

Plot 7-261. EIRP Density (Ant D 50 MHz 1CC + 100 MHz BW 5CC QPSK High)


Plot 7-262. EIRP Density (Ant D 50 MHz 2CC +100 MHz BW 5CC QPSK High)

| FCC ID: A3LAT1K04-B00 | 旆 PCTEST | MEASUREMENT REPORT (CERTIFICATION) | snmsuna | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 177 of 466 |



16:57:16 04.10.2020
Plot 7-263. EIRP Density (Ant D 50 MHz 1CC +100 MHz BW 6CC QPSK High)


Plot 7-264. EIRP Density (Ant D 50 MHz 2CC +100 MHz BW 6CC QPSK High)

| FCC ID: A3LAT1K04-B00 | 甭 PCTEST | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNF | Approved by: Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: <br> 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 178 of 466 |

### 7.3.5 MIMO EIRP Density

| Antenna | Bandwidth | Configuration | Channel | CCs active | Modulation |  | PSD Limit $[\mathrm{dBm} / 100 \mathrm{MHz}]$ | Margin [dB] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $A+C$ |  | 1CC | Low | 0 | QPSK | 50.53 | 75.00 | 24.47 |
|  |  | 1CC | Low | 0 | 16QAM | 50.44 | 75.00 | 24.56 |
|  |  | 1CC | Low | 0 | 64QAM | 50.52 | 75.00 | 24.48 |
|  |  | 2CC | Low | 0-1 | QPSK | 50.62 | 75.00 | 24.38 |
|  |  | 2CC | Low | 0-1 | 16QAM | 50.61 | 75.00 | 24.39 |
|  |  | 2CC | Low | 0-1 | 64QAM | 50.60 | 75.00 | 24.40 |
|  |  | 1CC | Mid | 4 | QPSK | 50.47 | 75.00 | 24.53 |
|  |  | 1CC | Mid | 4 | 16QAM | 50.35 | 75.00 | 24.65 |
|  |  | 1CC | Mid | 4 | 64QAM | 50.47 | 75.00 | 24.53 |
|  | 5 | 2CC | Mid | 0-1 | QPSK | 50.51 | 75.00 | 24.49 |
|  |  | 2CC | Mid | 0-1 | 16QAM | 50.56 | 75.00 | 24.44 |
|  |  | 2CC | Mid | 0-1 | 64QAM | 50.58 | 75.00 | 24.42 |
|  |  | 1CC | High | 7 | QPSK | 51.05 | 75.00 | 23.95 |
|  |  | 1CC | High | 7 | 16QAM | 50.96 | 75.00 | 24.04 |
|  |  | 1CC | High | 7 | 64QAM | 51.01 | 75.00 | 23.99 |
|  |  | 2CC | High | 0-1 | QPSK | 51.17 | 75.00 | 23.83 |
|  |  | 2CC | High | 0-1 | 16QAM | 51.08 | 75.00 | 23.92 |
|  |  | 2CC | High | 0-1 | 64QAM | 51.09 | 75.00 | 23.91 |
|  | 100 MHz | 1CC | Low | 0 | QPSK | 50.64 | 75.00 | 24.36 |
|  |  | 1CC | Low | 0 | 16QAM | 50.58 | 75.00 | 24.42 |
|  |  | 1CC | Low | 0 | 64QAM | 50.63 | 75.00 | 24.37 |
|  |  | 8CC | Low | 0-7 | QPSK | 48.38 | 75.00 | 26.62 |
|  |  | 8CC | Low | 0-7 | 16QAM | 48.35 | 75.00 | 26.65 |
|  |  | 8CC | Low | 0-7 | 64QAM | 48.36 | 75.00 | 26.64 |
|  |  | 1CC | Mid | 4 | QPSK | 50.26 | 75.00 | 24.74 |
|  |  | 1CC | Mid | 4 | 16QAM | 50.42 | 75.00 | 24.58 |
|  |  | 1CC | Mid | 4 | 64QAM | 50.49 | 75.00 | 24.51 |
|  |  | 8CC | Mid | 0-7 | QPSK | 48.45 | 75.00 | 26.55 |
|  |  | 8CC | Mid | 0-7 | 16QAM | 48.33 | 75.00 | 26.67 |
|  |  | 8CC | Mid | 0-7 | 64QAM | 48.37 | 75.00 | 26.63 |
|  |  | 1CC | High | 7 | QPSK | 50.97 | 75.00 | 24.03 |
|  |  | 1CC | High | 7 | 16QAM | 50.88 | 75.00 | 24.12 |
|  |  | 1CC | High | 7 | 64QAM | 50.92 | 75.00 | 24.08 |
|  |  | 2CC | High | 0-1 | QPSK | 50.73 | 75.00 | 24.27 |
|  |  | 3CC | High | 0-2 | QPSK | 51.09 | 75.00 | 23.91 |
|  |  | 4CC | High | 0-3 | QPSK | 51.24 | 75.00 | 23.76 |
|  |  | 5CC | High | 0-4 | QPSK | 50.32 | 75.00 | 24.68 |
|  |  | 6CC | High | 0-5 | QPSK | 49.54 | 75.00 | 25.46 |
|  |  | 7CC | High | 0-6 | QPSK | 48.88 | 75.00 | 26.12 |
|  |  | 8CC | High | 0-7 | QPSK | 48.79 | 75.00 | 26.21 |
|  |  | 8CC | High | 0-7 | 16QAM | 48.82 | 75.00 | 26.18 |
|  |  | 8CC | High | 0-7 | 64QAM | 48.80 | 75.00 | 26.20 |

Table 7-11. MIMO EIRP Density Summary Data (Antenna A + Antenna C)

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 179 of 466 |


| Antenna | Bandwidth | Configuration | Channel | CCs active | Modulation | Average e.i.r.p. PSD [dBm/100MHz] | $\begin{aligned} & \text { PSD Limit } \\ & \text { [dBm/100MHz] } \end{aligned}$ | Margin [dB] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $B+D$ |  | 1CC | Low | 0 | QPSK | 50.23 | 75.00 | 24.77 |
|  |  | 1CC | Low | 0 | 16QAM | 50.38 | 75.00 | 24.62 |
|  |  | 1CC | Low | 0 | 64QAM | 50.46 | 75.00 | 24.54 |
|  |  | 2CC | Low | 0-1 | QPSK | 50.61 | 75.00 | 24.39 |
|  |  | 2CC | Low | 0-1 | 16QAM | 50.58 | 75.00 | 24.42 |
|  |  | 2CC | Low | 0-1 | 64QAM | 50.56 | 75.00 | 24.44 |
|  |  | 1CC | Mid | 4 | QPSK | 50.66 | 75.00 | 24.34 |
|  |  | 1CC | Mid | 4 | 16QAM | 50.58 | 75.00 | 24.42 |
|  | 50 | 1CC | Mid | 4 | 64QAM | 50.64 | 75.00 | 24.36 |
|  | 50 M | 2CC | Mid | 0-1 | QPSK | 50.84 | 75.00 | 24.16 |
|  |  | 2CC | Mid | 0-1 | 16QAM | 50.79 | 75.00 | 24.21 |
|  |  | 2CC | Mid | 0-1 | 64QAM | 50.77 | 75.00 | 24.23 |
|  |  | 1CC | High | 7 | QPSK | 50.82 | 75.00 | 24.18 |
|  |  | 1CC | High | 7 | 16QAM | 50.63 | 75.00 | 24.37 |
|  |  | 1CC | High | 7 | 64QAM | 50.78 | 75.00 | 24.22 |
|  |  | 2CC | High | 0-1 | QPSK | 50.94 | 75.00 | 24.06 |
|  |  | 2CC | High | 0-1 | 16QAM | 50.89 | 75.00 | 24.11 |
|  |  | 2CC | High | 0-1 | 64QAM | 50.86 | 75.00 | 24.14 |
|  | 100 MHz | 1CC | Low | 0 | QPSK | 50.56 | 75.00 | 24.44 |
|  |  | 1CC | Low | 0 | 16QAM | 50.52 | 75.00 | 24.48 |
|  |  | 1CC | Low | 0 | 64QAM | 50.60 | 75.00 | 24.40 |
|  |  | 8CC | Low | 0-7 | QPSK | 48.25 | 75.00 | 26.75 |
|  |  | 8CC | Low | 0-7 | 16QAM | 48.15 | 75.00 | 26.85 |
|  |  | 8CC | Low | 0-7 | 64QAM | 48.22 | 75.00 | 26.78 |
|  |  | 1CC | Mid | 4 | QPSK | 50.44 | 75.00 | 24.56 |
|  |  | 1CC | Mid | 4 | 16QAM | 50.39 | 75.00 | 24.61 |
|  |  | 1CC | Mid | 4 | 64QAM | 50.45 | 75.00 | 24.55 |
|  |  | 8CC | Mid | 0-7 | QPSK | 48.40 | 75.00 | 26.60 |
|  |  | 8CC | Mid | 0-7 | 16QAM | 48.39 | 75.00 | 26.61 |
|  |  | 8CC | Mid | 0-7 | 64QAM | 48.42 | 75.00 | 26.58 |
|  |  | 1CC | High | 7 | QPSK | 50.51 | 75.00 | 24.49 |
|  |  | 1CC | High | 7 | 16QAM | 50.39 | 75.00 | 24.61 |
|  |  | 1CC | High | 7 | 64QAM | 50.47 | 75.00 | 24.53 |
|  |  | 2CC | High | 0-1 | QPSK | 50.79 | 75.00 | 24.21 |
|  |  | 3CC | High | 0-2 | QPSK | 51.10 | 75.00 | 23.90 |
|  |  | 4CC | High | 0-3 | QPSK | 51.02 | 75.00 | 23.98 |
|  |  | 5CC | High | 0-4 | QPSK | 50.26 | 75.00 | 24.74 |
|  |  | 6CC | High | 0-5 | QPSK | 49.44 | 75.00 | 25.56 |
|  |  | 7CC | High | 0-6 | QPSK | 48.80 | 75.00 | 26.20 |
|  |  | 8CC | High | 0-7 | QPSK | 48.54 | 75.00 | 26.46 |
|  |  | 8CC | High | 0-7 | 16QAM | 48.57 | 75.00 | 26.43 |
|  |  | 8CC | High | 0-7 | 64QAM | 48.62 | 75.00 | 26.38 |

