

**Procedure for obtaining  
Biometric Device Certification  
(Authentication)  
(BDCS(A)-03-02) ISSUE 1**

**STQC - IT Services**

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## **1.0 Purpose**

Purpose of this document is to describe the Procedure for obtaining the certification of Biometric Devices.

## **2.0 Target Audience**

The supplier of authentication devices and the certification body shall follow this procedure for certification.

## **3.0 Certification Context**

Biometric holds out the promise of increased confidence in personal authentication processes compared with traditional password and tokens. This is because of the direct link between the biometric characteristic and the individual. Measuring the quality of biometric sample is a crucial step in the collection process. Quality of sample features (data quality) that can be extracted from digitized sample depend on the image quality. Poor quality biometric image diminishes the matching performance of biometric recognition system result in false matches, false non-matches and increase search time.

To meet the objective of UIDAI, it is required that sufficient degree of assurance is provided that good quality of authentication devices is available to the user agencies. Testing and Certification are means to provide this confidence. This procedure facilitates the execution of Certification Process. This certification is primarily focused on combination on sensor and the extractor. However, the context on the device is not lost during the certification activity covering its reliability, portability and other relevant characteristics. The applicant shall provide the details of both the components (sensor and extractor) in their application

## **4.0 Objectives of Testing and Certification**

The key aim of testing & certification is to ensure that the Device Under Test (DUT) complies with the requirements, relevant standards, specifications including specifications released by UIDAI for UID applications.

The objectives are to verify:

- a) The extent to which requirements prescribed in the relevant UIDAI specifications have been fulfilled.
- b) The extent to which applicable regulations, standards and specifications set out in the applicable Quality specifications are met;

- c) Provide opportunity for Vendors to understand defects/ nonconformance and rectification of the same.
- d) To grant certification and provide assurance to users of devices that the certified product meets UIDAI requirements comprehensively

## **5.0 Scope of Work**

The scope includes testing & certification of the following Devices:

- a) Single Fingerprint Image Scanners for authentication

## **6.0 Procedure**

### *6.1 Pre-requisite for Certification*

- a) Supplier shall understand the Certification and Surveillance requirements, applicable charges etc. before applying to Certification Body (STQC).
- b) Supplier shall prepare a technical construction file (TCF). The clarity in TCF provide confidence to the Certification Body regarding Quality of Device. The requirements of TCF are given in Annex 1.

If supplier is confident regarding meeting the Certification requirement then he can apply to Certification Body (STQC). The contact details are given in the application form.

### *6.2 Step I: Application*

- a) The supplier shall fill the application (BDCS (A)-03-05) and submit it to STQC along with the enclosures (1 copy TCF). Supplier shall submit the application fee as per schedule of charges. Certification Body will evaluate TCF (Technical Construction File) preliminarily and if found satisfactorily Certification Agreement will be signed.
- b) Supplier shall submit three sets of Biometric devices, Test kit for Image Quality along with a copy of TCF to Biometric Device Test Lab BDTL Mohali. They shall fill Service Request Form (SRF) and submit the test charges. BDTL shall inform the client Probable Date of Completion (PDC)

### *6.3 Commencement of Test*

Certification Body (STQC) will inform the Head BDTL to proceed for Testing as per Standard Test Plan. (Annexure-II)

#### Issue of Provisional Certificate

TCF will be evaluated comprehensively and if found meeting the criteria let down in this document (Annexure 1) and satisfactory completion of functional testing certification body will issue the Provisional Certificate.

### *6.4 Test Approach and Methodology*

The following test approach & methodology will be used:

- a) The robustness of the devices will be tested by subjecting these devices to simulated environmental conditions (climatic & durability) such as temperature, humidity, dust, etc, as specified by the requirement, relevant specification document provided by UIDAI.
- b) The output of the biometric devices will be checked for compliance to relevant specification document provided by UIDAI.
- c) The integration of Biometric device with the system will be tested through
  1. Verification of compliance to relevant API standard published by UIDAI.
  2. Carrying out
    - o End to end functional testing using relevant software/ a Test harness.  
Repeat functional testing for consistency of operations.
  3. Quantitative Data Analysis: Carry out periodic field sample collection from vendor devices as per UIDAI procedure for predetermined number of Subjects. Results from the study will provide quantities metrics that will be used to qualify devices. This is a very crucial procedure for ensuring consistency and interoperability. This procedure applied in particular to biometric capture devices.  
Data collection will be done by UIDAI / its representative. STQC will do data analysis.

