## FCC OET-65 RF Exposure Study - Satellite Uplink Facility WMAQ-TV Digital Ku-band transportable uplink - "MC #51"

Publichoncontrolled area exposure limit 47CFR §1.1310 1 mW/cm <sup>2</sup> Occupational/controlled area exposure limit 47CFR §1.1310 1 mW/cm <sup>2</sup> Antenna Diameter diameter calculated 120.0 cm Antenna Surface area calculated 1318 cm <sup>2</sup> Sub-reflect of diameter measured NA cm <sup>2</sup> Feed flange diameter calculated 23 Freed flange diameter calculated 23 Freed flange diameter calculated 23 Freed flange diameter calculated 23 Antenna gain Antenna gain dc datasheet 43.2 dBi Antenna gain factor calculated 2.3 dBi Height of base of antenna above ground measured 2.9 m Height of base of antenna above ground measured 2.9 m Minimum Elevation Angle calculated 0.09727 radians Power density at subreflector ensity calculated Eq. 11 Pg 27 Ower density at subreflector ensity Eq. 11 Pg 27 Ower density at subreflector ensity Eq. 11 Pg 27 Ower density at subreflector ensity Eq. 11 Pg 27 Detential Hazard Potential Hazard Potential H	FCC Maximum Permissible Exposure Levels	Source	Units		
Input Data     Antenna Diameter   datasheet   120.0 cm     Antenna Surface area   calculated   11310 cm²     Sub-reflector diameter   measured   NA   cm²     Sub-reflector diameter   calculated   120.0 cm²     Sub-reflector diameter   calculated   23     Feed flange diameter   calculated   23     Frequency   (entry)   14125 MHz     Wavelength (speed of light = 299,792,458 m/s)   calculated   2232 cm     Transmit power at flange   Application   12500 cm²     Antenna gain factor   calculated   20893     Height of base of antenna above ground   measured   2.941 m     Maximum Dievation Angie   calculated   0.08727 radians     Results calculated using FCC Bulletin DET-65 (Edition 97-01 August 1997)   V4.21 mW/cm²   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   0 mW/cm²   Potential Hazard     Power density at ede flange   Eq. 11 Pg 27   0 mW/cm²   Potential Hazard     Power density at end of the transition region   Eq. 12 Pg 27   1696 cm   Potential Hazard     Power density at end of the transition region<	Public/uncontrolled area exposure limit	47CFR §1.1310	1 mW/cm <sup>2</sup>	_	
Antenna Diameter   datasheet   120.0 cm     Antenna surface area   calculated   11310 cm²     Sub-reflector diameter   measured   NA   cm²     Sub-reflector diameter   calculated   123     Feed flange diameter   estimated   5.400 cm²     Feed flange diameter   calculated   23     Frequency   (entry)   14125 MHz     Wavelength (speed of light = 299, 792, 458 m/s)   calculated   2.122 cm     Antenna gin   Atasheet   43.2 (Bi     Antenna gin factor   calculated   2.91 m     Height of center of antenna above ground   measured   3.51 m     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-55 (Edition 97-01 August 1997)   Valential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   0 mW/cm²   NA   NA     Power density at subreflector   Eq. 11 Pg 27   1986 cm   Potential Hazard   Potential Hazard     Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard     Power density at ted flange   Eq. 11	Occupational/controlled area exposure limit	47CFR §1.1310	5 mW/cm <sup>2</sup>		
Antenna surface area   calculated   11310   cm <sup>2</sup> Sub-reflector area   calculated   WA   cm <sup>2</sup> Feed flange diameter   estimated   5.400   cm <sup>2</sup> Feed flange area   calculated   213     Frequency   (entry)   14125   MHz     Wavelength (speed of light = 299,792,458 m/s)   calculated   2.122   cm     Transmit power at flange   Application   12600   miliwatts     Antenna gain factor   calculated   2.91   m     Height of base of antenna above ground   measured   2.91 m   measured   2.91 m     Height of centre of antenna above ground   measured   3.61 m   Minimum Elevation Angle   (entry)   5 degrees     Results calculated using PCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   1383 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at antenna surface   Eq. 11 Pg 27   1383 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at antenna surface   Eq. 11 Pg 27   138 mW/cm <sup>2</sup> Potenti	Input Data				
