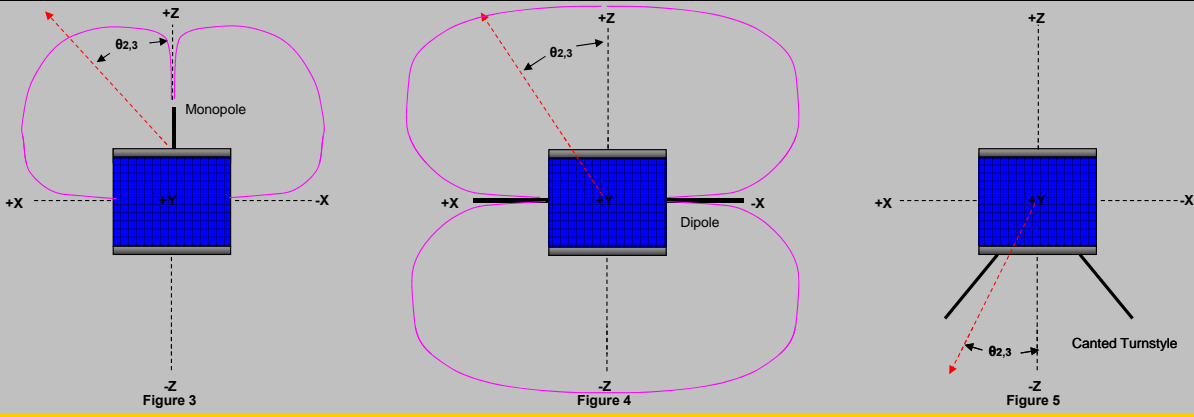
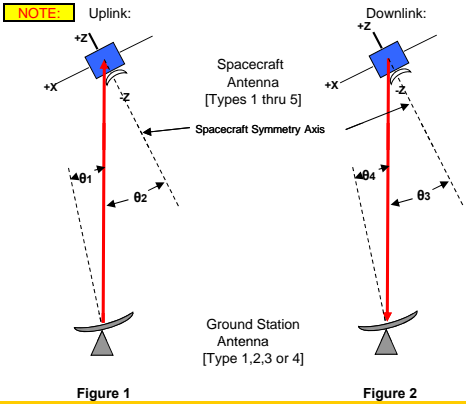


System Antenna Pointing Losses:

Alpha CubeSat

2016 February 05



Antenna Loss Determination:

(See Also Figure 8)

Uplink Antenna System:

NOTE:

Ground Station:

Uplink Frequency: 7145 MHz

Wavelength: 0.0420 meters

This Option was Selected on the Previous Page

3 Parabolic Reflector

Polarization: RHCP

1	Yagi	Maximum Gain:	16.3	dBIC	Beamwidth:	30.6 °
2	Helix	Gain:	16.0	dBIC	Beamwidth:	32.2 °
3	Parabolic Reflector	Gain:	94.7	dBIC	Beamwidth:	0.1 °
4	User Defined	Gain:	18.5	dBIC	Beamwidth:	24.0 °

Estimated Pointing Error (θ1): 0.0015 °

Approx. Antenna Pointing Loss: 0.0 dB

Spacecraft:

Uplink Frequency: 7145 MHz

Wavelength: 0.0420 meters

This Option was Selected on the Previous Page

7 Other (User Defined)

Polarization: RHCP

1	Monopole	Gain:	2.15	dBIL	Beamwidth:	156.2 °
2	Dipole	Gain:	2.15	dBIL	Beamwidth:	156.2 °
3	Canted Turnstyle	Gain:	2.0	dBIC	Beamwidth:	180 °

Antenna Coordinate System:	
See Figures 1 and 3	monopole
See Figures 1 and 4	dipole
See Figures 1, 5 & 8	canted turnstyle

NOTE:

2.77

Antenna Roll-Off

Calculation Formulas

12.8 dB

0.0 dB

0.0 dB

4	Quadrifilar Helix	Loop (λ):	1/2	Gain:	4.0 dBiC	Beamwidth:	150 °
5	Patch			Gain:	6.0 dBi (C or L)	Beamwidth:	90 °
6	Parabolic Reflector	[For S/C Hi Gain Option]		Gain:	49.5 dBi (C or L)	Beamwidth:	0.5 °
7	Other (User Defined)	Reflectenna		Gain:	8.0 dBi	Beamwidth:	4.8 °
Angle between S/C antenna symmetry axis and vector from S/C to gnd. station (θ2):				3 °	Approx. Antenna Pointing Loss:	0.0 dB	

See Figures 1 and 6	quadrifilar helix	0.0 dB
See Figures 1 and 7	patch antenna	0.0 dB
Dish Boresight Aligned with +Z Axis	parabolic reflector	32.7 dB
Link Model Operator to Provide	user defined	0.0 dB

879.25

Intermediate Calculation - Please Ignore This Value.

