

RF Exposure

This calculation is based on the highest EIRP possible from the EUT considering maximum power and antenna gain.

The highest output power of the EUT is 0.916 W and the gain of the antenna is 3 dBi.

The normal duty cycle is one transmission (70 mS) every 6 hours. The absolute maximum duty cycle would be a 70 mS transmission followed by a 250 mS pause. This pattern could theoretically be continuous, though it would be highly unlikely. The calculations are based on 70mS on time per 320mS duration. So the absolute maximum percentage is 21.875 %

1 MINIMUM SEPARATION DISTANCE PER OET 65

The following information provides the minimum separation distance for the EUT, as calculated from **FCC OET 65 Appendix B, Table 1B** "Guidelines for General Population/Uncontrolled Exposure"

Transmitter	MHz	Max Power dBm	Max Ant Gain dBi	Duty Cycle %	EIRP W	(S) GP Limit mW/cm ²	MSD Meters	MPE Ratio from 20 cm	Notes
450-470	460	29.6	3	21.9	0.3981	0.307	0.1016	0.508	
Total MPE Ratio								0.508	

Notes on the above tables:

- a. S is the power density General Population Limit from OET 65 table 1B
- b. EIRP Power is the Max Power corrected for Antenna Gain and Duty Cycle factor
- c. MSD (Minimum Separation Distance) = $((\text{EIRP} \times 30) / 3770 \times S)^{0.5}$
- d. For mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less.

2 RF EVALUATION FOR RSS-102E

Since the average e.i.r.p. is 0.398 Watts and separation distance between the user and the radiating element of the device is always greater than 20 cm, it is exempt from routine SAR and RF exposure evaluations

The following information provides the calculation for section 4.2 of RSS-102 Issue 5 for the General Public.

	RF	Antenna	Duty	Effective		Measurement	RF field	Exposure
Freq.	Power	Gain	Cycle	RF power		Distance	from EUT	GP limit
MHz	dBm	dB	%	dBm	Total mW	meters	V/m	V/m rms
450	29.6	3	21.88	25.999	398.06	0.200	17.3	25.3
460	29.0	3	21.88	25.399	346.70	0.200	16.1	25.5
470	28.8	3	21.88	25.199	331.09	0.200	15.8	25.7

GP is the limit for general Public

Note on above table.

$$\text{ERP} = (\text{V/m} \times \text{dist})^2 / 30$$

RS-102 EXEMPTIONS

Transmitter	MHz	Average Transmitter EIRP W	Limit for Exemption RSS-102 Max EIRP W	Result
Business	450	0.398	0.852	Exempt from SAR and RF exposure

Since the average power is 0.398 Watts, it is Exempt from SAR and RF exposure.