FCC OET-65 RF Exposure Study - Satellite Uplink Facility
WNBC Digital Ku-band transportable uplink - "H-F"

FCC Maximum Permissible Exposure Levels	Source		Units
Public/uncontrolled area exposure limit	47CFR §1.1310		**1** mW/cm^2
Occupational/controlled area exposure limit	47CFR §1.1310		**5** mW/cm^2

Input Data			
Antenna Diameter	datasheet		**120.0** cm
Antenna surface area	calculated		**11310** cm^2
Sub-reflector diameter	measured	**N/A**	cm
Sub-reflector area	calculated	**N/A**	cm^2
Feed flange diameter	estimated		**5.400** cm^2
Feed flange area	calculated		**23**
Frequency	(entry)		**14125** MHz
Wavelength (speed of light = 299,792,458 m/s)	calculated		**2.122** cm
Transmit power at flange	Application		**180000** milliwatts
Antenna gain	datasheet		**43.2** dBi
Antenna gain factor	calculated		**20893**
Height of base of antenna above ground	measured		**3.14** m
Height of center of antenna above ground	measured		**3.74** m
Minimum Elevation Angle	(entry)		**15** degrees
Minimum Elevation Angle	calculated		**0.26180** radians

			FCC Maximum Permissible Exposure (MPE)	
Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)			**Uncontrolled**	**Controlled**
Maximum power density at antenna surface	Eq. 11 Pg 27	**63.66** mW/cm^2	**Potential Hazard**	**Potential Hazard**
Power density at subreflector	Eq. 11 Pg 27	**0** mW/cm^2	**N/A**	**N/A**
Power density at feed flange	Eq. 11 Pg 27	**31438.01** mW/cm^2	**Potential Hazard**	**Potential Hazard**
Extent of near-field	Eq. 12 Pg 27	**1696** cm		
Maximum near-field power density	Eq. 13 Pg 28	**41.38** mW/cm^2	**Potential Hazard**	**Potential Hazard**
Aperture efficiency	datasheet	**0.65**		
Distance to beginning of far-field	Eq. 16 Pg 29	**4070.82** cm		
Power density at end of the transition regiion	Eq. 17 Pg 29	**17.24** mW/cm^2	**Potential Hazard**	**Potential Hazard**
Maximum far-field power density	Eq. 18 Pg 29	**18.059** mW/cm^2	**Potential Hazard**	**Potential Hazard**

Main Beam Far-field region safe exposure distances			
Minimum distance for public/uncontrolled exposure	Eq. 18 Pg 29	**172.99** meters	
Height at minimum antenna elevation angle	calculated	**48.51** meters	
Horizontal distance	calculated	**167.1** meters	
Minimum distance for occupational/controlled exposure	Eq. 18 Pg 29	**77.37** meters	
Height at minimum antenna elevation angle	calculated	**23.76** meters	
Horizontal distance	calculated	**74.73** meters	

Off-Axis Near Field/Transition Region safe exposure distances from antenna

(20 dB reduction in power density at distances greater than one antenna diameter from the main beam center.)	OET-65 Pg 30			
Maximum off-axis near field power density	Eq. 13 Pg 28	**0.4138** mW/cm^2	**Below FCC MPE**	**Below FCC MPE**
Public/uncontrolled exposure off-axis distance	Diam/or Eq 17	**1.2** meters		
Occupatonal/controlled exposure off-axis distance	Diam/or Eq 17	**1.2** meters		

Off-Axis Far Field safe exposure distances from the antenna

(Based on side lobe attenuation required by FCC 25.209(a)(2))			
Angle off main beam axis (1 to 48 degrees)	(entry)	**15** degree(s)	
Off-axis antenna gain factor	OET-65 Pg 30*	**2**	
Minimum distance for public/uncontrolled exposure	Eq. 18 Pg 29 **	**40.71** meters	

 * Gain converted from dBi to linear multiple
 ** If calculated distance is less than the start of the
   far field region, the distance to the start of the far
   field region is used.