Sub-reflector diameter   measured   NA   cm     Sub-reflector area   calculated   NA   cm <sup>2</sup> Feed flange diameter   estimated   5.400 cm <sup>2</sup> Frequency   (entry)   14125 MHz     Wavelength (speed of light = 299,792,458 m/s)   calculated   2.122 cm     Transmit power at flange   Application   125000 milliwatts     Antenna gain   datasheet   43.2 dBi     Antenna gain actor   calculated   208933     Minimum Elevation Angle   calculated   0.08727 radians     Kesults calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at untenna surface   Eq. 11 Pg 27   14.21 mW/cm <sup>2</sup> Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   1986 cm   N/A   N/A     Power density at subreflector   Eq. 11 Pg 27   1986 cm   N/A   N/A     Distance to beginning of far-field   Eq. 12 Pg 27   1986 cm   Potential Hazard   Potential Hazard     Potential flezzerd   Eq. 18 Pg 29   12.2 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Potential flezzerd	Antenna Diameter	datasheet	<b>120.0</b> cm	_	
Sub-reflector area   calculated   NA   cm <sup>2</sup> Feed flange diameter   estimated   5.400 cm <sup>2</sup> Feed flange area   calculated   23     Frequency   (entry)   14125 MHz     Wavelength (speed of light = 299,792,458 m/s)   calculated   2083     Antenna gain   datasheet   432,481     Antenna gain factor   calculated   20833     Height of base of antenna above ground   measured   2,51 m     Minimum Elevation Angle   (entry)   5 degrees     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> NIA   N/A     Power density at feed flange   Eq. 11 Pg 27   1586 cm   Potential Hazard   Potential Hazard     Potential Hazard   Eq. 14 Pg 27   1696 cm   NA   N/A   N/A     Power density at feed flange   Eq. 14 Pg 29   128 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard<	Antenna surface area	calculated	11310 cm <sup>2</sup>		
Feed flange diameter   estimated   5.400 cm²     Frequency   (entry)   14125 MHz     Wavelength (speed of light = 299,792,458 m/s)   calculated   2.122 cm     Transmit power at flange   Application   1250000 milliwatts     Antenna gain   datasheet   43.2 dBi     Antenna gain factor   calculated   20893     Height of base of antenna above ground   measured   3.51 m     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Power density at subreflector   Eq. 11 Pg 27   44.21 mW/cm²   Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   11831.95 mW/cm²   Potential Hazard   Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   1883.95 mW/cm²   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard     Power density at end of the transition region   Eq. 12 Pg 27   189 29   12.541 mW/cm²   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard	Sub-reflector diameter	measured	N/A cm		
Feed flage area   calculated   23     Frequency   (entry)   14125 MHz     Wavelength (speed of light = 299,792,458 m/s)   calculated   2122 cm     Transmit power at flange   Application   125000 milliwatts     Antenna gain   datasheet   43.2 dBi     Antenna gain factor   calculated   20893     Height of bace of antenna above ground   measured   3.51 m     Minimum Elevation Angle   (entry)   5 degrees     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using PCC Bulletin OET+65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> N/A   N/A     Power density at feed flange   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> N/A   N/A     Power density at feed flange   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> N/A   N/A     Power density at defe flange   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> N/A   N/A     Power density at end of the transition region   Eq. 17 Pg 29   0 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at end of the transition region	Sub-reflector area	calculated	N/A cm <sup>2</sup>		
