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**Attention: Reviewing Engineer**

***RF exposure information for the equipment EC400g (FCC ID: FAD-3232013-BV)***

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

<b>Frequency Range (MHz)</b>	<b>Power density (mW/cm<sup>2</sup>)</b>	<b>Averaging time (minutes)</b>
300 – 1500	f (MHz) /1500	30
1500 – 100.000	1.0	30

Based on the above table the limits are:

For 850 MHz frequency band device: 0.57 mW/cm<sup>2</sup>  
 For 1900 MHz frequency band device: 1 mW/cm<sup>2</sup>

Using the equation from page 19 of OET Bulletin 65, Edition 97-01:

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

where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)  
 P = power input to the antenna (in appropriate units, e.g., mW)  
 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 (appropriate units, e.g., cm)

Compliance with MPE limits can be guaranteed as the calculation below shows:

**850 MHz frequency band**

Maximum output power considerations:

<b>Mode</b>	<b>Maximum conducted output power (dBm)</b>	<b>Maximum conducted output power (mW)</b>	<b>Duty cycle</b>	<b>Equivalent conducted output power (Maximum conducted output power x duty cycle) (mW)</b>
GPRS	32.50	1778.28	25%	444.57
EDGE	30.30	1071.52	25%	267.88
WCDMA	26.86	485.29	100%	485.29

P	Maximum power input to the antenna:	444.57	mW
R	Distance:	20	cm
S	MPE limit for uncontrolled exposure:	0.57	mW/cm <sup>2</sup>
G <sub>1</sub>	Antenna gain (numerical) to comply with MPE limits:	5.9	

G<sub>1</sub> Antenna gain (dBi) to comply with MPE limits: 7.7 dBi

ERP power limit according 2.1091 where no routine evaluation is required: 1.5 W  
(2.445 W EIRP)

G<sub>2</sub> Antenna gain (numerical) to comply with ERP limits: 1.375  
(ERP = Maximum conducted output power x Antenna gain)

G<sub>2</sub> Antenna gain (dBi) to comply with ERP limits: 1.38 dBi

G<sub>850 MHz band</sub> Min (G<sub>1</sub>, G<sub>2</sub>) 1.38 dBi

Therefore the maximum antenna gain to comply with MPE and ERP limits should not exceed **1.38 dBi**.

### 1900 MHz frequency band

Maximum output power considerations:

Mode	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty cycle	Equivalent conducted output power (Maximum conducted output power x duty cycle) (mW)
GPRS	30.30	1071.52	25%	267.88
EDGE	29.40	870.96	25%	217.74
WCDMA	26.91	490.91	100%	490.91

P Maximum power input to the antenna: 490.91 mW

R Distance: 20 cm

S MPE limit for uncontrolled exposure: 1.0 mW/cm<sup>2</sup>

G<sub>3</sub> Antenna gain (numerical) to comply with MPE limits: 10.23

G<sub>3</sub> Antenna gain (dBi) to comply with MPE limits: 10.10 dBi

EIRP peak power limit according 24.232 c) 2 W

G<sub>4</sub> Antenna gain (numerical) to comply with ERP limits: 1.87  
(EIRP = Maximum conducted output power x Antenna gain)

G<sub>4</sub> Antenna gain (dBi) to comply with EIRP limits: 2.7 dBi

G<sub>1900 MHz band</sub> Min (G<sub>3</sub>, G<sub>4</sub>) 2.7 dBi

Therefore the maximum antenna gain to comply with MPE and EIRP limits should not exceed **2.7 dBi**.