FCC OET-65 RF Exposure Study - Satellite Uplink Facility

NBC TOWBOY   Old FCC License, E890799
Antenna Vendor: Vertex RSI Model 240KV
Antenna Size: 2.3 m
Amplifier Make/Model: ETM 450 KU
Amplifier Max Power: 450 w

FCC Maximum Permissible Exposure Levels	Source	Units	Notes
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	**230.0** cm	
Antenna surface area	calculated	**41548** cm^2	
Feed flange diameter	measured	**6.350** cm	
Feed flange area	calculated	**32** cm^2	
Frequency	(entry)	**14125** MHz	
Wavelength (speed of light = 299,792,458 m/s)	calculated	**2.122** cm	
Transmit power at flange	datasheet	**350000** milliwatts	
Antenna gain	datasheet	**49.3** dBi	
Antenna gain factor	calculated	**85114**	
Height of base of antenna above ground	measured	**3.5** m	
Height of center of antenna above ground	measured	**4.54** m	
Minimum Elevation Angle	(entry)	**5** degrees	
Minimum Elevation Angle	calculated	**0.08727** 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	**33.69632065** mW/cm^2	Potential Hazard	Potential Hazard
Power density at feed flange	Eq. 11 Pg 27	**44206.96541** mW/cm^2	Potential Hazard	Potential Hazard
Extent of near-field	Eq. 12 Pg 27	**6231** cm		
Maximum new-field power density	Eq. 13 Pg 28	**24.74523358** mW/cm^2	Potential Hazard	Potential Hazard
Aperture efficiency	Eq. 14 Pg 28	**0.734360105**		
Distance to beginning of far-field	Eq. 16 Pg 29	**14954.59569** cm		
Power density at end of the transition regiion	Eq. 17 Pg 29	**10.31051399** mW/cm^2	Potential Hazard	Potential Hazard
Maximum far-field power density	Eq. 18 Pg 29	**10.600** 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	**486.8880216** meters	
Height at minimum antenna elevation angle	calculated	**46.97508716** meters	
Horizontal distance	calculated	**485.0352657** meters	
Minimum distance for occupational/controlled exposure	Eq. 18 Pg 29	**217.7429427** meters	
Height at minimum antenna elevation angle	calculated	**23.5175479** meters	
Horizontal distance	calculated	**216.9143651** 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	**0.2475** mW/cm^2	Below FCC MPE	Below FCC MPE
Public/uncontrolled exposure off-axis distance	Diam/or Eq 17	**2.3** meters		
Occupatonal/controlled exposure off-axis distance	Diam/or Eq 17	**2.3** 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)	**5** degree(s)	
Off-axis antenna gain factor	OET-65 Pg 30*	**28**	
Minimum distance for public/uncontrolled exposure	Eq. 18 Pg 29 **	**149.5459569** 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 shown.