

5.3 Radio Frequency Radiation Exposure

Because the intended use of the test sample as a fixed device a theoretical MPE related evaluation as an example is done below, for information purposes.

FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits.

The prediction for power density in the far-field of the antenna can be made by use of the general equation below.

This equation is generally accurate in the far-field but will over-predict power density in the near field, where it could be used for making a “worst case” or conservative prediction.

The internal / external antennas used for this mobile transmitter must provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

$$S = \frac{P G}{4 \pi R^2}$$

S – Power Density

P – Conducted power

R – Distance

D – Cable Loss

AG – Antenna Gain G= AG-D

PCS 1900

Item	Unit	Value	Remarks
P	mW	918.3	Peak value
D	dB	4.5	Calculated value
AG	dB	-3	Peak gain
G		0.178	Calculated value
R	cm	20	Assumed value
S	mW/cm ²	0.0325	Calculated value

GSM 850

Item	Unit	Value	Remarks
P	mW	1614.4	Peak value
D	dB	2.5	Calculated value
AG	dBd	-3	Peak gain
G		0.282	Calculated value
R	cm	20	Assumed value
S	mW/cm ²	0.0515	Calculated value

Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm ²)
1500 – 100.000	1,0