SMPTE STANDARD

Multi-Link and Multi-Channel 1.5G, 3G, 6G and 12G-SDI Using CWDM

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Approved
January 6, 2017

Foreword

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SMPTE Engineering Documents are drafted in accordance with the rules given in its Standards Operations Manual.

SMPTE ST 297-2 Document was prepared by Technology Committee 32NF.

Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Engineering Document. However, attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SMPTE shall not be held responsible for identifying any or all such patent rights.

Introduction

This section is entirely informative and does not form an integral part of this Engineering Document.

Coarse Wavelength Division Multiplexing (CWDM) provides means of data transport of uncompressed video between capture systems and the associated storage and production equipment, for distances greater than 100 meters on a single optical fiber.

Two CWDM multiplexing applications are covered by this standard: Multi-Link (ML) and Multi-Channel (MC).

(1) Multi-Link operation provides a means of carrying synchronous dual-link or quad-link SDI interfaces over a single optical fiber. For example, dual and quad-link 3G SDI interfaces such as SMPTE ST 425-3 and SMPTE ST 425-5 can carry image formats beyond HDTV, high frame rates and or high bit depth images over multiple links. This standard combines those multiple-links into a single fiber.

(2) Multi-Channel operation provides a means to concatenate multiple synchronous or asynchronous SDI interfaces on a single optical fiber. For example, multiple (up to 18) separate SDI interfaces adhering to any of the supported data rates in any combination can be carried on a single fiber.

1 Scope

This standard defines the transport of Multi-Link (ML) or Multi-Channel (MC) SDI data streams over a single fiber using Coarse Wavelength Division Multiplexing (CWDM).

Specifically, this standard specifies a CWDM optical interface for Multi-Link 12G-SDI, Multi-Link 6G-SDI, Multi-Link 3G-SDI and Multi-Link 1.5G-SDI, as well as Multi-Channel 12G-SDI, 6G-SDI, 3G-SDI and/or 1.5G-SDI.

To conform to this standard, It is not necessary for implementations to include support for both Multi-Link and Multi-Channel modes, nor is it necessary to support all interface data rates defined in Table 1. Implementers should indicate supported interface rates and operating modes in commercial publications.

2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or contains the conformance language keywords: "shall", "should", or "may". Informative text is text that is potentially helpful to the user, but not indispensable, and can be removed, changed, or added editorially without affecting interoperability. Informative text does not contain any conformance keywords.

All text in this document is, by default, normative, except: the Introduction, any section explicitly labeled as "Informative" or individual paragraphs that start with "Note:"

The keywords "shall" and "shall not" indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

The keywords, "should" and "should not" indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.

The keywords "may" and "need not" indicate courses of action permissible within the limits of the document.

The keyword “reserved” indicates a provision that is not defined at this time, shall not be used, and may be defined in the future. The keyword “forbidden” indicates “reserved” and in addition indicates that the provision will never be defined in the future.

A conformant implementation according to this document is one that includes all mandatory provisions ("shall") and, if implemented, all recommended provisions ("should") as described. A conformant implementation need not implement optional provisions ("may") and need not implement them as described.

Unless otherwise specified, the order of precedence of the types of normative information in this document shall be as follows: Normative prose shall be the authoritative definition; Tables shall be next; then formal languages; then figures; and then any other language forms.