**In order to verify compliance to** the device specifications and other RFP requirements one or more of the followings will be used:

- Testing may be conducted in the STQC laboratory.
- External test laboratory/ client's test facility may be used to conduct the testing (where test facilities are not available with STQC).
- Compliance may be verified by demonstration(s) of testing using client's test facilities.
- Compliance may be verified based on the test reports &/or certifications obtained by the client (subject to verification of test results on sample basis).

To carry out testing following shall be arranged:

- Test Harness would be provided by UIDAI.
- During certification, complete compliance to authentication specification will be checked including compliance with API, released on UIDAI website.
- For authentication devices, various authentication components may need certification which adheres to relevant specifications published by UIDAI.
- Certification authority has to carry out Statistical and qualitative analysis as per UIDAI guidance.

## 6.5 Inputs Required by STQC:

**Access to the followings information & facilities/ systems to undertake testing of DUT will be required by STQC:**

- UID Requirements – RFP Document, Biometric device specifications, API Documentation
- Device Documentation – Biometric device specifications, Design Document, User/ Operations Manual, SDK Documentation
- Biometric Device to be tested with SDK, software application, database & test samples.
- Test environment for testing of specialized parameters (if required)
- Internal test reports of client
- Arrangement to witness the testing at client's facility, in case the in-house facility for the same is not available with STQC
- Image Quality Test Kit consisting of
  - Image capture device software
  - Analysis software
  - Test target and associated fixtures
  - Support tools and test procedure document

Supplier would need to be directly providing the documentation to STQC and as per the certification needs provide additional information/Test results.

### • **Scope of certification**

The applicant shall refine the scope of certification based on UID specification and requirements, AUA's requirement and other market needs considering the following. Sensor extractor combination is certified for a specified device (Say D) at first. Once this sensor extractor combination is validated for image quality for UID authentication., the certificate can be extended to other form factor devices using exactly the same sensor extractor combination subject to the following conditions being met by the new device for the "intended application" -

- OEM sensor extractor certified by STQC earlier for device D for UID authentication.
- OEM authorization if use of sensor extractor in the proposed device.
- Compliance with other applicable specifications as per the “intended application” –example: portability in case of mobile biometric devices.
- Environmental and robustness specification as per the “intended application” example: (Operating Temp, Humidity, Drop\*, Vibration, IP)
- Functional test as per the “intended application” workflow
- Additional requirements as per the “intended application” (like MicroATM specs for FI)
- Additional certifications for the “intended application” (like PCI for payment terminals).

\*Mainly suitable for mobile handheld devices.

“Intended application”- Financial inclusion, PDS, LPG subsidy, Telecom and so on using UID authentication platform.

STQC/UIDAI has developed a coding schema for sensor extractor combination. This code is passed in the *fdc* attribute of PID block. This code captures sensor technology (such as O- Optical, C –Capacitance, M- Multispectral, L-LES) 1 digit, OEM 2<sup>nd</sup> and 3<sup>rd</sup> digit, Sensor model 4<sup>th</sup> and 5<sup>th</sup> digit, extractor name, 6<sup>th</sup> and 7<sup>th</sup> digit and extractor version, 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> digit.

## 6.6 Testing

Testing activity consist of the following task

- a) Study & Understanding
- b) Test Planning & Preparation
- c) Test Execution
- d) Test Report Preparation

## 6.7 KEY FEATURES OF TESTING:

- STQC shall conduct test for biometric authentication device - “Sensor” output - compliance to the ISO 19794-4 template using UIDAI supplied test harness.
- For assuring quality of sensor image output, the vendor shall
  - submit the PIV compliance certificate. *Or*
  - Manufacturer own facility test report demonstrating compliance with PIV test specifications. *Or*

- Any alternative equivalent of the above with the support of technical rationale which will be reviewed and evaluated by a technical expert committee nominated by a competent authority. *Or*
- Based on the test report generated by Biometric Device Test Laboratory of STQC by testing as per the requirements of ISO 19794-4 Annex “A, if requested by supplier.

