

### Contents

Page

|         |  |    |
|---------|--|----|
| 0       | Introduction .....                                 | v  |
| 0.1     | Interpretation and use of the requirements .....   | v  |
| 0.2     | Lossy coding .....                                 | ix |
| 1       | Scope .....  | 1  |
| 2       | Normative references .....                         | 1  |
| 3       | Definitions .....                                  | 1  |
| 4       | Symbols and abbreviations .....                    | 3  |
| 4.1     | Abbreviations .....                                | 3  |
| 4.2     | Symbol definitions .....                           | 4  |
| 4.3     | Operator definitions .....                         | 11 |
| 5       | Conventions .....                                  | 11 |
| 5.1     | Typographic conventions .....                      | 11 |
| 5.2     | Binary notation .....                              | 11 |
| 5.3     | Hexadecimal notation .....                         | 11 |
| 5.4     | Integer value syntax .....                         | 11 |
| 5.5     | Array notation and conventions .....               | 12 |
| 5.6     | Image and bitmap conventions .....                 | 12 |
| 6       | Decoding Procedures .....                          | 13 |
| 6.1     | Introduction to decoding procedures .....          | 13 |
| 6.2     | Generic region decoding procedure .....            | 14 |
| 6.3     | Generic Refinement Region Decoding Procedure ..... | 21 |
| 6.4     | Text Region Decoding Procedure .....               | 25 |
| 6.5     | Symbol Dictionary Decoding Procedure .....         | 33 |
| 6.6     | Halftone Region Decoding Procedure .....           | 41 |
| 6.7     | Pattern Dictionary Decoding Procedure .....        | 44 |
| 6.8     | Colour palette decoding procedure .....            | 46 |
| 7       | Control Decoding Procedure .....                   | 47 |
| 7.1     | General description .....                          | 47 |
| 7.2     | Segment header syntax .....                        | 48 |
| 7.3     | Segment types .....                                | 52 |
| 7.4     | Segment syntaxes .....                             | 54 |
| 8       | Page Make-up .....                                 | 82 |
| 8.1     | Decoder model .....                                | 82 |
| 8.2     | Page image composition .....                       | 83 |
| 9       | Encoding procedures (informative) .....            | 85 |
| 10      | Control encoding procedures (informative) .....    | 85 |
| 11      | Page break-up (informative) .....                  | 85 |
| 11.1    | Page break-up architecture .....                   | 86 |
| 11.2    | Page image decomposition .....                     | 86 |
| 11.3    | Multi-page document composition .....              | 88 |
| Annex A | Arithmetic integer decoding procedure .....        | 89 |
| A.1     | General description .....                          | 89 |
| A.2     | Procedure for decoding values (except IAID) .....  | 89 |
| A.3     | The IAID decoding procedure .....                  | 91 |
| Annex B | Huffman table decoding procedure .....             | 93 |
| B.1     | General description .....                          | 93 |
| B.2     | Code table structure .....                         | 93 |
| B.3     | Assigning the prefix codes .....                   | 94 |
| B.4     | Using a Huffman table .....                        | 95 |
| B.5     | Standard Huffman tables .....                      | 96 |

|   |     |
|---|-----|
| Annex C – Gray-scale image decoding procedure.....                              | 103 |
| C.1    General description .....  | 103 |
| C.2    Input parameters.....  | 103 |
| C.3    Return value.....  | 103 |
| C.4    Variables used in decoding .....   | 103 |
| C.5    Decoding the gray-scale image .....                                      | 103 |
| Annex D – File formats .....  | 105 |
| D.1    Sequential organization.....   | 105 |
| D.2    Random-access organization.....  | 105 |
| D.3    Embedded organization .....  | 106 |
| D.4    File header syntax .....   | 106 |
| Annex E – Arithmetic coding .....   | 108 |
| E.1    Binary encoding.....   | 108 |
| E.2    Description of the arithmetic encoder .....                              | 109 |
| E.3    Arithmetic decoding procedure.....                                       | 116 |
| Annex F – Profiles .....  | 124 |
| Annex G – Arithmetic decoding procedure (software conventions).....             | 127 |
| Annex H – Datastream example and test sequence .....                            | 129 |
| H.1    Datastream example.....  | 129 |
| H.2    Test sequence for arithmetic coder .....                                 | 150 |
| Annex I – Patents.....  | 156 |
| I.1    List of patents.....   | 156 |
| I.2    Contact addresses for patent information.....                            | 157 |
| Annex J – Compliant example encoding methods.....                               | 158 |
| J.1    List of JBIG2 encoding components and corresponding algorithms .....     | 158 |
| J.2    Method references.....   | 159 |
| Annex K – Electronic conformance data and sample software .....                 | 161 |
| K.1    Attached electronic data (informative).....                              | 161 |
| K.2    Working environments of the released sample software (informative) ..... | 162 |
| K.3    How to use the sample software (informative) .....                       | 162 |
| Bibliography .....  | 165 |