Lab Authority Document
[v3.01]

Introduction

Lab authority is one of the departments of VCX-Forum. Its responsibilities encompass:

- Ensuring trust, transparency & repeatability of test results across VCX-Forum labs
- Translating VCX-forum standards to test cases
- coordinating dependencies on equipment, operator skill-set, tolerance & cost with the standards department
- Creation and maintenance of lab processes, guidelines and documentation for all the profiles defined by the standards department
- Re/certification of labs, maintain a list of current labs and labs under notice

This document provides information on:

- The type of labs
- The process of establishing a new lab
- The procedure for lab audit and certification
- Exception handling, lab disqualification and exit criteria

This document further refers to the following documents

- VCX-Forum lab audit request form
- VCX-Forum lab pre-audit questionnaire
- VCX-Forum Auditor's code of conduct
- VCX-Forum lab audit procedure
- VCX-Forum Audit report template
- VCX-Forum Lab Authority Reference devices – Do's and Don'ts

Labs

Types of labs

There are 3 types of labs that are defined

- VCX-Forum In-House Lab abbreviated as **VFIHL**
- VCX-Forum Certified Lab abbreviated as **VFCL**
- VCX-Forum Trusted Lab **VFTL**

	In-house VCX-Forum lab	Certified VCX-Forum lab	Trusted VCX-Forum lab
Issue VCX results under a Non-Disclosure Licence	✖	✓	✓
Issue VCX results under publication licence	✖	✖	✖
Use of VCX-Forum marketing assets	✖	✓	✓
Upgrade to trusted lab	✖	✓	N/A
Publish top level results	✖	✖	✖
Audit other labs	✖	✖	✓
Recertification	Not applicable	Yearly	Not applicable

VCX-Forum in-house lab [VFIHL]

Purpose: to enable any entity (members and non-members) to set up a VCX compliant lab as quickly and easily as possible.

Entry criteria:

- Acquisition of H/W and S/W that comply with VCX regardless of the profile

Exit criteria

- The lab can cease operations without notifying the VCX-forum

A VFIHL

- Which may or may not be a formal member of the VCX-Forum, does not have access to the weighting or metrics hence it cannot determine a benchmarking score
  - A non-member VFIHL can seek assistance from a VFCL/VFTL to convert test results into benchmarking scores. This service may incur a fee which is negotiated between the two labs. However, the results cannot be published.
- Is not allowed to offer VCX-related services to outside its own organisation
- Cannot claim or imply that it is authorised or certified by VCX-Forum
- Must adhere to the principles of the VCX-forum policies, objectives, and trust
- Is not required to be certified or audited by the VCX-Forum, but can choose to be audited for self-improvement purposes
- Cannot receive certification from VCX-Forum
- Can opt to implement single, multiple, or partial profile testing, there are no restrictions on coverage

VCX-Forum Certified Lab [VFCL]

Purpose: to enable chipset vendors, independent labs, and other entities to set up a VCX compliant lab to offer services to their clients and customers under confidentiality clause

Entry criteria:

- Formal member of the VCX-Forum
- An email request to the VCX-Coordinator with the following data
  - Lab name and address
  - Lab lead's name and contact details
  - Profile/s to be certified
- Evidence of acquisition of profile specific H/W, S/W that comply with the latest VCX-Forum standards for all applied profiles
- Staff training and/or evidence of expertise in test execution for the relevant profile/s
- Standards compliance & evidence of ability to independently execute a sub-set/s or full test suite of the latest version of VCX-forum for all the intended profiles

Process

- VCX-Forum will process the Lab-entry form and reply within two calendar weeks with an accepted/rejected notification
- In case of reject notification, the lab can opt to escalate to the VCX-Forum board
- In case of application acceptance notice, the lab is requested to provide the evidence required in the entry criteria and submit to an audit. From this point onwards the lab is noted as Lab-Under-Audit [LUA].
- The audit will be conducted by VCX-Forum at the cost and request of LUA. (More information about the audit process is elaborated elsewhere in this document)
- Upon successful completion of the audit, a certificate is issued. The lab, henceforth can operate as a VFCL

Exit criteria:

- Termination of VCX-Forum membership and/or voluntary closure/termination of the lab
- The lab will be put on notice if fails an annual audit. The lab is then expected to immediately alert its clients about the same. The notice is active for 3 months during which the VFCL under audit
  - Shall abstain from accepting new contracts / activities relating to VCX services or activities
  - Shall abstain from actively marketing / sale of VCX services
  - Shall make every effort to inform its existing customers about the status

