -13.0 | -41.4 | |

Band 5
HSDPA

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-09-08
**Test Engineer:** 25770
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** HSDPA Band 5 Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 826.4MHz | | | | | | | | | |
| 1652.80 | -10.6 | V | 3.0 | 45.6 | 1.0 | -55.3 | -13.0 | -42.3 | |
| 2479.20 | -7.2 | V | 3.0 | 45.5 | 1.0 | -51.7 | -13.0 | -38.7 | |
| 3305.60 | -4.2 | V | 3.0 | 45.7 | 1.0 | -48.9 | -13.0 | -35.9 | |
| 1652.80 | -11.0 | H | 3.0 | 45.6 | 1.0 | -55.6 | -13.0 | -42.6 | |
| 2479.20 | -6.9 | H | 3.0 | 45.5 | 1.0 | -51.3 | -13.0 | -38.3 | |
| 3305.60 | -4.6 | H | 3.0 | 45.7 | 1.0 | -49.3 | -13.0 | -36.3 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1673.20 | -9.9 | V | 3.0 | 45.6 | 1.0 | -54.5 | -13.0 | -41.5 | |
| 2509.80 | -6.4 | V | 3.0 | 45.5 | 1.0 | -50.8 | -13.0 | -37.8 | |
| 3346.40 | -4.4 | V | 3.0 | 45.7 | 1.0 | -49.1 | -13.0 | -36.1 | |
| 1673.20 | -11.1 | H | 3.0 | 45.6 | 1.0 | -55.7 | -13.0 | -42.7 | |
| 2509.80 | -6.8 | H | 3.0 | 45.5 | 1.0 | -51.3 | -13.0 | -38.3 | |
| 3346.40 | -4.1 | H | 3.0 | 45.7 | 1.0 | -48.8 | -13.0 | -35.8 | |
| High Ch, 846.6MHz | | | | | | | | | |
| 1693.20 | -9.2 | V | 3.0 | 45.6 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 2539.80 | -6.7 | V | 3.0 | 45.5 | 1.0 | -51.1 | -13.0 | -38.1 | |
| 3386.40 | -4.6 | V | 3.0 | 45.7 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 1693.20 | -11.3 | H | 3.0 | 45.6 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 2539.80 | -7.0 | H | 3.0 | 45.5 | 1.0 | -51.5 | -13.0 | -38.5 | |
| 3386.40 | -4.3 | H | 3.0 | 45.7 | 1.0 | -49.0 | -13.0 | -36.0 | |


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## WCDMA Band 4

Band 4 REL99

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/13/2022
**Test Engineer:** 19568
**Configuration:** EUT / AC Adapter, Y-Position
**Location:** Chamber 1
**Mode:** Rel99 Band 4 Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1712.4MHz | | | | | | | | | |
| 3424.80 | -9.1 | V | 3.0 | 45.7 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 5137.20 | -9.2 | V | 3.0 | 45.8 | 1.0 | -54.0 | -13.0 | -41.0 | |
| 6849.60 | -6.1 | V | 3.0 | 44.9 | 1.0 | -50.0 | -13.0 | -37.0 | |
| 3424.80 | -9.1 | H | 3.0 | 45.7 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 5137.20 | -9.1 | H | 3.0 | 45.8 | 1.0 | -53.9 | -13.0 | -40.9 | |
| 6849.60 | -6.2 | H | 3.0 | 44.9 | 1.0 | -50.1 | -13.0 | -37.1 | |
| Mid Ch, 1732.6MHz | | | | | | | | | |
| 3465.20 | -8.8 | V | 3.0 | 45.7 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 5197.80 | -8.9 | V | 3.0 | 45.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 6930.40 | -5.8 | V | 3.0 | 44.8 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 3465.20 | -8.9 | H | 3.0 | 45.7 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 5197.80 | -8.9 | H | 3.0 | 45.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 6930.40 | -6.0 | H | 3.0 | 44.8 | 1.0 | -49.9 | -13.0 | -36.9 | |
| High Ch, 1752.6MHz | | | | | | | | | |
| 3505.20 | -8.7 | V | 3.0 | 45.7 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 5257.80 | -8.8 | V | 3.0 | 45.8 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 7010.40 | -6.0 | V | 3.0 | 44.8 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 3505.20 | -8.8 | H | 3.0 | 45.7 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 5257.80 | -8.7 | H | 3.0 | 45.8 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 7010.40 | -6.1 | H | 3.0 | 44.8 | 1.0 | -49.9 | -13.0 | -36.9 | |

Band 4 HSDPA

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/13/2022
**Test Engineer:** 19568
**Configuration:** EUT / AC Adapter, Y-Position
**Location:** Chamber 1
**Mode:** HSDPA Band 4 Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1712.4MHz | | | | | | | | | |
| 3424.80 | -9.0 | V | 3.0 | 45.7 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 5137.20 | -9.2 | V | 3.0 | 45.8 | 1.0 | -54.0 | -13.0 | -41.0 | |
| 6849.60 | -6.0 | V | 3.0 | 44.9 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 3424.80 | -9.1 | H | 3.0 | 45.7 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 5137.20 | -9.2 | H | 3.0 | 45.8 | 1.0 | -54.0 | -13.0 | -41.0 | |
| 6849.60 | -6.2 | H | 3.0 | 44.9 | 1.0 | -50.1 | -13.0 | -37.1 | |
| Mid Ch, 1732.6MHz | | | | | | | | | |
| 3465.20 | -8.8 | V | 3.0 | 45.7 | 1.0 | -53.6 | -13.0 | -40.6 | |
| 5197.80 | -8.9 | V | 3.0 | 45.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 6930.40 | -5.9 | V | 3.0 | 44.8 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 3465.20 | -8.9 | H | 3.0 | 45.7 | 1.0 | -53.6 | -13.0 | -40.6 | |
| 5197.80 | -8.9 | H | 3.0 | 45.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 6930.40 | -5.9 | H | 3.0 | 44.8 | 1.0 | -49.7 | -13.0 | -36.7 | |
| High Ch, 1752.6MHz | | | | | | | | | |
| 3505.20 | -8.6 | V | 3.0 | 45.7 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 5257.80 | -8.8 | V | 3.0 | 45.8 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 7010.40 | -5.9 | V | 3.0 | 44.8 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 3505.20 | -8.8 | H | 3.0 | 45.7 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 5257.80 | -8.7 | H | 3.0 | 45.8 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 7010.40 | -6.1 | H | 3.0 | 44.8 | 1.0 | -49.9 | -13.0 | -36.9 | |


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## WCDMA Band 2

Band 2 REL99

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/13/2022
**Test Engineer:** 19568
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** Rel99 Band 2 Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1852.4MHz | | | | | | | | | |
| 3704.80 | -11.0 | V | 3.0 | 45.8 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 5557.20 | -8.2 | V | 3.0 | 45.7 | 1.0 | -52.9 | -13.0 | -39.9 | |
| 7409.60 | -5.8 | V | 3.0 | 44.6 | 1.0 | -49.4 | -13.0 | -36.4 | |
| 3704.80 | -11.0 | H | 3.0 | 45.8 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 5557.20 | -8.3 | H | 3.0 | 45.7 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 7409.60 | -5.9 | H | 3.0 | 44.6 | 1.0 | -49.4 | -13.0 | -36.4 | |
| Mid Ch, 1880MHz | | | | | | | | | |
| 3760.00 | -10.8 | V | 3.0 | 45.8 | 1.0 | -55.6 | -13.0 | -42.6 | |
| 5640.00 | -7.9 | V | 3.0 | 45.7 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 7520.00 | -5.9 | V | 3.0 | 44.5 | 1.0 | -49.4 | -13.0 | -36.4 | |
| 3760.00 | -10.8 | H | 3.0 | 45.8 | 1.0 | -55.6 | -13.0 | -42.6 | |
| 5640.00 | -7.9 | H | 3.0 | 45.7 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 7520.00 | -6.0 | H | 3.0 | 44.5 | 1.0 | -49.5 | -13.0 | -36.5 | |
| High Ch, 1907.6MHz | | | | | | | | | |
| 3815.20 | -10.8 | V | 3.0 | 45.8 | 1.0 | -55.6 | -13.0 | -42.6 | |
| 5722.80 | -7.9 | V | 3.0 | 45.7 | 1.0 | -52.6 | -13.0 | -39.6 | |
| 7630.40 | -5.7 | V | 3.0 | 44.4 | 1.0 | -49.1 | -13.0 | -36.1 | |
| 3815.20 | -10.8 | H | 3.0 | 45.8 | 1.0 | -55.6 | -13.0 | -42.6 | |
| 5722.80 | -8.0 | H | 3.0 | 45.7 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 7630.40 | -5.8 | H | 3.0 | 44.4 | 1.0 | -49.2 | -13.0 | -36.2 | |

