Double Tracking Antennas for UAS Communication

Control and Automation

June 21, 2016

Group CA832

16gr832@student.aau.dk

Department of Electronics and IT
Aalborg University
Denmark

AALBORG UNIVERSITY
DENMARK

Introduction

The project is about UAS:

- What ?
- Why ?
- How ?
- State each part and whom will present.

Agenda

Introduction

Overview
- Hardware
- Frames
- Telecommunication

Methods
- Modelling
- Controller
- Simulation

Results

Conclusion

Unmanned Aicraft System (UAS)

1. Unmanned Aircraft (UA)
2. Ground Station (GS)
3. Antennas
4. DC Servomotor

Frames

Geodetic Coordinate System

Earth-Centered Earth-Fixed (ECEF)

North-East-Down (NED)

Body Coordinate System

Line-Of-Sight (LOS) Propagation

Link Budget

Fresnel Zones

MAVLink Protocol

Moving Angle System (MAS)

Optimal Angle

Antenna

Controller

PID

Tunning

Comparion

LOS Coverage Map

1. Terrain elevation
2. Curvature of the Earth
3. Altitude of UA and GS

3D UAS

3D UAS

Angle Range

Earth Curvature

Above GS

Mountain

Conclusion

We did this: ...
We can see that: ...
We conclude that: ...
Further work that can be built on the current project:

Dept. of Electronics and IT
Aalborg University
Denmark

Thank you for flying with us!

AALBORG UNIVERSITY
DENMARK