11 §1.1307(b) (1) & §2.1091 - RF EXPOSURE

11.1   Applicable Standard

According to §1.1310 and §2.1091 (Mobile Devices) RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f^2)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

11.2   MPE Prediction

Predication of MPE limit at a given distance

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 antenna
        G = power gain of the antenna in the direction of interest relative to an isotropic radiator

        R = distance to the center of radiation of the antenna
Uplink:

CDMA:

Maximum peak output power at antenna input terminal: 20.91 (dBm)
Maximum peak output power at antenna input terminal: 123.3 (mW)
                        Prediction distance: 80 (cm)
                    Predication frequency: 836.52 (MHz)
                Antenna Gain (typical): 12 (dBi)
                        Antenna gain: 15.85 (numeric)
    Power density at predication frequency at 80 cm: 0.0243(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 0.57 (mW/cm^2)

GSM:

Maximum peak output power at antenna input terminal: 21.73(dBm)
Maximum peak output power at antenna input terminal: 148.9 (mW)
Prediction distance: 80 (cm)
Predication frequency: 836.6 (MHz)
Antenna Gain (typical): 12 (dBi)
Antenna gain: 15.85 (numeric)
Power density at predication frequency at 80 cm: 0.0293(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 0.57 (mW/cm^2)

TDMA:
Maximum peak output power at antenna input terminal: 23.27 (dBm)
Maximum peak output power at antenna input terminal: 212.3 (mW)
Prediction distance: 80 (cm)
Predication frequency: 836.5 (MHz)
Antenna Gain (typical): 12 (dBi)
Antenna gain: 15.85 (numeric)
Power density at predication frequency at 80 cm: 0.0418(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 0.57 (mW/cm^2)

AMPS:

Maximum peak output power at antenna input terminal: 23.22 (dBm)
Maximum peak output power at antenna input terminal: 209.9 (mW)
Prediction distance: 80 (cm)
Predication frequency: 836.52 (MHz)
Antenna Gain (typical): 12 (dBi)
Antenna gain: 15.85 (numeric)
Power density at predication frequency at 80 cm: 0.0414(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 0.57 (mW/cm^2)

Downlink:

CDMA:

Maximum peak output power at antenna input terminal: 5.80 (dBm)
Maximum peak output power at antenna input terminal: 3.8 (mW)
Prediction distance: 80 (cm)
Predication frequency: 881.52 (MHz)
Antenna Gain (typical): 12 (dBi)
Antenna gain: 15.85 (numeric)
Power density at predication frequency at 80 cm: 0.00075(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 0.587 (mW/cm^2)

GSM:

Maximum peak output power at antenna input terminal: 8.35 (dBm)
Maximum peak output power at antenna input terminal: 6.8 (mW)
Prediction distance: 80 (cm)
Predication frequency: 881.6 (MHz)
Antenna Gain (typical): 12 (dBi)
Antenna gain: 15.85 (numeric)
Power density at predication frequency at 80 cm: 0.00134(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 0.587 (mW/cm^2)

TDMA:

Maximum peak output power at antenna input terminal: 7.69 (dBm)
Maximum peak output power at antenna input terminal: 5.9 (mW)
Prediction distance: 80 (cm)
Predication frequency: 881.5 (MHz)
Antenna Gain (typical): 12 (dBi)
Antenna gain: 15.85 (numeric)
Power density at predication frequency at 80 cm: 0.00116(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 0.587 (mW/cm^2)

AMPS:

Maximum peak output power at antenna input terminal: 8.3 (dBm)
Maximum peak output power at antenna input terminal: 6.8 (mW)
Prediction distance: 80 (cm)
Predication frequency: 881.52 (MHz)
Antenna Gain (typical): 12 (dBi)
Antenna gain: 15.85 (numeric)
Power density at predication frequency at 80 cm: 0.00134 (mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 0.587 (mW/cm^2)

Test Result

The power density level at 80 cm is 0.0418mW/cm² , which is below the uncontrolled exposure limit of
0.57mW/cm² at 836.5 MHz.