INTERNATIONAL TELECOMMUNICATION UNION

ITU-T P.800.1

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TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

SERIES P: TELEPHONE TRANSMISSION QUALITY, TELEPHONE INSTALLATIONS, LOCAL LINE NETWORKS

Methods for objective and subjective assessment of quality

Mean Opinion Score (MOS) terminology

ITU-T Recommendation P.800.1

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ITU-T Recommendation P.800.1

Mean Opinion Score (MOS) terminology

Summary

This Recommendation provides a terminology which shall be used in conjunction with speech quality expressions in terms of Mean Opinion Score (MOS). The new terminology is motivated by the intention to avoid misunderstanding as to whether specific values of MOS are related to listening quality or conversational quality, and whether they originate from subjective tests, from objective models or from network planning models.

Source

ITU-T Recommendation P.800.1 was prepared by ITU-T Study Group 12 (2001-2004) and approved under the WTSA Resolution 1 procedure on 16 March 2003.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. 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.

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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, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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Mean Opinion Score (MOS) terminology

1 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.

[1] ITU-T Recommendation G.100 (2001), *Definitions used in Recommendations on general characteristics of international telephone connections and circuits*.

[2] ITU-T Recommendation G.107 (2003), *The E-model, a computational model for use in transmission planning*.

[3] ITU-T Recommendation G.113 Appendix I (2002), *Provisional planning values for the equipment impairment factor Ie and packet-loss robustness factor Bpl*.

[4] ITU-T Recommendation P.10 (1998), *Vocabulary of terms on telephone transmission quality and telephone sets*.

[5] ITU-T Recommendation P.562 (2000), *Analysis and interpretation of INMD voice-service measurements*.

[6] ITU-T Recommendation P.800 (1996), *Methods for subjective determination of transmission quality*.

[7] ITU-T Recommendation P.830 (1996), *Subjective performance assessment of telephone-band and wideband digital codecs*.

[8] ITU-T Recommendation P.833 (2001), *Methodology for derivation of equipment impairment factors from subjective listening-only tests*.

[9] ITU-T Recommendation P.834 (2002), *Methodology for derivation of equipment impairment factors from instrumental models*.

[10] ITU-T Recommendation P.862 (2001), *Perceptual evaluation of speech quality (PESQ): An objective method for end-to-end speech quality assessment of narrowband telephone networks and speech codecs*.

2 Recommended MOS terminology

The abbreviation MOS (Mean Opinion Score) is defined in ITU-T Rec. P.10 in the following way:

> The mean of opinion scores, i.e., of the values on a predefined scale that subjects assign to their opinion of the performance of the telephone transmission system used either for conversation or for listening to spoken material.

Apart from subjective opinion, the abbreviation MOS is also used for scores that originate from objective models or network planning models. The following identifiers are recommended to be used together with the abbreviation MOS in order to distinguish the area of application, where LQ refers to Listening Quality, CQ refers to Conversational Quality, S refers to Subjective, O refers to Objective, and E refers to Estimated.

	Listening-only	Conversational
Subjective	MOS-LQS	MOS-CQS
Objective	MOS-LQO	MOS-CQO
Estimated	MOS-LQE	MOS-CQE

2.1 MOS related to listening-only situations

These MOS scores are applicable to a listening-only situation. Three different cases have to be distinguished.

2.1.1 MOS-LQS

The score has been collected in a laboratory test by calculating the arithmetic mean value of subjective judgments on a 5-point ACR quality scale, as it is defined in ITU-T Rec. P.800. Subjective tests carried out according to ITU-T Rec. P.830 give results in terms of MOS-LQS.

2.1.2 MOS-LQO

The score is calculated by means of an objective model which aims at predicting the quality for a listening-only test situation. Objective measurements made using the model given in ITU-T Rec. P.862 give results in terms of MOS-LQO.

2.1.3 MOS-LQE

The score is calculated by a network planning model which aims at predicting the quality in a listening-only application situation.

2.2 MOS related to conversational situations

These MOS scores are applicable to a conversational situation. Three different cases have to be distinguished.

