DTMB Modulator Control & Management System

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Topics

• System Overview
• Hardware Architecture
• Software Architecture
• Practical Implementation
• Future enhancements
• Gallery
Hardware Architecture
Software Architecture
Practical Implementation: User Application

Level 0
- DTMB Modulator
  - Parameters
  - Status

Level 1
- Parameters
  - Mapping
  - FEC
  - Guard Int.
  - ...

Level 2
- Mapping
  - FEC
  - Guard Int.
    - PN420
    - PN595
    - PN945
Practical Implementation: Data Flow

1. User Interaction Task → Command Queue → Hardware Configuration Task
2. Remote Control Task → Command Queue → Hardware Configuration Task
Practical Implementation: UI Task

User Interface Task

Initialization Process

LCD Update Process

Keypad Scanning Process

Command Scheduling Process
Practical Implementation: HW Config Task
Practical Implementation: Final System

Spartan 3E Starter Kit

- Control System
  - Management Interfaces
    - Ethernet
    - Serial
  - User Interface (Display + Keypad)

Clock Frequency Synthesizer (AD9956)

I2C

Baseband Modulator (Cyclone IV)

TS Input

Frequency Up Converter (AD9789)

2.4 GHz

SPI
Work in progress

- Inclusion of a boot loader with “in-system” update capability.
- Development of PC application to transfer update to boot loader.
Future enhancements

• Include a web-based management interface using the Ethernet port.
• Include user-custom setting profiles.
Gallery: Complete System

Baseband Modulator

Power Supply

Up Converter

Clock Reference

Control System
Gallery: Menu Level 0

DTMB Modulator
Gallery: Menu Level 1
Gallery: Menu Level 2

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Gallery: Complete Working System
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