FCC OET-65 RF Exposure Study - Satellite Uplink Facility

Telemundo Digital Ku-band transportable uplink - "BANDIT"

Antenna Vendor/Model	Patriot/1.8m
Antenna Size:	1.8m
Amplifier Make/Model:	CPI VZU-6994AD
Power at antenna flange:	282W

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	**180.0**	cm
Antenna surface area	calculated	**25447**	cm^2
Feed flange diameter	estimated	**10.500**	cm
Feed flange area	calculated	**87**	
Frequency	(entry)	**14125**	MHz
Wavelength (speed of light = 299,792,458 m/s)	calculated	**2.122**	cm
Transmit power at flange	Application	**282000**	milliwatts
Antenna gain	datasheet	**47**	dBi
Antenna gain factor	calculated	**50119**	
Height of base of antenna above ground	measured	**2.9**	m
Height of center of antenna above ground	measured	**3.66**	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	**44.33**	mW/cm^2	**Potential Hazard**	**Potential Hazard**
Power density at feed flange	Eq. 11 Pg 27	**13026.89**	mW/cm^2	**Potential Hazard**	**Potential Hazard**
Extent of near-field	Eq. 12 Pg 27	**3816**	cm		
Maximum near-field power density	Eq. 13 Pg 28	**31.3**	mW/cm^2	**Potential Hazard**	**Potential Hazard**
Aperture efficiency	Eq. 14 Pg 28	**0.71**			
Distance to beginning of far-field	Eq. 16 Pg 29	**9159.34**	cm		
Power density at end of the transition region	Eq. 17 Pg 29	**13.04**	mW/cm^2	**Potential Hazard**	**Potential Hazard**
Maximum far-field power density	Eq. 18 Pg 29	**13.406**	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	**335.37**	meters
Height at minimum antenna elevation angle	calculated	**32.89**	meters
Horizontal distance	calculated	**334.09**	meters
Minimum distance for occupational/controlled exposure	Eq. 18 Pg 29	**149.98**	meters
Height at minimum antenna elevation angle	calculated	**16.73**	meters
Horizontal distance	calculated	**149.41**	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	**0.3130**	mW/cm^2	**Below FCC MPE**	**Below FCC MPE**
Public/uncontrolled exposure off-axis distance	Diam/or Eq 17	**1.8**	meters		
Occupational/controlled exposure off-axis distance	Diam/or Eq 17	**1.8**	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 **	**91.59**	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.