Band 2 HSDPA

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/13/2022
**Test Engineer:** 19568
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** HSDPA Band 2 Harmonics
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1852.4MHz | | | | | | | | | |
| 3704.80 | -11.0 | V | 3.0 | 45.8 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 5557.20 | -8.2 | V | 3.0 | 45.7 | 1.0 | -52.9 | -13.0 | -39.9 | |
| 7409.60 | -5.8 | V | 3.0 | 44.6 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 3704.80 | -11.0 | H | 3.0 | 45.8 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 5557.20 | -8.2 | H | 3.0 | 45.7 | 1.0 | -52.9 | -13.0 | -39.9 | |
| 7409.60 | -5.9 | H | 3.0 | 44.6 | 1.0 | -49.4 | -13.0 | -36.4 | |
| Mid Ch, 1880MHz | | | | | | | | | |
| 3760.00 | -10.8 | V | 3.0 | 45.8 | 1.0 | -55.7 | -13.0 | -42.7 | |
| 5640.00 | -7.9 | V | 3.0 | 45.7 | 1.0 | -52.6 | -13.0 | -39.6 | |
| 7520.00 | -6.0 | V | 3.0 | 44.5 | 1.0 | -49.5 | -13.0 | -36.5 | |
| 3760.00 | -10.9 | H | 3.0 | 45.8 | 1.0 | -55.7 | -13.0 | -42.7 | |
| 5640.00 | -7.9 | H | 3.0 | 45.7 | 1.0 | -52.6 | -13.0 | -39.6 | |
| 7520.00 | -6.0 | H | 3.0 | 44.5 | 1.0 | -49.5 | -13.0 | -36.5 | |
| High Ch, 1907.6MHz | | | | | | | | | |
| 3815.20 | -10.8 | V | 3.0 | 45.8 | 1.0 | -55.6 | -13.0 | -42.6 | |
| 5722.80 | -7.9 | V | 3.0 | 45.7 | 1.0 | -52.6 | -13.0 | -39.6 | |
| 7630.40 | -5.7 | V | 3.0 | 44.4 | 1.0 | -49.2 | -13.0 | -36.2 | |
| 3815.20 | -10.8 | H | 3.0 | 45.8 | 1.0 | -55.7 | -13.0 | -42.7 | |
| 5722.80 | -8.0 | H | 3.0 | 45.7 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 7630.40 | -5.8 | H | 3.0 | 44.4 | 1.0 | -49.2 | -13.0 | -36.2 | |


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## LTE Band 5

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 9/15/2022 |
| **Test Engineer:** | 25770 |
| **Configuration:** | EUT / AC Adapter, X-Position |
| **Location:** | Chamber 1 |
| **Mode:** | LTE_QPSK Band 5 Harmonics, 1.4MHz Bandwidth |
| **Test Votage:** | AC 120 V, 60 Hz |

LTE Band 5

1.4MHz

QPSK

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 824.7MHz | | | | | | | | | |
| 1649.40 | -15.6 | V | 3.0 | 45.6 | 1.0 | -60.2 | -13.0 | -47.2 | |
| 2474.10 | -12.2 | V | 3.0 | 45.4 | 1.0 | -56.7 | -13.0 | -43.7 | |
| 3298.80 | -9.8 | V | 3.0 | 45.7 | 1.0 | -54.5 | -13.0 | -41.5 | |
| 1649.40 | -16.6 | H | 3.0 | 45.6 | 1.0 | -61.2 | -13.0 | -48.2 | |
| 2474.10 | -12.8 | H | 3.0 | 45.4 | 1.0 | -57.2 | -13.0 | -44.2 | |
| 3298.80 | -9.8 | H | 3.0 | 45.7 | 1.0 | -54.5 | -13.0 | -41.5 | |
| Mid Ch, 836.5MHz | | | | | | | | | |
| 1673.00 | -15.7 | V | 3.0 | 45.6 | 1.0 | -60.3 | -13.0 | -47.3 | |
| 2509.50 | -12.3 | V | 3.0 | 45.5 | 1.0 | -56.8 | -13.0 | -43.8 | |
| 3346.00 | -9.7 | V | 3.0 | 45.7 | 1.0 | -54.4 | -13.0 | -41.4 | |
| 1673.00 | -16.6 | H | 3.0 | 45.6 | 1.0 | -61.2 | -13.0 | -48.2 | |
| 2509.50 | -12.8 | H | 3.0 | 45.5 | 1.0 | -57.2 | -13.0 | -44.2 | |
| 3346.00 | -9.8 | H | 3.0 | 45.7 | 1.0 | -54.5 | -13.0 | -41.5 | |
| High Ch, 848.3MHz | | | | | | | | | |
| 1696.60 | -15.5 | V | 3.0 | 45.6 | 1.0 | -60.1 | -13.0 | -47.1 | |
| 2544.90 | -12.2 | V | 3.0 | 45.5 | 1.0 | -56.7 | -13.0 | -43.7 | |
| 3393.20 | -9.5 | V | 3.0 | 45.7 | 1.0 | -54.2 | -13.0 | -41.2 | |
| 1696.60 | -16.5 | H | 3.0 | 45.6 | 1.0 | -61.0 | -13.0 | -48.0 | |
| 2544.90 | -12.6 | H | 3.0 | 45.5 | 1.0 | -57.1 | -13.0 | -44.1 | |
| 3393.20 | -9.5 | H | 3.0 | 45.7 | 1.0 | -54.2 | -13.0 | -41.2 | |


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## LTE Band 12

LTE Band 12

1.4MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 9/15/2022 |
| **Test Engineer:** | 25770 |
| **Configuration:** | EUT / AC Adapter, X-Position |
| **Location:** | Chamber 1 |
| **Mode:** | LTE_QPSK Band 12 Harmonics, 1.4MHz Bandwidth |
| **Test Votage:** | AC 120 V, 60 Hz |

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 699.7MHz | | | | | | | | | |
| 1399.40 | -17.2 | V | 3.0 | 45.8 | 1.0 | -62.0 | -13.0 | -49.0 | |
| 2099.10 | -13.6 | V | 3.0 | 45.4 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 2798.80 | -11.3 | V | 3.0 | 45.5 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 1399.40 | -18.0 | H | 3.0 | 45.8 | 1.0 | -62.8 | -13.0 | -49.8 | |
| 2099.10 | -14.5 | H | 3.0 | 45.4 | 1.0 | -58.8 | -13.0 | -45.8 | |
| 2798.80 | -11.5 | H | 3.0 | 45.5 | 1.0 | -56.0 | -13.0 | -43.0 | |
| Mid Ch, 707.5MHz | | | | | | | | | |
| 1415.00 | -17.1 | V | 3.0 | 45.8 | 1.0 | -61.9 | -13.0 | -48.9 | |
| 2122.50 | -13.5 | V | 3.0 | 45.4 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 2830.00 | -11.2 | V | 3.0 | 45.5 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 1415.00 | -18.0 | H | 3.0 | 45.8 | 1.0 | -62.8 | -13.0 | -49.8 | |
| 2122.50 | -14.4 | H | 3.0 | 45.4 | 1.0 | -58.8 | -13.0 | -45.8 | |
| 2830.00 | -11.3 | H | 3.0 | 45.5 | 1.0 | -55.9 | -13.0 | -42.9 | |
| High Ch, 715.3MHz | | | | | | | | | |
| 1430.60 | -17.0 | V | 3.0 | 45.8 | 1.0 | -61.8 | -13.0 | -48.8 | |
| 2145.90 | -13.4 | V | 3.0 | 45.4 | 1.0 | -57.8 | -13.0 | -44.8 | |
| 2861.20 | -11.0 | V | 3.0 | 45.5 | 1.0 | -55.6 | -13.0 | -42.6 | |
| 1430.60 | -17.9 | H | 3.0 | 45.8 | 1.0 | -62.7 | -13.0 | -49.7 | |
| 2145.90 | -14.3 | H | 3.0 | 45.4 | 1.0 | -58.7 | -13.0 | -45.7 | |
| 2861.20 | -11.1 | H | 3.0 | 45.5 | 1.0 | -55.6 | -13.0 | -42.6 | |


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## LTE Band 13

LTE Band 13

5MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 2022-09-15 |
| **Test Engineer:** | 25770 |
| **Configuration:** | EUT / AC Adapter, X-Position |
| **Location:** | Chamber 1 |
| **Mode:** | LTE_QPSK Band 13 Harmonics, 5MHz Bandwidth |
| **Test Votage:** | AC 120 V, 60 Hz |

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 779.5MHz | | | | | | | | | |
| 1559.00 | -16.2 | V | 3.0 | 45.7 | 1.0 | -60.9 | -40.0 | -20.9 | |
| 2338.50 | -12.6 | V | 3.0 | 45.4 | 1.0 | -57.1 | -13.0 | -44.1 | |
| 3118.00 | -10.5 | V | 3.0 | 45.6 | 1.0 | -55.1 | -13.0 | -42.1 | |
| 1559.00 | -17.2 | H | 3.0 | 45.7 | 1.0 | -61.9 | -40.0 | -21.9 | |
| 2338.50 | -13.2 | H | 3.0 | 45.4 | 1.0 | -57.7 | -13.0 | -44.7 | |
| 3118.00 | -10.5 | H | 3.0 | 45.6 | 1.0 | -55.2 | -13.0 | -42.2 | |
| Mid Ch, 782MHz | | | | | | | | | |
| 1564.00 | -16.1 | V | 3.0 | 45.7 | 1.0 | -60.8 | -40.0 | -20.8 | |
| 2346.00 | -12.5 | V | 3.0 | 45.4 | 1.0 | -56.9 | -13.0 | -43.9 | |
| 3128.00 | -10.5 | V | 3.0 | 45.6 | 1.0 | -55.1 | -13.0 | -42.1 | |
| 1564.00 | -17.1 | H | 3.0 | 45.7 | 1.0 | -61.8 | -40.0 | -21.8 | |
| 2346.00 | -13.2 | H | 3.0 | 45.4 | 1.0 | -57.7 | -13.0 | -44.7 | |
| 3128.00 | -10.4 | H | 3.0 | 45.6 | 1.0 | -55.1 | -13.0 | -42.1 | |
| High Ch, 784.5MHz | | | | | | | | | |
| 1569.00 | -16.2 | V | 3.0 | 45.7 | 1.0 | -60.9 | -40.0 | -20.9 | |
| 2353.50 | -12.6 | V | 3.0 | 45.4 | 1.0 | -57.0 | -13.0 | -44.0 | |
| 3138.00 | -10.4 | V | 3.0 | 45.6 | 1.0 | -55.0 | -13.0 | -42.0 | |
| 1569.00 | -17.1 | H | 3.0 | 45.7 | 1.0 | -61.8 | -40.0 | -21.8 | |
| 2353.50 | -13.2 | H | 3.0 | 45.4 | 1.0 | -57.6 | -13.0 | -44.6 | |
| 3138.00 | -10.4 | H | 3.0 | 45.6 | 1.0 | -55.0 | -13.0 | -42.0 | |


