

EQUiSat

Department Head: Hunter Ray **Control Operator:** Mckenna Cisler

Description:

EQUiSat's primary mission is to serve as an in-orbit validation of accessible and affordable space design to bring space closer to the masses. With novel in-house design techniques, cost-efficient construction, and open source technical documentation, EQUiSat represents the future of low-cost CubeSat design. EQUiSat's secondary mission is to test lithium iron phosphate (LiFePO₄) batteries that have never been flown in space before. These batteries will power EQUiSat's high-power LED array, which will serve as a beacon, allowing viewers on the ground to spot the satellite, even from urban areas. The beacon will flash from Low Earth Orbit with an apparent magnitude of 2, approximately the same intensity as Polaris. Observers will also be able to hear EQUiSat, via an onboard UHF transceiver that will transmit a signal that can be easily tracked by amateur radio operators, universities, and grade schools. Individuals will be able to monitor the satellite's telemetry, relationship to the sun, and valuable sensor data.

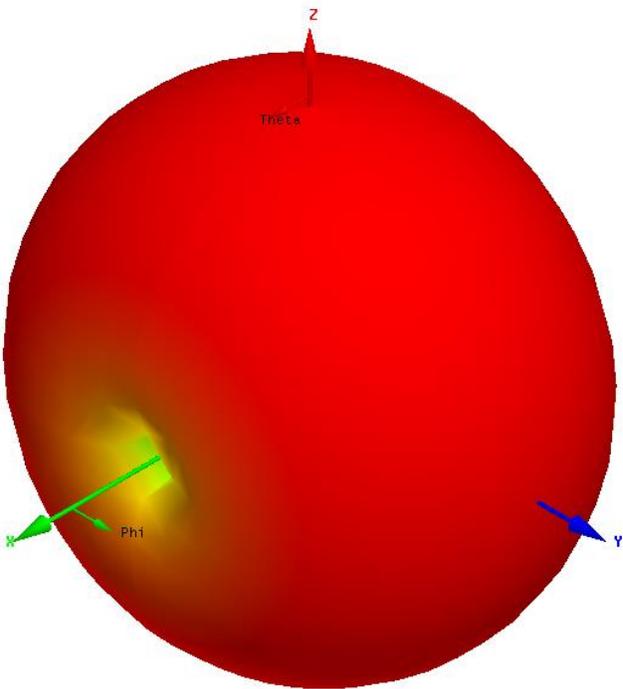
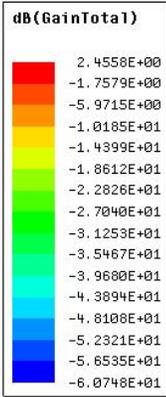
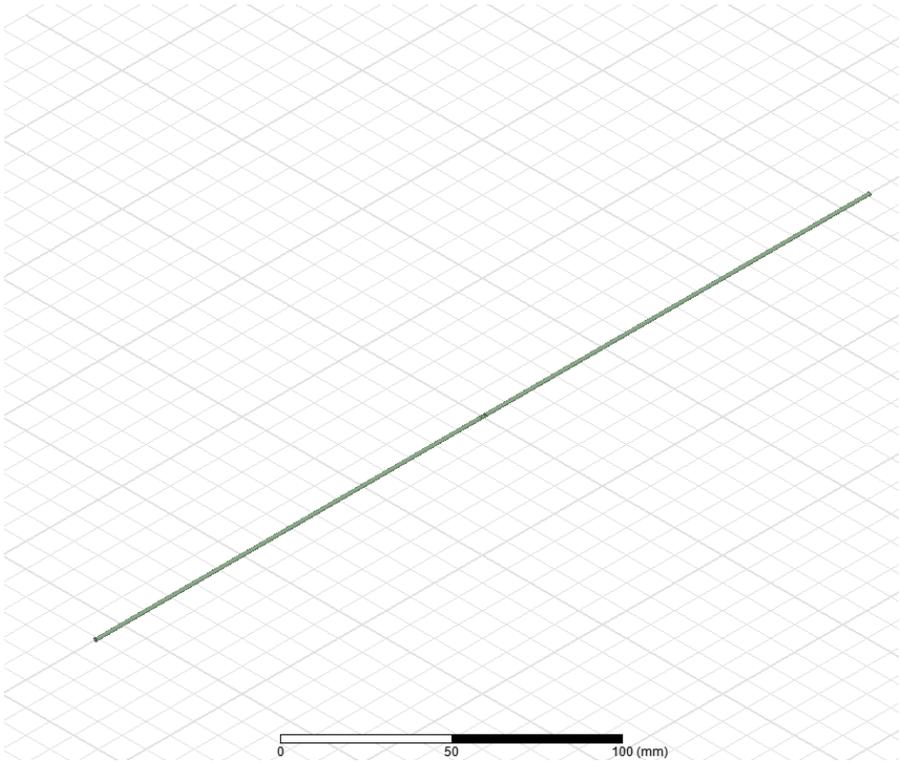
EQUiSat's amateur radio is a large part of our mission, as it helps achieve our organization's main goal, which to prove the accessibility of space to everyone. Using amateur radio on our satellite will allow any amateur radio enthusiast to connect with our satellite and retrieve data. There will also be a page on our website where the community can upload transmissions they receive from EQUiSat. This will help us 'crowdsource' data and help the community get involved with our project. In short, we are aiming to reduce the barrier between the space/radio enthusiast community and a seemingly complex and expensive industry, and using HAM radio to connect with the community is a large part of that goal.

To accomplish this, the EQUiSat team has been working with the Brown Amateur Radio Club (BARC <http://students.brown.edu/amateur-radio-club/home>). BARC has been an ARRL affiliated amateur radio club since 1975 that organizes projects for the members of the Brown Community interested in all that can be done with HAM radio. We have been in contact with the ARRL and they have informed us that they consider the EQUiSat project to be amateur. The BARC callsign, K1AD, is the callsign that will be used for EQUiSat's transmissions.

Quick Technical Info:

Radio	XDL Micro
Transmit Power	0.5W
Frequency	435.55MHz
Modulation	4FSK
Channel Bandwidth	12.5KHz
Antenna	Half Wave Dipole
Callsign	K1AD

Antenna Diagrams:



Radiation Pattern 4

HFSSDesign2 ▲

