NASA
Multi-Time-Code Mechanism

Glenn Parker Rakow

NASA – Goddard Space Flight Center

2006 MAPLD International Conference

Washington, D.C.

September 25, 2006

1

Purpose

- Expand the Time-code feature to provide additional side band signaling over SpaceWire

- Describe a method for implementing simultaneous Time-Codes that can be made backward compatible with the SpaceWire standard

Background

- SpaceWire standard allows only one time code master on a network

- Many systems have multiple discrete signals between subsytems that could be implemented with time-code

How It Works

- NASA has expanded the time-code function by allowing up to 4 simultaneous time-codes at once
  - Hard code upper 2 reserve bits of time-code counter
  - 4 TickIn signals
  - 4 Tickout signals
- Feature may be disabled allowing only one time-code counter
- Router also has capability to blocking transmission and receipt of time-codes on a per port basis allowing steering of time-codes
  - Provides greater flexibility to potentially increase useful number (greater than 4) of time-code in system