Flight Tracking and Messaging System

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FTMS - Redesigning ACU to assist pilots in missionary aid and relief
System Overview

Diagram:
- Pilot -> Display Board -> UDOO Board (SBC) -> Modem/Satellite Board -> AFFSWin (ground)
- Flight Critical Info.

ACU
Background

- Stakeholder: Cary Cupka

- This Semester’s goals:
  - Make final decision on industrial board
  - Redesign display board
  - Establish serial communication
Industrial Board Considerations

- In-field use
- Industrial versus Prototype version

Decision Criteria:
- Temperature tolerance
- Space efficiency
- Reasonable cost
Industrial-level Single Board Computer (SBC)

(The CQ7-A42 Carrier Board and Q7 – 928 Module)
Pilot Message Display

- Display Chips

This is 16 chars
Improving Original Display Board

- Part of ACU Redesign
  - Retain functionality

- Eliminate wasted space
  - Remove unused components
  - Reduce size of layout

- Removal of modem
  - Modem Pins
  - Integrated Circuitry
Display Board Solutions

- 3D Rendering of proposed redesign
Display Board Future Work

- Prototype Fabrication
  - Milling
  - Testing

- Future Considerations
  - Power supply
Bypassing Wireless Link: RS 232 Serial Communication

- **Why?**
  - Eliminates HF modem’s complexity
  - Facilitates system development

- **How?**
  - RS-232: standard communications protocol for data transmission

- **Immediate Goal**
  - Send random messages from UDOO board to both AFFSWin and LED Display simultaneously
Serial Communications Prototype among UDOO, AFFSWin and LED Display
**AFFSWin Result**

The image shows the interface of the Automated Flight Following System (AFFS) software. The display contains two main sections:

1. **AIRCRAFT (Most Recent Report)**
   - **Callsign**: Empty
   - **Destination**: Empty
   - **Status**: Empty
   - **Waypoint**: Empty
   - **Time to** and **Last Report**: Empty

2. **DATA PACKETS (Real Time Report)**
   - **Callsign**: Empty
   - **Latitude**: Empty
   - **Longitude**: Empty
   - **Destination**: Empty
   - **Status**: Empty
   - **Time**: Empty

In the **RAW DATA** section, there is a message highlighted in red:

```
FTMS Sys rocks!
```

This indicates that the system has received a message from the FTMS (Flight Tracking and Monitoring System) that it is functioning well.
LED Display Result
Future Goals

- Purchase industrial SBC
- Create Display Board
- Implement serial communication link with industrial SBC
- Establish basic functionalities (i.e. gps location, messaging, etc.)
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Questions