



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

J.53

(ex CMTT.606)

(06/90)

TELEVISION AND SOUND TRANSMISSION

**SAMPLING FREQUENCY TO BE USED
FOR THE DIGITAL TRANSMISSION
OF HIGH-QUALITY SOUND-PROGRAMME
SIGNALS**

ITU-T Recommendation J.53

(Formerly Recommendation ITU-R CMTT.606)

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 J.53 (formerly Recommendation ITU-R CMTT.606) was elaborated by the former ITU-R Study Group CMTT. See Note 1 below.

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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector (ITU-R).

Conforming to a joint decision by the World Telecommunication Standardization Conference (Helsinki, March 1993) and the Radiocommunication Assembly (Geneva, November 1993), the ITU-R Study Group CMTT was transferred to ITU-T as Study Group 9, except for the satellite news gathering (SNG) study area which was transferred to ITU-R Study Group 4.

2 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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Recommendation J.53¹⁾

**SAMPLING FREQUENCY TO BE USED FOR THE DIGITAL TRANSMISSION
OF HIGH-QUALITY SOUND-PROGRAMME SIGNALS**

(1982; revised 1990)

The CCIR,

CONSIDERING

- (a) the rapid developments in the use of digital systems for the transmission of high-quality sound signals;
- (b) that, according to subjective tests, limiting the audio frequency band to 15 kHz does not cause any appreciable degradation in subjective quality, even in critical listening conditions;
- (c) that the sampling frequency of 32 kHz is close to the theoretical limit compatible with the nominal passband of 15 kHz;
- (d) that the frequency of 32 kHz is already commonly used in a number of equipments;
- (e) that this frequency is compatible with the bit rates corresponding to the various hierarchical levels defined by the CCITT;
- (f) that the use of a single frequency is calculated to simplify equipment and facilitate exchange,

UNANIMOUSLY RECOMMENDS

that a sampling frequency of 32 kHz shall be used in coding for the digital transmission of high-quality sound channels. The associated tolerance shall be $\pm 5 \times 10^{-5}$ as specified in CCITT Recommendations G.732 and G.733 for primary PCM multiplex equipment, operating at 2048 kbit/s and 1544 kbit/s respectively.

Note – For quality levels of sound programme transmission other than high quality (15 kHz), other sampling frequencies may be preferred. They should always be multiples of 8 kHz.

¹⁾ Formerly Recommendation ITU-R CMTT.606.