INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

J.2
(03/98)

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

General Recommendations

Guidelines on the use of ITU-T Recommendations in the J series

ITU-T Recommendation J.2

(Previously CCITT Recommendation)

ITU-T J-SERIES RECOMMENDATIONS

TRANSMISSION OF TELEVISION, SOUND PROGRAMME AND OTHER MULTIMEDIA SIGNALS

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ITU-T RECOMMENDATION J.2

GUIDELINES ON THE USE OF ITU-T RECOMMENDATIONS IN THE J SERIES

Summary

This Recommendation offers guidelines on the use of ITU-T Recommendations in the J series.

Each annex to this Recommendation is designed to provide guidelines on the Recommendations in the J series, that apply to a specific technical area.

Annex A applies to Recommendations that cover the transmission of digital television and its supported services; other annexes are under study.

Source

ITU-T Recommendation J.2 was prepared by ITU-T Study Group 9 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 18th of March 1998.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the 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.

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.

INTELLECTUAL PROPERTY RIGHTS

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As of the date of approval of this Recommendation, the 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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Introduction

In view of the large number of Recommendations issued in the J series, a reader may find it difficult to identify those Recommendations in which he is most interested.

This Recommendation and its annexes are intended to provide the reader with a guide to the ITU-T Recommendations in the J series and to point to those Recommendations that he should consult in order to obtain detailed information on the technical aspects of his specific interest.

Annex A covers the transmission of digital television and its supported services; other annexes are under study.

Recommendation J.2

GUIDELINES ON THE USE OF ITU-T RECOMMENDATIONS IN THE J SERIES

(Geneva, 1998)

1 Scope

This Recommendation and its annexes provide a guide to the Recommendations issued by ITU-T Study Group 9 in the J series; Annex A covers the transmission of digital television and its supported services; a new Annex B is in preparation to cover interactivity; other annexes are under study.

2 References

This clause lists the Recommendations in the J series, for which the annexes to this Recommendation provide guidelines; the list gives the number, the month and year of adoption, and the title for each Recommendation.

2.1 Transmission of digital television and its supported services (Annex A)

The transmission of digital television and its supported services is covered in Annex A; the relevant Recommendations are listed below.

Number month/year	Title
J.1 (03/98)	*Terminology for new services in television and sound-programme transmission.*
J.80 (09/93)	*Transmission of component-coded digital television signals for contribution-quality applications at bit rates near 140 Mbit/s.*
J.81 (09/93)	*Transmission of component-coded digital television signals for contribution-quality applications at the third hierarchical level of ITU-T Recommendation G.702.*
J.81 Cor.1 (10/96)	*Transmission of component-coded digital television signals for contribution-quality applications at the third hierarchical level of ITU-T Recommendation G.702.*
J.81 Amd.1 (10/95)	*Appendix II to Annex A to Recommendation J.81 – Guidelines for implementation of a complete television codec.*
J.81 Amd.2 (03/98)	*Appendix IV to Annex A – Results of 34 Mbit/s codec interworking tests (February 1996).*
J.82 (07/96)	*Transport of MPEG-2 constant bit rate television signals in B-ISDN.*
J.83 (04/97)	*Digital multi-programme systems for television, sound and data services for cable distribution.*
J.84 (04/97)	*Distribution of digital multi-programme signals for television, sound and data services through SMATV networks.*
J.85 (06/90)	*Digital television transmission over long distances – General principles.*
J.87 (03/98)	*Use of hybrid cable television links for the secondary distribution of television into the user's premises.*
J.90 (04/97)	*Electronic programme guides for delivery by cable television and similar methods.*
J.91 (08/94)	*Technical methods for ensuring privacy in long-distance international television transmission.*

Number month/year	Title
J.93 (03/98)	*Requirements for conditional access in the secondary distribution of digital television on cable television systems.*
J.94[1] (03/98)	*Service information for digital broadcasting in cable television systems.*
J.131 (03/98)	*Transport of MPEG-2 signals in PDH networks.*
J.132 (03/98)	*Transport of MPEG-2 signals in SDH networks.*
J.140 (03/98)	*Subjective picture quality assessment for digital cable television systems.*
J.150 (03/98)	*Transmission of digital multi-programme signals for television, sound and data services through Multichannel, Multipoint Distribution Systems (MMDS).*

2.2 Other technical areas

Guidelines on the use of Recommendations in the J series that cover other technical areas such as digital sound-programme transmission of interactive services are under study.