Feed fange area   calculated   23     Frequency   (entry)   14125 MHz     Wavelengti (speed of light = 299,792,458 m/s)   calculated   2.122 cm     Antenna gain   datasheet   43.2. dBi     Antenna gain   calculated   20893     Antenna gain factor   calculated   20893     Height of center of antenna above ground   measured   2.91 m     Height of center of antenna above ground   measured   3.61 m     Minimum Elevation Angle   (entry)   5 degrees     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Editon 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   0 mW/cm²   Potential Hazard   Potential Hazard     Power density at teof flange   Eq. 11 Pg 27   0 mW/cm²   N/A   N/A     Power density at teof flange   Eq. 11 Pg 27   0 mW/cm²   Potential Hazard   Potential Hazard     Power density at end of the transition region   Eq. 17 Pg 29   12.2 mW/cm²   Potential Hazard   Potential Hazard     Power density at end of the transition region   E	Feed flange diameter	estimated	5.400 cm <sup>2</sup>		
Wavelength (speed of light = 299,792,458 m/s)   calculated   2.122 cm     Transmit power at flange   Application   125000 milliwatts     Antenna gain   datasheet   43.2. dBi     Antenna gain factor   calculated   20893     Height of base of antenna above ground   measured   2.91 m     Height of base of antenna above ground   measured   3.51 m     Minimum Elevation Angle   (entry)   5 degrees     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   44.21 mW/cm²   Potential Hazard   Potential Hazard     Power density at feed flange   Eq. 11 Pg 27   1831.95 mW/cm²   Potential Hazard   Potential Hazard     Power density at feed flange   Eq. 12 Pg 27   1896 cm   Potential Hazard   Potential Hazard     Potential distance for public/uncontrolled exposure   Eq. 18 Pg 29   12.2 mW/cm²   Potential Hazard   Potential Hazard     Potential flazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard	-	calculated	23		
Transmipower at flange   Application   12500 millivetits     Antenna gain   datasheet   43.2 dBi     Antenna gain factor   calculated   20893     Height of base of antenna above ground   measured   2.91 m     Height of cherter of antenna above ground   measured   3.51 m     Minimum Elevation Angle   (entry)   5 degrees     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at subreflector   Eq. 11 Pg 27   44.21 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   12 Bg 28   2.928 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 12 Pg 27   1696 cm   12 Bg 28   0.66   12 Bg 28   12 Bg 28 <t< td=""><td>Frequency</td><td>(entry)</td><td>14125 MHz</td><td></td><td></td></t<>	Frequency	(entry)	14125 MHz		
Antenna gain   datasheet   43.2 dBi     Antenna gain factor   calculated   20893     Height of base of antenna above ground   measured   2.91 m     Height of base of antenna above ground   measured   3.51 m     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   44.21 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> NA   NA     Power density at ted flange   Eq. 12 Pg 27   1696 cm   NA   NA     Aperture efficiency   Eq. 14 Pg 28   0.666   Potential Hazard   Potential Hazard   Potential Hazard     Power density at end flange   Eq. 14 Pg 28   12.541 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard   Potential Hazard     Potential flance   Eq. 18 Pg 29   12.541 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Potential flance   Eq. 18 Pg 29   144.16 meters   16.07 meters   16.07 meters     Height at minimum antenna elevation angle	Wavelength (speed of light = 299,792,458 m/s)	calculated	2.122 cm		
Antenna gain factor   calculated   20893     Height of base of antenna above ground   measured   2.91 m     Height of base of antenna above ground   measured   3.51 m     Minimum Elevation Angle   (entry)   5 degrees     Minimum Elevation Angle   (entry)   5 degrees     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> N/A   N/A     Power density at subreflector   Eq. 11 Pg 27   1831.95 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Aperture efficiency   Eq. 12 Pg 27   1839.28   0.66   Potential Hazard   Potential Hazard     Power density at end of the transition region   Eq. 12 Pg 29   12.2 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at end of the transition region   Eq. 18 Pg 29   12.2 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Maximum factor for public/uncontrolled exposure Height at minimum antenna elevation angle   Eq. 18 Pg 29   144.16 meters   64.23 meters<	Transmit power at flange	Application	125000 milliwatts		