- o Could opt to apply for a re-audit after acting upon the improvement opportunities / corrective actions suggested/ stated in the audit report (within 3 months)
- o Could opt and request for termination of VFCL status immediately
- o Could opt to wait for the 3 month's notice period to expire – this will automatically end the VFCL status of the lab

A VFCL

- May offer services to its customers for full or partial VCX testing
- Is allowed to use VCX marketing assets to promote their products and services
- Shall commit to maintaining the trust and transparency with the VCX-Forum and its customers on VCX related matters
- Shall commit to upholding highest standards of quality
- Shall undergo an annual lab audit (from the day of last successful certification) for all the VCX services it offers to its clients and customers, at its own cost
- Shall ensure that hardware, software, and procedures are in line with the latest version of VCX-forum standards for all profiles that are offered as part of
- Shall ensure that the personnel responsible for conducting the VCX testing are adequately trained and continuously update their skills for all the VCX related services that the VFCL has registered for
- Shall abstain from offering its clients and customers services, products for sub-sets of VCX that it has not registered for (as part of the VFCL application)
- Shall abstain from publishing results of testing to the general public or make it available for publishing to other entities
- Shall commit to support and maintain uniformity across labs by continuously & consciously interacting / collaborating with VCX-forum
- Is encouraged to contribute to the Lab authority work-stream
- Is encouraged to actively participate in VFLA activities, including but not limited to meetings / conference calls / workshops etc.
- Is not authorised to conduct VCX audits on other labs
- A VFCL is not authorised to offer nor render VCX services to its customers for sub-sets for which it is not certified. For example, if a VFCL has not been certified for the "Still image – handling" sub-set, then it is not authorised to offer nor render this service to its customers

VCX-Forum Trusted lab [VFTL]

Purpose: A lab equipped with necessary hardware, software and staffed with trained personnel who can carry out the latest version (at the point of re/certification) of the VCX test suite in its entirety for registered profile/s. A VFTL can choose to implement one or many VCX-profiles

Entry criteria:

- Formal member of the VCX-Forum
- Application for VFTL to VCX-Forum using the lab-entry notification form
- Acquisition of profile specific H/W, S/W that comply with the latest VCX-Forum standards
- Staff training and/or evidence of expertise in test execution for the relevant profile/s
- Standards compliance & evidence of ability to independently execute full test suite/s of the latest version of VCX-forum standards for all the intended profiles
- **Is inherently independent**
- Evidence of expertise – there are 3 ways to achieve this criterion
    - Continuous, active and successful operation as a VFCL for at least 2 calendar years with at least 10 successful full-tests (for the applied profile within the tolerance limits specified) conducted during the period
    - Test results for 15 devices (per profile, if applying for more than one) at own cost. The results need to be in sync with the results from an existing VFTL. The test devices will be issued by VCX-Forum
    - Origin-lab. A lab that actively participates and **significantly*** contributes to the development of an upcoming version of the VCX standard for the relevant profile. Demonstrates the skill and experience by showcasing results for the new profile version for at least 5 devices which agrees/matches with the results of an existing VFTL
- Demonstrated excellence in executing the latest full suite of VCX testing for all applicable profiles within the set tolerance limits
- Continuous and active participation in VCX-Forum activities both in the standards and lab-authority departments

*significantly – the decision if the lab had contributed significantly or not is decided by the VCX-Board

Process (Origin labs are exempt from this process)

- VCX-Forum will process the Lab-entry form and reply within two calendar weeks with an accepted/rejected notification
- If the application is rejected, the lab has the option to escalate the matter to the VCX-Forum board
- If application is accepted, the lab is asked to submit the evidence required in the entry criteria and undergo an audit. From this point, the lab is noted as Lab-Under-Audit [LUA].
    - LUA transitioning from a VFCL, provides the results of 10 devices which match the results from the VFTL
    - LUA applying for a VFTL without transitioning from VFCL requests for the 15 devices that it needs to test (at own cost). Once the testing is done, the results are shared with the VFLA and results compared with VFTL's results
- The audit will be conducted by VCX-Forum at the cost and request of LUA. (more information about the audit process itself is elaborated elsewhere in this document)
- Upon successful completion of the audit, a certificate is issued. The lab, henceforth can operate as a VFTL

Exit criteria:

- Termination of VCX-Forum membership and/or voluntary closure/termination of the lab
- A VFTL will be given a notice if the lab fails to honour the VFTLSC
- A VFTL may be stripped of its status by the VCX-forum board for the following [but not limited to] reasons
    - Violation of code of conduct by one / any of its auditors
    - Conflict of interest comes to light
    - Passive/token-participation in VCX-Forum activities
    - Breach of inherently independent clause
    - Failure to maintain highest level of confidentiality and security of VCX related data

