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   825 – 894 MHz Return Loss: Min = 12 dB Nom = 15db
AG – Antenna Gain   G= AG-D   1850 – 1970 MHz Return Loss: Min = 10 dB Nom = 12dB

PCS 1900

Item	Unit	Value	Remarks
P	mW	941	Peak value
D	dB	10	Measured value
AG	dBi	2	Peak gain
G		0.158	Calculated Value
R	cm	20	Assumed value
S	mW/cm^2	0.03	Calculated value

GSM 850

Item	Unit	Value	Remarks
P	mW	1832	Peak value
D	dB	12	Measured value
AG	dBd	3.28	Peak gain
G		0.107	Calculated Value
R	cm	20	Assumed value
S	mW/cm^2	0.079	Calculated value

Limits:

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