|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Fond-Rec_e | | **International Telecommunication Union** | | |
|  | |  | | |
| **ITU-T** | **P.862** | |
| TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU | | **Corrigendum 2**  (03/2018) |
|  | SERIES P: TELEPHONE TRANSMISSION QUALITY, TELEPHONE INSTALLATIONS, LOCAL LINE NETWORKS  Methods for objective and subjective assessment of speech and video quality | | | |
|  | Perceptual evaluation of speech quality (PESQ): An objective method for end-to-end speech quality assessment of narrow-band telephone networks and speech codecs  **Corrigendum 2** | | | |
|  | Recommendation ITU‑T P.862 (2001)  – Corrigendum 2 | | | |



ITU-T P-SERIES RECOMMENDATIONS

**TELEPHONE TRANSMISSION QUALITY, TELEPHONE INSTALLATIONS, LOCAL LINE NETWORKS**

|  |  |
| --- | --- |
|  |  |
| Vocabulary and effects of transmission parameters on customer opinion of transmission quality | Series P.10 |
| Voice terminal characteristics | Series P.30 |
|  | P.300 |
| Reference systems | Series P.40 |
| Objective measuring apparatus | Series P.50 |
|  | P.500 |
| Objective electro-acoustical measurements | Series P.60 |
| Measurements related to speech loudness | Series P.70 |
| Methods for objective and subjective assessment of speech quality | Series P.80 |
| **Methods for objective and subjective assessment of speech and video quality** | **Series P.800** |
| Audiovisual quality in multimedia services | Series P.900 |
| Transmission performance and QoS aspects of IP end-points | Series P.1000 |
| Communications involving vehicles | Series P.1100 |
| Models and tools for quality assessment of streamed media | Series P.1200 |
| Telemeeting assessment | Series P.1300 |
| Statistical analysis, evaluation and reporting guidelines of quality measurements | Series P.1400 |
| Methods for objective and subjective assessment of quality of services other than speech and video | Series P.1500 |
|  |  |

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

|  |
| --- |
| Recommendation ITU-T P.862  Perceptual evaluation of speech quality (PESQ): An objective method for end-to-end speech quality assessment of narrow-band  telephone networks and speech codecs  Corrigendum 2 |

|  |
| --- |
| Summary  Corrigendum 2 to ITU-T P.862 addresses ITU-T P.862.2 systematic under-prediction of subjective scores. The under-prediction, 0.8 MOS on average, is due to the audio signals being exposed at an incorrect level to the loudness model. The issue leads to degradations being exaggerated and producing lower scores than expected.  This corrigendum includes an electronic attachment with the updated conformance test file for ITU‑T P.862.2. |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| History   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Edition | Recommendation | Approval | Study Group | Unique ID[[1]](#footnote-1)\* | | 1.0 | ITU-T P.862 | 2001-02-23 | 12 | [11.1002/1000/5374](http://handle.itu.int/11.1002/1000/5374) | | 1.1 | ITU-T P.862 (2001) Amd. 1 | 2003-03-16 | 12 | [11.1002/1000/6258](http://handle.itu.int/11.1002/1000/6258) | | 1.2 | ITU-T P.862 (2001) Amd. 2 | 2005-11-29 | 12 | [11.1002/1000/8725](http://handle.itu.int/11.1002/1000/8725) | | 1.3 | ITU-T P.862 (2001) Cor. 1 | 2007-10-11 | 12 | [11.1002/1000/9293](http://handle.itu.int/11.1002/1000/9293) | | 1.4 | ITU-T P.862 (2001) Cor. 2 | 2018-03-16 | 12 | [11.1002/1000/13569](http://handle.itu.int/11.1002/1000/13569) | |

|  |
| --- |
|  |

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.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had 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/>.

© ITU 2018

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

Recommendation ITU-T P.862

Perceptual evaluation of speech quality (PESQ): An objective method  
for end‑to-end speech quality assessment of narrow-band   
telephone networks and speech codecs

Corrigendum 2

This Corrigendum addresses [ITU-T P.862.2] systematic under-prediction of subjective scores. The under-prediction, 0.8 MOS on average, is due to the audio signals being exposed at an incorrect level to the loudness model. The issue leads to degradations being exaggerated and producing lower scores than expected.

The [ITU-T P.862.2] reference implementation provided in Annex A should be corrected to adjust the signals to a target level of 76 dB (SPL) for wideband assessment:

*pesqmain.c, line 421:*

float WB\_InIIR\_Hsos\_8k[LINIIR] = { 0.251188 \* 2.6657628f, 0.251188 \* -5.3315255f, 0.251188 \* 2.6657628f, -1.8890331f, 0.89487434f };

*pesqmain.c, line 424:*

float WB\_InIIR\_Hsos\_16k[LINIIR] = { 0.251188 \* 2.740826f, 0.251188 \* -5.4816519f, 0.251188 \* 2.740826f, -1.9444777f, 0.94597794f };

The updated conformance test file for ITU-T P.862.2 is included in this corrigendum (suppl23\_wb.txt).

|  |  |
| --- | --- |
| **SERIES OF ITU-T RECOMMENDATIONS** | |
| Series A | Organization of the work of ITU-T |
| Series D | Tariff and accounting principles and international telecommunication/ICT economic and policy issues |
| Series E | Overall network operation, telephone service, service operation and human factors |
| Series F | Non-telephone telecommunication services |
| Series G | Transmission systems and media, digital systems and networks |
| Series H | Audiovisual and multimedia systems |
| Series I | Integrated services digital network |
| Series J | Cable networks and transmission of television, sound programme and other multimedia signals |
| Series K | Protection against interference |
| Series L | Environment and ICTs, climate change, e-waste, energy efficiency; construction, installation and protection of cables and other elements of outside plant |
| Series M | Telecommunication management, including TMN and network maintenance |
| Series N | Maintenance: international sound programme and television transmission circuits |
| Series O | Specifications of measuring equipment |
| **Series P** | **Telephone transmission quality, telephone installations, local line networks** |
| Series Q | Switching and signalling, and associated measurements and tests |
| Series R | Telegraph transmission |
| Series S | Telegraph services terminal equipment |
| Series T | Terminals for telematic services |
| Series U | Telegraph switching |
| Series V | Data communication over the telephone network |
| Series X | Data networks, open system communications and security |
| Series Y | Global information infrastructure, Internet protocol aspects, next-generation networks, Internet of Things and smart cities |
| Series Z | Languages and general software aspects for telecommunication systems |

1. \* 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>. [↑](#footnote-ref-1)