Table 7-12. MIMO EIRP Density Summary Data (Antenna B + Antenna D)

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | Snmsune | Approved by: Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: <br> 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 180 of 466 |


| Antenna | Bandwidth | Configuration | Channel | CCs active | Modulation | $\begin{gathered} \text { Average } \\ \text { e.i.r.p. PSD } \\ \text { [dBm/100MHz] } \end{gathered}$ | PSD Limit [dBm/100MHz] | Margin [dB] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $A+B+C+D$ | 50 MHz | 1CC | Low | 0 | QPSK | 53.39 | 75.00 | 21.61 |
|  |  | 1CC | Low | 0 | 16QAM | 53.42 | 75.00 | 21.58 |
|  |  | 1CC | Low | 0 | 64QAM | 53.50 | 75.00 | 21.50 |
|  |  | 2CC | Low | 0-1 | QPSK | 53.62 | 75.00 | 21.38 |
|  |  | 2CC | Low | 0-1 | 16QAM | 53.60 | 75.00 | 21.40 |
|  |  | 2CC | Low | 0-1 | 64QAM | 53.59 | 75.00 | 21.41 |
|  |  | 1CC | Mid | 4 | QPSK | 53.58 | 75.00 | 21.42 |
|  |  | 1CC | Mid | 4 | 16QAM | 53.48 | 75.00 | 21.52 |
|  |  | 1CC | Mid | 4 | 64QAM | 53.57 | 75.00 | 21.43 |
|  |  | 2CC | Mid | 0-1 | QPSK | 53.69 | 75.00 | 21.31 |
|  |  | 2CC | Mid | 0-1 | 16QAM | 53.69 | 75.00 | 21.31 |
|  |  | 2CC | Mid | 0-1 | 64QAM | 53.68 | 75.00 | 21.32 |
|  |  | 1CC | High | 7 | QPSK | 53.95 | 75.00 | 21.05 |
|  |  | 1CC | High | 7 | 16QAM | 53.81 | 75.00 | 21.19 |
|  |  | 1CC | High | 7 | 64QAM | 53.91 | 75.00 | 21.09 |
|  |  | 2CC | High | 0-1 | QPSK | 54.07 | 75.00 | 20.93 |
|  |  | 2CC | High | 0-1 | 16QAM | 54.00 | 75.00 | 21.00 |
|  |  | 2CC | High | 0-1 | 64QAM | 53.98 | 75.00 | 21.02 |
|  | 100 MHz | 1CC | Low | 0 | QPSK | 53.61 | 75.00 | 21.39 |
|  |  | 1CC | Low | 0 | 16QAM | 53.56 | 75.00 | 21.44 |
|  |  | 1CC | Low | 0 | 64QAM | 53.62 | 75.00 | 21.38 |
|  |  | 8CC | Low | 0-7 | QPSK | 51.32 | 75.00 | 23.68 |
|  |  | 8CC | Low | 0-7 | 16QAM | 51.26 | 75.00 | 23.74 |
|  |  | 8CC | Low | 0-7 | 64QAM | 51.30 | 75.00 | 23.70 |
|  |  | 1CC | Mid | 4 | QPSK | 53.36 | 75.00 | 21.64 |
|  |  | 1CC | Mid | 4 | 16QAM | 53.42 | 75.00 | 21.58 |
|  |  | 1CC | Mid | 4 | 64QAM | 53.48 | 75.00 | 21.52 |
|  |  | 8CC | Mid | 0-7 | QPSK | 51.44 | 75.00 | 23.56 |
|  |  | 8CC | Mid | 0-7 | 16QAM | 51.37 | 75.00 | 23.63 |
|  |  | 8CC | Mid | 0-7 | 64QAM | 51.41 | 75.00 | 23.59 |
|  |  | 1CC | High | 7 | QPSK | 53.75 | 75.00 | 21.25 |
|  |  | 1CC | High | 7 | 16QAM | 53.65 | 75.00 | 21.35 |
|  |  | 1CC | High | 7 | 64QAM | 53.71 | 75.00 | 21.29 |
|  |  | 2CC | High | 0-1 | QPSK | 53.77 | 75.00 | 21.23 |
|  |  | 3CC | High | 0-2 | QPSK | 54.11 | 75.00 | 20.89 |
|  |  | 4CC | High | 0-3 | QPSK | 54.14 | 75.00 | 20.86 |
|  |  | 5CC | High | 0-4 | QPSK | 53.30 | 75.00 | 21.70 |
|  |  | 6CC | High | 0-5 | QPSK | 52.50 | 75.00 | 22.50 |
|  |  | 7CC | High | 0-6 | QPSK | 51.85 | 75.00 | 23.15 |
|  |  | 8CC | High | 0-7 | QPSK | 51.67 | 75.00 | 23.33 |
|  |  | 8CC | High | 0-7 | 16QAM | 51.71 | 75.00 | 23.29 |
|  |  | 8CC | High | 0-7 | 64QAM | 51.72 | 75.00 | 23.28 |

Table 7-13. MIMO EIRP Density Summary Data (Antenna A + Antenna B + Antenna C + Antenna D)

| FCC ID: A3LAT1K04-B00 | F\|PCTEST | MEASUREMENT REPORT (CERTIFICATION) | Snmsuna | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 181 of 466 |

### 7.4 RF Conducted Output Power <br> $\$ 2.1046$

## Test Overview

RF conducted output power measurements are performed using broadband horn antennas. The conducted power is determined by maximizing the full spectrum EIRP for all component carrier configurations and then subtracting the known antenna gain from the EIRP. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

## Test Procedures Used

ANSI C63.26-2015 Section 5.2.4.4.1
ANSI C63.26-2015 Section 6.4

## Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW $=1-5 \%$ of the expected OBW
3. $V B W \geq 3 \times R B W$
4. Span $=2 x$ to $3 x$ the OBW
5. No. of sweep points $\geq 2 \times$ span / RBW
6. Detector $=$ RMS
7. The integration bandwidth was roughly set equal to the measured RF Conducted Output Power of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
8. Trace mode $=$ trace averaging (RMS) over 100 sweeps
9. The trace was allowed to stabilize

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| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 182 of 466 |

Test Notes

1) The EUT was tested while positioned upright and mounted on a mast at 1.5 m height. The worst case emissions are reported with the EUT in this fixed position and with the modulations and active component carriers shown in the tables below.
2) Elements within the same antenna array are correlated to produce beamforming array gain.
3) Measurements were taken in the far field of the mmWave signal based on the formula: $R \geq$ 2D^2/wavelength.
4) The test case with 1 CC active, "CC0" representing the component carrier with the lowest frequency, was selected for the worst case emission testing as it created the highest EIRP within 50 MHz and 100 MHz bandwidth.
5) The average EIRP reported below is calculated per formula specific in d) of ANSI C63.26-2015 Section 5.2.7:
$\operatorname{EIRP}(\mathrm{dBm})=\mathrm{E}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})+20 \log (\mathrm{D})-104.8$; where D is the measurement distance (in the far field region) in m .

For this section, all EIRP density measurements were performed at a distance of 3.19 m , so the effective correction is:

$$
\begin{aligned}
\operatorname{EIRP}(\mathrm{dBm}) & =\mathrm{E}(\mathrm{dBuV} / \mathrm{m})-94.72 \mathrm{~dB} \\
& =\text { Analyzer Level }(\mathrm{dBm})+\text { AFCL }(\mathrm{dB} / \mathrm{m})+107 \mathrm{~dB}-94.72 \mathrm{~dB} \\
& =\text { Analyzer Level }(\mathrm{dBm})+\text { AFCL }(\mathrm{dB} / \mathrm{m})+12.28 \mathrm{~dB}
\end{aligned}
$$

6) The conducted average power over the full channel BW is calculated as follows:

Conducted Average Power (dBm) = Average EIRP (dBm) - Antenna Gain (dBi)
7) Per ANSI C63.26-2015 Section 6.4, individual EIRPs are also summed before compared to the limit.
8) The angle of the horn antenna was rotated to maximize and find the worst case emissions. Worst case EIRP is reported below.
9) 7.3 Equivalent Isotropic Radiated Power (EIRP) Density plots cover for 7.4 Conducted Output Power plot.
10) CCs active 0, 4, $7=1$ Components Carriers Active, 0-7 = 8 Component Carriers Active. 0-7(NC) $=8$ Noncontiguous Component Carriers Active. Each component carrier's bandwidth is either of 50 MHz or 100 MHz Bandwidth.