3 Terms and definitions

The terms and definitions applicable to this Recommendation are those contained in Recommendation J.1 as well as those contained in the terms and definitions clause of the Recommendations referenced in 2.1 above.

4 Guidelines

The guidelines provided in the annexes to this Recommendation are given as a tool to ease the search for ITU-T Recommendations in the J series relevant to specific technical areas.

Annex A

Guidelines on the use of the Recommendations in the J series applicable to the transmission of digital television and its supported services

The guidelines in this Annex are given as a tool to ease the search for ITU-T Recommendations in the J series, relevant to the area of the transmission of digital television and of its supported services.

A.1 Terminology

Recommendation J.1 "Terminology for new services in television and sound-programme transmission" contains a large number of terms and definitions in the area of sound-programme and television transmission, including many terms related to the transmission of digital television and of its supported services.

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1 Expected to be approved in November 1998.

A.2 Point-to-point digital television transmission for contribution or primary distribution

A.2.1 General principles for digital television transmission

Recommendation J.85 "Digital television transmission over long distances – General principles" provides some very general guidelines on the need to preferably use digital circuits when transmitting digital component video signals, and vice versa.

Those general guidelines are reflected in more recent and more focused Recommendations, and they are normally taken into consideration in current operation.

A.2.2 Digital television transmission at 140 Mbit/s

Recommendation J.80 "Transmission of component-coded digital television signals for contribution-quality applications at bit rates near 140 Mbit/s" provides the specifications for the bit-rate-reduction codec to be used for the transmission of digital video signals for 625-line systems coded in components, according to ITU-R Recommendation BT.601; Recommendation J.80 applies to a transmission data rate close to 140 Mbit/s, a data rate that is normally only used for contribution purposes.

A.2.3 Digital television transmission at 34 or 45 Mbit/s

Recommendation J.81 "Transmission of component-coded digital television signals for contribution-quality applications at the third hierarchical level of ITU-T Recommendation G.702" provides the specifications for the coding and transmission of digital television signals at bit rates of about 34 or 45 Mbit/s, coded in components according to ITU-R Recommendation BT.601.

The Recommendation encompasses the coding algorithms needed for digital picture coding, and the interfaces with the transmission network; it applies to a transmission data rate of about 34 or 45 Mbit/s, these data rates are generally used for contribution and for primary distribution purposes.

The video coding algorithms are based on a hybrid predictive transform scheme incorporating arrangements for variable word-length coding, synchronization and video framing. Provision is made for the transmission of audio and of teletext services to accompany the video and for the application of scrambling for conditional access. Network adaptation is specified to both plesiochronous and synchronous digital hierarchies.

Recommendation J.81 should be studied in conjunction with its Corrigendum 1, and its Amendments 1 and 2; Amendment 1 provides guidelines for the implementation of the complete codec; Amendment 2 describes the results of interworking tests performed on practical codecs.

A.2.4 Digital television transmission in the B-ISDN

Recommendation J.82 "Transport of MPEG-2 constant bit rate television signals in B-ISDN" covers the packetized transport of digital television signals in the broadband-ISDN. In the context of this Recommendation, television signals are digitally encoded and transmitted in compliance with MPEG-2 systems specified in ITU-T Rec. H.222.0 | ISO/IEC 13818-1, at a constant bit rate in the Asynchronous Transfer Mode (ATM), which is the mode used by the B-ISDN.

Other ITU-T Recommendations that apply in this area are those that concern ATM in the I series of Recommendations of the ITU-T.

A.2.5 Transport of MPEG-2 signals in PDH and in SDH networks

Recommendation J.131 "Transport of MPEG-2 signals in PDH networks" provides specifications for the transmission of MPEG-2 transport streams within PDH networks working in conformity with Recommendation G.702 at the hierarchical bit rates of 1544, 2048, 6312, 8448, 34 368, 44 736 or 139 264 kbit/s.