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## LTE Band 25

LTE Band 25

10 MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 9/15/2022 |
| **Test Engineer:** | 25570 |
| **Configuration:** | EUT / AC Adapter, X-Position |
| **Location:** | Chamber 1 |
| **Mode:** | LTE_QPSK Band 25 Harmonics, 10MHz Bandwidth |
| **Test Votage:** | AC 120 V, 60 Hz |

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1855MHz | | | | | | | | | |
| 3710.00 | -11.1 | V | 3.0 | 45.8 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 5565.00 | -8.1 | V | 3.0 | 45.7 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 7420.00 | -5.8 | V | 3.0 | 44.5 | 1.0 | -49.4 | -13.0 | -36.4 | |
| 3710.00 | -11.1 | H | 3.0 | 45.8 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 5565.00 | -8.2 | H | 3.0 | 45.7 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 7420.00 | -5.9 | H | 3.0 | 44.5 | 1.0 | -49.5 | -13.0 | -36.5 | |
| Mid Ch, 1882.5MHz | | | | | | | | | |
| 3765.00 | -11.0 | V | 3.0 | 45.8 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 5647.50 | -7.9 | V | 3.0 | 45.7 | 1.0 | -52.7 | -13.0 | -39.7 | |
| 7530.00 | -5.9 | V | 3.0 | 44.5 | 1.0 | -49.4 | -13.0 | -36.4 | |
| 3765.00 | -10.9 | H | 3.0 | 45.8 | 1.0 | -55.7 | -13.0 | -42.7 | |
| 5647.50 | -8.0 | H | 3.0 | 45.7 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 7530.00 | -5.9 | H | 3.0 | 44.5 | 1.0 | -49.4 | -13.0 | -36.4 | |
| High Ch, 1910MHz | | | | | | | | | |
| 3820.00 | -11.0 | V | 3.0 | 45.8 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 5730.00 | -7.8 | V | 3.0 | 45.7 | 1.0 | -52.6 | -13.0 | -39.6 | |
| 7640.00 | -5.7 | V | 3.0 | 44.4 | 1.0 | -49.1 | -13.0 | -36.1 | |
| 3820.00 | -11.7 | H | 3.0 | 45.8 | 1.0 | -56.6 | -13.0 | -43.6 | |
| 5730.00 | -7.8 | H | 3.0 | 45.7 | 1.0 | -52.5 | -13.0 | -39.5 | |
| 7640.00 | -5.8 | H | 3.0 | 44.4 | 1.0 | -49.2 | -13.0 | -36.2 | |


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## LTE Band 26 (Part 90)

LTE Band 26

1.4 MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-04
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** LTE_QPSK Band 26 Harmonics, 1.4MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 814.7MHz | | | | | | | | | |
| 1629.40 | -14.3 | V | 3.0 | 46.4 | 1.0 | -59.7 | -13.0 | -46.7 | |
| 2444.10 | -11.6 | V | 3.0 | 46.9 | 1.0 | -57.5 | -13.0 | -44.5 | |
| 3258.80 | -9.5 | V | 3.0 | 46.7 | 1.0 | -55.2 | -13.0 | -42.2 | |
| 1629.40 | -14.8 | H | 3.0 | 46.4 | 1.0 | -60.2 | -13.0 | -47.2 | |
| 2444.10 | -12.2 | H | 3.0 | 46.9 | 1.0 | -58.1 | -13.0 | -45.1 | |
| 3258.80 | -9.6 | H | 3.0 | 46.7 | 1.0 | -55.2 | -13.0 | -42.2 | |
| Mid Ch, 823.3MHz | | | | | | | | | |
| 1646.60 | -14.4 | V | 3.0 | 46.4 | 1.0 | -59.9 | -13.0 | -46.9 | |
| 2469.90 | -11.6 | V | 3.0 | 46.9 | 1.0 | -57.5 | -13.0 | -44.5 | |
| 3293.20 | -9.4 | V | 3.0 | 46.6 | 1.0 | -55.1 | -13.0 | -42.1 | |
| 1646.60 | -14.8 | H | 3.0 | 46.4 | 1.0 | -60.2 | -13.0 | -47.2 | |
| 2469.90 | -12.1 | H | 3.0 | 46.9 | 1.0 | -58.0 | -13.0 | -45.0 | |
| 3293.20 | -9.5 | H | 3.0 | 46.6 | 1.0 | -55.2 | -13.0 | -42.2 | |

## LTE Band 26 (Straddle)

LTE Band 26

10 MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-04
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** LTE_QPSK Band 26 Harmonics, 10MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Straddle Ch, 824MHz | | | | | | | | | |
| 1648.00 | -14.7 | V | 3.0 | 46.4 | 1.0 | -60.1 | -13.0 | -47.1 | |
| 2472.00 | -11.6 | V | 3.0 | 46.9 | 1.0 | -57.5 | -13.0 | -44.5 | |
| 3296.00 | -9.4 | V | 3.0 | 46.6 | 1.0 | -55.0 | -13.0 | -42.0 | |
| 1648.00 | -15.8 | H | 3.0 | 46.4 | 1.0 | -61.2 | -13.0 | -48.2 | |
| 2472.00 | -12.1 | H | 3.0 | 46.9 | 1.0 | -58.0 | -13.0 | -45.0 | |
| 3296.00 | -9.5 | H | 3.0 | 46.6 | 1.0 | -55.1 | -13.0 | -42.1 | |


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## LTE Band 26 (Part 22)

LTE Band 26

1.4 MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 2022-10-04 |
| **Test Engineer:** | 51078 |
| **Configuration:** | EUT / AC Adapter, X-Position |
| **Location:** | Chamber 1 |
| **Mode:** | LTE_QPSK Band 26 Harmonics, 1.4MHz Bandwidth |
| **Test Votage:** | AC 120 V, 60 Hz |

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 814.7MHz | | | | | | | | | |
| 1629.40 | -14.8 | V | 3.0 | 46.4 | 1.0 | -60.3 | -13.0 | -47.3 | |
| 2444.10 | -11.6 | V | 3.0 | 46.9 | 1.0 | -57.5 | -13.0 | -44.5 | |
| 3258.80 | -9.5 | V | 3.0 | 46.7 | 1.0 | -55.2 | -13.0 | -42.2 | |
| 1629.40 | -15.8 | H | 3.0 | 46.4 | 1.0 | -61.2 | -13.0 | -48.2 | |
| 2444.10 | -12.0 | H | 3.0 | 46.9 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 3258.80 | -9.5 | H | 3.0 | 46.7 | 1.0 | -55.1 | -13.0 | -42.1 | |
| Mid Ch, 831.5MHz | | | | | | | | | |
| 1663.00 | -14.7 | V | 3.0 | 46.4 | 1.0 | -60.1 | -13.0 | -47.1 | |
| 2494.50 | -11.4 | V | 3.0 | 46.9 | 1.0 | -57.3 | -13.0 | -44.3 | |
| 3326.00 | -9.3 | V | 3.0 | 46.6 | 1.0 | -54.9 | -13.0 | -41.9 | |
| 1663.00 | -15.6 | H | 3.0 | 46.4 | 1.0 | -61.0 | -13.0 | -48.0 | |
| 2494.50 | -12.0 | H | 3.0 | 46.9 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 3326.00 | -9.3 | H | 3.0 | 46.6 | 1.0 | -54.9 | -13.0 | -41.9 | |
| High Ch, 848.3MHz | | | | | | | | | |
| 1696.60 | -14.5 | V | 3.0 | 46.5 | 1.0 | -60.0 | -13.0 | -47.0 | |
| 2544.90 | -11.5 | V | 3.0 | 46.9 | 1.0 | -57.4 | -13.0 | -44.4 | |
| 3393.20 | -8.9 | V | 3.0 | 46.5 | 1.0 | -54.4 | -13.0 | -41.4 | |
| 1696.60 | -15.4 | H | 3.0 | 46.5 | 1.0 | -60.9 | -13.0 | -47.9 | |
| 2544.90 | -12.0 | H | 3.0 | 46.9 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 3393.20 | -9.0 | H | 3.0 | 46.5 | 1.0 | -54.5 | -13.0 | -41.5 | |


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## LTE Band 41(PC2)

LTE Band 41(PC2)