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | SMMSUNA | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 183 of 466 |

### 7.4.1 Antenna A Conducted Power

| Antenna | $\qquad$ | Chan. | $\begin{aligned} & \text { CCs } \\ & \text { active } \end{aligned}$ | Modulation | Horn Angle | Horn Height | Turntable Azimuth | Analyzer Level (Total Pwr) | AFCL | EUT Antenna Gain | Average e.i.r.p. | Conducted Average Power |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | [degrees] | [cm] | [degrees] | [dBm] | [dB/m] | [dBi] | [dBm] | [dBm] |
| A | 50 | Low | 0 | QPSK | 135.0 | 156 | 54 | -12.99 | 57.65 | 28.12 | 44.66 | 16.54 |
|  |  | Low | 0 | 16QAM | 135.0 | 156 | 54 | -13.10 | 57.65 | 28.12 | 44.55 | 16.43 |
|  |  | Low | 0 | 64QAM | 135.0 | 156 | 54 | -12.99 | 57.65 | 28.12 | 44.66 | 16.54 |
|  |  | Low | 0-1 | QPSK | 135.0 | 156 | 54 | -12.85 | 57.65 | 28.12 | 44.80 | 16.68 |
|  |  | Low | 0-1 | 16QAM | 135.0 | 156 | 54 | -12.83 | 57.65 | 28.12 | 44.82 | 16.70 |
|  |  | Low | 0-1 | 64QAM | 135.0 | 156 | 54 | -12.83 | 57.65 | 28.12 | 44.82 | 16.70 |
|  |  | Mid | 4 | QPSK | 135.0 | 156 | 54 | -13.14 | 57.74 | 28.18 | 44.60 | 16.42 |
|  |  | Mid | 4 | 16QAM | 135.0 | 156 | 54 | -13.31 | 57.74 | 28.18 | 44.43 | 16.25 |
|  |  | Mid | 4 | 64QAM | 135.0 | 156 | 54 | -13.17 | 57.74 | 28.18 | 44.57 | 16.39 |
|  |  | Mid | 0-1 | QPSK | 135.0 | 156 | 54 | -13.12 | 57.74 | 28.18 | 44.62 | 16.44 |
|  |  | Mid | 0-1 | 16QAM | 135.0 | 156 | 54 | -13.09 | 57.74 | 28.18 | 44.65 | 16.47 |
|  |  | Mid | 0-1 | 64QAM | 135.0 | 156 | 54 | -13.05 | 57.74 | 28.18 | 44.69 | 16.51 |
|  |  | High | 7 | QPSK | 135.0 | 156 | 54 | -12.95 | 58.09 | 28.33 | 45.14 | 16.81 |
|  |  | High | 7 | 16QAM | 135.0 | 156 | 54 | -13.07 | 58.09 | 28.33 | 45.02 | 16.69 |
|  |  | High | 7 | 64QAM | 135.0 | 156 | 54 | -12.97 | 58.09 | 28.33 | 45.12 | 16.79 |
|  |  | High | 0-1 | QPSK | 135.0 | 156 | 54 | -12.86 | 58.09 | 28.33 | 45.23 | 16.90 |
|  |  | High | 0-1 | 16QAM | 135.0 | 156 | 54 | -12.95 | 58.09 | 28.33 | 45.14 | 16.81 |
|  |  | High | 0-1 | 64QAM | 135.0 | 156 | 54 | -12.94 | 58.09 | 28.33 | 45.15 | 16.82 |
|  |  | Low | 0 | QPSK | 135.0 | 156 | 54 | -9.98 | 57.65 | 28.12 | 47.67 | 19.55 |
|  |  | Low | 0 | 16QAM | 135.0 | 156 | 54 | -10.05 | 57.65 | 28.12 | 47.60 | 19.48 |
|  |  | Low | 0 | 64QAM | 135.0 | 156 | 54 | -9.99 | 57.65 | 28.12 | 47.66 | 19.54 |
|  |  | Low | 0-7 | QPSK | 135.0 | 156 | 54 | -12.01 | 57.65 | 28.12 | 45.64 | 17.52 |
|  |  | Low | 0-7 | 16QAM | 135.0 | 156 | 54 | -12.06 | 57.65 | 28.12 | 45.59 | 17.47 |
|  |  | Low | 0-7 | 64QAM | 135.0 | 156 | 54 | -12.06 | 57.65 | 28.12 | 45.59 | 17.47 |
|  |  | Mid | 4 | QPSK | 135.0 | 156 | 54 | -10.50 | 57.74 | 28.18 | 47.24 | 19.06 |
|  |  | Mid | 4 | 16QAM | 135.0 | 156 | 54 | -10.11 | 57.74 | 28.18 | 47.63 | 19.45 |
|  |  | Mid | 4 | 64QAM | 135.0 | 156 | 54 | -10.04 | 57.74 | 28.18 | 47.70 | 19.52 |
|  |  | Mid | 0-7 | QPSK | 135.0 | 156 | 54 | -11.99 | 57.74 | 28.18 | 45.75 | 17.57 |
|  |  | Mid | 0-7 | 16QAM | 135.0 | 156 | 54 | -12.24 | 57.74 | 28.18 | 45.50 | 17.32 |
|  |  | Mid | 0-7 | 64QAM | 135.0 | 156 | 54 | -12.18 | 57.74 | 28.18 | 45.56 | 17.38 |
|  |  | High | 7 | QPSK | 135.0 | 156 | 54 | -10.23 | 58.09 | 28.33 | 47.86 | 19.53 |
|  |  | High | 7 | 16QAM | 135.0 | 156 | 54 | -10.33 | 58.09 | 28.33 | 47.76 | 19.43 |
|  |  | High | 7 | 64QAM | 135.0 | 156 | 54 | -10.30 | 58.09 | 28.33 | 47.79 | 19.46 |
|  |  | High | 0-1 | QPSK | 135.0 | 156 | 54 | -10.21 | 58.09 | 28.33 | 47.88 | 19.55 |
|  |  | High | 0-2 | QPSK | 135.0 | 156 | 54 | -9.78 | 58.09 | 28.33 | 48.31 | 19.98 |
|  |  | High | 0-3 | QPSK | 135.0 | 156 | 54 | -9.61 | 58.09 | 28.33 | 48.48 | 20.15 |
|  |  | High | 0-4 | QPSK | 135.0 | 156 | 54 | -10.45 | 58.09 | 28.33 | 47.64 | 19.32 |
|  |  | High | 0-5 | QPSK | 135.0 | 156 | 54 | -11.26 | 58.09 | 28.33 | 46.83 | 18.51 |
|  |  | High | 0-6 | QPSK | 135.0 | 156 | 54 | -11.94 | 58.09 | 28.33 | 46.15 | 17.83 |
|  |  | High | 0-7 | QPSK | 135.0 | 156 | 54 | -12.79 | 58.09 | 28.33 | 45.30 | 16.97 |
|  |  | High | 0-7 | 16QAM | 135.0 | 156 | 54 | -12.53 | 58.09 | 28.33 | 45.56 | 17.23 |
|  |  | High | 0-7 | 64QAM | 135.0 | 156 | 54 | -12.73 | 58.09 | 28.33 | 45.36 | 17.03 |

Table 7-14. Antenna A Conducted Power Summary Data

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | Snmsung | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 184 of 466 |

