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SERIES J: TRANSMISSION OF TELEVISION, SOUND
PROGRAMME AND OTHER MULTIMEDIA SIGNALS

Digital transmission of television signals

**Digital multi-programme systems for television,
sound and data services for cable distribution**

ITU-T Recommendation J.83

(Previously CCITT Recommendation)

ITU-T J-SERIES RECOMMENDATIONS

TRANSMISSION OF TELEVISION, SOUND PROGRAMME AND OTHER MULTIMEDIA SIGNALS

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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 (Geneva, October, 1997).

This second edition of ITU-T Recommendation J.83 was prepared by ITU-T Study Group 9 (1997-2000) and incorporates Amendment 1 and Amendment 2 approved under the WTSC Resolution No. 1 procedure on the 17th of October 1996 and the 22nd of April 1997 respectively.

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 "Digital multi-programme systems for television, sound and data services for cable distribution" covers the definition of the framing structure, channel coding and modulation for digital multi-programme signals for television, sound and data services distributed by cable networks.

This Recommendation has four Annexes (A, B, C and D), that provide the specifications for the four digital television cable systems submitted to the ITU-T. This reflects the fact that standardization of digital cable television systems is being addressed for the first time by the ITU-T and that a number of systems had been developed and provisionally implemented when this standardization effort was undertaken by the ITU.

This Recommendation recommends that those implementing new digital multi-programme services on existing and future cable networks should use one of the systems whose framing structure, channel coding and modulation are specified in Annexes A, B, C and D.

INTRODUCTION

The development of new digital technology is now reaching the point at which it is evident that they enable digital systems to offer significant advantages, in comparison with conventional analogue techniques, in terms of vision and sound quality, spectrum and power efficiency, service flexibility, multimedia convergence and potentially lower equipment costs. Moreover, the use of cable distribution for the delivery of video and audio signals to individual viewers and listeners is continually growing, and has already become the dominant form of distribution in many parts of the world. It is also evident that these potential benefits can best be achieved through the economies of scale resulting from the widespread use of digital systems designed to be easily implementable on existing infrastructure and which take advantage of the many possible synergies with related audiovisual systems.

Administrations and private operators planning the introduction of digital cable television services are encouraged to consider the use of one of the systems described in Annexes A, B, C and D, and to seek opportunities for further convergence, rather than developing a different system based on the same technologies.

This second edition of this Recommendation incorporates Amendment 1 and Amendment 2. These amendments brought the following changes with respect to the first edition of the Recommendation:

- a) In Annex B there is now a specification for 256-QAM;
- b) In Annex B, two distinct operating modes of interleaving capability are specified, called *level 1* and *level 2*. Level 1 is specified for 64-QAM transmission only and this mode already existed in the first edition of Annex B. Level 2 encompasses 64-QAM and 256-QAM transmission, and for both modulation schemes is capable of supporting variable interleaving.
- c) In the first edition of Annex D, 24 bits were identified which determined the VSB mode for the data in the frame and two such modes were defined: 16-VSB Cable and 8-VSB Terrestrial (trellis coded). In this second edition, three other VSB modes are defined, i.e. 2-VSB, 4-VSB and 8-VSB.

Table 1/J.83 has been updated to take account of these extensions. In addition, a new Appendix I containing a short Bibliography has been added.

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