20 MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-04
**Test Engineer:** 25770
**Configuration:** EUT / AC Adapter, Y-Position
**Location:** Chamber 1
**Mode:** LTE_QPSK Band 41 Harmonics, 20MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 2506MHz | | | | | | | | | |
| 5012.00 | -13.0 | V | 3.0 | 46.2 | 1.0 | -58.3 | -25.0 | -33.3 | |
| 7518.00 | -11.0 | V | 3.0 | 45.5 | 1.0 | -55.6 | -25.0 | -30.6 | |
| 10024.00 | -6.9 | V | 3.0 | 45.6 | 1.0 | -51.4 | -25.0 | -26.4 | |
| 5012.00 | -13.1 | H | 3.0 | 46.2 | 1.0 | -58.4 | -25.0 | -33.4 | |
| 7518.00 | -8.8 | H | 3.0 | 45.5 | 1.0 | -53.3 | -25.0 | -28.3 | |
| 10024.00 | -7.9 | H | 3.0 | 45.6 | 1.0 | -52.4 | -25.0 | -27.4 | |
| Mid Ch, 2593MHz | | | | | | | | | |
| 5186.00 | -21.2 | V | 3.0 | 46.1 | 1.0 | -66.3 | -25.0 | -41.3 | |
| 7779.00 | -8.8 | V | 3.0 | 45.6 | 1.0 | -53.4 | -25.0 | -28.4 | |
| 10372.00 | -12.1 | V | 3.0 | 45.9 | 1.0 | -57.0 | -25.0 | -32.0 | |
| 5186.00 | -21.3 | H | 3.0 | 46.1 | 1.0 | -66.4 | -25.0 | -41.4 | |
| 7779.00 | -9.6 | H | 3.0 | 45.6 | 1.0 | -54.2 | -25.0 | -29.2 | |
| 10372.00 | -12.0 | H | 3.0 | 45.9 | 1.0 | -56.9 | -25.0 | -31.9 | |
| High Ch, 2680MHz | | | | | | | | | |
| 5360.00 | -13.0 | V | 3.0 | 45.9 | 1.0 | -57.9 | -25.0 | -32.9 | |
| 8040.00 | -2.1 | V | 3.0 | 45.6 | 1.0 | -46.7 | -25.0 | -21.7 | |
| 10720.00 | -6.6 | V | 3.0 | 46.2 | 1.0 | -51.8 | -25.0 | -26.8 | |
| 5360.00 | -12.7 | H | 3.0 | 45.9 | 1.0 | -57.7 | -25.0 | -32.7 | |
| 8040.00 | -5.9 | H | 3.0 | 45.6 | 1.0 | -50.5 | -25.0 | -25.5 | |
| 10720.00 | -7.7 | H | 3.0 | 46.2 | 1.0 | -52.9 | -25.0 | -27.9 | |


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## LTE Band 66

LTE Band 66

10 MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 9/16/2022 |
| **Test Engineer:** | 25570 |
| **Configuration:** | EUT / AC Adapter, Y-Position |
| **Location:** | Chamber 1 |
| **Mode:** | LTE_QPSK Band 66 Harmonics, 10MHz Bandwidth |
| **Test Votage:** | AC 120 V, 60 Hz |

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1715MHz | | | | | | | | | |
| 3430.00 | -9.0 | V | 3.0 | 45.7 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 5145.00 | -9.3 | V | 3.0 | 45.8 | 1.0 | -54.1 | -13.0 | -41.1 | |
| 6860.00 | -6.0 | V | 3.0 | 44.9 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 3430.00 | -9.1 | H | 3.0 | 45.7 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 5145.00 | -9.1 | H | 3.0 | 45.8 | 1.0 | -53.9 | -13.0 | -40.9 | |
| 6860.00 | -6.1 | H | 3.0 | 44.9 | 1.0 | -50.0 | -13.0 | -37.0 | |
| Mid Ch, 1745MHz | | | | | | | | | |
| 3490.00 | -8.7 | V | 3.0 | 45.7 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 5235.00 | -8.7 | V | 3.0 | 45.8 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 6980.00 | -6.1 | V | 3.0 | 44.8 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 3490.00 | -8.8 | H | 3.0 | 45.7 | 1.0 | -53.6 | -13.0 | -40.6 | |
| 5235.00 | -8.7 | H | 3.0 | 45.8 | 1.0 | -53.5 | -13.0 | -40.5 | |
| 6980.00 | -6.2 | H | 3.0 | 44.8 | 1.0 | -50.0 | -13.0 | -37.0 | |
| High Ch, 1775MHz | | | | | | | | | |
| 3550.00 | -8.2 | V | 3.0 | 45.8 | 1.0 | -52.9 | -13.0 | -39.9 | |
| 5325.00 | -8.5 | V | 3.0 | 45.8 | 1.0 | -53.3 | -13.0 | -40.3 | |
| 7100.00 | -5.8 | V | 3.0 | 44.7 | 1.0 | -49.5 | -13.0 | -36.5 | |
| 3550.00 | -8.2 | H | 3.0 | 45.8 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 5325.00 | -8.5 | H | 3.0 | 45.8 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 7100.00 | -5.9 | H | 3.0 | 44.7 | 1.0 | -49.6 | -13.0 | -36.6 | |


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## NR Band n5

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 2022-10-05 |
| **Test Engineer:** | 25770 |
| **Configuration:** | EUT / AC Adapter, Z-Position |
| **Location:** | Chamber 1 |
| **Mode:** | 5G NR_QPSK NR n5 Harmonics, 15MHz Bandwidth |
| **Test Votage:** | AC 120 V, 60 Hz |

15MHz

QPSK

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 831.5MHz | | | | | | | | | |
| 1663.00 | -14.7 | V | 3.0 | 46.4 | 1.0 | -60.2 | -13.0 | -47.2 | |
| 2494.50 | -11.4 | V | 3.0 | 46.9 | 1.0 | -57.3 | -13.0 | -44.3 | |
| 3326.00 | -9.5 | V | 3.0 | 46.6 | 1.0 | -55.0 | -13.0 | -42.0 | |
| 1663.00 | -15.7 | H | 3.0 | 46.4 | 1.0 | -61.1 | -13.0 | -48.1 | |
| 2494.50 | -12.1 | H | 3.0 | 46.9 | 1.0 | -58.0 | -13.0 | -45.0 | |
| 3326.00 | -9.4 | H | 3.0 | 46.6 | 1.0 | -55.0 | -13.0 | -42.0 | |
| Mid Ch, 836.5MHz | | | | | | | | | |
| 1673.00 | -14.7 | V | 3.0 | 46.4 | 1.0 | -60.1 | -13.0 | -47.1 | |
| 2509.50 | -11.6 | V | 3.0 | 46.9 | 1.0 | -57.5 | -13.0 | -44.5 | |
| 3346.00 | -9.3 | V | 3.0 | 46.6 | 1.0 | -54.9 | -13.0 | -41.9 | |
| 1673.00 | -15.7 | H | 3.0 | 46.4 | 1.0 | -61.1 | -13.0 | -48.1 | |
| 2509.50 | -12.0 | H | 3.0 | 46.9 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 3346.00 | -9.4 | H | 3.0 | 46.6 | 1.0 | -54.9 | -13.0 | -41.9 | |
| High Ch, 841.5MHz | | | | | | | | | |
| 1683.00 | -14.2 | V | 3.0 | 46.5 | 1.0 | -59.7 | -13.0 | -46.7 | |
| 2524.50 | -11.4 | V | 3.0 | 46.9 | 1.0 | -57.3 | -13.0 | -44.3 | |
| 3366.00 | -9.1 | V | 3.0 | 46.5 | 1.0 | -54.6 | -13.0 | -41.6 | |
| 1683.00 | -15.5 | H | 3.0 | 46.5 | 1.0 | -61.0 | -13.0 | -48.0 | |
| 2524.50 | -12.0 | H | 3.0 | 46.9 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 3366.00 | -9.2 | H | 3.0 | 46.5 | 1.0 | -54.7 | -13.0 | -41.7 | |


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## NR Band n25

15 MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/16/2022
**Test Engineer:** 19568
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** 5G NR_QPSK NR n25 Harmonics, 15MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1857.5MHz | | | | | | | | | |
| 3715.00 | -10.9 | V | 3.0 | 45.8 | 1.0 | -55.7 | -13.0 | -42.7 | |
| 5572.50 | -8.1 | V | 3.0 | 45.7 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 7430.00 | -5.5 | V | 3.0 | 44.5 | 1.0 | -49.1 | -13.0 | -36.1 | |
| 3715.00 | -10.7 | H | 3.0 | 45.8 | 1.0 | -55.5 | -13.0 | -42.5 | |
| 5572.50 | -8.1 | H | 3.0 | 45.7 | 1.0 | -52.8 | -13.0 | -39.8 | |
| 7430.00 | -5.7 | H | 3.0 | 44.5 | 1.0 | -49.2 | -13.0 | -36.2 | |
| Mid Ch, 1882.5MHz | | | | | | | | | |
| 3765.00 | -10.6 | V | 3.0 | 45.8 | 1.0 | -55.4 | -13.0 | -42.4 | |
| 5647.50 | -7.6 | V | 3.0 | 45.7 | 1.0 | -52.4 | -13.0 | -39.4 | |
| 7530.00 | -5.8 | V | 3.0 | 44.5 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 3765.00 | -11.0 | H | 3.0 | 45.8 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 5647.50 | -7.9 | H | 3.0 | 45.7 | 1.0 | -52.6 | -13.0 | -39.6 | |
| 7530.00 | -5.6 | H | 3.0 | 44.5 | 1.0 | -49.1 | -13.0 | -36.1 | |
| High Ch, 1907.5MHz | | | | | | | | | |
| 3815.00 | -10.5 | V | 3.0 | 45.8 | 1.0 | -55.4 | -13.0 | -42.4 | |
| 5722.50 | -7.7 | V | 3.0 | 45.7 | 1.0 | -52.4 | -13.0 | -39.4 | |
| 7630.00 | -5.6 | V | 3.0 | 44.4 | 1.0 | -49.1 | -13.0 | -36.1 | |
| 3815.00 | -10.6 | H | 3.0 | 45.8 | 1.0 | -55.5 | -13.0 | -42.5 | |
| 5722.50 | -7.6 | H | 3.0 | 45.7 | 1.0 | -52.4 | -13.0 | -39.4 | |
| 7630.00 | -5.6 | H | 3.0 | 44.4 | 1.0 | -49.0 | -13.0 | -36.0 | |