7.4.2 Antenna B Conducted Power

| Antenna | Bandwidth | Chan. | $\begin{aligned} & \text { CCs } \\ & \text { active } \end{aligned}$ | Modulation | Horn Angle | Horn Height | Turntable Azimuth | Analyzer Level (Total Pwr) | AFCL | EUT Antenna Gain | Average e.i.r.p. | Conducted Average Power |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | [MHz] |  |  |  | [degrees] | [cm] | [degrees] | [dBm] | [dB/m] | [dBi] | [dBm] | [dBm] |
| B |  | Low | 0 | QPSK | 45.0 | 1.44 | 52 | -13.41 | 57.65 | 28.12 | 44.24 | 16.12 |
|  |  | Low | 0 | 16QAM | 45.0 | 1.44 | 52 | -13.15 | 57.65 | 28.12 | 44.50 | 16.38 |
|  |  | Low | 0 | 64QAM | 45.0 | 1.44 | 52 | -13.08 | 57.65 | 28.12 | 44.57 | 16.45 |
|  |  | Low | 0-1 | QPSK | 45.0 | 1.44 | 52 | -12.78 | 57.65 | 28.12 | 44.87 | 16.75 |
|  |  | Low | 0-1 | 16QAM | 45.0 | 1.44 | 52 | -12.82 | 57.65 | 28.12 | 44.83 | 16.71 |
|  |  | Low | 0-1 | 64QAM | 45.0 | 1.44 | 52 | -12.83 | 57.65 | 28.12 | 44.82 | 16.70 |
|  |  | Mid | 4 | QPSK | 45.0 | 1.44 | 52 | -13.19 | 57.74 | 28.18 | 44.55 | 16.36 |
|  |  | Mid | 4 | 16QAM | 45.0 | 1.44 | 52 | -13.31 | 57.74 | 28.18 | 44.43 | 16.24 |
|  |  | Mid | 4 | 64QAM | 45.0 | 1.44 | 52 | -13.26 | 57.74 | 28.18 | 44.48 | 16.30 |
|  | 50 | Mid | 0-1 | QPSK | 45.0 | 1.44 | 52 | -12.91 | 57.74 | 28.18 | 44.83 | 16.65 |
|  |  | Mid | 0-1 | 16QAM | 45.0 | 1.44 | 52 | -12.94 | 57.74 | 28.18 | 44.80 | 16.62 |
|  |  | Mid | 0-1 | 64QAM | 45.0 | 1.44 | 52 | -12.98 | 57.74 | 28.18 | 44.76 | 16.58 |
|  |  | High | 7 | QPSK | 45.0 | 1.44 | 52 | -13.38 | 58.09 | 28.33 | 44.71 | 16.38 |
|  |  | High | 7 | 16QAM | 45.0 | 1.44 | 52 | -13.49 | 58.09 | 28.33 | 44.60 | 16.27 |
|  |  | High | 7 | 64QAM | 45.0 | 1.44 | 52 | -13.41 | 58.09 | 28.33 | 44.68 | 16.35 |
|  |  | High | 0-1 | QPSK | 45.0 | 1.44 | 52 | -13.20 | 58.09 | 28.33 | 44.89 | 16.56 |
|  |  | High | 0-1 | 16QAM | 45.0 | 1.44 | 52 | -13.24 | 58.09 | 28.33 | 44.85 | 16.52 |
|  |  | High | 0-1 | 64QAM | 45.0 | 1.44 | 52 | -13.28 | 58.09 | 28.33 | 44.81 | 16.49 |
|  | 100 | Low | 0 | QPSK | 45.0 | 1.44 | 52 | -9.91 | 57.65 | 28.12 | 47.74 | 19.62 |
|  |  | Low | 0 | 16QAM | 45.0 | 1.44 | 52 | -9.96 | 57.65 | 28.12 | 47.69 | 19.57 |
|  |  | Low | 0 | 64QAM | 45.0 | 1.44 | 52 | -9.90 | 57.65 | 28.12 | 47.75 | 19.63 |
|  |  | Low | 0-7 | QPSK | 45.0 | 1.44 | 52 | -12.45 | 57.65 | 28.12 | 45.20 | 17.08 |
|  |  | Low | 0-7 | 16QAM | 45.0 | 1.44 | 52 | -12.56 | 57.65 | 28.12 | 45.09 | 16.97 |
|  |  | Low | 0-7 | 64QAM | 45.0 | 1.44 | 52 | -12.47 | 57.65 | 28.12 | 45.18 | 17.06 |
|  |  | Mid | 4 | QPSK | 45.0 | 1.44 | 52 | -10.36 | 57.74 | 28.18 | 47.38 | 19.20 |
|  |  | Mid | 4 | 16QAM | 45.0 | 1.44 | 52 | -10.39 | 57.74 | 28.18 | 47.35 | 19.16 |
|  |  | Mid | 4 | 64QAM | 45.0 | 1.44 | 52 | -10.33 | 57.74 | 28.18 | 47.41 | 19.23 |
|  |  | Mid | 0-7 | QPSK | 45.0 | 1.44 | 52 | -12.35 | 57.74 | 28.18 | 45.39 | 17.21 |
|  |  | Mid | 0-7 | 16QAM | 45.0 | 1.44 | 52 | -12.41 | 57.74 | 28.18 | 45.33 | 17.15 |
|  |  | Mid | 0-7 | 64QAM | 45.0 | 1.44 | 52 | -12.38 | 57.74 | 28.18 | 45.36 | 17.18 |
|  |  | High | 7 | QPSK | 45.0 | 1.44 | 52 | -10.55 | 58.09 | 28.33 | 47.54 | 19.21 |
|  |  | High | 7 | 16QAM | 45.0 | 1.44 | 52 | -10.63 | 58.09 | 28.33 | 47.46 | 19.13 |
|  |  | High | 7 | 64QAM | 45.0 | 1.44 | 52 | -10.56 | 58.09 | 28.33 | 47.53 | 19.20 |
|  |  | High | 0-1 | QPSK | 45.0 | 1.44 | 52 | -10.64 | 58.09 | 28.33 | 47.45 | 19.12 |
|  |  | High | 0-2 | QPSK | 45.0 | 1.44 | 52 | -10.25 | 58.09 | 28.33 | 47.84 | 19.52 |
|  |  | High | 0-3 | QPSK | 45.0 | 1.44 | 52 | -10.12 | 58.09 | 28.33 | 47.97 | 19.64 |
|  |  | High | 0-4 | QPSK | 45.0 | 1.44 | 52 | -11.13 | 58.09 | 28.33 | 46.96 | 18.63 |
|  |  | High | 0-5 | QPSK | 45.0 | 1.44 | 52 | -11.92 | 58.09 | 28.33 | 46.17 | 17.85 |
|  |  | High | 0-6 | QPSK | 45.0 | 1.44 | 52 | -12.43 | 58.09 | 28.33 | 45.66 | 17.34 |
|  |  | High | 0-7 | QPSK | 45.0 | 1.44 | 52 | -12.52 | 58.09 | 28.33 | 45.57 | 17.24 |
|  |  | High | 0-7 | 16QAM | 45.0 | 1.44 | 52 | -12.52 | 58.09 | 28.33 | 45.57 | 17.24 |
|  |  | High | 0-7 | 64QAM | 45.0 | 1.44 | 52 | -12.52 | 58.09 | 28.33 | 45.57 | 17.25 |

Table 7-15. Antenna B Conducted Power Summary Data

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | Snmsune | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 185 of 466 |

### 7.4.3 Antenna C Conducted Power

| Antenna | $\qquad$ | Chan. | $\begin{aligned} & \text { CCs } \\ & \text { active } \end{aligned}$ | Modulation | Horn Angle | Horn Height | Turntable Azimuth | Analyzer Level (Total Pwr) | AFCL | EUT Antenna Gain | Average e.i.r.p. | Conducted Average Power |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | [degrees] | [cm] | [degrees] | [dBm] | [dB/m] | [dBi] | [dBm] | [dBm] |
| C | 50 | Low | 0 | QPSK | 135.0 | 156 | 55 | -13.29 | 57.65 | 28.12 | 44.36 | 16.24 |
|  |  | Low | 0 | 16QAM | 135.0 | 156 | 55 | -13.36 | 57.65 | 28.12 | 44.29 | 16.17 |
|  |  | Low | 0 | 64QAM | 135.0 | 156 | 55 | -13.32 | 57.65 | 28.12 | 44.33 | 16.21 |
|  |  | Low | 0-1 | QPSK | 135.0 | 156 | 55 | -13.25 | 57.65 | 28.12 | 44.40 | 16.28 |
|  |  | Low | 0-1 | 16QAM | 135.0 | 156 | 55 | -13.30 | 57.65 | 28.12 | 44.35 | 16.23 |
|  |  | Low | 0-1 | 64QAM | 135.0 | 156 | 55 | -13.32 | 57.65 | 28.12 | 44.33 | 16.21 |
|  |  | Mid | 4 | QPSK | 135.0 | 156 | 55 | -13.44 | 57.74 | 28.18 | 44.30 | 16.12 |
|  |  | Mid | 4 | 16QAM | 135.0 | 156 | 55 | -13.50 | 57.74 | 28.18 | 44.24 | 16.06 |
|  |  | Mid | 4 | 64QAM | 135.0 | 156 | 55 | -13.41 | 57.74 | 28.18 | 44.33 | 16.15 |
|  |  | Mid | 0-1 | QPSK | 135.0 | 156 | 55 | -13.39 | 57.74 | 28.18 | 44.35 | 16.17 |
|  |  | Mid | 0-1 | 16QAM | 135.0 | 156 | 55 | -13.30 | 57.74 | 28.18 | 44.44 | 16.26 |
|  |  | Mid | 0-1 | 64QAM | 135.0 | 156 | 55 | -13.32 | 57.74 | 28.18 | 44.42 | 16.24 |
|  |  | High | 7 | QPSK | 135.0 | 156 | 55 | -13.16 | 58.09 | 28.33 | 44.93 | 16.61 |
|  |  | High | 7 | 16QAM | 135.0 | 156 | 55 | -13.23 | 58.09 | 28.33 | 44.86 | 16.53 |
|  |  | High | 7 | 64QAM | 135.0 | 156 | 55 | -13.23 | 58.09 | 28.33 | 44.86 | 16.54 |
|  |  | High | 0-1 | QPSK | 135.0 | 156 | 55 | -13.01 | 58.09 | 28.33 | 45.08 | 16.76 |
|  |  | High | 0-1 | 16QAM | 135.0 | 156 | 55 | -13.10 | 58.09 | 28.33 | 44.99 | 16.66 |
|  |  | High | 0-1 | 64QAM | 135.0 | 156 | 55 | -13.20 | 58.09 | 28.33 | 44.89 | 16.56 |
|  |  | Low | 0 | QPSK | 135.0 | 156 | 55 | -10.05 | 57.65 | 28.12 | 47.60 | 19.48 |
|  |  | Low | 0 | 16QAM | 135.0 | 156 | 55 | -10.11 | 57.65 | 28.12 | 47.54 | 19.42 |
|  |  | Low | 0 | 64QAM | 135.0 | 156 | 55 | -10.07 | 57.65 | 28.12 | 47.58 | 19.46 |
|  |  | Low | 0-7 | QPSK | 135.0 | 156 | 55 | -12.57 | 57.65 | 28.12 | 45.08 | 16.96 |
|  |  | Low | 0-7 | 16QAM | 135.0 | 156 | 55 | -12.58 | 57.65 | 28.12 | 45.07 | 16.95 |
|  |  | Low | 0-7 | 64QAM | 135.0 | 156 | 55 | -12.55 | 57.65 | 28.12 | 45.10 | 16.98 |
|  |  | Mid | 4 | QPSK | 135.0 | 156 | 55 | -10.47 | 57.74 | 28.18 | 47.27 | 19.09 |
|  |  | Mid | 4 | 16QAM | 135.0 | 156 | 55 | -10.56 | 57.74 | 28.18 | 47.18 | 19.00 |
|  |  | Mid | 4 | 64QAM | 135.0 | 156 | 55 | -10.49 | 57.74 | 28.18 | 47.25 | 19.07 |
|  |  | Mid | 0-7 | QPSK | 135.0 | 156 | 55 | -12.63 | 57.74 | 28.18 | 45.11 | 16.93 |
|  |  | Mid | 0-7 | 16QAM | 135.0 | 156 | 55 | -12.60 | 57.74 | 28.18 | 45.14 | 16.96 |
|  |  | Mid | 0-7 | 64QAM | 135.0 | 156 | 55 | -12.58 | 57.74 | 28.18 | 45.16 | 16.98 |
|  |  | High | 7 | QPSK | 135.0 | 156 | 55 | -10.03 | 58.09 | 28.33 | 48.06 | 19.74 |
|  |  | High | 7 | 16QAM | 135.0 | 156 | 55 | -10.11 | 58.09 | 28.33 | 47.98 | 19.65 |
|  |  | High | 7 | 64QAM | 135.0 | 156 | 55 | -10.05 | 58.09 | 28.33 | 48.04 | 19.71 |
|  |  | High | 0-1 | QPSK | 135.0 | 156 | 55 | -10.53 | 58.09 | 28.33 | 47.56 | 19.23 |
|  |  | High | 0-2 | QPSK | 135.0 | 156 | 55 | -10.24 | 58.09 | 28.33 | 47.85 | 19.52 |
|  |  | High | 0-3 | QPSK | 135.0 | 156 | 55 | -10.13 | 58.09 | 28.33 | 47.96 | 19.63 |
|  |  | High | 0-4 | QPSK | 135.0 | 156 | 55 | -11.14 | 58.09 | 28.33 | 46.95 | 18.62 |
|  |  | High | 0-5 | QPSK | 135.0 | 156 | 55 | -11.87 | 58.09 | 28.33 | 46.22 | 17.89 |
|  |  | High | 0-6 | QPSK | 135.0 | 156 | 55 | -12.51 | 58.09 | 28.33 | 45.58 | 17.25 |
|  |  | High | 0-7 | QPSK | 135.0 | 156 | 55 | -12.48 | 58.09 | 28.33 | 45.61 | 17.28 |
|  |  | High | 0-7 | 16QAM | 135.0 | 156 | 55 | -12.49 | 58.09 | 28.33 | 45.60 | 17.27 |
|  |  | High | 0-7 | 64QAM | 135.0 | 156 | 55 | -12.56 | 58.09 | 28.33 | 45.53 | 17.21 |