The supplier supplied test reports and certificates are acceptable for **Provisional certificate**. For certificate of approval STQC will be carrying out independent testing separately.

- Technically image enhancement for certification is not acceptable. NFIQ score (req. of  $\leq 1$  or 2) will be tested using UIDAI supplied test harness. STQC shall conduct the test on number of subjects (for all ten fingers). The test subjects shall have at least one finger with NFIQ score reported/observed to be with value numeric one.
- STQC shall conduct test for biometric authentication device - “Extractor” output -compliance to the ISO 19794-2 template. UIDAI provides this feature in the Test Harness to be provided to STQC.
- To check the quality of biometric authentication device extractor, the following test shall be conducted:

First of all only those subject samples shall be considered fit for test whose number of minutiae extracted by using the backend extractor shall be at least 16. These successful test samples shall be used with the supplier devices (DUT) & the extractor shall pass the test if it is able to extract at least 12 minutiae points. This should not include false minutiae which can adversely affect template quality.

(As per the ISO 19794-2, for authentication at least 12 minutiae points must match).

This feature is part of the test harness supplied to STQC.

- In order to meet the objective of UID Authentication Service where the residents get a usable & reliable service, the supplier device (sensor+ extractor combination) should be compatible with the backend of UIDAI & shall be able to deliver an FRR of 2% for an FAR of 0.01% & the threshold value fixed by the UIDAI.
- UIDAI shall expose a “test service” (similar to their backend in terms of extractor and matcher algorithms used), access to which shall be provided to the suppliers of biometric authentication devices on registration. The suppliers are expected to conduct testing on at least 1500 samples (residents) to gain the confidence that their sensor + extractor combination is compatible with the UIDAI backend & shall be able to deliver the desired FRR of 2%. This test may take quite some time & cannot be completed in a short duration expected for provisional certification. Thus the provisional certificate shall be granted if the above conditions get satisfied along-with the system related control checkpoints viz. ISO 9001 of Manufacturer & Supplier, RoHS undertaking,



Manufacturer authorization of supplier etc. The supplier is expected to provide a report for compliance to this requirement within 3 months, in order to maintain his provisional certification.

**6.8** BDTL will execute the testing as per Test Plan. In case of any non-compliance/failure BDTL shall inform to the supplier and stop the testing. The supplier should analyze the results and take corrective action, both at device level and at System Level. (If corrections are required at Manufacture level/Principal Level, supplier shall co-ordinate and inform to CB. The testing can be re-started if CB is satisfied with the analysis and corrective actions are satisfactory. CB and BDTL will decide whether to start test from zero level or partial testing is adequate depending on the situation and engineering analysis of the test data. This should be recorded and presented to CC at the time of Certification.

The supplier shall maintain analysis and corrective actions records which will be audited during surveillance visit.

After completion of the tests BDTL shall prepare the Test report in approved format and forward the detail test report to CB

### **6.9 Certification**

Certification body will internally check the compliance with respect to Rules and Procedures of the scheme and put up to Certification Committee after

- a) Analyzing the test results
- b) Verifying compliance to evaluation Criteria

Certification Committee will review the reports and other information holistically, and give its recommendation for Certification. Certification Committee can use a reference Checklist

### **6.10 Deliverables**

On satisfactory completing all above activities and fulfillment of certification & Evaluation Criteria, CB will issue the final invoice and after receipt of payment issue the certificate along with the test report.

To ensure Certification remains valid. The supplier shall ensure be meets the maintenance of Certification Requirements BDCS(A)-03-11 Procedure for maintenance of approval (Authentication)

BDTL is responsible for storage and maintenance of the devices and other customer supplier products (Test fixture, supplied Test Methods, Software, and Documentation etc.).

#### **7.0 Test and Certification Schedule:**

- It will take about 4-6 weeks to complete the testing and certification after required inputs have been provided by the client to STQC.
- The charges for testing and certification per Biometric Device will be as per the schedule of charges.
- The service tax @ 10.30% (or as applicable) shall be extra.

#### **8.0 Mode of Payment:**

##### *Application*

- Application and Surveillance Fee are paid in advance through DD/ PO drawn in favor of "Pay & Accounts Officer, DIT, New Delhi"
- The service tax @ 10.30% (or as applicable) shall be extra. The service tax No. is DL-II/ST/TT/CCT/65/ERTL/2004.

