

## APPENDIX A: RF EXPOSURE CALCULATION

The calculation for RF exposure for the reference FCC ID: P57-FL60-1250 was done using the method directed by Bulletin 65 for a point-to-point microwave antenna, and is hereby resubmitted.

From FCC rules and regulation 1.1310, Table 1A, the maximum permissible exposure for general population/uncontrolled environment is 1 mW/cm<sup>2</sup>. For occupational/controlled environment the limit is 5 mW/cm<sup>2</sup>.

The maximum power density on the surface of the antenna is given by the equation 11 from OET Bulletin 65:

$$S_{\text{SURFACE}} = \frac{4P}{A} \quad \text{where } S_{\text{SURFACE}} \text{ is the power density of the antenna in mW/cm}^2$$

$P$  is the power into the antenna in mW, and  
 $A$  is the surface area of the antenna aperture in cm<sup>2</sup>

The diameter of the antenna aperture for these Access Unit products is 60.96 cm (24 inches). This translates to an aperture area of 2918.6 cm<sup>2</sup>.

### Calculation for Power Density

The power density,  $S_{\text{SURFACE}}$ , on an Access Unit antenna surface is calculated from the equation above and using the CW Output Power of the two Access Units derived from the testing (see Section 2.1 of the test report). The table below summarizes the results compared to the general population/uncontrolled exposure limit of 1mW/cm<sup>2</sup>. The uncontrolled exposure limit is chosen since it is the more stringent requirement.

Antenna	P	A	Maximum	Exposure Limit	Results
			S <sub>SURFACE</sub>		
	mW	cm <sup>2</sup>	mW/cm <sup>2</sup>	mW/cm <sup>2</sup>	
Access Unit - A	.083	2918.6	0.0001	1.0	Pass
Access Unit - B	.069	2918.6	0.00009	1.0	Pass

Referring to the table above, it is evident that the power density at the antenna surface is below the exposure limit. The power density at greater distances, based on Bulletin 65 calculations, decreases even further below the limit. The antenna surface is sealed and the area below it is not accessible. Therefore, there are no restrictions on either general population or occupational exposure at any distance or location external to the Access Unit.

### Maximum Input Power

The power density values calculated for the two antennas in the table above are considerably lower than the maximum exposure limit. Therefore, as a technical exercise, a calculation is made below to determine the maximum input power to the antenna for which the power density at the antenna surface would not exceed 1 mW/cm<sup>2</sup>.

The equation above is used in the computation.

$$\therefore P = (S_{SURFACE})(A)/ 4 = (1 \text{ mW/cm}^2) (2918.6 \text{ cm}^2)/ 4$$

$$= 729.7 \text{ mW}$$

$$= +28.6 \text{ dBm}$$

Therefore, the maximum permissible exposure for the general population would not be exceeded even when an input power of 729.7 mW is applied to the antenna of Access Unit A or Access Unit B antennas.