Table 7-16. Antenna C Conducted Power Summary Data

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 186 of 466 |

### 7.4.4 Antenna D Conducted Power

| Antenna | Bandwidth | Chan. | CCs active | Modulation | Horn Angle | Horn Height | Turntable Azimuth | Analyzer Level (Total Pwr) | AFCL |  | Average e.i.r.p. | Conducted Average Power |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | [MHz] |  |  |  | [degrees] | [cm] | [degrees] | [dBm] | [dB/m] | [dBi] | [dBm] | [dBm] |
| D | 50 | Low | 0 | QPSK | 45.0 | 1.44 | 51 | -13.47 | 57.65 | 28.12 | 44.18 | 16.06 |
|  |  | Low | 0 | 16QAM | 45.0 | 1.44 | 51 | -13.42 | 57.65 | 28.12 | 44.23 | 16.11 |
|  |  | Low | 0 | 64QAM | 45.0 | 1.44 | 51 | -13.34 | 57.65 | 28.12 | 44.31 | 16.19 |
|  |  | Low | 0-1 | QPSK | 45.0 | 1.44 | 51 | -13.36 | 57.65 | 28.12 | 44.29 | 16.17 |
|  |  | Low | 0-1 | 16QAM | 45.0 | 1.44 | 51 | -13.38 | 57.65 | 28.12 | 44.27 | 16.15 |
|  |  | Low | 0-1 | 64QAM | 45.0 | 1.44 | 51 | -13.40 | 57.65 | 28.12 | 44.25 | 16.13 |
|  |  | Mid | 4 | QPSK | 45.0 | 1.44 | 51 | -13.01 | 57.74 | 28.18 | 44.73 | 16.55 |
|  |  | Mid | 4 | 16QAM | 45.0 | 1.44 | 51 | -13.04 | 57.74 | 28.18 | 44.70 | 16.52 |
|  |  | Mid | 4 | 64QAM | 45.0 | 1.44 | 51 | -12.97 | 57.74 | 28.18 | 44.77 | 16.59 |
|  |  | Mid | 0-1 | QPSK | 45.0 | 1.44 | 51 | -12.92 | 57.74 | 28.18 | 44.82 | 16.64 |
|  |  | Mid | 0-1 | 16QAM | 45.0 | 1.44 | 51 | -12.99 | 57.74 | 28.18 | 44.75 | 16.57 |
|  |  | Mid | 0-1 | 64QAM | 45.0 | 1.44 | 51 | -13.00 | 57.74 | 28.18 | 44.74 | 16.56 |
|  |  | High | 7 | QPSK | 45.0 | 1.44 | 51 | -13.19 | 58.09 | 28.33 | 44.90 | 16.57 |
|  |  | High | 7 | 16QAM | 45.0 | 1.44 | 51 | -13.47 | 58.09 | 28.33 | 44.62 | 16.30 |
|  |  | High | 7 | 64QAM | 45.0 | 1.44 | 51 | -13.25 | 58.09 | 28.33 | 44.84 | 16.51 |
|  |  | High | 0-1 | QPSK | 45.0 | 1.44 | 51 | -13.14 | 58.09 | 28.33 | 44.95 | 16.62 |
|  |  | High | 0-1 | 16QAM | 45.0 | 1.44 | 51 | -13.20 | 58.09 | 28.33 | 44.89 | 16.56 |
|  |  | High | 0-1 | 64QAM | 45.0 | 1.44 | 51 | -13.22 | 58.09 | 28.33 | 44.87 | 16.54 |
|  | 100 | Low | 0 | QPSK | 45.0 | 1.44 | 51 | -10.29 | 57.65 | 28.12 | 47.36 | 19.24 |
|  |  | Low | 0 | 16QAM | 45.0 | 1.44 | 51 | -10.32 | 57.65 | 28.12 | 47.33 | 19.21 |
|  |  | Low | 0 | 64QAM | 45.0 | 1.44 | 51 | -10.22 | 57.65 | 28.12 | 47.43 | 19.31 |
|  |  | Low | 0-7 | QPSK | 45.0 | 1.44 | 51 | -12.37 | 57.65 | 28.12 | 45.28 | 17.16 |
|  |  | Low | 0-7 | 16QAM | 45.0 | 1.44 | 51 | -12.46 | 57.65 | 28.12 | 45.19 | 17.07 |
|  |  | Low | 0-7 | 64QAM | 45.0 | 1.44 | 51 | -12.41 | 57.65 | 28.12 | 45.24 | 17.12 |
|  |  | Mid | 4 | QPSK | 45.0 | 1.44 | 51 | -10.26 | 57.74 | 28.18 | 47.48 | 19.30 |
|  |  | Mid | 4 | 16QAM | 45.0 | 1.44 | 51 | -10.32 | 57.74 | 28.18 | 47.42 | 19.24 |
|  |  | Mid | 4 | 64QAM | 45.0 | 1.44 | 51 | -10.27 | 57.74 | 28.18 | 47.47 | 19.29 |
|  |  | Mid | 0-7 | QPSK | 45.0 | 1.44 | 51 | -12.34 | 57.74 | 28.18 | 45.40 | 17.22 |
|  |  | Mid | 0-7 | 16QAM | 45.0 | 1.44 | 51 | -12.30 | 57.74 | 28.18 | 45.44 | 17.26 |
|  |  | Mid | 0-7 | 64QAM | 45.0 | 1.44 | 51 | -12.28 | 57.74 | 28.18 | 45.46 | 17.27 |
|  |  | High | 7 | QPSK | 45.0 | 1.44 | 51 | -10.63 | 58.09 | 28.33 | 47.46 | 19.13 |
|  |  | High | 7 | 16QAM | 45.0 | 1.44 | 51 | -10.78 | 58.09 | 28.33 | 47.31 | 18.98 |
|  |  | High | 7 | 64QAM | 45.0 | 1.44 | 51 | -10.69 | 58.09 | 28.33 | 47.40 | 19.07 |
|  |  | High | 0-1 | QPSK | 45.0 | 1.44 | 51 | -10.00 | 58.09 | 28.33 | 48.09 | 19.76 |
|  |  | High | 0-2 | QPSK | 45.0 | 1.44 | 51 | -9.75 | 58.09 | 28.33 | 48.34 | 20.01 |
|  |  | High | 0-3 | QPSK | 45.0 | 1.44 | 51 | -10.04 | 58.09 | 28.33 | 48.05 | 19.72 |
|  |  | High | 0-4 | QPSK | 45.0 | 1.44 | 51 | -10.57 | 58.09 | 28.33 | 47.52 | 19.20 |
|  |  | High | 0-5 | QPSK | 45.0 | 1.44 | 51 | -11.40 | 58.09 | 28.33 | 46.69 | 18.36 |
|  |  | High | 0-6 | QPSK | 45.0 | 1.44 | 51 | -12.17 | 58.09 | 28.33 | 45.92 | 17.59 |
|  |  | High | 0-7 | QPSK | 45.0 | 1.44 | 51 | -12.60 | 58.09 | 28.33 | 45.49 | 17.16 |
|  |  | High | 0-7 | 16QAM | 45.0 | 1.44 | 51 | -12.53 | 58.09 | 28.33 | 45.56 | 17.23 |
|  |  | High | 0-7 | 64QAM | 45.0 | 1.44 | 51 | -12.44 | 58.09 | 28.33 | 45.65 | 17.32 |

Table 7-17. Antenna D Conducted Power Summary Data

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | IMMSUN | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 187 of 466 |

