INTERNATIONAL TELECOMMUNICATION UNION

ITU-T P.38

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TELEPHONE TRANSMISSION QUALITY
SUBSCRIBERS' LINES AND SETS

TRANSMISSION CHARACTERISTICS OF OPERATOR TELEPHONE SYSTEMS (OTS)

ITU-T Recommendation P.38

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The 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 Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation P.38 was revised by the ITU-T Study Group XII (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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

TRANSMISSION CHARACTERISTICS OF OPERATOR TELEPHONE SYSTEMS (OTS)

(Melbourne, 1988; amended at Helsinki, 1993)

The measurement methods adopted for measuring on operator telephone systems (OTS) which comprise a headset, feeding circuit and subscriber's line (the same principles can be applied to any system that uses a headset), conform to the methods described in Recommendation P.64 with the following exceptions:

1 Sending sensitivities of OTS

In principle, the OTS is similar to the Local Telephone System (LTS) of Recommendation P.64 with the exception that in a headset the earphone and microphone may not have a fixed relationship as has a conventional telephone handset. Those headsets which are not adjustable in distance from the receiver to the microphone should be positioned per Annex A/P.76. For those which are adjustable, a modal position of the input port of the mouthpiece must be specified by the manufacturer in 3-dimensional coordinates relative to the lip, horizontal and vertical reference planes of the mouth as defined in Recommendation P.51.

This modal position is defined by the manufacturer to be representative of the position of normal usage.

NOTE – The term “corner of the mouth” used by some manufacturers in defining the normal use position is assumed to be 21 mm from the centre 9 mm behind the lip plane. The sound field of the artificial mouth is not defined behind the lip plane and therefore measurement points behind the lip plane are not recommended.

The sending sensitivity is then determined as per clauses 2, 4 and 6/P.64

The sending loudness rating (SLR) is computed as described in Recommendation P.79.

2 Receiving sensitivities of OTS

2.1 For headsets using supra-aural earphones, the Type 1 (see Recommendation P.57) artificial ear is used.

The receiving sensitivity is determined as per clauses 3, 5 and 7/P.64.

The receiving loudness rating (RLR) is computed as described in Recommendation P.79 using the L_E values of Table 4/P.79.

2.2 For headsets using insert type receivers, the Type 2 (see Recommendation P.57) ear simulator is used.

The receiving sensitivity is determined as per clauses 3, 5 and 7/P.64.

2.3 For headsets using intra-concha receivers, Type 3.1 (see Recommendation P.57) Concha bottom simulator is used.

For headsets using low impedance supra-aural and supra-cocha receivers, Type 3.2 (see Recommendation P.57) Simplified pinna simulator is used.

For headsets using supra-concha or supra-aural receivers which, due to their peculiar shape, do not fit the circular rims of Types 3.1 or 3.2 simulators, Type 3.3 Pinna simulator (see Recommendation P.57) is used.

2.4 The receiving sensitivity suitable for use in the calculation of loudness requires:

a) a transfer function (S_{DE}) for the eardrum to the ear reference point (ERP) and is given in Table 1a/P.57; and

b) the $L_{E(I)}$ values of Table 1 appropriate for insert type receivers.

The sensitivity is defined as

$$S_{JE} = S_{Jd} + S_{DE} - L_{E(I)}$$

where

S_{JE} is the sensitivity from the junction to the real ear.

S_{Jd} is the sensitivity from the junction to the type 2 (see Recommendation P.57) ear simulator (eardrum).

$L_{E(I)}$ is the ear coupling loss of insert type receivers (Table 1).

S_{DE} is the transfer function from the eardrum to the ERP (Table 1a/P.57).

The receiving loudness rating (RLR) is computed as described in Recommendation P.79 using S_{JE} from the above formula.

NOTES

1 The L_E values of Table 4/P.79 have been replaced by the values of Table 1.

2 Further information on the measurement of OTS can be found in 3.4 of *Handbook on Telephonometry*.

TABLE 1/P.38

Values of $L_{E(I)}$ for insert type receivers

Frequency (Hz)	$L_{E(I)}$ (dB)
200	23.0
250	19.0
315	18.0
400	17.4
500	12.8
630	9.0
800	6.8
1000	3.2
1250	1.5
1600	1.4
2000	0.4
2500	–1.5
3150	3.0
4000	0.0