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                    ANALYSIS OF NON-IONIZING RADIATION
                 for Ó↑↑↔bÁO~↑↑|^↔´á\↔~^bÁO~ã*~ãá\↔~^
                   Site: H€ÁR~^|↑æ^\ÁO↔ã´→æ  State: ØN
            Latitude:  3Ï HIJ €4È€  Longitude:  86 €Ï ĞF.IJ  (NAD83)
                              €Í-FÎ-20FÍ
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The Office of Science and Technology Bulletin, No. 65, October
1985 and revised August 1997, specifies that the maximum level
of non-ionizing radiation that a person may be exposed to over a
six minute period is an average power density equal to 5 mW/cm**2
(five milliwatts per centimeter squared) for a controlled
environment. For an uncontrolled environment, the maximum level
of non-ionizing radiation that a person may be exposed to over a
thirty minute period is an average power density equal to 1 mW/cm**2
(one milliwatt per centimeter squared). It is the purpose of this
report to determine the maximum power flux densities of the earth
station in the far zone, near zone, transition zone, at the main
reflector surface, and between the antenna edge and the ground.

Parameters which were used in the calculations:
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Antenna Diameter,   (D) = 3.8000 m

Antenna Surface Area   (Sa) =   pi(D**2)/4   = 11.3411 m**2

Wavelength at 6.1750 GHz (lambda) = 0.0485 m

Transmit Power at Flange   (P) = 20.0000 Watts

Antenna Gain at Earth Site   (GES) = 45.9000 dBi   =   38904.5145
                                                         Power Ratio:
                                                         AntiLog(GES/10)
pi   =   3.1415927

Antenna Aperture Efficiency   (n) = 0.6000
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1. FAR ZONE CALCULATIONS
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Distance to the Far Zone      (Df) =     (n)(D**2)      = 178.6392 m
                                         ---------
                                           lambda


Far Zone Power Density        (Rf) =     (GES)(P)       = 1.9403 W/m**2
                                       ------------
                                        4*pi*(Df**2)
                                                       = 0.1940 mW/cm**2




2. NEAR ZONE CALCULATIONS
=========================

Power Flux Density is considered to be at a maximum value
throughout the entire length of this Zone. The Zone is
contained within a cylindrical volume which has the same diameter
as the antenna.  Beyond the Near Zone, the Power Flux Density
will decrease with distance from the Antenna.

Distance to the Near Zone     (Dn) =       D**2         = 74.4330 m
                                         --------
                                         4*lambda


Near Zone Power Density       (Rn) =     16.0(n)P       = 4.2324 W/m**2
                                         --------
                                         pi(D**2)

                                                       = 0.4232 mW/cm**2




3. TRANSITION ZONE CALCULATIONS
===============================

The Power Density begins to decrease with distance in the
Transition Zone.  While the Power Density decreases inversely with
distance in the Transition Zone, the Power Density decreases
inversely with the square of the distance in the Far Zone.
Since the maximum Power Density in the Transition Zone will not
exceed the Near Zone values, it is not calculated.
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4. MAIN REFLECTOR ZONE
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Main Reflector Power Density       =        2(P)        = 3.5270 W/m**2
                                            ----
                                             Sa
                                                         = 0.3527 mW/cm**2




5. ZONE BETWEEN THE MAIN REFLECTOR AND THE GROUND
=================================================

Applying uniform illumination of the Main Reflector Surface:

Main to Ground Power Density       =         P          = 1.7635 W/m**2
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                                             Sa
                                                         = 0.1763 mW/cm**2
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                    CALCULATED SAFETY MARGINS SUMMARY
                           AND EVALUATION


-------------------------------------------------------------------------
   Controlled Safety Margin  =  5.0 - Calculated Zone Value (mW/cm**2)
-------------------------------------------------------------------------

                                  Safety
        Zones                     Margins      Conclusions
                                  (mW/cm**2)
---------------------------    ------------   ---------------------------
1.  Far Zone                        4.8060    Complies with ANSI

2.  Near Zone                       4.5768    Complies with ANSI

3.  Transition Zone            Rf < Rt < Rn   Complies with ANSI

4.  Main Reflector Surface          4.6473    Complies with ANSI

5.  Main Reflector to Ground        4.8237    Complies with ANSI




-------------------------------------------------------------------------
   Uncontrolled Safety Margin  =  1.0 - Calculated Zone Value (mW/cm**2)
-------------------------------------------------------------------------

                                  Safety
        Zones                     Margins      Conclusions
                                  (mW/cm**2)
---------------------------    ------------   ---------------------------
1.  Far Zone                        0.8060    Complies with ANSI

2.  Near Zone                       0.5768    Complies with ANSI

3.  Transition Zone            Rf < Rt < Rn   Complies with ANSI

4.  Main Reflector Surface          0.6473    Complies with ANSI

5.  Main Reflector to Ground        0.8237    Complies with ANSI




6.  EVALUATION
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A. Controlled Environment
B. Uncontrolled Environment
     All Zones comply with ANSI Standards.
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