##### *Testing*

- Test charges are to be paid in advance through DD/ PO drawn in favour of "Pay & Accounts Officer, DIT, payable at Chandigarh.
- The service tax as applicable. At present the rate is 10.30% shall be extra. The service tax No. is TMPRU 4542CST001 dated 23-04-2004.

#### **9.0 Terms and Conditions:**

- The payments to STQC Directorate (being Government of India organization) are exempted from TDS under section 196 of Income Tax Act.
- The client shall arrange for DUT and support environment at STQC test lab where testing will be undertaken.
- In order to complete the testing, as per schedule, client shall ensure readiness of test related documentation and timely availability of the required information.
- STQC shall ensure timely completion of test activities as per plan and submit the deliverables.
- The schedules & prices given in this proposal are based on the details as mentioned in the RFP & Biometric Design Standards for UID applications.

*(Issue 1 Dated November 2011)*

ABBREVIATIONS:

CB –Certification Body

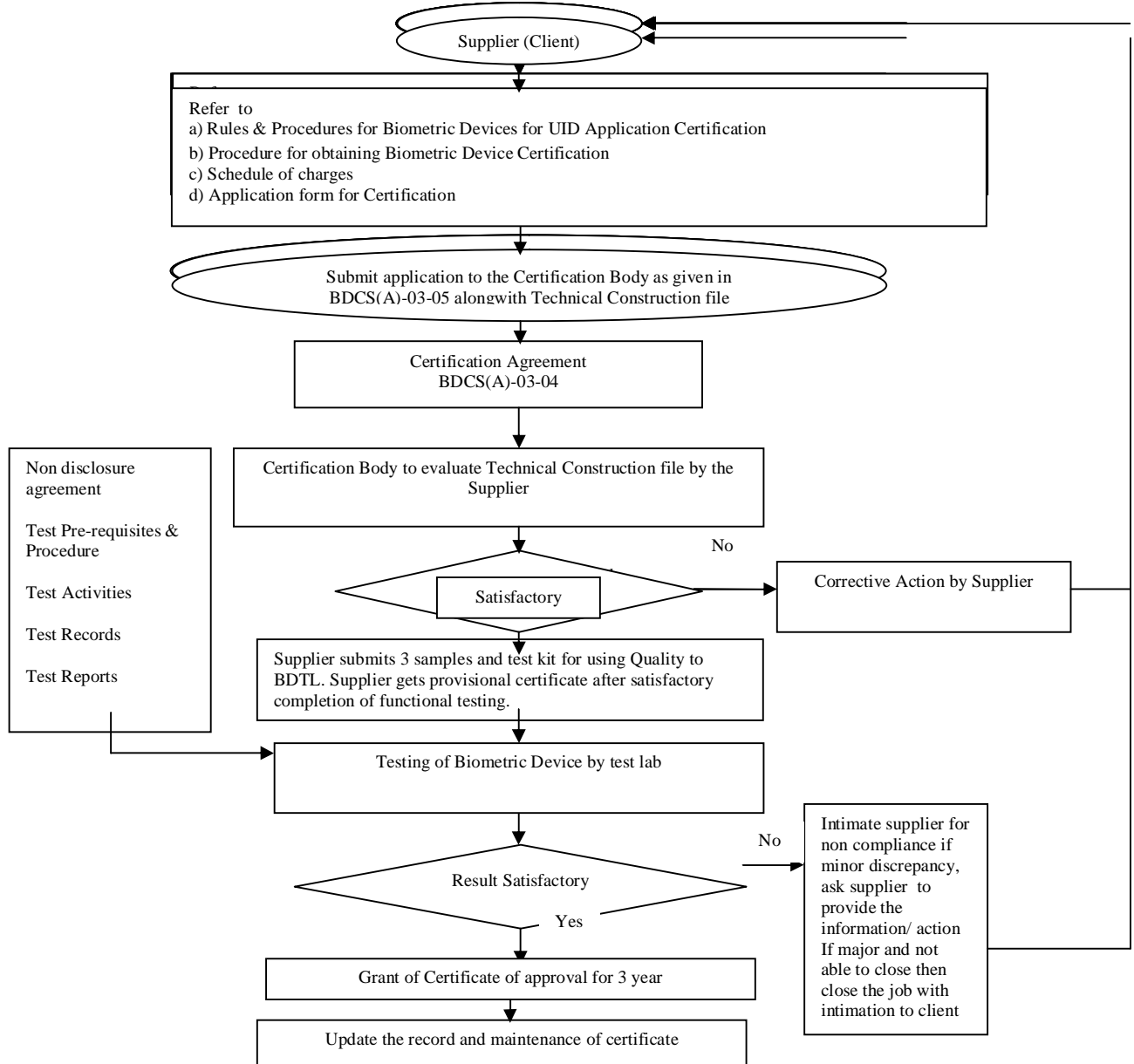
BDTL- Biometric Device Test Lab

RFP- Request for proposal

UIDAI- Unique Identification Authority of India

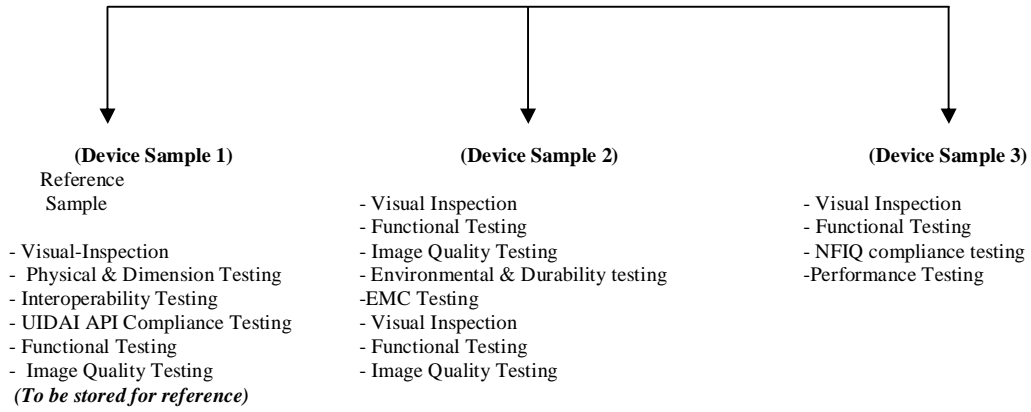
DUT-Device under test

**Certification Process Flow Chart**



## Annexure-II

### Test Plan (Summary)



Total 3 Devices are required

## **Annexure I**

### **Requirements of Technical Construction File (TCF)**

To create confidence in the Device Quality, Supplier shall maintain a technical construction file. This will require close collaborations of supplier with the manufacturer. The confidential part of this file may not be revealed to the Certification Body only summary/principles used of confidential part of the file may be informed to the Certification Body on need base. The general content of the TCF are –

#### **General**

- General description