### 7.4.5 Conducted Total Power (Summed Across All Antennas)

| Antenna | Bandwidth | Chan. | $\begin{aligned} & \text { CCs } \\ & \text { active } \end{aligned}$ | Modulation | Ant A <br> [dBm] | Ant B <br> [dBm] | Ant C <br> [dBm] | Ant D <br> [dBm] | Average e.i.r.p. <br> [dBm] |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | [MHz] |  |  |  |  |  |  |  |  |  |
| $A+B+C+D$ |  | Low | 0 | QPSK | 16.54 | 16.12 | 16.24 | 16.06 | 50.38 | 22.25 |
|  |  | Low | 0 | 16QAM | 16.43 | 16.38 | 16.17 | 16.11 | 50.42 | 22.28 |
|  |  | Low | 0 | 64QAM | 16.54 | 16.45 | 16.21 | 16.19 | 50.49 | 22.38 |
|  |  | Low | 0-1 | QPSK | 16.68 | 16.75 | 16.28 | 16.17 | 50.62 | 22.48 |
|  |  | Low | 0-1 | 16QAM | 16.70 | 16.71 | 16.23 | 16.15 | 50.60 | 22.48 |
|  |  | Low | 0-1 | 64QAM | 16.70 | 16.70 | 16.21 | 16.13 | 50.58 | 22.48 |
|  |  | Mid | 4 | QPSK | 16.42 | 16.36 | 16.12 | 16.55 | 50.57 | 22.38 |
|  |  | Mid | 4 | 16QAM | 16.25 | 16.24 | 16.06 | 16.52 | 50.47 | 22.28 |
|  | 50 | Mid | 4 | 64QAM | 16.39 | 16.30 | 16.15 | 16.59 | 50.56 | 22.41 |
|  | 50 | Mid | 0-1 | QPSK | 16.44 | 16.65 | 16.17 | 16.64 | 50.68 | 22.48 |
|  |  | Mid | 0-1 | 16QAM | 16.47 | 16.62 | 16.26 | 16.57 | 50.68 | 22.48 |
|  |  | Mid | 0-1 | 64QAM | 16.51 | 16.58 | 16.24 | 16.56 | 50.68 | 22.48 |
|  |  | High | 7 | QPSK | 16.81 | 16.38 | 16.61 | 16.57 | 50.94 | 22.60 |
|  |  | High | 7 | 16QAM | 16.69 | 16.27 | 16.53 | 16.30 | 50.80 | 22.48 |
|  |  | High | 7 | 64QAM | 16.79 | 16.35 | 16.54 | 16.51 | 50.90 | 22.58 |
|  |  | High | 0-1 | QPSK | 16.90 | 16.56 | 16.76 | 16.62 | 51.06 | 22.72 |
|  |  | High | 0-1 | 16QAM | 16.81 | 16.52 | 16.66 | 16.56 | 50.99 | 22.65 |
|  |  | High | 0-1 | 64QAM | 16.82 | 16.49 | 16.56 | 16.54 | 50.95 | 22.62 |
|  | 100 | Low | 0 | QPSK | 19.55 | 19.62 | 19.48 | 19.24 | 53.62 | 25.50 |
|  |  | Low | 0 | 16QAM | 19.48 | 19.57 | 19.42 | 19.21 | 53.56 | 25.44 |
|  |  | Low | 0 | 64QAM | 19.54 | 19.63 | 19.46 | 19.31 | 53.63 | 25.50 |
|  |  | Low | 0-7 | QPSK | 17.52 | 17.08 | 16.96 | 17.16 | 51.33 | 23.20 |
|  |  | Low | 0-7 | 16QAM | 17.47 | 16.97 | 16.95 | 17.07 | 51.26 | 23.16 |
|  |  | Low | 0-7 | 64QAM | 17.47 | 17.06 | 16.98 | 17.12 | 51.30 | 23.20 |
|  |  | Mid | 4 | QPSK | 19.06 | 19.20 | 19.09 | 19.30 | 53.36 | 25.19 |
|  |  | Mid | 4 | 16QAM | 19.45 | 19.16 | 19.00 | 19.24 | 53.42 | 25.22 |
|  |  | Mid | 4 | 64QAM | 19.52 | 19.23 | 19.07 | 19.29 | 53.48 | 25.31 |
|  |  | Mid | 0-7 | QPSK | 17.57 | 17.21 | 16.93 | 17.22 | 51.44 | 23.26 |
|  |  | Mid | 0-7 | 16QAM | 17.32 | 17.15 | 16.96 | 17.26 | 51.38 | 23.20 |
|  |  | Mid | 0-7 | 64QAM | 17.38 | 17.18 | 16.98 | 17.27 | 51.41 | 23.23 |
|  |  | High | 7 | QPSK | 19.53 | 19.21 | 19.74 | 19.13 | 53.76 | 25.43 |
|  |  | High | 7 | 16QAM | 19.43 | 19.13 | 19.65 | 18.98 | 53.66 | 25.33 |
|  |  | High | 7 | 64QAM | 19.46 | 19.20 | 19.71 | 19.07 | 53.72 | 25.39 |
|  |  | High | 0-1 | QPSK | 19.55 | 19.12 | 19.23 | 19.76 | 53.77 | 25.44 |
|  |  | High | 0-2 | QPSK | 19.98 | 19.52 | 19.52 | 20.01 | 54.11 | 25.78 |
|  |  | High | 0-3 | QPSK | 20.15 | 19.64 | 19.63 | 19.72 | 54.14 | 25.81 |
|  |  | High | 0-4 | QPSK | 19.32 | 18.63 | 18.62 | 19.20 | 53.30 | 24.97 |
|  |  | High | 0-5 | QPSK | 18.51 | 17.85 | 17.89 | 18.36 | 52.51 | 24.18 |
|  |  | High | 0-6 | QPSK | 17.83 | 17.34 | 17.25 | 17.59 | 51.85 | 23.53 |
|  |  | High | 0-7 | QPSK | 16.97 | 17.24 | 17.28 | 17.16 | 51.51 | 23.18 |
|  |  | High | 0-7 | 16QAM | 17.23 | 17.24 | 17.27 | 17.23 | 51.59 | 23.26 |
|  |  | High | 0-7 | 64QAM | 17.03 | 17.25 | 17.21 | 17.32 | 51.55 | 23.22 |

Table 7-18. Conducted Total Power Summary Data

| FCC ID: A3LAT1K04-B00 | F\|PCTEST | MEASUREMENT REPORT (CERTIFICATION) | Snmsuna | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 188 of 466 |

### 7.5 Radiated Spurious and Harmonic Emissions <br> \$2.1051 \$30.203

## Test Overview

All out of band emissions were scanned from 30 MHz to 100 GHz for n 261 . Emissions are measured in a radiated test setup while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All modulations 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.

## The conductive power or total radiated power of any emissions outside a licensee's frequency block shall be -13 dBm / 1 MHz.

## Test Procedure Used

ANSI C63.26-2015 Section 5.7.4
ANSI C63.26-2015 Section 6.4
KDB 842590 D01 v01r01 Section 4.4.2 and Section 4.4.3

## Test Settings

1. Start frequency was set to 30 MHz and stop frequency was set to 100 GHz . Several plots are used to show investigations in this entire span.
2. Detector $=$ RMS
3. Trace mode = trace average
4. Sweep time $=$ auto couple
5. Number of sweep points $\geq 2 \times$ Span/RBW
6. The trace was allowed to stabilize
7. $\operatorname{RBW}=1 \mathrm{MHz}, \mathrm{VBW}=1 \mathrm{MHz}$

## Test Notes

1) The EUT was tested while positioned upright and mounted on a mast 1.5 m height. The worst case emissions are reported with the EUT in this fixed position and with the modulations and active component carriers shown in the tables below.
2) Emissions below 18 GHz were measured at a 3 meter test distance, while emissions above 18 GHz were measured at the appropriate far field distance. See Table 3-1 for distances used for measurements based on theoretical far field distance.
3) All appropriate Antenna Factors, Cable Losses, and Mixer Conversion Losses have been applied as an offset in the spectrum analyzer for each measurement.
4) $1 \mathrm{CC}=1$ Components Carriers Active, 2CC = 2 Component Carriers Active. 2CC NC $=2$ Non-contiguous Component Carriers Active. Each component carrier's bandwidth is 50 MHz .
5) $1 \mathrm{CC}=1$ Components Carriers Active, $8 \mathrm{CC}=8$ Component Carriers Active. 8CC NC = 8 Non-contiguous Component Carriers Active. Each component carrier's bandwidth is 100 MHz .
6) $2 \mathrm{CC}=2$ Components Carriers Active, $8 \mathrm{CC}=8$ Component Carriers Active. 8CC NC $=8$ Non-contiguous Component Carriers Active. Each component carrier's mixed bandwidth is $50 \mathrm{MHz}+100 \mathrm{MHz}$.
7) Ch. is stands for Channel, Final is stands for Final measurement.

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | SnMSUN: | Approved by: Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
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8) The angle of the horn antenna was rotated to maximize and find the worst case emissions. The worst case is reported in this section.
9) Spurious emissions were measured with all EUT antennas transmitting simultaneously.
10) Some frequency points exceed the limit which requires to investigate with TRP method for this spurious emission evaluation according to 4.4 Unwanted Emission Measurements of KDB 842590 D01.
11) No emissions were found below 1 GHz .
12) Lower and Upper Band Edge range also has been tested for investigation purpose.
13) All radiated spurious emissions were measured as EIRP to compare with the $\S 30.203$ TRP limits.
14) The plots from $1-100 \mathrm{GHz}$ show corrected average EIRP levels. The average EIRP reported below is calculated per section 5.2.7 of ANSI C63.26-2015 which states; EIRP $(\mathrm{dBm})=\mathrm{E}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})+20 \log (\mathrm{D})-$ 104.8; where $D$ is the measurement distance (in the far field region) in $m$. The field strength $E$ is calculated $\mathrm{E}(\mathrm{dB} \mu \mathrm{V} / \mathrm{m})=$ Spectrum Analyzer Level $(\mathrm{dBm})+$ Antenna Factor ( $\mathrm{dB} / \mathrm{m}$ ) + Cable Loss ( dB ) + Harmonic Mixer Conversion Loss (dB) + 107. All appropriate Antenna Factor and Cable Loss have been applied in the spectrum analyzer for each measurement. For measurements > 40 GHz , Harmonic Mixer Conversion Loss was also applied to the spectrum analyzer.
15) Emission below 18 GHz were measured at a 3 M test distance, while emissions above 18 GHz were measured at the appropriate far field distance. The far field of the mmWave signal is based on formula; R $>2 D^{\wedge} 2 /$ wavelength, where $D$ is the larger between the dimension of the measurement antenna and the transmitting antenna of the EUT. In this case, D is the largest dimension of the measurement antenna.

| Frequency Range <br> $[\mathbf{G H z}]$ | Wavelength <br> $[\mathbf{c m}]$ | Far Field Distance <br> $[\mathbf{m}]$ | Measurements <br> Distance <br> $[\mathbf{m}]$ |
| :---: | :---: | :---: | :---: |
| 18 to 40 | 0.749 | 3.19 | 3.19 |
| 40 to 60 | 0.500 | 1.39 | 3.19 |
| 60 to 90 | 0.333 | 0.91 | 3.19 |
| 90 to 100 | 0.214 | 0.58 | 2.00 |

