

Double Tracking Antennas for UAS Communication

Control and Automation

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AALBORG UNIVERSITY
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Introduction

Double Tracking
Antennas for UAS
Communication

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Introduction

1

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

The project is about UAS:

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



Agenda

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

2

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

10

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion



Hardware

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

3

Unmanned Aircraft System (UAS)

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



Frames

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

4

Geodetic Coordinate System

Earth-Centered Earth-Fixed (ECEF)

North-East-Down (NED)

Body Coordinate System



Telecommunication

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

5

Line-Of-Sight (LOS) Propagation

Link Budget

Fresnel Zones

MAVLink Protocol

10



Modelling

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

6

Moving Angle System (MAS)

Optimal Angle

Antenna

10



Controller

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

PID

7 Tuning

Comparison



Simulation

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

LOS Coverage Map

2D UAS

3D UAS

8

10



Results

Scenarios

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

Angle Range

Earth Curvature

Above GS

Mountain

9

10



Conclusion

Double Tracking
Antennas for UAS
Communication

Group CA832

Introduction

Overview

Hardware

Frames

Telecommunication

Methods

Modelling

Controller

Simulation

Results

Conclusion

10

We did this: ...

We can see that: ...

We conclude that: ...

Further work that can be built on the current project:

Thank you for flying with us!



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