International Telecommunication Union

ITU-T G.8262/Y.1362

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Amendment 2

(10/2012)

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

Packet over Transport aspects – Quality and availability targets

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

Internet protocol aspects – Transport

Timing characteristics of a synchronous Ethernet equipment slave clock

Amendment 2

Recommendation ITU-T G.8262/Y.1362 (2010) – Amendment 2

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

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

Recommendation ITU-T G.8262/Y.1362

Timing characteristics of a synchronous Ethernet equipment slave clock

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Summary

Amendment 2 to Recommendation ITU-T G.8262/Y1362 (2010) adds a clarification in clause 10.2 and a new Appendix V, "Considerations for measuring noise transfer for EEC-Option 2 clocks".

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.8262/Y.1362	2007-08-13	15
1.1	ITU-T G.8262/Y.1362 (2007) Amd. 1	2008-04-29	15
1.2	ITU-T G.8262/Y.1362 (2007) Amd.2	2010-01-13	15
2.0	ITU-T G.8262/Y.1362	2010-07-29	15
2.1	ITU-T G.8262/Y.1362 (2010) Amd. 1	2012-02-13	15
2.2	ITU-T G.8262/Y.1362 (2010) Amd. 2	2012-10-29	15

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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.8262/Y.1362

Timing characteristics of a synchronous Ethernet equipment slave clock

Amendment 2

1) Clause 10.2, EEC-Option 2

Replace the existing text in clause 10.2 with:

The maximum bandwidth requirement for an EEC is 0.1 Hz. Considerations for measuring conformance to this requirement are provided in Appendix V. There is no requirement for a minimum bandwidth.

Table 13 – Placeholder table

(This table has been intentionally left blank.)

(This figure has been intentionally left blank.)

Figure 11 – Placeholder figure

2) Appendix V

Add Appendix V, "Considerations for measuring noise transfer for EEC-Option 2 clocks".

Appendix V

Considerations for measuring noise transfer for EEC-Option 2 clocks

(This appendix does not form an integral part of this Recommendation.)

The noise transfer of an EEC clock generally behaves as a second-order system. The main parameters that impact wander accumulation in the network are the transfer bandwidth and the allowable gain peaking.

A common method to measure noise transfer for Option 2 networks involves the use of TDEV measurements. Since clock tolerance is measured using a signal that meets the TDEV network limit, measuring the output TDEV will provide an indication of the filtering provided by the clock. Some consideration is needed to accommodate gain peaking. For the EEC-Option 2, the output TDEV is raised by approximately 2% to reflect the appropriate gain.

For example, the output TDEV shall not exceed the mask shown in Figure V.1 when the reference signal is at the noise level given by the TDEV tolerance mask specified in Figure 8 of this Recommendation.

The bandwidth of the clock is approximated by the breakpoint observable at 3 seconds observation time. Details for the approximate relationship between clock bandwidth and TDEV can be found in Appendix I of [ITU-T G.812].

Note, as per [b-ITU-T O.174], additional sources of measurement error may need to be considered if using this methodology to verify the transfer characteristics.

In some cases, traditional methods such as the use of sinusoidal signals applied to the input and measured at the output may be suitable to determine the transfer characteristics of the clock. The specification of these methods is for further study.

The output TDEV noise transfer mask for EEC-Option 2 clocks is given in Table V.1

Table V.1 – Wander transfer for EEC-Option 2 (maximum output wander when input wander meets Table 10)

TDEV limit [ns]	Observation interval τ [s]
10.2	$0.1 < \tau \leq 1.73$
$5.88\ \tau$	$1.73 < \tau \leq 30$
$32.26\ \tau^{0.5}$	$30 < \tau \leq 1000$

The resultant TDEV is shown in the mask of Figure V.1.

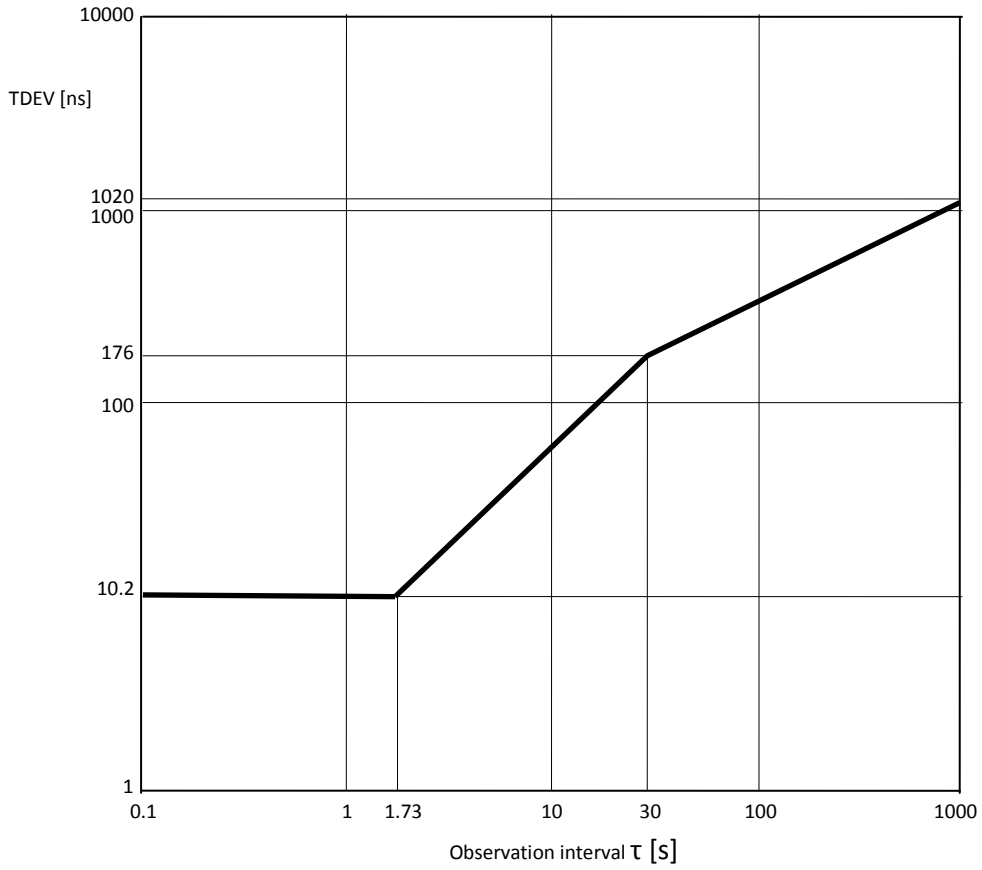

Figure V.1 – Output TDEV noise transfer mask for EEC-Option 2 clocks

NOTE – The values of this transfer mask are 2% higher than the mask found in Figure 8 of this Recommendation in the passband.

3) Bibliography

Add the following Bibliography after Appendix V.

Bibliography

[b-ITU-T O.174] Recommendation ITU-T O.174 (2009), *Jitter and wander measuring equipment for digital systems which are based on synchronous Ethernet technology*.

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