A VFTL

- Shall remain inherently independent during its entire course of operation
- Shall participate in VFTLSC as determined by the lab-authority and conform to the expected standard and tolerance limits for all applicable profiles
- Shall uphold highest level and confidentially and security

- Shall take complete responsibility of confidentiality and security of its customer's data, which could be negotiated to a higher level than the VCX-forum demands (primarily applicable to private testing)
- Is authorised to offer VCX testing or VCX training and pre-audit services for all the profiles that the VFTL implements
- Is **NOT** authorised to offer VCX testing or VCX training and pre-audit services for profiles that the VFTL itself doesn't implement
- Is authorised to conduct lab audits and certification on CVFLs & CIVFLs on behalf of VCX-Forum [The audit request is made by VFLA]
- Is **NOT** authorised to conduct lab audits and certification of VCX profiles that the VFTL itself doesn't implement
- Shall maintain the lab that can offer the latest version of the VCX test suite in its entirety (entire profile/s, partial profile implementation capabilities are not valid) at all times. Downtimes are accepted with 3 weeks' notice to VFLA. The maximum downtime acceptable is 3 months. After the downtime the VFTL shall perform a VFTLSC before offering VCX related services again

Common

- If a legal entity wants to set up multiple labs, each lab will have to be certified independently. A lab cannot be geographically fragmented over different cities /towns. Any expectation to this will need to be granted by the VCX-board
- A lab may opt to purchase equipment from vendors or develop its own
- A lab can choose to implement a single profile or multiple profiles simultaneously, provided all the criteria for hardware, software and skill-set requirements are met
- The VFCL and VFTL are free to charge their clients a fee that suits their business needs, circumstances, geographical location etc. There is no obligation to reveal this data (amount of fee charged) to VCX-forum. The monetary guidance is meant as guidance alone.
- A tolerance limit is set for all parameters in the VCX-test suite for each profile; these tolerance limits are applicable to all labs without dilution and/or concession
- The summation of tolerance zones for all VCX-parameters shall not exceed 50% of one final VCX score.

  I.e., the difference between the summations of all negative tolerance vs summations of all positive tolerance shall not exceed 0.05 in the final score.

  Example: 2 labs measure the same device. Lab-A's final test result shows that all their test values fall on the extreme left of the zone (left = when added, reduces the overall VCX score). The Lab-B's test result shows that all their test values fall on the extreme right of the zone (right = when added, increases the

overall VCX score). The difference between these results from the labs should not exceed 0.5 in the final score.

- The Sync-Cycle need not be the same for all parameters. Some sensitive parameters might need to have a higher sync frequency than others; VFLA determines groups of parameters that might need disparate sync frequencies. A full sync-cycle consists of syncing all parameters across the entire test suite
- The severity / details / guidelines of any confidentiality agreement between VFCL/VFTL and their customers are not in the remit, nor purview of the Lab-authority
- A VFCL / VFTL / VFIHL is under no obligation to reveal any details of a private testing to the Lab-Authority or VCX-forum except for calculating the surcharge due, which could be paid cumulatively at the end of a billing period negotiated with VCX-forum
- VFCL/VFTL are required to pay a surcharge for every VCX compliant measurement to the VCX-forum to support future developments of VCX-forum activities. This fee (a percentage of the billing amount or a fixed fee) is determined by the VCX-forum and could be changed at any time by the action of members and final approval by the board. Please refer to the monetary guidance for further information
- A VFCL/VFTL may terminate operating as a lab but may opt to continue as VCX-Forum member

Audit procedure overview

This process is applicable to labs seeking an audit with the clear intention of obtaining a certification as either a VFCL or VFTL. The entry criteria for both types of labs are stated elsewhere in this document.

Labs requesting an audit without the intention of certification by VCX-forum, can negotiate directly with a VFTL of their choice.

