Annex E
Patents

(This annex does not form an integral part of this Recommendation | International Standard)

E.1 Introductory remarks

The user's attention is called to the possibility that compliance with this Specification may require use of an invention covered by patent rights.

By publication of this Specification, no position is taken with respect to the validity of the claim or of any patent rights in connection therewith. However, for each patent listed in this Annex, the patent holder has filed with the ISO/IEC Information Technology Task Force (ITTF) and the Telecommunication Standardization Bureau (TSB) a statement of willingness to grant a license under these rights on reasonable and non-discriminatory terms and conditions to applications desiring to obtain such a license.

The criteria for including patents in this annex are:

1) The patent has been identified by someone who is familiar with the technical fields relevant to this Specification, and who believes use of the invention covered by the patent is required for implementation of one or more of the coding processes specified.

2) The patent holder has filed a letter with the ITTF and the TSB stating willingness to grant a license to an unlimited number of applicants throughout the world under reasonable terms and conditions that are demonstrably free of any unfair discrimination.

During maintenance of this Specification, the list of patents shall be updated, if necessary, upon any revisions to the Recommendation | International Standard.

E.2 List of patents

Only patents in the home countries of the patent-holding corporations are listed. In many cases foreign filings have been made.

1) IBM, *A method and means for pipeline decoding of the high to low order pairwise combined digits of a decodable set of relatively shifted finite number of strings*, US 4 295 125, Oct. 13, 1981.

2) IBM, *A method and means for carry-over control in a high order to low order combining of digits of a decodable set of relatively shifted finite number strings*, US 4 463 342, July 31, 1984.

3) IBM, *High-speed arithmetic compression using concurrent value updating*, US 4 467 317, August 21, 1984.

4) IBM, *Method and means for arithmetic coding using a reduced number of operations*, US 4 286 256, August 25, 1981.

5) IBM, *A multiplication-free multi-alphabet arithmetic code*, US 4 652 856, Feb. 4, 1986.

6) IBM, *Symmetrical adaptive data compression/decompression system*, US 4 633 490, Dec. 30, 1986.

7) IBM, *Arithmetic coding data compression/de compression by selectively employed, diverse arithmetic encoders and decoders*, US 4 891 643, January 2, 1990.

8) IBM, *System for compression bi-level data*, US 4 901 363, February 13, 1990.

9) IBM, *Arithmetic coding encoder and decoder system*, US 4 905 297, February 27, 1990.

10) IBM, *Probability adaptation for arithmetic coders*, US 4 935 882, June 19, 1990.

11) IBM, *Probability adaptation for arithmetic coders*, US 5 099 440, March 24, 1992.

12) IBM, *Method and apparatus for processing pel signals of an image*, US 4 982 292, January 1, 1991.

13) AT&T, *Progressive transmission of high resolution two-tone facsimile images*, US 4 870 497, September 26, 1989.

14) AT&T, *Edge decomposition for the transmission of high resolution facsimile images*, US 4 873 577, October 10, 1989.

15) AT&T, *Adaptive probability estimator for entropy encoder/decoder*, US 5 025 258, June 18, 1991.

16) AT&T, *Efficient encoding/decoding in the decomposition and recomposition of a high resolution image utilizing its low resolution replica*, US 4 979 049, December 18, 1990.

17) AT&T, *Efficient encoding/decoding in the decomposition and recomposition of a high resolution image utilizing pixel clusters*, US 5 031 053, July 9, 1991.

18) AT&T, *Entropy encoder/decoder including a context extractor*, US 5 023 611, June 11, 1991.

19) AT&T, *Method and apparatus for carry-over control in arithmetic entropy coding*, US 4 973 961, November 27, 1990.

20) KDD, *Methods for reduced-sized images*, Japan Application No. 63-212 432, pending in Japan.

21) KDD, *Image reduction system*, Japan Application No. 1-167 033, joint with Canon, pending in Japan.

22) Mitsubishi, *Facsimile encoding communication system*, Japan 1 251 403, July 6, 1984.

23) Mitsubishi, *Encoding method*, pending in Japan.

24) Canon, *Image reduction system*, Japan Application No. 1-167 033, joint with KDD, pending in Japan.

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