Table 7-19. Far-Field Distance \& Measurement Distance per Frequency Range
TRP Measurement Procedure
If the recorded EIRP value was close or above the TRP limit, a Two Cut TRP measurement was done according to KDB 842590 D01 v01 Section 4.4.3.3.2
a) Align the EUT with a chosen xy-plane and the xz-plane of the antenna measurement coordinate system. NOTE 1 For harmonics and spurious emission frequencies which are beamforming as identified in exploratory scan, it may be required to align the orthogonal cuts to include the peak based on exploratory scans.
b) Measure the EUT dimensions, i.e., depth (d), width (w), and height (h); see Figure A. 1 in Appendix A.
c) Calculate the spherical and cylindrical diameters (D and Dcyl) using Equations (A.1) and (A.2) (see Appendix A).
d) For the highest frequency (smallest wavelength) of the frequency band measured, calculate the reference angular steps $\Delta \theta \theta$ ref and $\Delta \phi \phi$ ref using Equations (A.3) and (A.4).
e) Set the grid spatial sampling step $\Delta \theta \theta \leq \Delta \theta \theta$ ref for the vertical angle and $\Delta \phi \phi \leq \Delta \phi \phi$ ref for the horizontal cut.
f) For each emission frequency, measure the EIRP (as a sum of two orthogonal polarizations) at each spatial sampling step on the selected grid.
g) For each emission frequency, calculate the average EIRP for both the cuts separately, and then take the average of these two average values.
h) Add 2 dB as a correction factor to the averaged value computed in step g).

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### 7.5.1 Radiated Spurious Emissions Plots (30 MHz to 1 GHz )



Plot 7-265. RSE $30 \mathrm{MHz}-1$ GHz ( 100 MHz BW 4CC CC QPSK Low Ant. Pol. H)


Plot 7-266. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}$ (100 MHz BW 4CC CC QPSK Low Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { F/ PTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNG | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 191 of 466 |



Plot 7-267. RSE 30 MHz - 1 GHz ( 100 MHz BW 4CC CC QPSK Mid Ant. Pol. H)


Plot 7-268. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}$ ( 100 MHz BW 4CC CC QPSK Mid Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { Tr PCTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SHMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 192 of 466 |



Plot 7-269. RSE 30 MHz - 1 GHz (100 MHz BW 4CC CC QPSK High Ant. Pol. H)


Plot 7-270. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}$ ( 100 MHz BW 4CC CC QPSK High Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { F/ PTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 193 of 466 |



Frequienty (MHzz)
Plot 7-271. RSE $30 \mathrm{MHz}-1$ GHz (100 MHz BW 8CC CC QPSK Low Ant. Pol. H)


Plot 7-272. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}$ ( 100 MHz BW 8CC CC QPSK Low Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { F/ PTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 194 of 466 |



Frequienty (MHzz)
Plot 7-273. RSE 30 MHz - 1 GHz ( 100 MHz BW 8CC CC QPSK Mid Ant. Pol. H)


Plot 7-274. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}$ ( 100 MHz BW 8CC CC QPSK Mid Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | SHMSUNA | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 195 of 466 |



Plot 7-275. RSE 30 MHz - 1 GHz (100 MHz BW 8CC CC QPSK High Ant. Pol. H)


Plot 7-276. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}$ ( 100 MHz BW 8CC CC QPSK High Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { F/ PTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 196 of 466 |



Frequienty (MHzz)
Plot 7-277. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 3CC CC QPSK Low
Ant. Pol. H)


Plot 7-278. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 3CC CC QPSK Low
Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { FCTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNG | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 197 of 466 |



Frequienty (MHzz)
Plot 7-279. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 3CC CC QPSK Mid Ant. Pol. H)


Plot 7-280. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 3CC CC QPSK Mid Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { FCTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNG | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 198 of 466 |



Frequienty (MHzz)
Plot 7-281. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 3CC CC QPSK High Ant. Pol. H)


Plot 7-282. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 3CC CC QPSK High Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { FrCTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SHMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 199 of 466 |



Frequility (MHza)
Plot 7-283. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 6CC CC QPSK Low
Ant. Pol. H)


Plot 7-284. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 6CC CC QPSK Low
Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { F/ PTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNG | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 200 of 466 |



Frequienty (MHzz)
Plot 7-285. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 6CC CC QPSK Mid Ant. Pol. H)


Plot 7-286. RSE $30 \mathrm{MHz}-1 \mathrm{GHz}(50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 6CC CC QPSK Mid Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { F PCTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SHMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 201 of 466 |



Frequienty (MHzz)
Plot 7-287. RSE $30 \mathrm{MHz}-1$ GHz (50 MHz 2CC + 100 MHz BW 6CC CC QPSK High Ant. Pol. H)


Plot 7-288. RSE $30 \mathrm{MHz}-1$ GHz (50 MHz 2CC +100 MHz BW 6CC CC QPSK High Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | $\sqrt{\text { F/ PTEST }}$ | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNG | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
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## Spurious Emissions EIRP Sample Calculation (n261)

The raw radiated spurious level is converted to field strength in $\mathrm{dB} \mu \mathrm{V} / \mathrm{m}$. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meters.

RSE EIRP [dBm] = Analyzer Level [dBm] + AFCL [dB/m] + $107+20 \log \left(\mathrm{D}_{\mathrm{m}}\right)-104.8$

| Frequency <br> $[\mathrm{MHz}]$ | Channel | CC <br> Active | Mod. | Ant. <br> Pol <br> $[\mathrm{H} / \mathrm{V}]$ | Antenna <br> Height <br> $[\mathrm{cm}]$ | Turn <br> Table <br> Azimuth <br> $[$ degree] | Analyzer <br> Level <br> $[\mathrm{dBm}]$ | AFCL <br> $[\mathrm{dBm}]$ | Field <br> Strength <br> $[\mathrm{dB} \mu \mathrm{V} / \mathrm{m}]$ | RSE <br> EIRP <br> $[\mathrm{dBm}]$ | Limit <br> $[\mathrm{dBm}]$ | Margin <br> $[\mathrm{dB}]$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 135.21 | Mid | CC0- <br> CC7(C) | QPSK | H | 300 | 160 | -83.22 | 18.32 | 42.10 | -53.16 | -13.00 | 40.16 |
| 175.35 | Mid | CC0- <br> CC7(C) | QPSK | H | 300 | 160 | -82.40 | 15.77 | 40.37 | -54.89 | -13.00 | 41.89 |
| 265.66 | Mid | CC0- <br> CC7(C) | QPSK | V | 300 | 210 | -73.79 | 19.49 | 52.70 | -42.56 | -13.00 | 29.56 |
| 813.55 | Mid | CC0- <br> CC7(C) | QPSK | H | 200 | 340 | -83.65 | 24.19 | 47.54 | -47.72 | -13.00 | 34.72 |
| 832.91 | Mid | CC0- <br> CC7(C) | QPSK | V | 200 | 340 | -84.00 | 24.39 | 47.39 | -47.87 | -13.00 | 34.87 |
| 913.38 | Mid | CC0- <br> CC7(C) | QPSK | H | 200 | 340 | -83.19 | 25.21 | 48.89 | -46.24 | -13.00 | 33.24 |

Table 7-20. 2Tx-Spurious Emissions (30 MHz to 1 GHz )

## Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 3 meter.

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| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 203 of 466 |

### 7.5.2 Radiated Spurious Emissions Plots (1 GHz to 18 GHz )



Plot 7-289. RSE 1 GHz - 18 GHz ( 100 MHz BW 4CC CC QPSK Low Ant. Pol. H)


Plot 7-290. RSE 1 GHz - 18 GHz ( 100 MHz BW 4CC CC QPSK Low Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNE | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
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Plot 7-291. RSE 1 GHz - 18 GHz ( 100 MHz BW 4CC CC QPSK Mid Ant. Pol. H)


Plot 7-292. RSE 1 GHz - 18 GHz ( 100 MHz BW 4CC CC QPSK Mid Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | FCTEST | MEASUREMENT REPORT (CERTIFICATION) | Snmsuna | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
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Plot 7-293. RSE 1 GHz - 18 GHz (100 MHz BW 4CC CC QPSK High Ant. Pol. H)


Plot 7-294. RSE 1 GHz - 18 GHz ( 100 MHz BW 4CC CC QPSK High Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | Snmsung | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
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Plot 7-295. RSE 1 GHz - 18 GHz (100 MHz BW 8CC CC QPSK Low Ant. Pol. H)


Plot 7-296. RSE 1 GHz - 18 GHz ( 100 MHz BW 8CC CC QPSK Low Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 | 屏 PCTEST | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNA | Approved by: <br> Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
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Plot 7-297. RSE 1 GHz - 18 GHz ( 100 MHz BW 8CC CC QPSK Mid Ant. Pol. H)


Plot 7-298. RSE 1 GHz - 18 GHz ( 100 MHz BW 8CC CC QPSK Mid Ant. Pol. V)

| FCC ID: A3LAT1K04-B00 |  | MEASUREMENT REPORT (CERTIFICATION) | SnMSUNG | Approved by: Quality Manager |
| :---: | :---: | :---: | :---: | :---: |
| Test Report S/N: <br> 8K20090901-R2.A3L | Test Dates: 09/10/2020-10/08/2020 | EUT Type: <br> 5G Access Unit |  | Page 208 of 466 |



Plot 7-299. RSE 1 GHz - 18 GHz (100 MHz BW 8CC CC QPSK High Ant. Pol. H)


Plot 7-300. RSE 1 GHz - 18 GHz ( 100 MHz BW 8CC CC QPSK High Ant. Pol. V)

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Plot 7-301. RSE 1 GHz - 18 GHz (50 MHz 2CC + 100 MHz BW 3CC CC QPSK Low
Ant. Pol. H)


