

Attachment to INCA Experimental Application 0839-EX-CN-2017

Global Star STX3 Radio Pointing Restrictions

The antenna for the STX3 radio is located on INCA's -Z face with the centerline of the antenna pointed in the -Z direction. INCA is intended to be spin stabilized about the Z axis, meaning that once the vehicle stabilizes the antenna will be spinning around its primary axis, and pointed opposite the sun vector. The STX3 will have a software inhibit to prevent transmission when the antenna centerline is greater than 66.5deg from zenith. The inhibit will use 3-sigma (~99.7%) error bars, meaning the system will only transmit when there is a greater than a 3-sigma probability it is within the 66 deg arc. These values are based on the antenna's 90deg -3dB beam width. This will prevent the -3dB beam from touching the earth. Using while transmitting within this 66deg cone, the maximum signal strength receive on the ground should be approximately -173.55dBW ($4.41 \times 10^{-18} \text{W}$).

