

# LOW MASS SPACEWIRE

## Session: SpaceWire Components

### Short Paper

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#### ABSTRACT

The current cable specification given in the ECSS-E-ST-50-12C SpW standard is defining the detailed construction of the cable. With this, the manufacturer can produce a cable compliant to the standard which is able to transmit the signal over a length of 10 m and support a data rate of 200 Mbps. The disadvantage is that this cable may be heavier and more rigid than necessary for short connections and too lossy for distances beyond 10 m.

For the upcoming update of the SpaceWire standard, the intention is to specify not the construction, but rather specify physical and electrical parameters which can be verified by measurement. These could comprise parameters like Differential Impedance, Signal Skew, Return Loss, Insertion Loss, Near-end Crosstalk (NEXT), Far-end Crosstalk (FEXT) and radiated EMI. With this input cable manufactures will be able to design compliant cables which are more optimised for the targeted applications.

ESA will start an activity to develop a low mass SpaceWire cable at the beginning of 2010. The activity shall define the electrical and physical performance parameters of the current SpaceWire cable and use these metrics to define a new cable construction with lower mass properties. The following steps are to develop, manufacture and validate a Low Mass SpaceWire cable, a cable that is foreseen used mainly for shorter SpW interconnections. The goal is to reduce the mass between 30% and 50%. An important part of the activity is to determine whether the current SpW Cable grounding and shielding scheme can be changed without affecting performance factors such as e.g. EMC/EMI, mechanical properties and data rate adversely.

In this paper, the latest results obtained during the first part of the Low Mass SpaceWire activity will be reported. It discusses candidate cable constructions to achieve lower mass, alternative connectors for the cable assembly and the upcoming tasks leading up to activity completion.