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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.

***a) THE TYPE OF SATELLITE, GEOSTATIONARY OR NONGEOSTATIONARY***

[Nongeostationary.](#)

***B.) IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM,***

[CADRE will be deployed from the International Space Station \(ISS\). Expected orbit is approximately 410km, circular, at 51.65 degrees inclination. The orbital period is 92.69 minutes.](#)

***b) THE SATELLITE TRANSMITTER ANTENNA GAIN AND BEAMWIDTH,***

[UHF Monopole: Gain – 0 dBi, 45 degrees  
S-Band Patch: Gain – 6.36 dBi, 45 degrees](#)

***c) THE SATELLITE TRANSMITTER ANTENNA AZIMUT: NARROWBEAM (NB), EARTH COVERAGE (EC),***

[For both satellite antennas, the antenna azimuth is not fixed, but varies over time.](#)

[The UHF antenna will point down \(nadir\) during the majority of the mission. The S-Band antenna will be pointed at the ground station during transmissions.](#)

**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