Recommendation J.132 "Transport of MPEG-2 signals in SDH networks" provides specifications for the transmission of MPEG-2 transport streams within SDH networks working in conformity with Recommendation G.707 at the hierarchical bit rates of 155 520 or 51 840 kbit/s.

The equipment considered in the two Recommendations is the "Network Adapter" that performs the adaptation between MPEG-2 transport streams and the interfaces of PDH or respectively SDH networks.

A.2.6 Conditional access for long-distance digital television transmission

Recommendation J.91 "Technical methods for ensuring privacy in long-distance international television transmission" provides common specifications for a conditional access system for long distance international transmission of digital television signals in conformity with Recommendation J.81.

It defines the interfaces and equipment needed to operate the conditional access system and it specifies a transport protocol to carry conditional access messages in a dedicated data channel specified in Recommendation J.81.

Practical implementations are described in the annexes to the Recommendation.

A.3 Secondary distribution of digital television

A.3.1 Digital cable television distribution

Recommendation J.83 "Digital multi-programme systems for television, sound and data services for cable distribution" provides worldwide specifications for the delivery of digital television services over a cable television network.

The Recommendation defines the framing structure, channel coding and modulation for digital multi-programme television, sound and data signals distributed to the audience by cable television networks, possibly in frequency-division multiplex with existing analogue television signals.

A.3.2 Multiplexing analogue and digital signals on the same cable television network

Recommendation J.87 "Use of hybrid cable television links for the secondary distribution of television into the user's premises" specifies the operational rules to be followed in order to facilitate the carriage of both analogue and digital television signals of satisfactory quality on the same coaxial cable delivery system for the secondary distribution of television to the home.

A.3.3 Multichannel Multipoint Distribution Systems (MMDS) for digital television

Recommendation J.150 "Transmission of digital multi-programme signals for television, sound and data services through Multichannel Multipoint Distribution Systems (MMDS)" extends the principles of cable television network architectures to digital MMDS distribution systems which use radio waves at microwave frequencies of the order of several gigahertz.

The Recommendation covers the framing structure, channel coding and modulation for such MMDS systems, used as extensions or alternatives to cable television networks, possibly in frequency division multiplex with existing analogue signals. It follows the basic structure of Recommendation J.83.

A.3.4 Satellite Master Antenna Television (SMATV) distribution

Recommendation J.84 "Distribution of digital multi-programme signals for television, sound and data services through SMATV networks" provides worldwide specifications for the delivery of digital television services over a SMATV network.

The Recommendation defines the framing structure, channel coding and modulation for digital multi-programme television, sound and data signals distributed to the audience by SMATV networks, possibly in frequency-division multiplex with existing analogue television signals. It follows the basic structure of Recommendation J.83.

A.3.5 Conditional access for digital cable television

Recommendation J.93 "Requirements for conditional access in the secondary distribution of digital television on cable television systems" covers the requirements, hardware and command interfaces, policies and procedures appertaining to conditional access for the secondary distribution of digital television and data over cable television systems.

The intent is that the actual conditional access features selected for implementation in a specific cable television system should be based on the system requirements specified in this Recommendation.

A.4 Supported services

A.4.1 Service information for digital cable television

Recommendation J.94[2] "Service information for digital broadcasting in cable television systems" defines the service information data that is distributed by cable television networks as "service specific information" in order to convey the relevant description of the services contained in the MPEG-2 transport stream.

Being highly flexible, the MPEG-2 transport stream can be configured to deliver any desired mix of television, sound and data signals; this mechanism provides some data capacity in the forward channel, which can be used to accommodate the needs of additional services supported by the system, e.g. programme guides. The Recommendation specifies the way in which a description of those supported services can be conveyed to the user in the form of service information data.

A.4.2 Electronic programme guides for cable television

Recommendation J.90 "Electronic programme guides for delivery by cable television and similar methods" specifies requirements to be met when electronic programme guides are delivered to the home by digital cable television and similar distribution methods.

It identifies the various items of information that a properly structured electronic programme guide should provide, and the users' requirement to be met in order to allow the user to easily navigate through the guide.

A.5 Assessment of picture quality

A.5.1 Subjective assessment of picture quality

Recommendation J.140 "Subjective picture quality assessment for digital cable television systems" describes a method for the subjective assessment of picture quality for digital cable television systems.

