

RF Exposure Analysis – Routine Evaluation Exemption

Applicant: RFbeam Microwave GmbH
FCC ID: 2ASYV-V-LD1
Model number/name: V-LD1

The above device operates in the 57.0 to 61.56 GHz frequency band (Part 15.255(c)(2)(ii) Field Disturbance Sensor).

The following FCC Rule Parts are applicable:

Part 2.1091 – Radiofrequency radiation exposure evaluation: mobile devices

Part 1.1307(b)(3)(i)(A) – 1 mW Blanket Exemption (i)

Part 1.1307(b)(3)(i)(C) – MPE-based Exemption (ii)

Part 1.1307(b)(3)(i)(B) – SAR-based Exemption (iii)

For the above device:

Without lens:

Transmitter frequency range = 57.4 GHz to 61.4 GHz

Max. EIRP = 6.00 dBm (including tune-up tolerance)

ERP = EIRP - 2.15 dBm = 3.85 dBm (**2.43 mW**)

Duty Cycle: 27.46 %

Maximum time-averaged Power (ERP): $2.43 \text{ mW} * 0.2746 = \underline{\underline{0.67 \text{ mW}}}$

With lens:

Transmitter frequency range = 57.4 GHz to 61.4 GHz

Max. EIRP = 20.00 dBm (including tune-up tolerance)

ERP = EIRP - 2.15 dBm = 17.85 dBm (**60.95 mW**)

Duty Cycle: 27.46 %

Maximum time-averaged Power (ERP): $60.95 \text{ mW} * 0.2746 = \underline{\underline{16.74 \text{ mW}^*}}$

^{*)} Worst case value used for the evaluation

Minimum separation distance (R) to be considered: **0.2 m**

Evaluation:

RF exemption applies if the maximum time-averaged transmitted power is less than the maximum of the following three criteria:

- i) Less than 1 mw Blanket exemption. $P_{TH} = 0.001 \text{ W}$ – §1.1307(b)(3)(i)(A) - **criteria not met**
- ii) determination of exemption under the MPE-based §1.1307(b)(3)(i)(C), if i) not met
- iii) determination of exemption under the SAR-based §1.1307(b)(3)(i)(B) if both i) and ii) are not met;

Determination of threshold power (P_{TH}) under the MPE-based §1.1307(b)(3)(i)(C):

This is only applicable at a separation distance greater than $\lambda/2\pi$ and at frequencies from 0.3 GHz to 100 GHz.

For 60 GHz operation: $\lambda/2\pi = 0.0008 \text{ m}$

It follows that this clause is applicable since the separation distance (R) equals **0.2 m** which is greater than **0.0008 m**.

Threshold ERP P_{TH} (watts) for the frequency range of 1.5-100 GHz: $19.2 * R^2$

$R = 0.2 \text{ m}$

$P_{TH} = (19.2 * 0.2^2) \text{ W} = 0.768 \text{ W}$ (**768 mW**)

Conclusion:

The maximum ERP of **16.74 mW** is below the applicable **768 mW** threshold for operation in the 57.0 - 61.56 GHz frequency band, and therefore the above device is exempt from evaluation in accordance with §1.1307(b)(3)(i)(C).

Yours faithfully,



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