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Techologies:

Technologies:	Max. Power: (AVG)	Max. Gain:	Min. Pathloss:
BT 2G4	12 dBm ± 1 dB (cond.)	0.5 dBi	-/-
K - band	20 dBm (EIRP)	-/-	-/-

Prediction of MPE limit at given distance - FCC

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where: S = Power density
P = Power input to the antenna
G = Antenna gain
R = Distance to the center of radiation of the antenna

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled "Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure"

Frequency Range (MHz)	Power Density (mW/cm²)	Averaging Time (minutes)
300 -1500	f/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

Prediction: worst case

		< 1500 MHz	> 1500 MHz	> 1500 MHz
		-/-	BT	K - band
P	Max power input to the antenna	-/-	13 dBm	20 dBm (EIRP)
R	Distance	-/-	20 cm	20 cm
G	Antenna gain	-/-	0.5 dBi	-/- dBi
S	MPE limit for uncontrolled exposure	-/-	1 mW/cm²	1 mW/cm²
	Calculated power density:	-/-	**0.00 mW/cm²**	**0.02 mW/cm²**
	Colocation BT + K - band	-/-	**0.45 %**	**2 %**
		-/-	**2.45 %**	

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 - IC

RSS-102, Issue 5, 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

• below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);

• at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;

• at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);

• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

• at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

Prediction: worst case

		BT	K - band	-/-	-/-
P	Max power input to the antenna	13 dBm	20 dBm	-/-	-/-
G	Antenna gain	0.5 dBi	-/- dBi	-/-	-/-
S	MPE limit for uncontrolled exposure	2676 mW	100 mW	-/-	-/-
	Calculated output power:	**22.4 mW**	**19.1 mW**	**-/-**	**-/-**
	Colocation BT + K - band	**0.84 %**	**19.2 %**	**-/-**	**-/-**
		20.0 %		**-/-**	**-/-**

Conclusion: for applications where minimum distance to radiating element is 20cm Annex C of RSS-102 should be filled out.

p.o.

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