

RF exposure evaluation

76-81 GHz Band Radar Service RF exposure evaluation.

Regulation

According to FCC §95.3385, regardless of the power density levels permitted under this subpart, devices operating under the provisions of this subpart are subject to the radiofrequency radiation exposure requirements specified in §§1.1307(b), 2.1091, and 2.1093 as appropriate. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

Test result

MPE calculation to the FCC ID:

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a “worst case” prediction.

$$S = PG/4\pi R^2 \quad \text{or} \quad S = \text{EIRP}/(4\pi R^2)$$

Where:

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units e.g. mW)

G = power gain of the antenna in the direction of interest relative to the isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units e.g. cm)

EIRP = equivalent isotropically radiated power

Calculation:

Waveforms	Operating Frequency	EIRP		Power density (S) @ 20 cm	
				Calculated	Limit
	GHz	dBm	mW	mW/ cm ²	
CS11	76.177	31.4	1380.38	0.27	1.0
CS12	77.636	30.8	1202.26	0.24	1.0
CS13_EOL_Mode	77.651	30.4	1096.48	0.22	1.0
CS14_EOL_Mode	76.151	31.2	1318.26	0.26	1.0

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Date of issue	2023-07-20