Height of base of antenna above ground   measured   2.91 m     Height of center of antenna above ground   measured   3.51 m     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   44.21 mW/cm²   Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   0 mW/cm²   N/A   N/A     Power density at feed flange   Eq. 11 Pg 27   21831.95 mW/cm²   Potential Hazard   Potential Hazard     Apsimum near-field power density   Eq. 13 Pg 28   29.28 mW/cm²   Potential Hazard   Potential Hazard     Distance to beginning of far-field   Eq. 17 Pg 29   12.2 mW/cm²   Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 18 Pg 29   12.2 mW/cm²   Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 18 Pg 29   144.16 meters   Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 18 Pg 29   144.16 meters   143.61 meters   Potential Hazard   Potential Hazard   Potential Hazard <td>Antenna gain</td> <td>datasheet</td> <td><b>43.2</b> dBi</td> <td></td> <td></td>	Antenna gain	datasheet	<b>43.2</b> dBi		
Height of center of antenna above ground   measured   3.51 m     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   44.21 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   21831.95 mW/cm <sup>2</sup> N/A   N/A     Power density at subreflector   Eq. 11 Pg 27   21831.95 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   21831.95 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   21831.95 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Results calculated in ear-field   Eq. 12 Pg 28   29.28 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Aperture efficiency   Eq. 14 Pg 28   0.66   Go   Potential Hazard   Potential Hazard     Power density at end of the transition region   Eq. 18 Pg 29   12.54 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Maximum far-field prower density   Eq. 18 Pg 29   144.16 meters   <					
Minimum Elevation Angle   (entry)   5 degrees     Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   4.21 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   21831.95 mW/cm <sup>2</sup> N/A   N/A     Power density at subreflector   Eq. 11 Pg 27   1696 cm   N/A   N/A     Aperture efficiency   Eq. 16 Pg 29   0.66   Potential Hazard   Potential Hazard     Power density at end of the transition region   Eq. 17 Pg 29   12.2 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at end of the transition region   Eq. 17 Pg 29   12.2 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Maximum distance for public/uncontrolled exposure   Eq. 18 Pg 29   12.41 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Minimum distance for occupational/controlled exposure   Eq. 18 Pg 29   144.16 meters   16.07 meters     Height at minimum antenna elevation angle   calculated   16.07 meters   9.13 meters     Horizontal distan	· · · · · ·				
Minimum Elevation Angle   calculated   0.08727 radians     Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)   FCC Maximum Permissible Exposure (MPE) Uncontrolled   Controlled     Maximum power density at antenna surface   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> N/A   N/A     Power density at subreflector   Eq. 11 Pg 27   0 mW/cm <sup>2</sup> N/A   N/A     Power density at subreflector   Eq. 13 Pg 28   0.66   Potential Hazard   Potential Hazard     Maximum near-field power density   Eq. 13 Pg 28   0.66   Potential Hazard   Potential Hazard   Potential Hazard     Power density at end of the transition region   Eq. 17 Pg 29   12.24 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Mainmum far-field power density   Eq. 18 Pg 29   12.54 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Minimum distance for public/uncontrolled exposure   Eq. 18 Pg 29   144.16 meters   16.07 meters     Height at minimum antenna elevation angle   calculated   16.35 meters   64.23 meters     Minimum distance for occupational/controlled exposure   Eq. 18 Pg 29	•				
