



Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-0357/15-01-10

Certification numbers and labeling requirements	
FCC ID	ROJ-3715A
IC number	6200B-3715A
HVIN (Hardware Version Identification Number)	TT-3715A
PMN (Product Marketing Name)	TT-3715A
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

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Document authorized:

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EUT technologies:

Technologies:	Max. power: (AVG)	Max. gain:	Min. pathloss:
Inmarsat terminal	5.1 dBm)*	11 dBi	0 dB (if applicable)

)* including tune-up tolerance

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/cm ²)	Averaging Time (minutes)
300 -1500	f/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

Prediction: worst case

		> 1500 MHz
	Technology	Inmarsat terminal
P	Max power input to the antenna	5.1 dBm
R	Distance	100 cm
G	Antenna gain	11 dBi
S	MPE limit for uncontrolled exposure	1 mW/cm ²
	Calculated Power density:	0.324 mW/cm²

This prediction demonstrates the following:

The power density levels for FCC at a distance of **100 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

	Technology	
P	Max power input to the antenna	35.1 dBm
R	Distance	100 cm
G	Antenna gain	11 dBi
S	MPE limit for uncontrolled exposure)*	0.41 mW/cm ²
	Calculated Power density:	0.324 mW/cm²

)* calculated for 1626 MHz

This prediction demonstrates the following:

The power density levels for IC at a distance of **100 cm** are below the maximum levels allowed by regulations.

Prediction of MPE limit at given distance – EN and AS/NZS

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

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 ICNIRP Guideline for uncontrolled environment

Frequency Range (MHz)	Power Density (mW/cm ²)	Averaging Time (minutes)
400 - 2000	f/2000	6
2000 - 300000	1.0	6

where f = Frequency (MHz)

Prediction: worst case

		400 - 2000 MHz
	Technology	Inmarsat terminal
P	Max power input to the antenna	5.1 dBm
R	Distance	100 cm
G	Antenna gain	11 dBi
S	MPE limit for uncontrolled exposure)*	0.813 mW/cm ²
	Calculated Power density:	0.324 mW/cm²

)* calculated for 1626 MHz

This prediction demonstrates the following:

The power density levels for EN and AS/NZS at a distance of **100 cm** are below the maximum levels allowed by regulations.