Link Model operator enter equation for functional behavior of user defined antenna here.

UPLINK ↑

DOWNLINK ↓

Downlink Antenna System:

Spacecraft:		Downlink Frequency:	32000 MHz	Wavelength:	0.0094 meters		
		This Option was Selected on the Previous Page					
		7	Other (User Defined)	Polarization:	RHCP		
1	Monopole	Gain:	2.15 dBiL	Beamwidth:	156.2 °		
2	Dipole	Gain:	2.15 dBiL	Beamwidth:	156.2 °		
3	Canted Turnstyle	Gain:	2.0 dBiC	Beamwidth:	180 °		
4	Quadrifilar Helix	Loop (λ):	1/2	Gain:	4.0 dBiC	Beamwidth:	150 °
5	Other (User Defined)	Patch (Example)	Gain:	6.0 dBi	Beamwidth:	90 °	
6	Parabolic Reflector	[For S/C Hi Gain Option]	Gain:	53.9 dBi (C or L)	Beamwidth:	0.3 °	
7	Other (User Defined)	Reflectenna	Gain:	32.0 dBi	Beamwidth:	3 °	
Angle between S/C antenna symmetry axis and vector from S/C to gnd. station (θ3):				3 °	Approx. Antenna Pointing Loss:	0.0 dB	

Antenna Coordinate System:

See Figures 2 and 3

See Figures 2 and 4

See Figures 2, 5 & 8

See Figures 2 and 6

See Figures 2 and 7

Link Model Operator to Provide

Link Model Operator to Provide

Antenna Roll-Off
Calculation Formulas

1458.47

Intermediate Calculation - Please Ignore This Value.

Enter functional behavior of user defined antenna here.

Ground Station:		Downlink Frequency:	32000 MHz	Wavelength:	0.0094 meters		
		This Option was Selected on the Previous Page					
		3	Parabolic Reflector	Polarization:	RHCP		
1	Yagi	Maximum Gain:	0.0 dBiC	Beamwidth:	39.7 °		
2	Helix	Gain:	0.0 dBiC	Beamwidth:	32.2 °		
3	Parabolic Reflector	Gain:	0.0 dBiC	Beamwidth:	0.0 °		
4	User Defined	Gain:	18.5 dBiC	Beamwidth:	24.0 °		
Estimated Pointing Error (θ4):				0.0015 °	Approx. Antenna Pointing Loss:	0.1 dB	

12.40

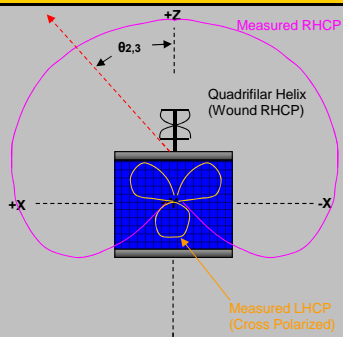


Figure 6

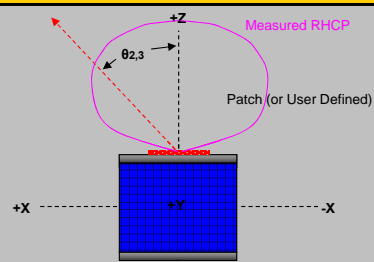


Figure 7

Turnstyle Gain in RHCP and LHCP

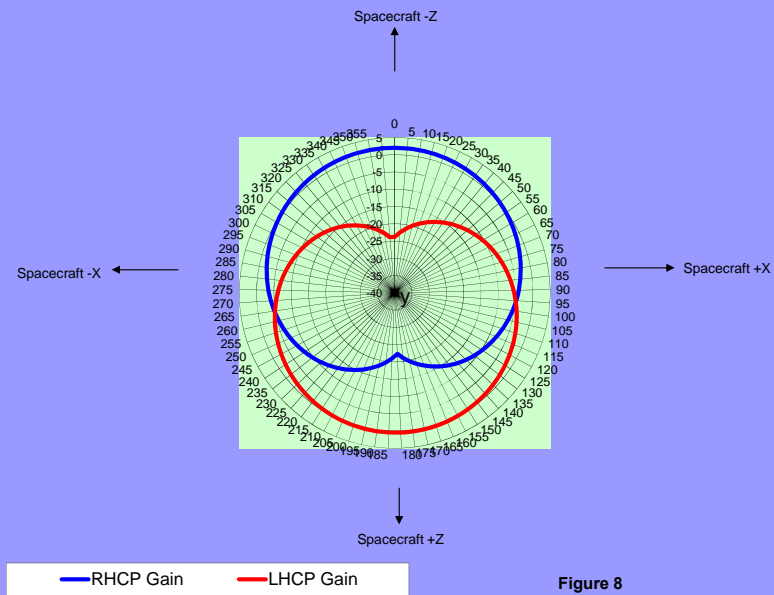


Figure 8