Recommendation J.140 is based on ITU-R Recommendation BT.500, and it concerns all of the television chain from the signal source to the user's receiver, irrespective of whether the chain may contain satellite links, terrestrial links or cable television links.

The assessment method assumes a home viewing environment and it is made using consumer-grade receivers.

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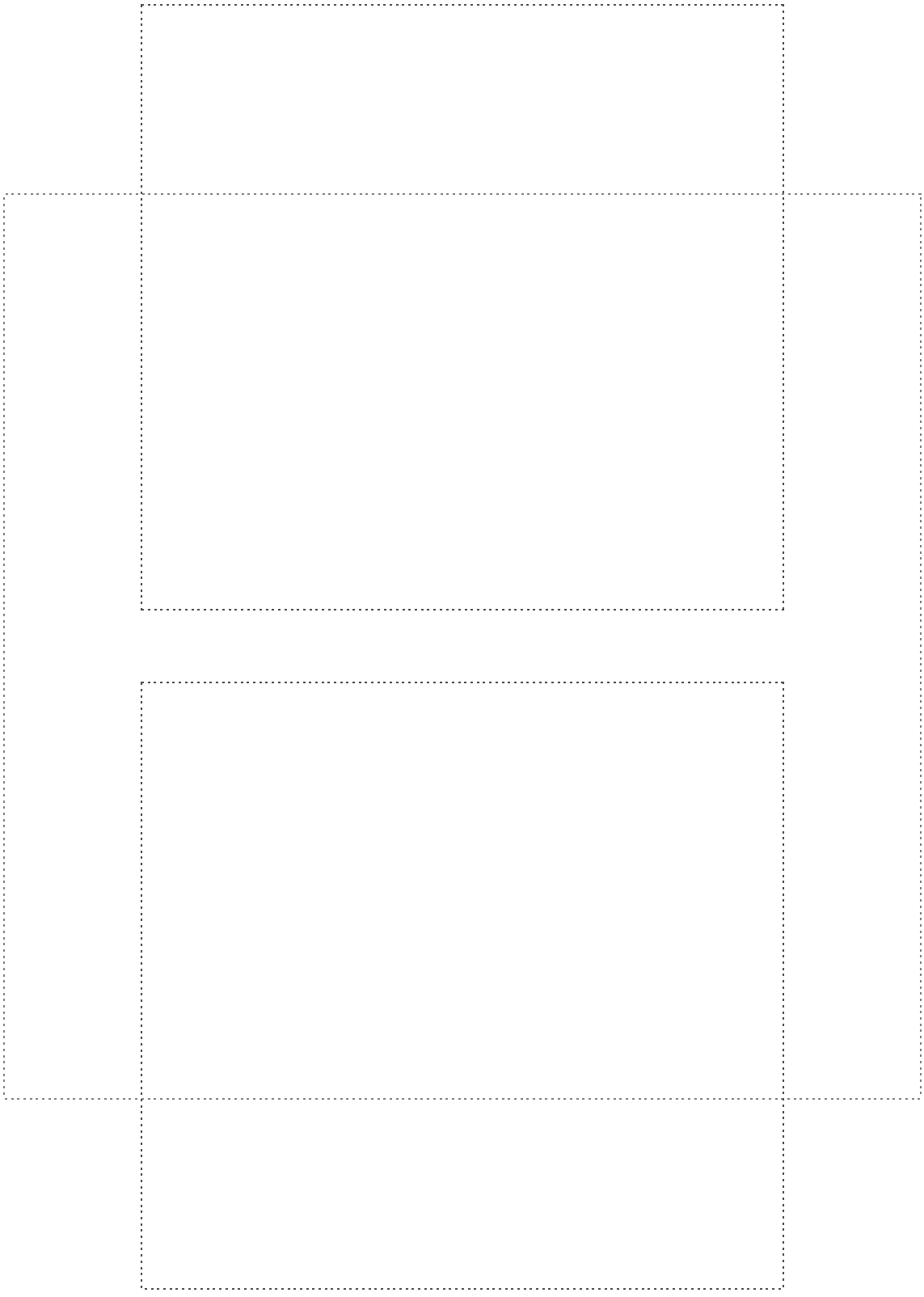
2 Expected to be approved in November 1998.



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