International Telecommunication Union

ITU-T G.8273.2/Y.1368.2

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Amendment 1

(01/2015)

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Packet over Transport aspects – Synchronization, quality and availability targets

SERIES Y: GLOBAL INFORMATION INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS AND NEXT-GENERATION NETWORKS

Internet protocol aspects – Transport

Timing characteristics of telecom boundary clocks and telecom time slave clocks

Amendment 1

Recommendation ITU-T G.8273.2/Y.1368.2 (2014) – Amendment 1

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Recommendation ITU-T G.8273.2/Y.1368.2

Timing characteristics of telecom boundary clocks and telecom time slave clocks

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Summary

Amendment 1 to Recommendation ITU-T G.8273.2/Y.1368.2 (2014) introduces the following changes:

- modifies clauses 7.1, 7.1.1 and 7.1.2
- adds clause 7.1.3, *Dynamic time error (dTE_H) high frequency noise generation*
- adds Note 3 to Annex A
- modifies clause C.1.2.2
- adds clause C.2.1.3, *Dynamic time error (dTE_H) high frequency noise generation*.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T G.8273.2/Y.1368.2	2014-05-14	15	11.1002/1000/12196
1.1	ITU-T G.8273.2/Y.1368.2 (2014) Amd. 1	2015-01-13	15	11.1002/1000/12395

* 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

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

Recommendation ITU-T G.8273.2/Y.1368.2

Timing characteristics of telecom boundary clocks and telecom time slave clocks

1) Clause 7

Add the following note after the first paragraph:

NOTE – The 1 PPS input pertains to telecom grand master functions, and it is for further study.

2) Clause 7.1

Change the following note from:

NOTE – The values in Table 1 are valid for 1 PPS, 1 gigabit Ethernet (GbE) and 10 GbE interfaces. Above 10 GbE is for further study.

to:

NOTE – The values in Table 1 are valid for 1 PPS, 1 gigabit Ethernet (GbE) and 10 GbE interfaces. Values for signals above 10 GbE or below 1 GbE are for further study.

3) Clause 7.1.1

Change the following note from:

NOTE – The values in Table 2 are valid for 1 PPS, 1 GbE and 10 GbE interfaces. Above 10 GbE is for further study.

to:

NOTE 1 – The values in Table 2 are valid for 1 PPS, 1 GbE and 10 GbE interfaces. Values for signals above 10 GbE or below 1 GbE are for further study.

4) Clause 7.1.2

i) *Change the title of clause 7.1.2 from:*

Dynamic time error noise generation

to:

Dynamic time error low-pass filtered noise generation (dTE_L)

ii) *Add the following note after Table 7-4:*

NOTE – Guidelines for variable temperature testing are described in Appendix I of [ITU-T G.8273].

5) Clause 7.1.3

Add clause 7.1.3 after clause 7.1.2 as follows:

7.1.3 Dynamic time error high-pass filtered noise generation (dTE_H)

For a T-BC Class A or Class B containing an EEC-Option 1 clock, and operating in a locked mode synchronized to both a noise-free time reference at the PTP input, and a noise-free frequency reference at the SyncE/SDH input, the peak-to-peak time error at the T-BC output interfaces, measured over a 1 000 second measurement interval, with a first-order high-pass filter of 0.1 Hz must be less than 70 ns.

NOTE – The value of 70 ns is a conservative limit based on the SEC/EEC noise generation specification. This is based on the assumption that most of this noise is generated by the high-pass filtered noise of the SEC/EEC oscillator. It is expected that implementations based on better clocks can result in significantly lower values. It is not intended and not assumed that the component of the high-pass filtered noise due to timestamp granularity is a major portion of the 70 ns.

6) Annex A

Add Note 3 after Note 2 in Annex A as follows:

NOTE 3 – T-BC functional model is also applicable to the T-TSC, except for the PTP master side (the T-TSC functional model includes the 1PPS and ToD interface).

7) Annex C.2.1.2

Change the title of clause C.2.1.2 from:

Dynamic time error noise generation

to:

Dynamic time error low-pass filtered noise generation (dTE_L)

8) Annex C.2.1.3

Add clause C.2.1.3 after clause C.2.1.2 as follows:

C.2.1.3 Dynamic time error high-pass filtered noise generation (dTE_H)

For a T-TSC containing an EEC-Option 1 clock, and operating in a locked mode synchronized to both a noise-free time reference at the PTP input, and a noise-free frequency reference at the SyncE/SDH input, the peak-to-peak time error at the T-TSC output interfaces, measured over a 1 000 second measurement interval, with a first-order high-pass filter of 0.1 Hz must be less than 70 ns.

NOTE – The value of 70 ns is a conservative limit based on the SEC/EEC noise generation specification. This is based on the assumption that most of this noise is generated by the high-pass filtered noise of the SEC/EEC oscillator. It is expected that implementations based on better clocks can result in significantly lower values. It is not intended and not assumed that the component of the high-pass filtered noise due to timestamp granularity is a major portion of the 70 ns.

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