

Cello 6 V2 MPE Calculation - OET Bulletin 65

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from a device to the body of a user.

The MPE calculation as given in FCC OET Bulletin 65, page 19 is used to calculate the safe operating distance for the user.

The transmitter operation for the Cello 6 V2 covers GSM850 and PCS1900 operating bands.

The following FCC Rule Parts are applicable:

Part 2.1091(c)

Part 22 GSM850 devices operating at frequencies at or below 1.5GHz with effective radiated power (ERP) of 1.5 watts or more are subject to routine RF exposure evaluation, otherwise they are categorically excluded.

Part 24 PCS1900 devices operating at frequencies above 1.5GHz with effective radiated power (ERP) of 3 watts or more are subject to routine RF exposure evaluation, otherwise they are categorically excluded.

CALCULATION

From OET Bulletin 65 the following far field power density equation is applicable:

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

Where S = Power density

$EIRP$ = Effective Isotropically Radiated Power

R = distance to the centre of radiation of the antenna

For the Cello 6 V2 @ GSM850

Transmitter frequency range = 824 MHz to 849 MHz

Maximum Measured Transmitter Power ERP = 2.51 W

Requirement

From table 1 (b) - Limits for General Population/ Uncontrolled Exposure of FCC Rule Part 1.1310 for GSM850

$S = f/1500 \text{ mW/cm}^2$ (f = operating frequency)

$S = 824/1500 = 0.55 \text{ mW/cm}^2$ (worst case)



Calculation for GSM850 20cm safe distance

Values: $P_{ave} = 2510 \text{ mW}$; $R = 20\text{cm}$

$$S = \text{EIRP}/4 \pi R^2$$

$$S = 2510/(12.56 \times 20^2)$$

$$= 2510/5024$$

$$\mathbf{S = 0.50 \text{ mW/cm}^2}$$



For the Cello 6 V2 @ PCS1900

Transmitter frequency range = 1850 MHz to 1910 MHz

Maximum Measured Transmitter Power EIRP = 1.05 W (30.2 dBm)

ERP = EIRP - 2.15 dB (half wave dipole gain)

ERP = 28.05 dBm = 0.64 W

Note: The maximum ERP is < 3.0W, so from Part 2.1091(c), routine RF exposure evaluation is categorically excluded.

Conclusion

The Cello 6 V2 at 20 cm meets the required OET Bulletin 65 RF exposure requirements.

At PCS1900, routine RF exposure evaluation is categorically excluded from FCC Part 2.1091(c).