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## NR Band n41

NR n41

40MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

| | |
|---|---|
| **Company:** | Samsung |
| **Project #:** | 4790541040 |
| **Date:** | 2022-10-05 |
| **Test Engineer:** | 25770 |
| **Configuration:** | EUT / AC Adapter, Y-Position |
| **Location:** | Chamber 1 |
| **Mode:** | 5G NR_QPSK NR n41 Harmonics, 60MHz Bandwidth |
| **Test Votage:** | AC 120 V, 60 Hz |

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 2526.01MHz | | | | | | | | | |
| 5052.02 | -15.5 | V | 3.0 | 46.2 | 1.0 | -60.7 | -25.0 | -35.7 | |
| 7578.03 | -0.8 | V | 3.0 | 45.5 | 1.0 | -45.3 | -25.0 | -20.3 | |
| 10104.04 | -9.7 | V | 3.0 | 45.6 | 1.0 | -54.3 | -25.0 | -29.3 | |
| 5052.02 | -15.3 | H | 3.0 | 46.2 | 1.0 | -60.5 | -25.0 | -35.5 | |
| 7578.03 | 2.0 | H | 3.0 | 45.5 | 1.0 | -42.6 | -25.0 | -17.6 | |
| 10104.04 | -10.0 | H | 3.0 | 45.6 | 1.0 | -54.6 | -25.0 | -29.6 | |
| Mid Ch, 2592.99MHz | | | | | | | | | |
| 5185.98 | -13.2 | V | 3.0 | 46.1 | 1.0 | -58.3 | -25.0 | -33.3 | |
| 7778.97 | -1.8 | V | 3.0 | 45.6 | 1.0 | -46.4 | -25.0 | -21.4 | |
| 10371.96 | -7.9 | V | 3.0 | 45.9 | 1.0 | -52.7 | -25.0 | -27.7 | |
| 5185.98 | -13.9 | H | 3.0 | 46.1 | 1.0 | -59.0 | -25.0 | -34.0 | |
| 7778.97 | 1.0 | H | 3.0 | 45.6 | 1.0 | -43.6 | -25.0 | -18.6 | |
| 10371.96 | -7.9 | H | 3.0 | 45.9 | 1.0 | -52.8 | -25.0 | -27.8 | |
| High Ch, 2660MHz | | | | | | | | | |
| 5320.00 | -15.1 | V | 3.0 | 46.0 | 1.0 | -60.1 | -25.0 | -35.1 | |
| 7980.00 | -13.5 | V | 3.0 | 45.6 | 1.0 | -58.0 | -25.0 | -33.0 | |
| 10640.00 | -9.3 | V | 3.0 | 46.1 | 1.0 | -54.4 | -25.0 | -29.4 | |
| 5320.00 | -15.0 | H | 3.0 | 46.0 | 1.0 | -60.0 | -25.0 | -35.0 | |
| 7980.00 | -13.7 | H | 3.0 | 45.6 | 1.0 | -58.3 | -25.0 | -33.3 | |
| 10640.00 | -9.2 | H | 3.0 | 46.1 | 1.0 | -54.3 | -25.0 | -29.3 | |


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NR n41

SRS1

40MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-13
**Test Engineer:** 25770
**Configuration:** EUT / AC Adapter, Y-Position
**Location:** Chamber 1
**Mode:** 5G NR_n41 Harmonics, 40MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 2516.01MHz | | | | | | | | | |
| 5032.02 | -16.9 | V | 3.0 | 46.2 | 1.0 | -62.1 | -25.0 | -37.1 | |
| 7548.03 | -15.3 | V | 3.0 | 45.5 | 1.0 | -59.8 | -25.0 | -34.8 | |
| 10064.04 | -11.1 | V | 3.0 | 45.6 | 1.0 | -55.7 | -25.0 | -30.7 | |
| 12580.05 | -9.2 | V | 3.0 | 47.1 | 1.0 | -55.3 | -25.0 | -30.3 | |
| 15096.06 | -9.9 | V | 3.0 | 46.1 | 1.0 | -55.0 | -25.0 | -30.0 | |
| 5032.02 | -16.7 | H | 3.0 | 46.2 | 1.0 | -61.9 | -25.0 | -36.9 | |
| 7548.03 | -15.3 | H | 3.0 | 45.5 | 1.0 | -59.9 | -25.0 | -34.9 | |
| 10064.04 | -11.3 | H | 3.0 | 45.6 | 1.0 | -55.9 | -25.0 | -30.9 | |
| 12580.05 | -8.9 | H | 3.0 | 47.1 | 1.0 | -55.0 | -25.0 | -30.0 | |
| 15096.06 | -9.9 | H | 3.0 | 46.1 | 1.0 | -55.0 | -25.0 | -30.0 | |
| Mid Ch, 2592.99MHz | | | | | | | | | |
| 5185.98 | -16.8 | V | 3.0 | 46.1 | 1.0 | -61.9 | -25.0 | -36.9 | |
| 7778.97 | -14.8 | V | 3.0 | 45.6 | 1.0 | -59.4 | -25.0 | -34.4 | |
| 10371.96 | -10.8 | V | 3.0 | 45.9 | 1.0 | -55.7 | -25.0 | -30.7 | |
| 12964.95 | -9.4 | V | 3.0 | 46.9 | 1.0 | -55.4 | -25.0 | -30.4 | |
| 15557.94 | -9.5 | V | 3.0 | 45.9 | 1.0 | -54.3 | -25.0 | -29.3 | |
| 5185.98 | -16.7 | H | 3.0 | 46.1 | 1.0 | -61.7 | -25.0 | -36.7 | |
| 7778.97 | -10.6 | H | 3.0 | 45.6 | 1.0 | -55.2 | -25.0 | -30.2 | |
| 10371.96 | -11.0 | H | 3.0 | 45.9 | 1.0 | -55.8 | -25.0 | -30.8 | |
| 12964.95 | -9.6 | H | 3.0 | 46.9 | 1.0 | -55.5 | -25.0 | -30.5 | |
| 15557.94 | -9.4 | H | 3.0 | 45.9 | 1.0 | -54.3 | -25.0 | -29.3 | |
| High Ch, 2670MHz | | | | | | | | | |
| 5340.00 | -14.5 | V | 3.0 | 45.9 | 1.0 | -59.5 | -25.0 | -34.5 | |
| 8010.00 | -15.0 | V | 3.0 | 45.6 | 1.0 | -59.6 | -25.0 | -34.6 | |
| 10680.00 | -10.8 | V | 3.0 | 46.1 | 1.0 | -55.9 | -25.0 | -30.9 | |
| 13350.00 | -10.0 | V | 3.0 | 46.8 | 1.0 | -55.7 | -25.0 | -30.7 | |
| 16020.00 | -9.0 | V | 3.0 | 45.6 | 1.0 | -53.6 | -25.0 | -28.6 | |
| 5340.00 | -15.7 | H | 3.0 | 45.9 | 1.0 | -60.6 | -25.0 | -35.6 | |
| 8010.00 | -15.0 | H | 3.0 | 45.6 | 1.0 | -59.6 | -25.0 | -34.6 | |
| 10680.00 | -10.6 | H | 3.0 | 46.1 | 1.0 | -55.7 | -25.0 | -30.7 | |
| 13350.00 | -9.9 | H | 3.0 | 46.8 | 1.0 | -55.7 | -25.0 | -30.7 | |
| 16020.00 | -8.9 | H | 3.0 | 45.6 | 1.0 | -53.6 | -25.0 | -28.6 | |