2.2.1 MOS-CQS

The score has been collected in a laboratory test by calculating the arithmetic mean value of subjective judgments on a 5-point ACR quality scale, as it is defined in ITU-T Rec. P.800. Subjective conversation tests carried out according to ITU-T Rec. P.800 give results in terms of MOS-CQS.

2.2.2 MOS-CQO

The score is calculated by means of an objective model which aims at predicting the quality for a conversational test situation. Objective measurements made using the model given in ITU-T Rec. P.562 give results in terms of MOS-CQO.

2.2.3 MOS-CQE

The score is calculated by a network planning model which aims at predicting the quality in a conversational application situation. Estimates of conversational quality carried out according to ITU-T Rec. G.107, when transformed to mean opinion score, give results in terms of MOS-CQE.

3 Relationship between some MOS qualifiers

Figure 1 gives an overview of the relation between MOS-LQS, MOS-LQO and MOS-LQE.

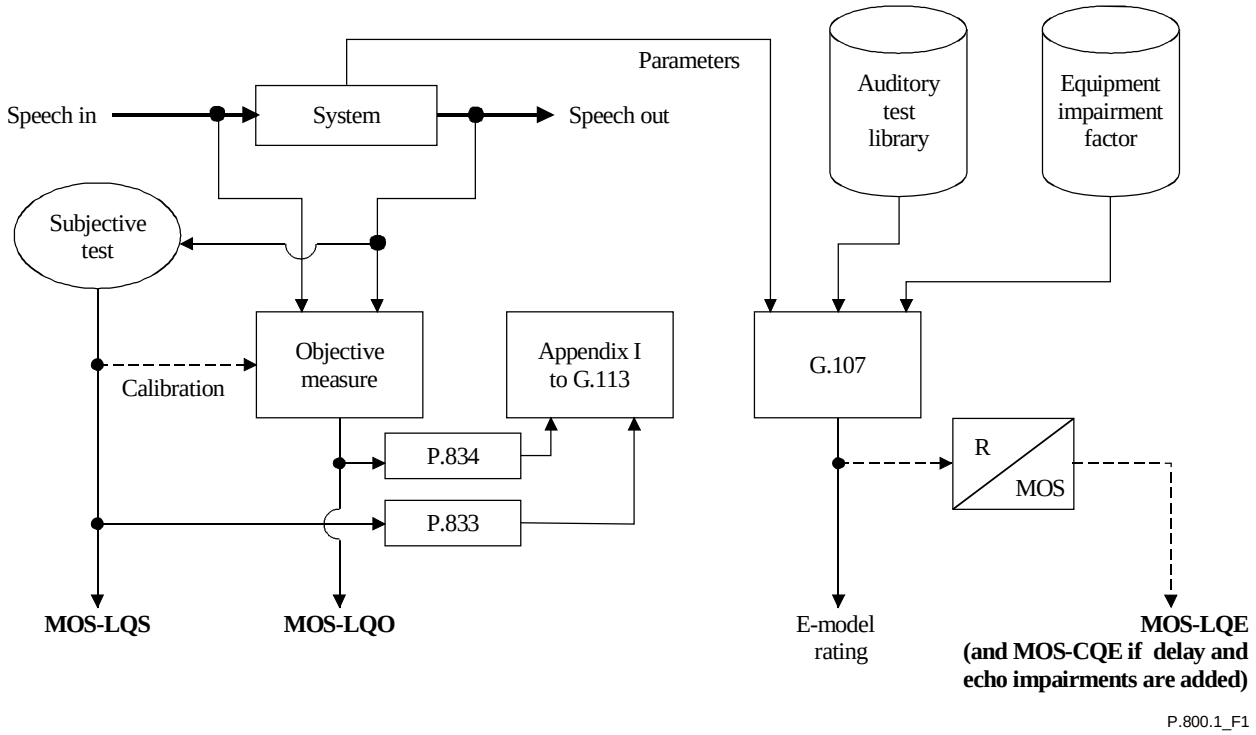

Figure 1/P.800.1 – Relationship between some MOS qualifiers

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