INTERNATIONAL TELECOMMUNICATION UNION

# ITU-T G.115

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STANDARDIZATION SECTOR
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## TRANSMISSION SYSTEMS AND MEDIA

## GENERAL CHARACTERISTICS OF INTERNATIONAL TELEPHONE CONNECTIONS AND INTERNATIONAL TELEPHONE CIRCUITS

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# MEAN ACTIVE SPEECH LEVEL FOR ANNOUNCEMENTS AND SPEECH SYNTHESIS SYSTEMS

## ITU-T Recommendation G.115

(Previously “CCITT Recommendation”)

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## FOREWORD

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

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation G.115 was prepared by ITU-T Study Group 12 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 6th of February 1996.

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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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## SUMMARY

This Recommendation contains a recommendation for the mean active speech level to be used for setting the levels of announcement machines and speech synthesis systems in the telephone network. A level of –19 dBm0 is recommended, which presumes that the SLR of the telephones in the network is 8 dB, the long-term target value (referred to a 0 dBr point). If the present SLR in a national network is different, the recommended level can be adjusted, using a formula supplied, to a level consistent with that of live speech in the network. The recommended level is defined at the 0 dBr point, and to measure the level a speech voltmeter conforming to the requirements of Method B speech level meters in Recommendation P.56 should be used.

**Recommendation G.115**

# MEAN ACTIVE SPEECH LEVEL FOR ANNOUNCEMENTS AND SPEECH SYNTHESIS SYSTEMS

*(Geneva, 1996)*

## 1 Introduction

With the deployment of automatic announcement systems and of speech synthesis systems in the telephone network, it is necessary to specify the proper level of the generated speech. The actual speech levels of live speech in the network depend on the send and receive efficiencies of the telephone sets. Recommendation P.310 specifies long-term objectives for the SLR and RLR of digital telephone sets. Different networks have different values of SLR and RLR in their telephones. Thus, the speech levels vary from one network to another. Information on actual speech levels in different networks and for different types of calls, e.g. national and international, is found in [1].

A recommendation on speech levels must take these differences into account. In this Recommendation, a recommended level based on the long-term SLR and RLR objectives is provided. As an option, a formula for adjusting the level to that of a particular network is also provided.

## 2 Recommended level

It is recommended that the mean active speech level generated in announcement machines in the telephone network be set to a nominal output level of –19 dBm0.

This value presumes that the target value for SLR is 8 dB, referred to a 0 dBr point. Together with the target value for RLR of 2 dB, the recommended value of –19 dBm0 will produce an average listening level at the subscriber's end that corresponds to the preferred listening level, as defined in Recommendation P.10.

The recommended speech level also conforms with the existing levels in national networks, if the present SLR values are around 8 dB. If the national transmission plan for the present mixed analogue-digital network states a nominal $SLR_n$ (referred to a 0 dBr point) that differs significantly from 8 dB, an interim value for the level from announcement machines and synthesis systems which conforms better with the present levels in the network may be achieved by a correction for the difference.

The correction, $C = 8 - SLR_n$ dB, is added to the recommended value of –19 dBm0, in order to produce a higher or lower level, depending on the sign of the correction. By this correction, the interim level becomes:

$L_i = -19 + C$ dBm0, which is equivalent to:

$L_i = -11 - SLR_n$ dBm0.

NOTE – For synthetic speech, it should be checked that the level balance between the individual words in an announcement, in particular for digits, is the same as for real speech.

## 3 Measuring method

The active speech level shall be measured in accordance with P.56 Method B. The necessary precision can be obtained for a duration of speech of at least 5 seconds. For longer announcements than 20 seconds, it is recommended that at least 20 seconds of active speech be measured.

Instead of a speech signal, an artificial voice signal according to Recommendation P.50 may be used for setting the level.

## 4 Reference point

The reference point for the recommended speech level is 0 dBr as defined in Recommendation G.121.

## References


[1] ITU-T COM 12-R 9-E (1994), *Report of WP 3/12 meeting* (Geneva, 23-24 February 1994), page 15, Table 1.

[2] ITU-T COM 12-50-E (1995), *Basis for Recommendation G.115 on speech levels*, (Rapporteur Q.17/12).

[3] ITU-T Recommendation P.310 (1996), *Transmission characteristics for telephone band (300-3400 Hz) digital telephones*.

[4] ITU-T Recommendation P.10 (1993), *Vocabulary of terms on telephone transmission quality and telephone sets*.

[5] ITU-T Recommendation P.56 (1993), *Objective measurement of active speech level*.

[6] ITU-T Recommendation P.50 (1993), *Artificial voices.*

[7] ITU-T Recommendation G.121 (1993), *Loudness Ratings (LRs) of national systems*.