FCC Maximum Permissible Exposure (MPE) Uncontrolled     FCC Maximum Permissible Exposure (MPE) Uncontrolled     Maximum power density at antenna surface   Eq. 11 Pg 27 Eq. 11 Pg 27   0 mW/cm <sup>2</sup> 0 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27 Extent of near-field   Eq. 12 Pg 27   1696 cm   N/A   N/A     Power density at feed flange   Eq. 12 Pg 27   1696 cm   Potential Hazard   Potential Hazard   Potential Hazard     Maximum near-field power density   Eq. 14 Pg 28   0.66   0   0   0   0     Distance to beginning of far-field   Eq. 16 Pg 29   4070.82 cm   Potential Hazard   Potenti					
Results calculated using FCC Bulletin OET-65 (Edition 97-01 August 1997)UncontrolledControlledMaximum power density at antenna surfaceEq. 11 Pg 2744.21 mW/cm²Potential HazardPotential HazardPower density at subreflectorEq. 11 Pg 270 mW/cm²N/AN/APower density at subreflectorEq. 11 Pg 2721831.95 mW/cm²Potential HazardPotential HazardPower density at subreflectorEq. 12 Pg 271696 cmPotential HazardPotential HazardMaximum near-field power densityEq. 13 Pg 2829.28 mW/cm²Potential HazardPotential HazardAperture efficiencyEq. 14 Pg 280.66Potential HazardPotential HazardPotential HazardPower density at end of the transition regionEq. 17 Pg 2912.2 mW/cm²Potential HazardPotential HazardMaximum far-field power densityEq. 18 Pg 2912.541 mW/cm²Potential HazardPotential HazardMinimum distance for public/uncontrolled exposureEq. 18 Pg 2916.07 metersPotential HazardHeight at minimum antenna elevation anglecalculated16.07 meters13.3 metersHorizontal distanceEq. 18 Pg 2913.3 meters13 metersOff-Axis Near Field/Transition Region safe exposure distances from antenna64.47 meters(20 dB reduction in power density at distances greater0ET-65 Pg 30Maximum off-axis near field power densityEq. 13 Pg 280.2928 mW/cm²Off-Asis near field power densityEq. 13 Pg 280.2928 mW/cm²	Minimum Elevation Angle	calculated	0.08727 radians	500 M ·	
Maximum power density at antenna surface   Eq. 11 Pg 27   44.21 mW/cm²   Potential Hazard   Potential Hazard     Power density at subreflector   Eq. 11 Pg 27   0 mW/cm²   N/A   N/A     Power density at feed flange   Eq. 11 Pg 27   21831.95 mW/cm²   Potential Hazard   Potential Hazard     Maximum near-field   Eq. 12 Pg 27   1696 cm   Potential Hazard   Potential Hazard   Potential Hazard     Maximum near-field power density   Eq. 13 Pg 28   0.66   29.28 mW/cm²   Potential Hazard   Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 16 Pg 29   4070.82 cm   Potential Hazard   Potential Hazard   Potential Hazard     Maimem far-field power density   Eq. 18 Pg 29   12.541 mW/cm²   Potential Hazard   Potential Hazard   Potential Hazard     Maimem far-field power density   Eq. 18 Pg 29   12.541 mW/cm²   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard     Maimem far-field power density   Eq. 18 Pg 29   12.541 mW/cm²   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard   Potential Hazard <t< td=""><td>Depute coloulated using ECC Bulletin OFT 65 (Edition</td><td>07.04 August 40</td><td>07)</td><td></td><td>• • • •</td></t<>	Depute coloulated using ECC Bulletin OFT 65 (Edition	07.04 August 40	07)		• • • •
Power density at subreflectorEq. 11 Pg 270 mW/cm2N/AN/APower density at feed flangeEq. 11 Pg 2721831.95 mW/cm2Potential HazardPotential HazardExtent of near-fieldEq. 12 Pg 271696 cmPotential HazardPotential HazardMaximum near-field power densityEq. 13 Pg 2829.28 mW/cm2Potential HazardPotential HazardAperture efficiencyEq. 14 Pg 280.660.66Potential HazardPotential HazardDistance to beginning of far-fieldEq. 17 Pg 2912.2 mW/cm2Potential HazardPotential HazardMaximum far-field power densityEq. 18 Pg 2912.541 mW/cm2Potential HazardPotential HazardMain Beam Far-field region safe exposureEq. 18 Pg 29144.16 metersPotential HazardPotential HazardHorizontal distancecalculated143.61 metersHorizontal distanceEq. 18 Pg 2964.47 metersHorizontal distanceScluated64.23 metersOff-Axis Near Field/Transition Region safe exposure distances from anterna64.23 meters(20 dB reduction in power density at distances greater than one antenna diameter from the main beam center.)OET-65 Pg 30Maximum off-axis near field power densityEq. 13 Pg 280.2928 mW/cm2Below FCC MPEBelow FCC MPE		-			
