Massachusetts Institute of Technology
FCC Form 442
Station WA2XPG

Exhibit A

By this application, Massachusetts Institute of Technology (MIT) seeks to modify the license of Experimental Radio Station WA2XPG.

Specifically, MIT proposes to relocate the base station to a site which is 0.33 kilometers from the site currently authorized. All other parameters of Station WA2XPG will remain unchanged.

Exhibit B
RF Exposure showing for MIT Experimental Application

For the MIT experimental operation, the base transmitter is to operate at 1370 watts ERP at a frequency of 940.575 MHz. The height to the center of radiation above ground is 113.142 meters above ground level.

Using exposure limits from OET Bulletin 65, the occupational and general exposure limits can be calculated as follows:

occupational population exposure for 940.575 MHz = f/300
= 940.575 MHz/300
= 3.135 mW/cm^2
= 3135 $\mu W/cm^2$

general population exposure for 940.575 MHz = f/1500
= 940.575 MHz/1500
= 0.627 mW/cm^2
= 627 $\mu W/cm^2$

Therefore, using equation (9) of OET Bulletin 65 to determine worst-case exposure possibilities:

$$S = \frac{33.4(ERP)}{R^2}$$

where S = power density in $\mu W/cm^2$
ERP = power in watts
R = distance in meters

First, general population exposure at a point 2 meters above ground (approximate head level) at a distance 20 meters from base of tower (assuming flat terrain) would find that distance R is calculated to be:

R = [the square root of $(111.142)^2 + (20)^2$] or 112.93 meters

then using equation (9):

$$S = \frac{(33.4)(1370 \text{ watts})}{(112.93 \text{ m})^2} = 3.59 \ \mu W/cm^2$$ which is less than the 627 $\mu W/cm^2$ required

Second, for occupational exposure at base of tower, since the transmitter is located on top of a building, R is calculated by subtracting the building height above ground level (93.3 meters) from the height to center above ground level (113.142 meters). Therefore, R = 19.842 meters. Now, using same equation (9):

$$S = \frac{(33.4)(1370 \text{ watts})}{(19.842 \text{ m})^2} = 116.22 \ \mu W/cm^2$$ which is less than the 3135 $\mu W/cm^2$ required

In lieu of these calculations under worst-case assumptions, the base transmitter for the MIT experimental operation using 1370 watts ERP at a frequency of 940.575 MHz fully complies with both the occupational and general population/uncontrolled limits for RF exposure as specified by the Commission.