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NR n41
SRS2
20MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-13
**Test Engineer:** 25770
**Configuration:** EUT / AC Adapter, Z-Position
**Location:** Chamber 1
**Mode:** 5G NR_n41 Harmonics, 20MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 2506.01MHz | | | | | | | | | |
| 5012.02 | -15.6 | V | 3.0 | 46.2 | 1.0 | -60.8 | -25.0 | -35.8 | |
| 7518.03 | -15.2 | V | 3.0 | 45.5 | 1.0 | -59.8 | -25.0 | -34.8 | |
| 10024.04 | -10.9 | V | 3.0 | 45.6 | 1.0 | -55.4 | -25.0 | -30.4 | |
| 5012.02 | -13.0 | H | 3.0 | 46.2 | 1.0 | -58.2 | -25.0 | -33.2 | |
| 7518.03 | -15.3 | H | 3.0 | 45.5 | 1.0 | -59.8 | -25.0 | -34.8 | |
| 10024.04 | -11.1 | H | 3.0 | 45.6 | 1.0 | -55.7 | -25.0 | -30.7 | |
| Mid Ch, 2592.99MHz | | | | | | | | | |
| 5185.98 | -16.2 | V | 3.0 | 46.1 | 1.0 | -61.3 | -25.0 | -36.3 | |
| 7778.97 | -14.7 | V | 3.0 | 45.6 | 1.0 | -59.3 | -25.0 | -34.3 | |
| 10371.96 | -10.7 | V | 3.0 | 45.9 | 1.0 | -55.6 | -25.0 | -30.6 | |
| 5185.98 | -13.8 | H | 3.0 | 46.1 | 1.0 | -58.9 | -25.0 | -33.9 | |
| 7778.97 | -14.6 | H | 3.0 | 45.6 | 1.0 | -59.1 | -25.0 | -34.1 | |
| 10371.96 | -10.7 | H | 3.0 | 45.9 | 1.0 | -55.6 | -25.0 | -30.6 | |
| High Ch, 2680MHz | | | | | | | | | |
| 5360.00 | -15.6 | V | 3.0 | 45.9 | 1.0 | -60.5 | -25.0 | -35.5 | |
| 8040.00 | -15.1 | V | 3.0 | 45.6 | 1.0 | -59.6 | -25.0 | -34.6 | |
| 10720.00 | -10.6 | V | 3.0 | 46.2 | 1.0 | -55.8 | -25.0 | -30.8 | |
| 5360.00 | -13.1 | H | 3.0 | 45.9 | 1.0 | -58.1 | -25.0 | -33.1 | |
| 8040.00 | -14.7 | H | 3.0 | 45.6 | 1.0 | -59.3 | -25.0 | -34.3 | |
| 10720.00 | -10.6 | H | 3.0 | 46.2 | 1.0 | -55.8 | -25.0 | -30.8 | |

NR n41
SRS3
10MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-12
**Test Engineer:** 25546
**Configuration:** EUT / AC Adapter, Z-Position
**Location:** Chamber 1
**Mode:** 5G NR_n41 Harmonics, 10MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 2501.01MHz | | | | | | | | | |
| 5002.02 | -9.2 | V | 3.0 | 46.2 | 1.0 | -54.4 | -25.0 | -29.4 | |
| 7503.03 | -15.1 | V | 3.0 | 45.5 | 1.0 | -59.6 | -25.0 | -34.6 | |
| 10004.04 | -11.1 | V | 3.0 | 45.6 | 1.0 | -55.6 | -25.0 | -30.6 | |
| 5002.02 | -9.9 | H | 3.0 | 46.2 | 1.0 | -55.2 | -25.0 | -30.2 | |
| 7503.03 | -15.0 | H | 3.0 | 45.5 | 1.0 | -59.5 | -25.0 | -34.5 | |
| 10004.04 | -11.2 | H | 3.0 | 45.6 | 1.0 | -55.8 | -25.0 | -30.8 | |
| Mid Ch, 2592.99MHz | | | | | | | | | |
| 5185.98 | -16.0 | V | 3.0 | 46.1 | 1.0 | -61.1 | -25.0 | -36.1 | |
| 7778.97 | -14.8 | V | 3.0 | 45.6 | 1.0 | -59.4 | -25.0 | -34.4 | |
| 10371.96 | -10.7 | V | 3.0 | 45.9 | 1.0 | -55.6 | -25.0 | -30.6 | |
| 5185.98 | -15.5 | H | 3.0 | 46.1 | 1.0 | -60.6 | -25.0 | -35.6 | |
| 7778.97 | -14.8 | H | 3.0 | 45.6 | 1.0 | -59.3 | -25.0 | -34.3 | |
| 10371.96 | -10.7 | H | 3.0 | 45.9 | 1.0 | -55.6 | -25.0 | -30.6 | |
| High Ch, 2685MHz | | | | | | | | | |
| 5370.00 | -15.9 | V | 3.0 | 45.9 | 1.0 | -60.8 | -25.0 | -35.8 | |
| 8055.00 | -15.1 | V | 3.0 | 45.6 | 1.0 | -59.7 | -25.0 | -34.7 | |
| 10740.00 | -9.9 | V | 3.0 | 46.2 | 1.0 | -55.1 | -25.0 | -30.1 | |
| 5370.00 | -14.6 | H | 3.0 | 45.9 | 1.0 | -59.6 | -25.0 | -34.6 | |
| 8055.00 | -15.1 | H | 3.0 | 45.6 | 1.0 | -59.7 | -25.0 | -34.7 | |
| 10740.00 | -10.4 | H | 3.0 | 46.2 | 1.0 | -55.6 | -25.0 | -30.6 | |


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## NR Band n66

NR n66
Main1 Ant
20 MHz
QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/16/2022
**Test Engineer:** 19568
**Configuration:** EUT / AC Adapter, Y-Position
**Location:** Chamber 1
**Mode:** 5G NR_QPSK NR n66 Harmonics, 20MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1720MHz | | | | | | | | | |
| 3440.00 | -9.1 | V | 3.0 | 45.7 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 5160.00 | -8.9 | V | 3.0 | 45.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 6880.00 | -5.8 | V | 3.0 | 44.9 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 3440.00 | -9.0 | H | 3.0 | 45.7 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 5160.00 | -9.0 | H | 3.0 | 45.8 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 6880.00 | -5.9 | H | 3.0 | 44.9 | 1.0 | -49.8 | -13.0 | -36.8 | |
| Mid Ch, 1745MHz | | | | | | | | | |
| 3490.00 | -8.7 | V | 3.0 | 45.7 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 5235.00 | -8.6 | V | 3.0 | 45.8 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 6980.00 | -6.0 | V | 3.0 | 44.8 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 3490.00 | -8.6 | H | 3.0 | 45.7 | 1.0 | -53.3 | -13.0 | -40.3 | |
| 5235.00 | -8.6 | H | 3.0 | 45.8 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 6980.00 | -5.9 | H | 3.0 | 44.8 | 1.0 | -49.7 | -13.0 | -36.7 | |
| High Ch, 1770MHz | | | | | | | | | |
| 3540.00 | -8.3 | V | 3.0 | 45.8 | 1.0 | -53.1 | -13.0 | -40.1 | |
| 5310.00 | -8.6 | V | 3.0 | 45.8 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 7080.00 | -5.6 | V | 3.0 | 44.7 | 1.0 | -49.4 | -13.0 | -36.4 | |
| 3540.00 | -8.5 | H | 3.0 | 45.8 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 5310.00 | -8.3 | H | 3.0 | 45.8 | 1.0 | -53.1 | -13.0 | -40.1 | |
| 7080.00 | -5.7 | H | 3.0 | 44.7 | 1.0 | -49.4 | -13.0 | -36.4 | |

NR n66
Sub2 Ant
10 MHz
QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-19
**Test Engineer:** 25770
**Configuration:** EUT / AC Adapter, Y-Position
**Location:** Chamber 1
**Mode:** 5G NR_QPSK NR n66 Harmonics, 10MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1715MHz | | | | | | | | | |
| 3430.00 | -8.5 | V | 3.0 | 46.4 | 1.0 | -53.9 | -13.0 | -40.9 | |
| 5145.00 | -4.5 | V | 3.0 | 46.1 | 1.0 | -49.6 | -13.0 | -36.6 | |
| 6860.00 | -5.5 | V | 3.0 | 45.5 | 1.0 | -50.0 | -13.0 | -37.0 | |
| 3430.00 | -8.4 | H | 3.0 | 46.4 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 5145.00 | -3.1 | H | 3.0 | 46.1 | 1.0 | -48.2 | -13.0 | -35.2 | |
| 6860.00 | -5.5 | H | 3.0 | 45.5 | 1.0 | -50.0 | -13.0 | -37.0 | |
| Mid Ch, 1745MHz | | | | | | | | | |
| 3490.00 | -8.2 | V | 3.0 | 46.3 | 1.0 | -53.6 | -13.0 | -40.6 | |
| 5235.00 | -5.3 | V | 3.0 | 46.0 | 1.0 | -50.4 | -13.0 | -37.4 | |
| 6980.00 | -5.6 | V | 3.0 | 45.5 | 1.0 | -50.1 | -13.0 | -37.1 | |
| 3490.00 | -8.3 | H | 3.0 | 46.3 | 1.0 | -53.6 | -13.0 | -40.6 | |
| 5235.00 | -3.2 | H | 3.0 | 46.0 | 1.0 | -48.2 | -13.0 | -35.2 | |
| 6980.00 | -5.7 | H | 3.0 | 45.5 | 1.0 | -50.1 | -13.0 | -37.1 | |
| High Ch, 1775MHz | | | | | | | | | |
| 3550.00 | -7.9 | V | 3.0 | 46.3 | 1.0 | -53.1 | -13.0 | -40.1 | |
| 5325.00 | -6.9 | V | 3.0 | 46.0 | 1.0 | -51.9 | -13.0 | -38.9 | |
| 7100.00 | -5.3 | V | 3.0 | 45.5 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 3550.00 | -7.9 | H | 3.0 | 46.3 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 5325.00 | -6.0 | H | 3.0 | 46.0 | 1.0 | -51.0 | -13.0 | -38.0 | |
| 7100.00 | -5.4 | H | 3.0 | 45.5 | 1.0 | -49.9 | -13.0 | -36.9 | |


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## NR Band n77 (3450 – 3550 MHz)

