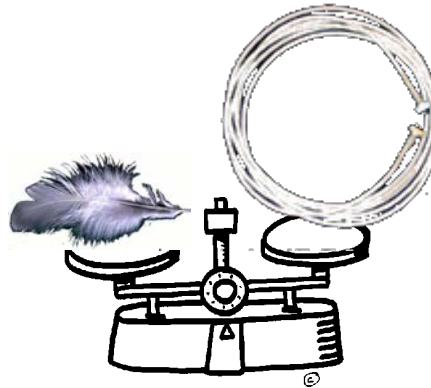


SpaceWire Evolutions

Low Mass SpaceWire



J. Ilstad

On-board Payload Data Processing section (TEC-EDP)

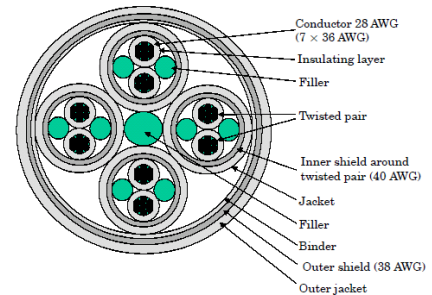
ESA/ESTEC

Overview

- Background
- Activity Goals
- Evaluation Options
- Status

Background

- The Standard gives detailed specification on the construction of the SpW cable
- **Advantage:**
 - Specification can be delivered directly to a manufacturer to produce a compliant cable.
- **Disadvantage:**
 - The cable may be **heavier** and more **rigid** than necessary for shorter cable lengths.



Activity Objectives

- Define and **complement electrical and physical performance parameters** of the existing flight quality cable
 - Return and Insertion Losses, NEXT and FEXT etc.
 - Aim to provide such parameters in the revised standard.
- **Review current cable shielding arrangement**
 - Evaluate pros and cons of removing either inner or outer shields.
 - Better support for bulkhead connections
- Identify suitable **alternative matched impedance connector**
- **Validate** Low Mass SpW cable
 - both towards **electrical performance** and **physical endurance**

Status

- Activity Kick-Off mid January 2010
- Activity End beginning Q1 2011
- Currently in trade-off phase:
 - Taking into account typical spacecraft EMC requirements
 - Evaluating inner shield configuration
 - One recommendations is to ground inner shields at both ends to spacecraft structure reference.
 - Outer shield may not be necessary in such case.
 - Evaluate suitable alternative connector

Status

- List of envisaged approaches:
 1. Use lighter materials (aluminium, celloflon + polyimide tape) :
Solution with same EMI level.
 2. Remove fillers
 3. Reduce signal wire gauge
 4. Use different construction techniques
 5. Remove outer shield
 6. Remove inner shields
- Potential difficulties/obstacles :
 - EMI and Impedance deviation for pairs w/o shield

Thank You!