Power density at feed flange   Eq. 11 Pg 27 Extent of near-field   Z1831.95 Eq. 12 Pg 27 Statum near-field power density   Potential Hazard   Potential Hazard     Maximum near-field power density   Eq. 13 Pg 28 Aperture efficiency   Eq. 14 Pg 28 0.66   0.66   Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 14 Pg 29 12.2 mW/cm²   0.66   Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 17 Pg 29 Eq. 18 Pg 29   12.2 mW/cm²   Potential Hazard   Potential Hazard     Maximum distance for public/uncontrolled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 Eq. 18 Pg 29 Calculated calculated   144.16 meters 143.61 meters   9.13 meters 64.23 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 OET-65 Pg 30 Maximum off-axis near field power density   DET-65 Pg 30 Eq. 13 Pg 28   0.2928 mW/cm²   Below FCC MPE   Below FCC MPE					
Extent of near-fieldEq. 12 Pg 271696 cmMaximum near-field power densityEq. 13 Pg 2829.28 mW/cm²Aperture efficiencyEq. 14 Pg 280.66Distance to beginning of far-fieldEq. 16 Pg 294070.82 cmPower density at end of the transition regionEq. 17 Pg 2912.2 mW/cm²Maximum far-field power densityEq. 18 Pg 2912.541 mW/cm²Main Beam Far-field region safe exposure distancesEq. 18 Pg 29144.16 metersMinimum distance for public/uncontrolled exposure Height at minimum antenna elevation angle Horizontal distanceEq. 18 Pg 29144.16 metersMinimum distance for occupational/controlled exposure Height at minimum antenna elevation angle calculated calculatedEq. 18 Pg 2964.47 metersMinimum distance for occupational/controlled exposure Height at minimum antenna elevation angle calculated calculatedEq. 18 Pg 2964.47 metersMinimum distanceCoff-Axis Near Field/Transition Region safe exposure distances from anterna9.13 meters(20 dB reduction in power density at distances greater than one antenna diameter from the main beam center.)OET-65 Pg 30Maximum off-axis near field power densityEq. 13 Pg 280.2928 mW/cm²Below FCC MPEBelow FCC MPE		· -			
Maximum near-field power density   Eq. 13 Pg 28   29.28 mW/cm²   Potential Hazard   Potential Hazard     Aperture efficiency   Eq. 14 Pg 28   0.66     Distance to beginning of far-field   Eq. 16 Pg 29   4070.82 cm     Power density at end of the transition region   Eq. 17 Pg 29   12.2 mW/cm²   Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 18 Pg 29   12.541 mW/cm²   Potential Hazard   Potential Hazard     Main Beam Far-field region safe exposure distances   Eq. 18 Pg 29   144.16 meters   Potential Hazard   Potential Hazard     Minimum distance for public/uncontrolled exposure Height at minimum antenna elevation angle   Eq. 18 Pg 29   144.16 meters   16.07 meters     Horizontal distance   Eq. 18 Pg 29   64.47 meters   143.61 meters   143.61 meters     Minimum distance for occupational/controlled exposure Height at minimum antenna elevation angle   Eq. 18 Pg 29   64.47 meters   143.61 meters     Morizontal distance   Calculated   9.13 meters   64.23 meters   143.61 meters   143.61 meters     Morizontal distance   Collated   G18-02 meters   64.23 meters   64.23 meters   64.23 meters   64.23 meters   64.23 meters				Potential Hazard	Potential Hazard
Aperture efficiency   Eq. 14 Pg 28   0.66     Distance to beginning of far-field   Eq. 16 Pg 29   4070.82 cm     Power density at end of the transition region   Eq. 17 Pg 29   12.2 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 18 Pg 29   12.541 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Main Beam Far-field region safe exposure distances   Eq. 18 Pg 29   144.16 meters     Minimum distance for public/uncontrolled exposure   Eq. 18 Pg 29   144.16 meters     Height at minimum antenna elevation angle   calculated   16.07 meters     Horizontal distance   Eq. 18 Pg 29   64.47 meters     Minimum distance for occupational/controlled exposure   Eq. 18 Pg 29   64.47 meters     Height at minimum antenna elevation angle   calculated   9.13 meters     Horizontal distance   Galculated   64.23 meters     Off-Axis Near Field/Transition Region safe exposure distances from antenna   Get-65 Pg 30     Maximum off-axis near field power density   Eq. 13 Pg 28   0.2928 mW/cm <sup>2</sup> Below FCC MPE		· -			
