

To: Behnam Ghaffari  
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Please find responses to the additional information that was requested. UM responses are in blue and the original questions are in black italics.

***Please provide the coordinates (latitude and longitude) for the earth station(s).***

The latitude and longitude are: 42.293367 North , -83.711993 East.

**d) THE EARTH STATION RECEIVER ANTENNA GAIN, BEAMWIDTH, AZIMUTHAL RANGE, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS AND THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS,**

UHF Receiver Station:

Antenna Gain:	16 dBi
Beamwidth:	21 degrees
Azimuthal Range:	360 degrees
Elevation:	900 feet
Antenna Height Above Terrain:	75 feet

S-Band Receiver Station

Antenna Gain:	47 dBi
Beamwidth:	1 degrees
Azimuthal Range:	360 degrees
Elevation:	5 feet
Antenna Height Above Terrain:	10 feet

**e) THE EARTH STATION RECEIVER ANTENNA AZIMUTH, THE MINIMUM ANGLE OF ELEVATION (V00 TO V90),**

UHF Receiver Station:

Antenna Azimuth:	Variable, track satellite, so full range.
Minimum elevation:	0 degrees

S-Band Receiver Station

Antenna Azimuth:	Variable, track satellite, so full range.
Minimum elevation:	5 degrees

**f) THE TRANSMITTER ANTENNA ORIENTATION (XAP), EXAMPLE XAP01 J , AND THE RECEIVER ANTENNA ORIENTATION (RAP), EXAMPLE RAP01 J , WHERE J REPRESENTS LINEAR POLARIZATION. OTHER POLARIZATIONS INCLUDE H FOR HORIZONTAL, V FOR VERTICAL, S FOR HORIZONTAL AND VERTICAL, L FOR LEFT HAND CIRCULAR, R FOR RIGHT HAND CIRCULAR, T FOR RIGHT AND LEFT HAND CIRCULAR, E FOR ELLIPTICAL AND O FOR OBLIQUE ANGLED CROSSED.,**

S-Band:       XAP01 R  
                  RAP01 R

UHF:           XAP02 V  
                  XAP02 R