

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.8273.3/Y.1368.3

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

Packet over Transport aspects – Synchronization, quality
and availability targets

**SERIES Y: GLOBAL INFORMATION
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS,
NEXT-GENERATION NETWORKS, INTERNET OF
THINGS AND SMART CITIES**

Internet protocol aspects – Transport

Timing characteristics of telecom transparent clocks

Recommendation ITU-T G.8273.3/Y.1368.3

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

Recommendation ITU-T G.8273.3/Y.1368.3

Timing characteristics of telecom transparent clocks

Summary

Recommendation ITU-T G.8273.3/Y.1368.3 defines the minimum requirements for telecom transparent clocks (T-TCs). These requirements apply under normal environmental conditions specified for the equipment.

This Recommendation includes: clock accuracy, noise generation, noise tolerance, noise transfer, and transient response for T-TCs.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T G.8273.3/Y.1368.3	2017-10-07	15	11.1002/1000/13327

Keywords

PTP, phase and time synchronization, telecom profile, transparent clock.

* 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>.

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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.8273.3/Y.1368.3

Timing characteristics of telecom transparent clocks

1 Scope

This Recommendation specifies minimum requirements for time and phase synchronization devices used in synchronizing network equipment, which operates in the network architecture as defined in [ITU-T G.8271] and [ITU-T G.8275]. It supports time and/or phase synchronization distribution for packet-based networks. The telecom transparent clock (T-TC) must be operating in end-to-end transparent clock (TC) mode.

This Recommendation assumes operation within the framework specified in [ITU-T G.8273], and that the physical layer reference chain behaviors given in [ITU-T G.803] and [ITU-T G.8261] are followed. It is also assumed that the network limits given in [ITU-T G.8271.1] are met and that the profile given in [ITU-T G.8275.1] is applied.

This Recommendation allows for proper network operation when a network equipment clock is timed from another network equipment clock or a higher quality clock.

This Recommendation defines the minimum requirements for transparent clocks. These requirements apply under normal environmental conditions specified for the equipment.

Guidelines for testing are described in Appendix I.

This version of the Recommendation focuses on synchronized T-TCs with frequency reference provided by the physical layer based on ITU-T G.8262 EEC-Option 1 (and ITU-T G.813 SEC-Option 1 as the requirements are identical). ITU-T G.8262 EEC-Option 2 and ITU-T G.813 SEC-Option 2 are for further study. A T-TC without a frequency reference provided by the physical layer is for further study.

NOTE – This Recommendation does not modify the physical layer reference chain behaviour, according to [ITU-T G.803] and [ITU-T G.8261]. This Recommendation does not exclude the use of other physical layer clocks (e.g., ITU-T G.812 Type I) within the frequency transport network. The equipment specification of a T-TC assisted by a physical layer equipment clock, other than ITU-T G.8262 Option 1, such as ITU-T G.812 Type I, is for further study.

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.

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|---------------|---|
| [ITU-T G.703] | Recommendation ITU-T G.703 (2016), <i>Physical/electrical characteristics of hierarchical digital interfaces</i> . |
| [ITU-T G.781] | Recommendation ITU-T G.781 (2017), <i>Synchronization layer functions</i> . |
| [ITU-T G.803] | Recommendation ITU-T G.803 (2000), <i>Architecture of transport networks based on the synchronous digital hierarchy (SDH)</i> . |
| [ITU-T G.810] | Recommendation ITU-T G.810 (1996), <i>Definitions and terminology for synchronization networks</i> . |