Distance to beginning of far-field   Eq. 16 Pg 29   4070.82 cm     Power density at end of the transition region   Eq. 17 Pg 29   12.2 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Maximum far-field power density   Eq. 18 Pg 29   12.541 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Main Beam Far-field region safe exposure distances   Eq. 18 Pg 29   144.16 meters     Minimum distance for public/uncontrolled exposure   Eq. 18 Pg 29   144.16 meters     Height at minimum antenna elevation angle   calculated   143.61 meters     Minimum distance for occupational/controlled exposure   Eq. 18 Pg 29   64.47 meters     Height at minimum antenna elevation angle   calculated   143.61 meters     Horizontal distance   Eq. 18 Pg 29   calculated   9.13 meters     Height at minimum antenna elevation angle   calculated   64.23 meters   64.23 meters     Off-Axis Near Field/Transition Region safe exposure distances from antenna   (20 dB reduction in power density at distances greater   0ET-65 Pg 30     Maximum off-axis near field power density   Eq. 13 Pg 28   0.2928 mW/cm <sup>2</sup> Below FCC MPE   Below FCC MPE				Potential Hazard	Potential Hazard
Power density at end of the transition region   Eq. 17 Pg 29 Eq. 18 Pg 29   12.2 mW/cm <sup>2</sup> 12.541 mW/cm <sup>2</sup> Potential Hazard Potential Hazard   Potential Hazard Potential Hazard     Main Beam Far-field region safe exposure distances   Eq. 18 Pg 29   144.16 meters     Minimum distance for public/uncontrolled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated   144.16 meters     Minimum distance for occupational/controlled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated   64.47 meters     Minimum distance for occupational/controlled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated   64.42 meters     Off-Axis Near Field/Transition Region safe exposure distances from antenna   0ET-65 Pg 30   0ET-65 Pg 30     Maximum off-axis near field power density   Eq. 13 Pg 28   0.2928 mW/cm <sup>2</sup> Below FCC MPE					
Maximum far-field power density   Eq. 18 Pg 29   12.541 mW/cm <sup>2</sup> Potential Hazard   Potential Hazard     Main Beam Far-field region safe exposure distances   Eq. 18 Pg 29   144.16 meters   Potential Hazard   Potential Hazard     Minimum distance for public/uncontrolled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29   144.16 meters   16.07 meters   143.61 meters   143.61 meters   143.61 meters   144.16 meters   143.61 meters   143.61 meters   143.61 meters   143.61 meters   144.16 meters   143.61 meters   144.16 meters   143.61 meters   144.16 meters   143.61 meters   144.16 meters   143.61 meters   144.16 meters <td></td> <td>· -</td> <td></td> <td></td> <td></td>		· -			
Main Beam Far-field region safe exposure distances     Minimum distance for public/uncontrolled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated   144.16 meters 16.07 meters calculated     Minimum distance for occupational/controlled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated   64.47 meters 9.13 meters     Minimum distance for occupational/controlled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated   64.23 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 OET-65 Pg 30     Maximum off-axis near field power density   Eq. 13 Pg 28   0.2928 mW/cm <sup>2</sup> Below FCC MPE		· -			
