

ISO/IEC 23634:2022-04 (E)

Information technology - Automatic identification and data capture techniques - JAB Code polychrome bar code symbology specification

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms, definitions, abbreviated terms and symbols	1
3.1	Terms and definitions	1
3.2	Abbreviated terms	2
3.3	Mathematical symbols	3
3.4	Mathematical and logical operations	3
4	Symbol description	4
4.1	Basic characteristics	4
4.2	Summary of additional features	5
4.3	Symbol structure	5
4.3.1	Square primary symbol	5
4.3.2	Rectangle primary symbol	5
4.3.3	Square secondary symbol	5
4.3.4	Rectangle secondary symbol	5
4.3.5	Symbol side size	7
4.3.6	Module dimension	9
4.3.7	Finder pattern	9
4.3.8	Alignment pattern	10
4.3.9	Colour palette	13
4.3.10	Metadata	13
4.3.11	Encoded data	14
4.4	Metadata structure	14
4.4.1	Metadata of a primary symbol	14
4.4.2	Metadata of a secondary symbol	16
4.4.3	Metadata error correction encoding	18
4.4.4	Reserved modules for metadata and colour palette	18
4.5	Symbol Cascading	20
4.5.1	Symbol docking rules	20
4.5.2	Symbol decoding order	20
5	Symbol generation	24
5.1	Encoding procedure overview	24
5.2	Data analysis	25
5.3	Encoding modes	25
5.3.1	Encoding modes and character set	25
5.3.2	Uppercase mode	26
5.3.3	Lowercase mode	27
5.3.4	Numeric mode	28
5.3.5	Punctuation mode	28
5.3.6	Mixed mode	28
5.3.7	Alphanumeric mode	28
5.3.8	Byte mode	29
5.3.9	Extended Channel Interpretation (ECI) mode	29

5.3.10	FNC1 mode	29
5.4	Error correction	29
5.4.1	Error correction levels	29
5.4.2	Error correction parameters	30
5.4.3	Padding Bits	30
5.4.4	Generating the error correction stream	31
5.5	Data interleaving	31
5.6	Metadata module reservation	31
5.7	Data module encoding and placement	32
5.8	Data masking	33
5.8.1	Data masking rules	33
5.8.2	Data mask patterns	33
5.8.3	Evaluation of data masking results	34
5.9	Metadata generation and module placement	34
6	Reference decode algorithm	35
6.1	Decoding procedure overview	35
6.2	Pre-processing image and classifying colours	35
6.3	Locating finder patterns	36
6.4	Locating alignment patterns	41
6.5	Establishing sampling grid and sampling symbol	44
6.6	Decoding metadata and constructing colour palettes	45
6.7	Decoding the data stream	47
6.8	Locating and decoding secondary symbols	48
7	Transmitted Data	49
7.1	General principles	49
7.2	Protocol for FNC1	49
7.3	Protocol for ECIs	49
7.4	Symbology identifier	49
8	JAB-Code symbol quality	50
8.1	Symbol quality evaluation	50
8.2	JAB-Code verification parameter according to ISO/IEC 15415	50
8.2.1	Decode	50
8.2.2	Unused Error Correction	50
8.2.3	Grid non-uniformity	51
8.2.4	Fixed Pattern Damage	51
8.2.5	Symbol contrast, modulation and reflectance margin	53
8.3	JAB-Code colour verification	54
8.3.1	Colour Palette Accuracy	54
8.3.2	Colour Variation in Data Modules	54
	Annex A (informative) User guidelines	56
	Annex B (informative) Error detection and correction	58
	Annex C (normative) Error correction matrix generation for metadata	61
	Annex D (informative) JAB Code symbol encoding example	62
	Annex E (informative) Optimization of bit stream length	64
	Annex F (informative) Interleaving algorithm	66
	Annex G (informative) Guidelines for module colour selection and colour palette construction	67
	Annex H (normative) Symbology identifier	71
	Bibliography	72