

# ISO/IEC 29794-4:2024-09 (E)

## Information technology - Biometric sample quality - Part 4: Finger image data

### Contents

Page

- Foreword..... iv
- Introduction..... v
- 1 Scope..... 1**
- 2 Normative references..... 1**
- 3 Terms and definitions..... 1**
- 4 Abbreviated terms..... 2**
- 5 Conformance..... 2**
- 6 Finger image quality measures..... 3**
  - 6.1 Overview..... 3
    - 6.1.1 General..... 3
    - 6.1.2 Methods for mapping to the desired value range..... 3
    - 6.1.3 Constituent of local quality measures..... 4
    - 6.1.4 Constituent of global quality measures..... 4
    - 6.1.5 Image preprocessing..... 4
    - 6.1.6 Image examples..... 7
  - 6.2 Normative contributive quality components..... 7
    - 6.2.1 General..... 7
    - 6.2.2 Orientation certainty level..... 7
    - 6.2.3 Local clarity..... 9
    - 6.2.4 Frequency domain analysis (FDA)..... 14
    - 6.2.5 Ridge valley uniformity..... 15
    - 6.2.6 Orientation flow..... 17
    - 6.2.7 MU..... 19
    - 6.2.8 MMB..... 19
    - 6.2.9 Minutiae count in finger image..... 19
    - 6.2.10 Minutiae count in centre of mass region..... 20
    - 6.2.11 Minutiae quality based on local image mean..... 20
    - 6.2.12 Minutiae quality based on local orientation certainty level..... 21
    - 6.2.13 Region of interest image mean..... 22
    - 6.2.14 Region of interest orientation map coherence sum..... 24
    - 6.2.15 Region of interest relative orientation map coherence sum..... 25
    - 6.2.16 Quality feature vector composition..... 25
  - 6.3 Non-normative quality measures..... 28
    - 6.3.1 General..... 28
    - 6.3.2 Radial power spectrum..... 29
    - 6.3.3 Gabor filter bank..... 30
  - 6.4 Unified quality score..... 32
    - 6.4.1 Methodology for combining quality components..... 32
    - 6.4.2 Training method..... 32
- 7 Finger image quality block..... 33**
  - 7.1 Binary encoding..... 33
  - 7.2 XML encoding..... 33
  - 7.3 Quality algorithm identifiers..... 33
- Annex A (normative) Conformance test assertions..... 35**
- Annex B (informative) Factors influencing fingerprint image quality..... 57**
- Annex C (informative) Area consideration..... 59**
- Bibliography..... 60**