Minimum distance for public/uncontrolled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated calculated   144.16 meters 16.07 meters 143.61 meters     Minimum distance Horizontal distance   Eq. 18 Pg 29 calculated   64.47 meters 9.13 meters calculated     Minimum distance for occupational/controlled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated   64.47 meters 9.13 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 Eq. 13 Pg 28   0.2928 mW/cm <sup>2</sup>	Maximum far-field power density	Eq. 18 Pg 29	12.541 mW/cm <sup>2</sup>	Potential Hazard	Potential Hazard
Height at minimum antenna elevation angle   calculated   16.07 meters     Horizontal distance   calculated   143.61 meters     Minimum distance for occupational/controlled exposure   Eq. 18 Pg 29   64.47 meters     Height at minimum antenna elevation angle   calculated   9.13 meters     Horizontal distance   calculated   9.13 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   0.2928 mW/cm <sup>2</sup> Below FCC MPE	Main Beam Far-field region safe exposure distances				
Horizontal distance   calculated   143.61 meters     Minimum distance for occupational/controlled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated calculated   64.47 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 Eq. 13 Pg 28   0.2928 mW/cm <sup>2</sup> Below FCC MPE   Below FCC MPE	Minimum distance for public/uncontrolled exposure	Eq. 18 Pg 29	144.16 meters	_	
Minimum distance for occupational/controlled exposure Height at minimum antenna elevation angle Horizontal distance   Eq. 18 Pg 29 calculated calculated   64.47 meters 9.13 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   0.2928 mW/cm <sup>2</sup> Below FCC MPE	Height at minimum antenna elevation angle	calculated	16.07 meters		
Height at minimum antenna elevation angle   calculated   9.13 meters     Horizontal distance   calculated   64.23 meters     Off-Axis Near Field/Transition Region safe exposure distances from antenna   Commentation     (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   0.2928 mW/cm <sup>2</sup> Below FCC MPE   Below FCC MPE	Horizontal distance	calculated	143.61 meters		
Height at minimum antenna elevation angle   calculated   9.13 meters     Horizontal distance   calculated   64.23 meters     Off-Axis Near Field/Transition Region safe exposure distances from antenna   Cold B reduction in power density at distances greater     (20 dB reduction in power density at distances greater   OET-65 Pg 30     Maximum off-axis near field power density   Eq. 13 Pg 28   0.2928 mW/cm <sup>2</sup> Below FCC MPE   Below FCC MPE	Minimum distance for occupational/controlled exposure	Eg. 18 Pg 29	64.47 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   0.2928 mW/cm <sup>2</sup> Below FCC MPE   Below FCC MPE			9.13 meters		
(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   0.2928 mW/cm <sup>2</sup> Below FCC MPE   Below FCC MPE	Horizontal distance	calculated	64.23 meters		
(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   0.2928 mW/cm <sup>2</sup> Below FCC MPE   Below FCC MPE	Off-Axis Near Field/Transition Region safe exposure d	listances from an	tenna		
than one antenna diameter from the main beam center.)   OET-65 Pg 30     Maximum off-axis near field power density   Eq. 13 Pg 28     0.2928 mW/cm <sup>2</sup> Below FCC MPE     Below FCC MPE   Below FCC MPE	<b>v</b>				
Maximum off-axis near field power density     Eq. 13 Pg 28     0.2928 mW/cm²     Below FCC MPE     Below FCC MPE		OET-65 Pg 30			
Public/uncontrolled exposure off-axis distance Diam/or Eq.17 1.2 meters	Maximum off-axis near field power density	Eq. 13 Pg 28	0.2928 mW/cm <sup>2</sup>	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	Occupatonal/controlled exposure off-axis distance	Diam/or Eq 17	1.2 meters		
Off-Axis Far Field safe exposure distances from the antenna	Off-Axis Far Field safe exposure distances from the a	ntenna			
(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)		, , , ,	15 degree(s)		
Off-axis antenna gain factor OET-65 Pg 30* 2		OET-65 Pg 30*			
Minimum distance for public/uncontrolled exposure Eq. 18 Pg 29 ** 40.71 meters		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.	field region is used.				

Prepared by Doug Lung, NBC Universal, April 10, 2012