NR n77

40MHz

QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/28/2022
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, Z-Position
**Location:** Chamber 1
**Mode:** 5G NR_QPSK NR n77 LO Harmonics, 40MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 3470.01MHz | | | | | | | | | |
| 6940.00 | -2.7 | V | 3.0 | 44.8 | 1.0 | -46.6 | -13.0 | -33.6 | |
| 10410.00 | 3.1 | V | 3.0 | 42.7 | 1.0 | -38.7 | -13.0 | -25.7 | |
| 13880.00 | 5.3 | V | 3.0 | 44.8 | 1.0 | -38.5 | -13.0 | -25.5 | |
| 6940.00 | -3.0 | H | 3.0 | 44.8 | 1.0 | -46.9 | -13.0 | -33.9 | |
| 10410.00 | 2.5 | H | 3.0 | 42.7 | 1.0 | -39.2 | -13.0 | -26.2 | |
| 13880.00 | 5.1 | H | 3.0 | 44.8 | 1.0 | -38.7 | -13.0 | -25.7 | |
| Mid Ch, 3499.98MHz | | | | | | | | | |
| 6999.96 | -3.4 | V | 3.0 | 44.8 | 1.0 | -47.2 | -13.0 | -34.2 | |
| 10499.94 | 2.8 | V | 3.0 | 42.7 | 1.0 | -39.0 | -13.0 | -26.0 | |
| 13999.92 | 5.3 | V | 3.0 | 44.9 | 1.0 | -38.6 | -13.0 | -25.6 | |
| 6999.96 | -3.0 | H | 3.0 | 44.8 | 1.0 | -46.8 | -13.0 | -33.8 | |
| 10499.94 | 3.0 | H | 3.0 | 42.7 | 1.0 | -38.8 | -13.0 | -25.8 | |
| 13999.92 | 5.4 | H | 3.0 | 44.9 | 1.0 | -38.5 | -13.0 | -25.5 | |
| High Ch, 3529.98MHz | | | | | | | | | |
| 7058.00 | -3.2 | V | 3.0 | 44.7 | 1.0 | -46.9 | -13.0 | -33.9 | |
| 10587.00 | 2.7 | V | 3.0 | 42.8 | 1.0 | -39.1 | -13.0 | -26.1 | |
| 14116.00 | 5.2 | V | 3.0 | 45.0 | 1.0 | -38.8 | -13.0 | -25.8 | |
| 7058.00 | -3.3 | H | 3.0 | 44.7 | 1.0 | -47.1 | -13.0 | -34.1 | |
| 10587.00 | 2.9 | H | 3.0 | 42.8 | 1.0 | -38.9 | -13.0 | -25.9 | |
| 14116.00 | 5.3 | H | 3.0 | 45.0 | 1.0 | -38.7 | -13.0 | -25.7 | |


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NR n77
SRS1
30MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-07
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** 5G NR_n77 LO Harmonics, 30MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 3465MHz | | | | | | | | | |
| 6930.00 | -5.5 | V | 3.0 | 45.5 | 1.0 | -50.0 | -13.0 | -37.0 | |
| 10395.00 | 0.3 | V | 3.0 | 45.9 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 13860.00 | 2.5 | V | 3.0 | 46.6 | 1.0 | -43.1 | -13.0 | -30.1 | |
| 6930.00 | -5.6 | H | 3.0 | 45.5 | 1.0 | -50.1 | -13.0 | -37.1 | |
| 10395.00 | 0.2 | H | 3.0 | 45.9 | 1.0 | -44.7 | -13.0 | -31.7 | |
| 13860.00 | 2.8 | H | 3.0 | 46.6 | 1.0 | -42.8 | -13.0 | -29.8 | |
| Mid Ch, 3499.98MHz | | | | | | | | | |
| 6999.96 | -5.5 | V | 3.0 | 45.5 | 1.0 | -50.0 | -13.0 | -37.0 | |
| 10499.94 | 0.4 | V | 3.0 | 46.0 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 13999.92 | 2.6 | V | 3.0 | 46.5 | 1.0 | -42.9 | -13.0 | -29.9 | |
| 6999.96 | -5.8 | H | 3.0 | 45.5 | 1.0 | -50.3 | -13.0 | -37.3 | |
| 10499.94 | 0.2 | H | 3.0 | 46.0 | 1.0 | -44.8 | -13.0 | -31.8 | |
| 13999.92 | 2.8 | H | 3.0 | 46.5 | 1.0 | -42.7 | -13.0 | -29.7 | |
| High Ch, 3535.02MHz | | | | | | | | | |
| 7070.04 | -5.4 | V | 3.0 | 45.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 10605.06 | 0.6 | V | 3.0 | 46.1 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 14140.08 | 2.4 | V | 3.0 | 46.5 | 1.0 | -43.1 | -13.0 | -30.1 | |
| 7070.04 | -5.5 | H | 3.0 | 45.5 | 1.0 | -50.0 | -13.0 | -37.0 | |
| 10605.06 | 0.5 | H | 3.0 | 46.1 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 14140.08 | 2.6 | H | 3.0 | 46.5 | 1.0 | -42.9 | -13.0 | -29.9 | |

NR n77
SRS2
30MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-07
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, Z-Position
**Location:** Chamber 1
**Mode:** 5G NR_n77 LO Harmonics, 30MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 3465MHz | | | | | | | | | |
| 6930.00 | -5.3 | V | 3.0 | 45.5 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 10395.00 | 0.4 | V | 3.0 | 45.9 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 13860.00 | 2.6 | V | 3.0 | 46.6 | 1.0 | -43.0 | -13.0 | -30.0 | |
| 6930.00 | -5.4 | H | 3.0 | 45.5 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 10395.00 | 0.3 | H | 3.0 | 45.9 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 13860.00 | 2.8 | H | 3.0 | 46.6 | 1.0 | -42.8 | -13.0 | -29.8 | |
| Mid Ch, 3499.98MHz | | | | | | | | | |
| 6999.96 | -5.6 | V | 3.0 | 45.5 | 1.0 | -50.1 | -13.0 | -37.1 | |
| 10499.94 | 0.3 | V | 3.0 | 46.0 | 1.0 | -44.7 | -13.0 | -31.7 | |
| 13999.92 | 2.7 | V | 3.0 | 46.5 | 1.0 | -42.8 | -13.0 | -29.8 | |
| 6999.96 | -5.7 | H | 3.0 | 45.5 | 1.0 | -50.2 | -13.0 | -37.2 | |
| 10499.94 | 0.2 | H | 3.0 | 46.0 | 1.0 | -44.8 | -13.0 | -31.8 | |
| 13999.92 | 2.9 | H | 3.0 | 46.5 | 1.0 | -42.7 | -13.0 | -29.7 | |
| High Ch, 3535.02MHz | | | | | | | | | |
| 7070.04 | -5.4 | V | 3.0 | 45.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 10605.06 | 0.5 | V | 3.0 | 46.1 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 14140.08 | 2.7 | V | 3.0 | 46.5 | 1.0 | -42.7 | -13.0 | -29.7 | |
| 7070.04 | -5.4 | H | 3.0 | 45.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 10605.06 | 0.5 | H | 3.0 | 46.1 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 14140.08 | 2.9 | H | 3.0 | 46.5 | 1.0 | -42.6 | -13.0 | -29.6 | |


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NR n77

SRS3

30 MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-07
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** 5G NR_n77 LO Harmonics, 30MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 3465MHz | | | | | | | | | |
| 6930.00 | -5.2 | V | 3.0 | 45.5 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 10395.00 | 0.4 | V | 3.0 | 45.9 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 13860.00 | 2.6 | V | 3.0 | 46.6 | 1.0 | -43.0 | -13.0 | -30.0 | |
| 6930.00 | -5.4 | H | 3.0 | 45.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 10395.00 | 0.3 | H | 3.0 | 45.9 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 13860.00 | 2.8 | H | 3.0 | 46.6 | 1.0 | -42.8 | -13.0 | -29.8 | |
| Mid Ch, 3499.98MHz | | | | | | | | | |
| 6999.96 | -5.6 | V | 3.0 | 45.5 | 1.0 | -50.1 | -13.0 | -37.1 | |
| 10499.94 | 0.4 | V | 3.0 | 46.0 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 13999.92 | 2.6 | V | 3.0 | 46.5 | 1.0 | -42.9 | -13.0 | -29.9 | |
| 6999.96 | -5.7 | H | 3.0 | 45.5 | 1.0 | -50.2 | -13.0 | -37.2 | |
| 10499.94 | 0.2 | H | 3.0 | 46.0 | 1.0 | -44.7 | -13.0 | -31.7 | |
| 13999.92 | 2.7 | H | 3.0 | 46.5 | 1.0 | -42.8 | -13.0 | -29.8 | |
| High Ch, 3535.02MHz | | | | | | | | | |
| 7070.04 | -5.4 | V | 3.0 | 45.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 10605.06 | 0.5 | V | 3.0 | 46.1 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 14140.08 | 2.6 | V | 3.0 | 46.5 | 1.0 | -42.8 | -13.0 | -29.8 | |
| 7070.04 | -5.5 | H | 3.0 | 45.5 | 1.0 | -50.0 | -13.0 | -37.0 | |
| 10605.06 | 0.4 | H | 3.0 | 46.1 | 1.0 | -44.7 | -13.0 | -31.7 | |
| 14140.08 | 2.8 | H | 3.0 | 46.5 | 1.0 | -42.7 | -13.0 | -29.7 | |


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## NR Band n77(3700 – 3980 MHz)