Plot 7-302. RSE 1 GHz - 18 GHz (50 MHz 2CC + 100 MHz BW 3CC CC QPSK Low Ant. Pol. V)

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Plot 7-303. RSE 1 GHz - 18 GHz ( $50 \mathrm{MHz} 2 \mathrm{CC}+100 \mathrm{MHz}$ BW 3CC CC QPSK Mid Ant. Pol. H)


Plot 7-304. RSE 1 GHz - 18 GHz (50 MHz 2CC + 100 MHz BW 3CC CC QPSK Mid Ant. Pol. V)

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Plot 7-305. RSE 1 GHz - 18 GHz ( 50 MHz 2CC + 100 MHz BW 3CC CC QPSK High Ant. Pol. H)


Plot 7-306. RSE 1 GHz - 18 GHz ( 50 MHz 2CC +100 MHz BW 3CC CC QPSK High Ant. Pol. V)

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Plot 7-307. RSE 1 GHz - 18 GHz (50 MHz 2CC + 100 MHz BW 6CC CC QPSK Low
Ant. Pol. H)


Plot 7-308. RSE 1 GHz - 18 GHz (50 MHz 2CC + 100 MHz BW 6CC CC QPSK Low Ant. Pol. V)

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Plot 7-309. RSE 1 GHz - $18 \mathrm{GHz}(50 \mathrm{MHz}$ 2CC +100 MHz BW 6CC CC QPSK Mid Ant. Pol. H)


Plot 7-310. RSE 1 GHz - 18 GHz (50 MHz 2CC + 100 MHz BW 6CC CC QPSK Mid Ant. Pol. V)

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Plot 7-311. RSE 1 GHz - 18 GHz ( 50 MHz 2CC + 100 MHz BW 6CC CC QPSK High Ant. Pol. H)


Plot 7-312. RSE 1 GHz - 18 GHz ( 50 MHz 2CC +100 MHz BW 6CC CC QPSK High Ant. Pol. V)

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## Spurious Emissions EIRP Sample Calculation (n261)

The raw radiated spurious level is converted to field strength in $\mathrm{dB} \mu \mathrm{V} / \mathrm{m}$. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meters.

RSE EIRP [dBm] = Analyzer Level [dBm] + AFCL [dB/m] + $107+20 \log \left(\mathrm{D}_{\mathrm{m}}\right)-104.8$

| Frequency $[\mathrm{MHz}]$ | Channel | $\underset{\text { Active }}{\text { Cc }}$ | Mod. | Ant. <br> Pol <br> [H/V] | Antenna Height [cm] | Turn Table Azimuth [degree] | Analyzer Level [dBm] | AFCL [dBm] | Field Strength [ $\mathrm{dB} \mu \mathrm{V} / \mathrm{m}$ ] | $\begin{gathered} \text { RSE } \\ \text { EIRP } \\ \text { [dBm] } \\ \hline \end{gathered}$ | $\begin{gathered} \text { Limit } \\ {[\mathrm{dBm}]} \end{gathered}$ | Margin [dB] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12870.73 | High | $\begin{gathered} \mathrm{CCO}- \\ \mathrm{CC7}(\mathrm{C}) \end{gathered}$ | QPSK | V | 150 | 100 | -76.89 | 26.83 | 56.90 | -38.32 | -13.00 | 25.32 |
| 14971.21 | High | $\begin{array}{cc} \text { CCO- } \\ \operatorname{CC7}(\mathrm{C}) \end{array}$ | QPSK | V | 150 | 100 | -74.89 | 27.74 | 59.90 | -35.41 | -13.00 | 22.41 |
| 16805.23 | High | $\begin{gathered} \mathrm{CCO}- \\ \operatorname{cC7}(\mathrm{C}) \end{gathered}$ | QPSK | V | 150 | 100 | -72.71 | 25.62 | 59.90 | -35.35 | -13.00 | 22.35 |
| 17161.68 | High | $\begin{gathered} \mathrm{CCO}- \\ \operatorname{cC7}(\mathrm{C}) \end{gathered}$ | QPSK | V | 150 | 260 | -73.88 | 26.76 | 59.90 | -35.38 | -13.00 | 22.38 |
| 17624.12 | High | $\begin{array}{cc} \text { CCO- } \\ \operatorname{CC7}(\mathrm{C}) \end{array}$ | QPSK | V | 150 | 260 | -74.15 | 30.80 | 63.60 | -31.61 | -13.00 | 18.61 |
| 17967.41 | High | $\begin{gathered} \mathrm{CCO}- \\ \operatorname{cC7}(\mathrm{C}) \end{gathered}$ | QPSK | H | 150 | 300 | -75.11 | 34.14 | 69.00 | -29.23 | -13.00 | 16.23 |

Table 7-21. 2Tx-Spurious Emissions (1 GHz to 18 GHz )

## Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 3 meter.

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## (f)PCTEST

7.5.3 Radiated Spurious Emissions Plots (18 GHz to 27.5 GHz)


Plot 7-313. RSE 18 GHz - 27.5 GHz ( 100 MHz BW 4CC CC QPSK Low Ant. Angle 45)


Plot 7-314. RSE 18 GHz - 27.5 GHz ( 100 MHz BW 4CC CC QPSK Low Ant. Angle 45, Final)

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17:46:41 06.10.2020
Plot 7-315. RSE 18 GHz - 27.5 GHz (100 MHz BW 4CC CC QPSK Low Ant. Angle 135)


17:48:01 06.10.2020
Plot 7-316. RSE 18 GHz - 27.5 GHz (100 MHz BW 4CC CC QPSK Low Ant. Angle 135, Final)

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1st Marker Frequency: $27.500 \mathrm{GHz} \quad$ Margin: 11.87 dB


Plot 7-317. RSE 2.5 GHz - 27.5 GHz (100 MHz BW 4CC CC QPSK Low TRP)


Plot 7-318. RSE 18 GHz - 27.5 GHz ( 100 MHz BW 4CC NC QPSK Low Ant. Angle 45)

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Plot 7-319. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}$ (100 MHz BW 4CC NC QPSK Low Ant. Angle 45, Final)


Plot 7-320. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}$ (100 MHz BW 4CC NC QPSK Low Ant. Angle 135)

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Plot 7-321. RSE 18 GHz - 27.5 GHz (100 MHz BW 4CC NC QPSK Low Ant. Angle 135, Final)


Plot 7-322. RSE 2.5 GHz - 27.5 GHz (100 MHz BW 4CC NC QPSK Low TRP)

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Plot 7-323. RSE 18 GHz - 27.5 GHz (100 MHz BW 8CC CC QPSK Low Ant. Angle 45)


Plot 7-324. RSE 18 GHz - 27.5 GHz ( 100 MHz BW 8CC CC QPSK Low Ant. Angle 45, Final)

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Plot 7-325. RSE 18 GHz - 27.5 GHz (100 MHz BW 8CC CC QPSK Low Ant. Angle 135)


Plot 7-326. RSE 18 GHz - 27.5 GHz (100 MHz BW 8CC CC QPSK Low Ant. Angle 135, Final)

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1st Marker Frequency: $27.460 \mathrm{GHz} \quad$ Margin: 10.31 dB


Plot 7-327. RSE 18 GHz - 27.5 GHz (100 MHz BW 8CC CC QPSK Low TRP)


Plot 7-328. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC + 100 MHz BW 3CC CC QPSK Low Ant. Angle 45)

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Plot 7-329. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}$ ( 50 MHz BW 2CC + 100 MHz BW 3CC CC QPSK Low Ant. Angle 45, Final)


Plot 7-330. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC + 100 MHz BW 3CC CC QPSK Low Ant. Angle 135)

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Plot 7-331. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC + 100 MHz BW 3CC CC QPSK Low Ant. Angle 135, Final)

1st Marker Frequency: $27.500 \mathrm{GHz} \quad$ Margin: 10.84 dB 2nd Marker Frequency: 25.930 GHz Margin: 6.67 dB


Plot 7-332. RSE $25 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC +100 MHz BW 3CC CC QPSK Low TRP)

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Plot 7-333. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}$ ( 50 MHz BW 2CC + 100 MHz BW 3CC NC QPSK Low Ant. Angle 45)


Plot 7-334. RSE 18 GHz - 27.5 GHz (50 MHz BW 2CC + 100 MHz BW 3CC NC QPSK Low Ant. Angle 45, Final)

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Plot 7-335. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC + 100 MHz BW 3CC NC QPSK Low Ant. Angle 135)


Plot 7-336. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}$ (50 MHz BW 2CC + 100 MHz BW 3CC NC QPSK Low Ant. Angle 135, Final)

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Plot 7-337. RSE $25 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC +100 MHz BW 3CC NC QPSK Low TRP)


Plot 7-338. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}$ (50 MHz BW 2CC + 100 MHz BW 6CC CC QPSK Low Ant. Angle 45)

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Plot 7-339. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}$ ( 50 MHz BW 2CC + 100 MHz BW 6CC CC QPSK Low Ant. Angle 45, Final)


Plot 7-340. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC + 100 MHz BW 6CC CC QPSK Low Ant. Angle 135)

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Plot 7-341. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC +100 MHz BW 6CC CC QPSK Low Ant. Angle 135, Final)

1st Marker Frequency: $27.500 \mathrm{GHz} \quad$ Margin: 12.61 dB


Plot 7-342. RSE $25 \mathrm{GHz}-27.5 \mathrm{GHz}(50 \mathrm{MHz}$ BW 2CC +100 MHz BW 6CC CC QPSK Low TRP)

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Plot 7-343. RSE 18 GHz - 27.5 GHz (50 MHz BW 2CC + 100 MHz BW 6CC NC QPSK Low Ant. Angle 45)


Plot 7-344. RSE $18 \mathrm{GHz}-27.5 \mathrm{GHz}$ (50 MHz BW 2CC + 100 MHz BW 6CC NC QPSK Low Ant. Angle 45, Final)

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