- Biometrics Device Specification (may be in the form of brochure)
- Quality Control System (with special emphasis on Image Quality)
- List of Applicable Regulations/Standards
- Risk Assessment

#### **Certificates**

- Certificate for ISO 9001:2008 (Certification for Biometric Device Development, Manufacturing and Service (Manufacturer))
- Certificate for ISO 9001:2008(Certification for Biometric Device Supply and Distribution, Training, Maintenance, Calibration and Services (Supplier/Distributor))
- Certificate of Incorporation in India (Supplier)
- PIV Certificate for Image Quality for finger print Scanner
- IECEE-CB Certificate(IEC 60950) for safety, enclosed with CB Test Report from recognized CTL or equivalent dual certification.
- WHQL Certificate for Device Driver along with test report
- Manufacturer authorization to supplier to place devices in Indian market

#### **Declaration of Conformities**

- Declaration to compliance with RoHS and WEEE requirements
- Declaration that supplier has a plan to make provision and comply with the notification of Government of India, Ministry of Environment and Forest regarding collection and disposal of devices/equipment at end of life applicable from May 2012.

#### **Test Report**

- Image Quality, Test Procedure and Test Report
- EMI/EMC compliance test report
- Safety Compliance Test Report
- UIDAI API Specification Compliance Test Report
- Environment/Durability compliance test report

- Performance test report or FAR of UIDAI requirements with technical rationale.

### **Technical Information**

File shall provide the necessary evidence that the design is in accordance with the relevant requirements.

File shall identify the product and its specification consisting of its description in terms of

- Photographs, brochures
- Technical construction drawing
- Schematic diagram
- User manual