NR n77
100MHz
QPSK

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 9/28/2022
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, Y-Position
**Location:** Chamber 1
**Mode:** 5G NR_QPSK NR n77 UP Harmonics, 100MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 3750MHz | | | | | | | | | |
| 7500.00 | -2.9 | V | 3.0 | 44.5 | 1.0 | -46.4 | -13.0 | -33.4 | |
| 11250.00 | 4.4 | V | 3.0 | 43.0 | 1.0 | -37.6 | -13.0 | -24.6 | |
| 15000.00 | 5.6 | V | 3.0 | 45.7 | 1.0 | -39.2 | -13.0 | -26.2 | |
| 7500.00 | -2.9 | H | 3.0 | 44.5 | 1.0 | -46.4 | -13.0 | -33.4 | |
| 11250.00 | 4.1 | H | 3.0 | 43.0 | 1.0 | -37.9 | -13.0 | -24.9 | |
| 15000.00 | 6.0 | H | 3.0 | 45.7 | 1.0 | -38.7 | -13.0 | -25.7 | |
| Mid Ch, 3840MHz | | | | | | | | | |
| 7680.00 | -2.8 | V | 3.0 | 44.4 | 1.0 | -46.2 | -13.0 | -33.2 | |
| 11520.00 | 4.0 | V | 3.0 | 43.1 | 1.0 | -38.1 | -13.0 | -25.1 | |
| 15360.00 | 6.3 | V | 3.0 | 45.0 | 1.0 | -37.7 | -13.0 | -24.7 | |
| 7680.00 | -3.0 | H | 3.0 | 44.4 | 1.0 | -46.5 | -13.0 | -33.5 | |
| 11520.00 | 4.0 | H | 3.0 | 43.1 | 1.0 | -38.1 | -13.0 | -25.1 | |
| 15360.00 | 6.5 | H | 3.0 | 45.0 | 1.0 | -37.5 | -13.0 | -24.5 | |
| High Ch, 3930MHz | | | | | | | | | |
| 7860.00 | -3.1 | V | 3.0 | 44.3 | 1.0 | -46.5 | -13.0 | -33.5 | |
| 11790.00 | 4.4 | V | 3.0 | 43.2 | 1.0 | -37.8 | -13.0 | -24.8 | |
| 15720.00 | 6.7 | V | 3.0 | 44.2 | 1.0 | -36.5 | -13.0 | -23.5 | |
| 7860.00 | -3.0 | H | 3.0 | 44.3 | 1.0 | -46.3 | -13.0 | -33.3 | |
| 11790.00 | 4.8 | H | 3.0 | 43.2 | 1.0 | -37.4 | -13.0 | -24.4 | |
| 15720.00 | 6.6 | H | 3.0 | 44.2 | 1.0 | -36.6 | -13.0 | -23.6 | |

NR n77
SRS1
40 MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-07
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, X-Position
**Location:** Chamber 1
**Mode:** 5G NR_n77 UP Harmonics, 40MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 3720.02MHz | | | | | | | | | |
| 7440.04 | -5.3 | V | 3.0 | 45.5 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11160.06 | 1.2 | V | 3.0 | 46.6 | 1.0 | -44.4 | -13.0 | -31.4 | |
| 14880.08 | 3.4 | V | 3.0 | 46.2 | 1.0 | -41.8 | -13.0 | -28.8 | |
| 7440.04 | -5.4 | H | 3.0 | 45.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 11160.06 | 1.1 | H | 3.0 | 46.6 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 14880.08 | 3.6 | H | 3.0 | 46.2 | 1.0 | -41.6 | -13.0 | -28.6 | |
| Mid Ch, 3840MHz | | | | | | | | | |
| 7680.00 | -5.2 | V | 3.0 | 45.6 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11520.00 | 1.6 | V | 3.0 | 46.9 | 1.0 | -44.2 | -13.0 | -31.2 | |
| 15360.00 | 3.8 | V | 3.0 | 46.0 | 1.0 | -41.2 | -13.0 | -28.2 | |
| 7680.00 | -5.2 | H | 3.0 | 45.6 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11520.00 | 1.7 | H | 3.0 | 46.9 | 1.0 | -44.1 | -13.0 | -31.1 | |
| 15360.00 | 3.9 | H | 3.0 | 46.0 | 1.0 | -41.0 | -13.0 | -28.0 | |
| High Ch, 3960MHz | | | | | | | | | |
| 7920.00 | -5.2 | V | 3.0 | 45.6 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 11880.00 | 2.2 | V | 3.0 | 47.2 | 1.0 | -44.0 | -13.0 | -31.0 | |
| 15840.00 | 4.2 | V | 3.0 | 45.7 | 1.0 | -40.5 | -13.0 | -27.5 | |
| 7920.00 | -5.1 | H | 3.0 | 45.6 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 11880.00 | 2.4 | H | 3.0 | 47.2 | 1.0 | -43.8 | -13.0 | -30.8 | |
| 15840.00 | 4.1 | H | 3.0 | 45.7 | 1.0 | -40.6 | -13.0 | -27.6 | |


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NR n77

SRS2

30 MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-07
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, Z-Position
**Location:** Chamber 1
**Mode:** 5G NR_n77 UP Harmonics, 30MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 3715.02MHz | | | | | | | | | |
| 7430.00 | -5.3 | V | 3.0 | 45.5 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11145.00 | 1.0 | V | 3.0 | 46.5 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 14860.00 | 3.4 | V | 3.0 | 46.2 | 1.0 | -41.8 | -13.0 | -28.8 | |
| 7430.00 | -5.4 | H | 3.0 | 45.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 11145.00 | 1.2 | H | 3.0 | 46.5 | 1.0 | -44.4 | -13.0 | -31.4 | |
| 14860.00 | 3.5 | H | 3.0 | 46.2 | 1.0 | -41.7 | -13.0 | -28.7 | |
| Mid Ch, 3840MHz | | | | | | | | | |
| 7680.00 | -5.2 | V | 3.0 | 45.6 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11520.00 | 1.8 | V | 3.0 | 46.9 | 1.0 | -44.1 | -13.0 | -31.1 | |
| 15360.00 | 3.8 | V | 3.0 | 46.0 | 1.0 | -41.2 | -13.0 | -28.2 | |
| 7680.00 | -5.3 | H | 3.0 | 45.6 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 11520.00 | 1.9 | H | 3.0 | 46.9 | 1.0 | -44.0 | -13.0 | -31.0 | |
| 15360.00 | 3.9 | H | 3.0 | 46.0 | 1.0 | -41.0 | -13.0 | -28.0 | |
| High Ch, 3964.98MHz | | | | | | | | | |
| 7929.96 | -5.2 | V | 3.0 | 45.6 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 11894.94 | 2.2 | V | 3.0 | 47.2 | 1.0 | -44.0 | -13.0 | -31.0 | |
| 15859.92 | 4.3 | V | 3.0 | 45.7 | 1.0 | -40.4 | -13.0 | -27.4 | |
| 7929.96 | -5.2 | H | 3.0 | 45.6 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11894.94 | 2.3 | H | 3.0 | 47.2 | 1.0 | -43.9 | -13.0 | -30.9 | |
| 15859.92 | 4.2 | H | 3.0 | 45.7 | 1.0 | -40.5 | -13.0 | -27.5 | |

NR n77

SRS3

30 MHz

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** Samsung
**Project #:** 4790541040
**Date:** 2022-10-07
**Test Engineer:** 51078
**Configuration:** EUT / AC Adapter, Z-Position
**Location:** Chamber 1
**Mode:** 5G NR_n77 UP Harmonics, 30MHz Bandwidth
**Test Votage:** AC 120 V, 60 Hz

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 3715.02MHz | | | | | | | | | |
| 7430.04 | -5.3 | V | 3.0 | 45.5 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11145.06 | 1.0 | V | 3.0 | 46.5 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 14860.08 | 3.5 | V | 3.0 | 46.2 | 1.0 | -41.7 | -13.0 | -28.7 | |
| 7430.04 | -5.3 | H | 3.0 | 45.5 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11145.06 | 1.0 | H | 3.0 | 46.5 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 14860.08 | 3.6 | H | 3.0 | 46.2 | 1.0 | -41.6 | -13.0 | -28.6 | |
| Mid Ch, 3840MHz | | | | | | | | | |
| 7680.00 | -5.4 | V | 3.0 | 45.6 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 11520.00 | 1.7 | V | 3.0 | 46.9 | 1.0 | -44.2 | -13.0 | -31.2 | |
| 15360.00 | 3.8 | V | 3.0 | 46.0 | 1.0 | -41.1 | -13.0 | -28.1 | |
| 7680.00 | -5.3 | H | 3.0 | 45.6 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11520.00 | 1.9 | H | 3.0 | 46.9 | 1.0 | -44.0 | -13.0 | -31.0 | |
| 15360.00 | 3.8 | H | 3.0 | 46.0 | 1.0 | -41.1 | -13.0 | -28.1 | |
| High Ch, 3964.98MHz | | | | | | | | | |
| 7929.96 | -5.2 | V | 3.0 | 45.6 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 11894.94 | 2.2 | V | 3.0 | 47.2 | 1.0 | -44.0 | -13.0 | -31.0 | |
| 15859.92 | 4.3 | V | 3.0 | 45.7 | 1.0 | -40.4 | -13.0 | -27.4 | |
| 7929.96 | -5.1 | H | 3.0 | 45.6 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 11894.94 | 2.4 | H | 3.0 | 47.2 | 1.0 | -43.8 | -13.0 | -30.8 | |
| 15859.92 | 4.3 | H | 3.0 | 45.7 | 1.0 | -40.4 | -13.0 | -27.4 | |

# END OF REPORT



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