1. Lab that intends to be certified, sends a formal audit request to VCX-Forum Lab-Authority by filling and signing the "VCX-Forum Audit request form"
2. VFLA assigns a trusted lab or a certified auditor to conduct the audit, considering various factors including but not limited to
    a. Geographical location of the lab under audit and the trusted lab
    b. Conflict of interest [1] – between the auditing lab/auditor and the lab being audited
    c. Fairness – to avoid a particular VFTL being allocated the majority of the audit requests. This process will be made open to members for scrutiny
3. An audit contract is signed between the auditing VFTL and the lab that intends to be certified. Once the contract is signed the lab that intends to be certified will be referred to as the lab under audit [LUA] [4]
4. In case the auditing entity is a VFTL, an auditor [3] is nominated by the auditing VFTL head/lead. The auditing VFTL head/lead is responsible for all outcomes and actions of the assigned auditor.
5. Depending on the number of profiles to be audited, multiple auditors may be assigned and/or extend the audit duration to accommodate the effort needed to cover the profiles.
6. The auditor ships a couple of reference devices (for each intended profile) to LUA as part of audit preparation.
7. The LUA executes the requested test-suite sub-set / full test-suite at the auditor's request / discretion. The LUA shall abide by the "VCX-Forum Lab Authority

Reference Devices – Do's and Don'ts" documents when testing the reference devices

8. The LUA submits the results to the auditor
9. The auditor initiates pre-audit discussion(s) with the LUA to
    a. Clearly explain the audit process and answer questions from LUA if any regarding the process itself
    b. accesses the readiness of the LUA from the test results
    c. recommend actions/ suggestions to ensure that the audit is conducted in the most efficient manner, come the audit day
    d. negotiate a time/day for the audit based on the readiness of the LUA, logistics and cost [travel / lodging]
10. The minutes of the discussion are summited to the VFLA and are only visible to the VCX-forum board (board members with conflict of interest will need to recuse themselves from this process). This is intended to be used as a reference in case of escalations / complaints during / after the audit process
11. On the agreed day/time the audit is conducted by the auditor according to the detailed audit procedure described in the VCX-Forum LA "Audit procedure" document [5]
12. The audit is finalised, and a report is generated, which is reviewed by the Auditing VFTL head and a recommendation along with the detailed report is submitted to the VCX-Forum LA. Note that the auditor is not authorised to announce the audit result [6]
13. The VFTL raises an invoice toward the LUA for the entire audit
14. The findings from the audit are shared with the lab and VCX-Forum LA; escalation/s if any is/are raised to the VCX-LA
15. VCX-Forum LA reviews the report and recommendation; at its discretion grants the lab under audit the requested certificate [5] in consultation with the VCX-Forum board. If the LUA fails the audit, steps to improve could be provided on request by the auditing VFTL
16. Fee structure for the audit (including certification and recertification of VFCL)
    a. VFLA recommends 1000 Euros per auditor [3] per day [2] of audit

  b. VFLA mandates that the travel, lodging be billed on actuals. A daily-allowance/per-diem (> 12 hours) as per below

    i. US/Canada/ EU - 90 EUR

    ii. East Asia - 75 EUR

    iii. Rest of the world - 60 EUR

Reference

- [1] The auditing VFTL has the onus and responsibility to flag any conflict of interest to VFLA as soon it comes to light; Ideally as soon as the VCX-Forum LA audit request is placed
- [2] A typical working day consists of 8 hours of work in addition to breaks for food and refreshments
- [3] Multiple auditors for a single profile audit are not envisaged at this time[2Q2022]. The scenario might change if and when the standard becomes expansive to include multiple profiles [Webcam / PhoneCam / DroneCam etc.]. The head of the auditing VFTL is responsible for the entire audit and is also responsible for the audit report sign off generated by the auditor/s
- [4] It is assumed at this point that the lab that intends to be certified has read and understood the process and procedure of the audit. It is further assumed that the lab that intends to be certified understands the fee structure and has agreed to the VCX-forum audit terms and conditions. From this point onwards the lab that intends to be certified will be known as "lab under audit" [LUA]. Note that the entire fee including the travel and daily allowance is directly settled with the Auditing VFTL.
- [5] If the lab under audit is audited for a VCX-Forum Trusted Lab, the recommendation is shared with the VCX-Forum board for final approval. The auditing VFLA is not authorised to grant "Trusted lab" status on its own
- [6] The auditor is not obliged to hand out improvement tips / tricks / solutions for issues/challenges that get detected during the audit, but is free to do so at his/her/their discretion. The auditor is bound by strict rules of conflict of interest and is expected to conduct the audit with at-most professionalism.

Acronyms

- VFTL: VCX-Forum Trusted Lab
- VFCL: VCX-Forum Certified Lab
- VFIHL: VCX-Forum In-House Lab
- VFTLSC: VCX-Forum Trusted Lab Sync Cycle – an exercise that all VFTLs participate to synchronise and calibrate results using selectively picked reference devices. The VFTLSC is co-ordinated by the VCX-forum Lab-Authority