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SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Digital terminal equipments – General

SERIES Y: GLOBAL INFORMATION
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS,
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Future networks

OTU25 and OTU50 short-reach interfaces

Recommendation ITU-T G.709.4/Y.3134.4

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For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T G.709.4/Y.3134.4

OTU25 and OTU50 short-reach interfaces

Summary

Recommendation ITU-T G.709.4/Y.1331.4 specifies an interface for an OTU25 and OTU50 short-reach interconnect application.

History

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* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Recommendation ITU-T G.709.4/Y.3134.4

OTU25 and OTU50 short-reach interfaces

1 Scope

This Recommendation specifies 25 Gbit/s and 50 Gbit/s optical transport network (OTN) short-reach interfaces with Reed-Solomon forward error correction codes (OTU25-RS, OTU50-RS) with lower overhead percentage than the Reed-Solomon forward error correction (FEC) code specified for OTUk (k=1,2,3,4) in [ITU-T G.709].

The OTU25-RS and OTU50-RS interfaces complement the OTU25/ODU25 and OTU50/ODU50 functions specified in [ITU-T G.709], with a hard-decision FEC codec, which uses the same overhead percentage (~5.8%) as the FlexO-x-RS FEC codec.

The OTU25-RS and OTU50-RS interfaces may be operated at an approximately 8% and 5% lower rate for use in network scenarios that do not require the support of all clients. Such interfaces are identified as OTU25u-RS and OTU50u-RS interfaces. The OTU25u-RS interface will be equipped with a hard-decision FEC code, which uses a ~3% lower overhead percentage.

This Recommendation makes use of existing [ITU-T G.709], [ITU-T G.798] and [b-ITU-T G-Sup.58] functions by reference and it provides specifications for new functions that are specific to this new interface type. In addition, some introduction material for intended applications is included.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T G.709] Recommendation ITU-T G.709/Y.1331 (2020), *Interfaces for the optical transport network*.
- [ITU-T G.798] Recommendation ITU-T G.798 (2017), *Characteristics of optical transport network hierarchy equipment functional blocks*.
- [IEEE 802.3] IEEE Std 802.3TM-2018, IEEE Standard for Ethernet.
- [IEEE 802.3cd] IEEE Std 802.3cdTM, IEEE Standard for Ethernet, *Amendment 3: Media Access Control Parameters for 50 Gb/s and Physical Layers and Management Parameters for 50 Gb/s, 100 Gb/s, and 200 Gb/s Operation*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1 optical data unit k (ODUk)** [ITU-T G.709].
- 3.1.2 optical transport network (OTN)** [ITU-T G.709].
- 3.1.3 optical payload unit k (OPUk)** [ITU-T G.709].

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 OTU25-RS: Information structure consisting of an OTU25, plus code word marker, plus Reed-Solomon (544,514)₁₀ FEC parity.

3.2.2 OTU25u-RS: Information structure consisting of an OTU25u, plus code word marker, plus Reed-Solomon (528,514)₁₀ FEC parity.

3.2.3 OTU50-RS: Information structure consisting of an OTU50, plus alignment marker, plus Reed-Solomon (544,514)₁₀ FEC parity.

3.2.4 OTU50u-RS: Information structure consisting of an OTU50, plus alignment marker, plus Reed-Solomon (544,514)₁₀ FEC parity.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AM	Alignment Marker
CM _x	Common Marker #x
CP _x	Common Pad #x
CWM	Code Word Marker
FEC	Forward Error Correction
LSB	Least Significant Bit
MSB	Most Significant Bit
ODU	Optical Data Unit
ODU _k	ODU order <i>k</i>
OPU	Optical Payload Unit
OPU _k	OPU order <i>k</i>
OTL50.k-RS	group of <i>k</i> Optical Transport Lanes with Reed-Solomon FEC that carry one OTU50
OTN	Optical Transport Network
OTSi	Optical Tributary Signal
OTU	Optical Transport Unit
OTU-RS	Optical Transport Unit with AM/CWM and Reed-Solomon (528,514) ₁₀ or (544,514) ₁₀ FEC (e.g., OTU25-RS, OTU50-RS)
RS	Reed Solomon
UM _x	Unique Marker #x

5 Conventions

Transmission order: The order of transmission of information in all the diagrams in this Recommendation is first from left to right and then from top to bottom. Within each byte the most significant bit is transmitted first. The most significant bit (bit 1) is illustrated at the left in all the diagrams.

Value of reserved bit(s): The value of an overhead bit, which is reserved or reserved for future international standardization, shall be set to "0".