

Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-5965-23-02-04_TR1-R01 MPE (FCC_I SED)

| Certification numbers and labeling requirements | |
|---|---|
| FCC ID | PGP-R600V-01 |
| ISED number | 24812-R600VV01 |
| HVIN (Hardware Version Identification Number) | 11188367-2 11209335-2 11228779-2 11205779-2 11221283-2 11225384-2 11724913-2 |
| PMN (Product Marketing Name) | R600V.DAE0-11188367 R600V.DAE0-11209335 R600V.DAE0-11228779 R600V.DAH5-11205779 R600V.DAH5-11221283 R600V.RAH5-11225384 R600V-DAE0-11724913 |
| FVIN (Firmware Version Identification Number) | R600VMOF_S R600VMSF_S R600VMSF_S R600VSOF_S R600VM8F_S R600VRTF_S R600VCAF_S |
| HMN (Host Marketing Name) | -/- |

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

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EUT technologies:

| Technologies: | Max. power [dBm] | | Antenna gain max.: [dBi] | # |
|-----------------------------|------------------|-------------------|--------------------------|---|
| | conducted | EIRP | | |
| FMCW RADAR 122 – 123 GHz | -- | meas. 19.65 (avg) | -- | A |

Details and origins of the measurements shown in the table above:

| # | Results from: | Additional information |
|---|---------------------------------------|-----------------------------|
| A | 1-5965_23-02-02 cetecom advanced GmbH | Measurement results page 28 |

Minimum safety distance declared by manufacturer: 20cm

Prediction of MPE limit at given distance - FCC

$$S = PG / 4\pi R^2$$

where: S = Power density
P = Power input to the antenna
G = Antenna gain
R = Distance to the center of radiation of the antenna
PG = Output power including antenna gain (EIRP)

The table below is excerpted from Table 1 - Limits for Maximum Permissible Exposure (MPE) - "General Population/Uncontrolled Exposure" according 47 CFR 1.1310 (e) (1).

| Frequency Range (MHz) | Power Density (mW/cm ²) | Averaging Time (minutes) |
|--------------------------------|-------------------------------------|--------------------------|
| 1500 – 3 000 000 ¹⁾ | 1.0 | 30 |

where f = Frequency (MHz)

¹⁾ Extended according FCC 19-126

Prediction: worst case

| | | | |
|-----|--|------------|--------------------|
| | Technology | FMCW RADAR | |
| | Frequency | 122500 | MHz |
| P·G | Meas. EIRP | 19.65 | dBm |
| R | Distance | 20 | cm |
| S | MPE limit for uncontrolled exposure | 1.0 | mW/cm ² |
| | Calculated Power density: | 0.0184 | mW/cm ² |
| | Calculated percentage of limit: | 1.84% | |

This prediction demonstrates the following:

The power density levels for FCC at a distance of 20 cm are below the maximum levels allowed by regulations.

Prediction of MPE limit at given distance - ISED

RSS-102, Issue 6, chapter 6 Reference levels for general public (uncontrolled environment):

| According to: RSS 102-ISSUE 06 | | | | |
|-------------------------------------|--------------------------|-------------------------------|---|----------------------------|
| Frequency Range (MHz) | Electric Field (V/m rms) | Magnetic Field (A/m rms) | Power Density (W/m ²) | Reference Period (minutes) |
| 10-20 | 27.46 | 0.0728 | 2 | 6 |
| 20-48 | $58.07 / f^{0.25}$ | $0.1540 / f^{0.25}$ | $8.944 / f^{0.5}$ | 6 |
| 48-300 | 22.06 | 0.05852 | 1.291 | 6 |
| 300-6000 | $3.142 f^{0.3417}$ | $0.008335 f^{0.3417}$ | $0.02619 f^{0.3417}$ | 6 |
| 6000-15000 | 61.4 | 0.163 | 10 | 6 |
| 15000-150000 | 61.4 | 0.163 | 10 | $616000 / f^{1.2}$ |
| 150000-300000 | $0.158 f^{0.5}$ | $4.21 \times 10^{-4} f^{0.5}$ | $6.67 \times 10^{-5} f$ | $616000 / f^{1.2}$ |
| Note: f is frequency in MHz. | | | | |

Prediction: worst case

| | | | |
|-----|--|------------|------------------|
| | Technology | FMCW RADAR | |
| | Frequency | 122500 | MHz |
| P-G | Meas. EIRP | 19.65 | dBm |
| R | Distance | 20 | cm |
| S | MPE limit for uncontrolled exposure | 8.17 | W/m ² |
| | Calculated Power density: | 0.184 | W/m ² |
| | Calculated percentage of limit: | 2.25% | |

Conclusion: RF exposure evaluation is not required.