International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.113

Amendment 2

(05/2019)

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

International telephone connections and circuits – General Recommendations on the transmission quality for an entire international telephone connection

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Transmission impairments due to speech processing

Amendment 2: New Appendix V – Provisional planning values for the fullband equipment impairment factor and the fullband packet loss robustness factor

Recommendation ITU-T G.113 (2007) – Amendment 2

International Telecommunication Union

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Transmission impairments due to speech processing

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New Appendix V – Provisional planning values for the fullband equipment impairment factor and the fullband packet loss robustness factor

Summary

Amendment 2 to Recommendation ITU-T G.113 adds Appendix V with up-to-date information on available values of fullband equipment impairment factors and packet loss robustness factors.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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2.0	ITU-T G.113	1976-10-08		11.1002/1000/9899
3.0	ITU-T G.113	1980-11-21		11.1002/1000/7639
4.0	ITU-T G.113	1984-10-19		11.1002/1000/3527
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5.2	ITU-T G.113 App. I	1999-09-30	12	11.1002/1000/4835
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6.1	ITU-T G.113 App. I	2001-10-26	12	11.1002/1000/6094
6.2	ITU-T G.113 App. I	2002-05-31	12	11.1002/1000/6097
7.0	ITU-T G.113	1996-02-06	12	11.1002/1000/3303
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8.3	ITU-T G.113 (2001) Amd. 1	2006-06-13	12	11.1002/1000/8866
8.4	ITU-T G.113 (2001) Amd. 2	2007-01-25	12	11.1002/1000/9070
9.0	ITU-T G.113	2007-11-13	12	11.1002/1000/9273
9.1	ITU-T G.113 (2007) Amd. 1	2009-03-19	12	11.1002/1000/9726
9.2	ITU-T G.113 (2007) Amd. 2	2019-05-16	12	11.1002/1000/13923

* 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.113

Transmission impairments due to speech processing

Amendment 2

New Appendix V – Provisional planning values for the fullband equipment impairment factor and the fullband packet loss robustness factor

1) Appendix V

Include new Appendix V as follows:

Appendix V

Provisional planning values for the fullband equipment impairment factor and the fullband packet loss robustness factor

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

This appendix provides up-to-date information on available values of fullband equipment impairment factors, *Ie,fb,* and packet loss robustness factors, *Bpl, fb*. It is intended to be updated regularly. These values are to be used on an extended transmission rating scale (*R*-scale) as it is defined in [b-ITU-T G.107.2].

See Table V.1 for the information on the fullband equipment factor, and Table V.2 for the information on the fullband packet loss robustness factor.

Table V.1 – Provisional planning values for the fullband equipment impairment factor, *Ie,fb,* for fullband codecs when a diotic sound presentation is assumed

Codec type	Reference	Operating rate [kbit/s]	*Ie,fb* value (diotic)
ACELP / MDCT	EVS (SWB mode) [1]	48	10.2
		32	8.7
		24.4	7.2
		16.4	10.8
		13.2	17.1
		9.6	22.7

Provisional planning values for the fullband equipment impairment factor, *Ie,fb*, for wideband codecs (downward-compatible to the wideband E-model) can be derived based on the extension of the *R*-scale by the following procedure.

Ie,fb values for WB codecs correspond to the sum of the *Ie* value defined for the WB case and the difference between the FB and the WB "direct" channel, the latter having a position of 129 on the *R*-scale:

$$Ie,fb = \sum_{codecs} Ie.wb + (148 - 129) = \sum_{codecs} Ie,wb + 19$$

Table V.2 – Provisional planning values for the fullband packet loss robustness factor, *Bpl, fb*, for fullband codecs when a diotic sound presentation is assumed

Codec type	Reference	Operating rate [kbit/s]	*Ie,fb* value (diotic)	*Bpl,fb* value (diotic)
ACELP/ MDCT	EVS (SWB mode) [b-3GPP TS 26.445]	48	10.2	9.6
		32	8.7	9.3
		24.4	7.2	11.4
		16.4	10.8	10.3
		13.2	17.1	11.7
		9.6	22.7	13

2) Bibliography

Add the following references to the Bibliography:

[b-ITU-T G.107.2] Recommendation ITU-T G.107.2 (2019), *Fullband E-model*.

[b-3GPP TS 26.445] 3GPP Spec TS 26.445 (2019), *Codec for Enhanced Voice Services (EVS); Detailed Algorithmic Description*.

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