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No. 355 H2

H264-46

ITU	**ISO**	**IEC**
International Telecommunication Union Telecommunication Standardization Sector	International Organization for Standardization	International Electrotechnical Commission

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Patent Holder/Organization:	
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**ITU-T Recommandation	ISO/IEC International Standard:**	
Number	Rec H.264
Title	**Joint Video Specification (ITU-T Rec. H.264 | ISO/IEC 14496-10 AVC)**

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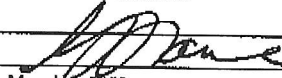
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Signature

Organization	IBM Corporation
Name of authorized person	Gerald T. Lane
Title of authorized person	Director of Standards
Signature	
Place, Date	March 3, 2003

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Patent Information (desired but not required)

The US patents, identified in Table 1, in IBM's evaluation, appear to be relevant, may be essential, and could be facilitating to the JVT specification as of the "Klagenfurt July 2002 – ISO/IEC FCD 14496 – 10 (WG11 N4920); JVT-D 157" revisions.   (Only the US Patents are listed and there may be corresponding patents in one or more other jurisdictions.)

Table 1: IBM Relevant Patents based on Klagenfurt Specification

Patent Number	Inventors	Title	Assignee	Relevance to JVT
US5099440	William B. Pennebaker Joan L. Mitchell	Probability adaptation for arithmetic coders	IBM	Main Profile – Arithmetic Coder
US4725885	Cesar A. Gonzales Joan L. Mitchell William B. Pennebaker	Adaptive graylevel image compression system	IBM	Baseline/Main Profile
US4633490	Gerald Goertzel Joan L. Mitchell	Symmetrical optimized adaptive data compression/transfer/decompression system	IBM	Main Profile – Arithmetic Coder
US5001559	Cesar A. Gonzales Thomas McCarthy	Transform coding using coefficient prediction techniques	IBM	Baseline/Main Profile
US4749983	Glen G. Langdon, Jr.	Compression of multilevel signals	IBM	Main Profile – Arithmetic Coder

The US patents identified in Table 2, in IBM's evaluation, are in the general area of the JVT Baseline / Main Profiles {Klagenfurt July 2002 – ISO/IEC FCD 14496 – 10 (WG11 N4920); JVT-D 157} and may be applicable to future JVT revisions or support future JVT specification implementations. . (Only the US Patents are listed and there may be corresponding patents in one or more other jurisdictions.)

Table 2: Other IBM Patents

Patent Number	Inventors	Title	Comments
US4933883	William B. Pennebaker Joan L. Mitchell	Probability adaptation for arithmetic coders	
US4905297	Glen G. Langdon, Jr. Joan L. Mitchell William B. Pennebaker Jorma J. Rissanen	Arithmetic coding encoder and decoder system	
US4935882	William B. Pennebaker Joan L. Mitchell	Probability adaptation for arithmetic coders	
US4652856	Kottappuram M. A. Mohiuddin Jorma J. Rissanen	Multiplication-free multi-alphabet arithmetic code	
US4891643	Joan L. Mitchell William B. Pennebaker	Arithmetic coding data compression/de-compression by selectively employed, diverse arithmetic coding encoders and decoders	
US4467317	Glen G. Langdon, Jr. Jorma J. Rissanen	High-speed arithmetic compression coding using concurrent value updating	Expired in US – counterparts may still be in force.
US4463342	Glen G. Langdon, Jr. Jorma J. Rissanen	Method and means for carry-over control in the high order to low order pairwise combining of digits of a decodable set of relatively shifted finite number strings	Expired in US – counterparts may still be in force.
US5859604	Michael John Slattery Joan LaVerne Mitchell	Merged VLSI implementation of hardware optimized Q-Coder and software optimized QM-Coder	
US6091854	Michael John Slattery Joan LaVerne Mitchell	Merged VLSI implementation of hardware optimized Q-Coder and software optimized QM-Coder	
US5384598	Arturo A. Rodriguez Charles T. Rutherfoord Steven M. Hancock Robert F. Kantner, Jr. Mark A. Pietras	System and method for frame differencing video compression and decompression with frame rate scalability	
US5157488	William B. Pennebaker	Adaptive quantization within the JPEG sequential mode	