



---

## ***RF exposure requirements – ZTE MF220***

Dear Reviewer,

The maximum measured power output is

GSM 850:32.94dBm

GSM 1900:30.48dBm

UMTS 850: 22.61dBm

UMTS 1900: 22.09dBm

UMTS 1700: 22.15dBm

the maximum antenna gain for integral antenna is

GSM 850:-1.0dBi

GSM 1900:1.2dBi

UMTS 850: -1.0dBi

UMTS 1900: 1.2dBi

UMTS 1700: -1.2dBi

The maximum permissible exposure is defined in 47 CFR 1.1310 with 1 mW/cm<sup>2</sup>.

The Transmitter is using external antennas that operate at 20 cm or more from nearby persons.

The maximum permitted level is calculated using the general equation:

$$S = P' / 4\pi R^2$$

$$\text{GSM 850: } P' = 32.94\text{dBm} + (-1.0\text{dBi}) = 31.94\text{dBm} = 1563\text{mW}$$

$$\text{GSM1900: } P' = 30.48\text{dBm} + 1.2\text{dBi} = 31.68\text{dBm} = 1472\text{mW}$$

$$\text{UMTS850: } P' = 22.61\text{dBm} + (-1.0\text{dBi}) = 21.61\text{dBm} = 145\text{mW}$$

$$\text{UMTS1900: } P' = 22.09\text{dBm} + 1.2\text{dBi} = 23.29\text{dBm} = 213\text{mW}$$

$$\text{UMTS1700: } P' = 22.15\text{dBm} + (-1.2\text{dBi}) = 20.95\text{dBm} = 124\text{mW}$$

$$R = 20\text{cm}$$

$$\pi = 3.1416$$

Solving for S, the power density at 20 cm is

$$\text{GSM 850: } \mathbf{0.311\text{mW/cm}^2}$$

$$\text{GSM1900: } \mathbf{0.293\text{mW/cm}^2}$$

$$\text{UMTS850: } \mathbf{0.029\text{mW/cm}^2}$$

$$\text{UMTS1900: } \mathbf{0.042\text{mW/cm}^2}$$

$$\text{UMTS1700: } \mathbf{0.025\text{mW/cm}^2}$$

So the limit is kept.

Best Regard.

2010-12-15

Zhang Hao

Telecommunication Metrology Center of MIIT

No 52 Huayuanbei Road, Haidian District Beijing P.R.China 100191