



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.723.1

Annex B
(11/96)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA

Digital transmission systems – Terminal equipments –
Coding of analogue signals by methods other than PCM

Dual rate speech coder for multimedia
communications transmitting at 5.3 and 6.3 kbit/s

**Annex B: Alternative specification based on
floating point arithmetic**

ITU-T Recommendation G.723.1 – Annex B

(Previously CCITT Recommendation)

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For further details, please refer to ITU-T List of Recommendations.

ITU-T RECOMMENDATION G.723.1 – Annex B

ALTERNATIVE SPECIFICATION BASED ON FLOATING POINT ARITHMETIC

Source

Annex B to ITU-T Recommendation G.723.1, was prepared by ITU-T Study Group 15 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 8th of November 1996.

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 (Helsinki, March 1-12, 1993).

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.

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Recommendation G.723.1 – Annex B

ALTERNATIVE SPECIFICATION BASED ON FLOATING POINT ARITHMETIC

(Geneva, 1996)

B.1 Introduction

Recommendation G.723.1 provides a bit-exact, fixed-point specification of a dual rate 6.3 and 5.3 kbit/s speech coder for multimedia telecommunications applications. Exact details of this specification are given in bit-exact, fixed-point C code available from the ITU-T. This Annex describes an alternative implementation of G.723.1 contained in floating point C source code. A set of digital test vectors for this floating point specification is also available from the ITU-T in order to facilitate the implementation of Recommendation G.723.1. Note that passing the test vectors is a necessary but not a sufficient condition to comply with Recommendation G.723.1.

B.2 Algorithm description

The floating point version of G.723.1 has the same algorithmic steps as the fixed-point version. Similarly, the bit stream is identical to that of G.723.1. The reader is referred to clauses 2, 3, 4 and 6 of the main body of Recommendation G.723.1 for details.

B.3 ANSI C code

ANSI C code simulation the dual/rate encoder/decoder in floating point arithmetic is available from the ITU-T. Table B.1 lists all the files included in this code. Individual C function names are the same as in the main body text of Recommendation G.723.1.

TABLE B.1/G.723.1

List of software filenames

File name	Description
TYPDEF2.H	data type definition is machine dependent
CST2.H	definition of constants for Recommendation G.723.1
LBCCODE2.C	main program for G.723.1 speech codecs
LBCCODE2.H	function prototypes
CODER2.C	G.723.1 speech encoder for the two bit rates
CODER2.H	function prototypes
DECOD2.C	G.723.1 speech decoder for the two bit rates
DECOD2.H	function prototypes
LPC2.C	linear predictive analysis
LPC2.H	function prototypes
LSP2.C	line spectral pair related functions, quantizer
LSP2.H	function prototypes
EXC2.C	adaptive and fixed (MP-MLQ, ACELP) excitation
EXC2.H	function prototypes
UTIL2.C	miscellaneous functions (HPF, pack, unpack, I/O ...)
UTIL2.H	function prototypes
TAB2.C	tables of constants
TAB2.H	external declaration for constant tables

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- Series C General telecommunication statistics
- Series D General tariff principles
- Series E Telephone network and ISDN
- Series F Non-telephone telecommunication services
- Series G Transmission systems and media**
- Series H Transmission of non-telephone signals
- Series I Integrated services digital network
- Series J Transmission of sound-programme and television signals
- Series K Protection against interference
- Series L Construction, installation and protection of cables and other elements of outside plant
- Series M Maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
- Series N Maintenance: international sound-programme and television transmission circuits
- Series O Specifications of measuring equipment
- Series P Telephone transmission quality
- Series Q Switching and signalling
- Series R Telegraph transmission
- Series S Telegraph services terminal equipment
- Series T Terminal equipment and protocols for telematic services
- Series U Telegraph switching
- Series V Data communication over the telephone network
- Series X Data networks and open system communication
- Series Z Programming languages