Verizon NEBS™ Compliance: Quality Audit Process

Verizon Technical Purchasing Requirements

VZ.TPR.9453

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1.0 PURPOSE

The purpose of this Verizon Technical Purchasing Requirement document is to provide a basic overview of the quality audit process as it pertains to the auditing of Verizon's suppliers and ITLs.

2.0 SCOPE

ITL & supplier quality audits

3.0 REFERENCES

ISO 9001:2000	Quality Management Systems: Requirements
TL 9000	Quality Management Systems: Requirements
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
ISO 19011	Guidelines for quality and/or environmental auditing
VZ.TPR.9401	Checklist for Initial FOC ITL and Supplier Lab Audit
VZ.TPR.9402	Checklist for Follow-up FOC ITL and Supplier Lab Audit
VZ.TPR.9404	FOC Factory Move Test Requirements
VZ.TPR.9445	Factory Audit Requirements

4.0 ACRONYMS

CAR	Corrective Action Report
ITL	Independent Testing Laboratory
NQA	NEBS & Quality Assurance
QC	Quality Control
QAM	Quality Assurance Manager
RCA	Root Cause Analysis
TPR	Technical Purchasing Requirement

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5.0 GENERAL REQUIREMENTS FOR QUALITY AUDITS

Verizon NQA performs audits of suppliers primarily to ensure product conformance. NQA performs audits of ITLs primarily to ensure compliance of a particular product test plan based on an applicable GR and/or TPR. In either case, the company's quality management system should be included as part of the audit scope. This quality portion of the audit is important because it may expose areas of concern in the company's processes that could have an impact on test results. Quality is a continuous improvement process.

In the case of a supplier, the quality standard to which the quality portion of the audit is based is TL 9000. For an ITL, the relevant standard is ISO/IEC 17025. Reference the VZ.TPRs listed in Section 3.0 for the actual checklists that are used when conducting these various types of audits.

It is important to note that Verizon is a second-party auditor and does not perform ISO accreditation audits. It is the responsibility of the supplier/ITL to obtain and maintain third-party accreditation to the appropriate ISO standard.

The following information in section 5 was adapted from ISO 19011.

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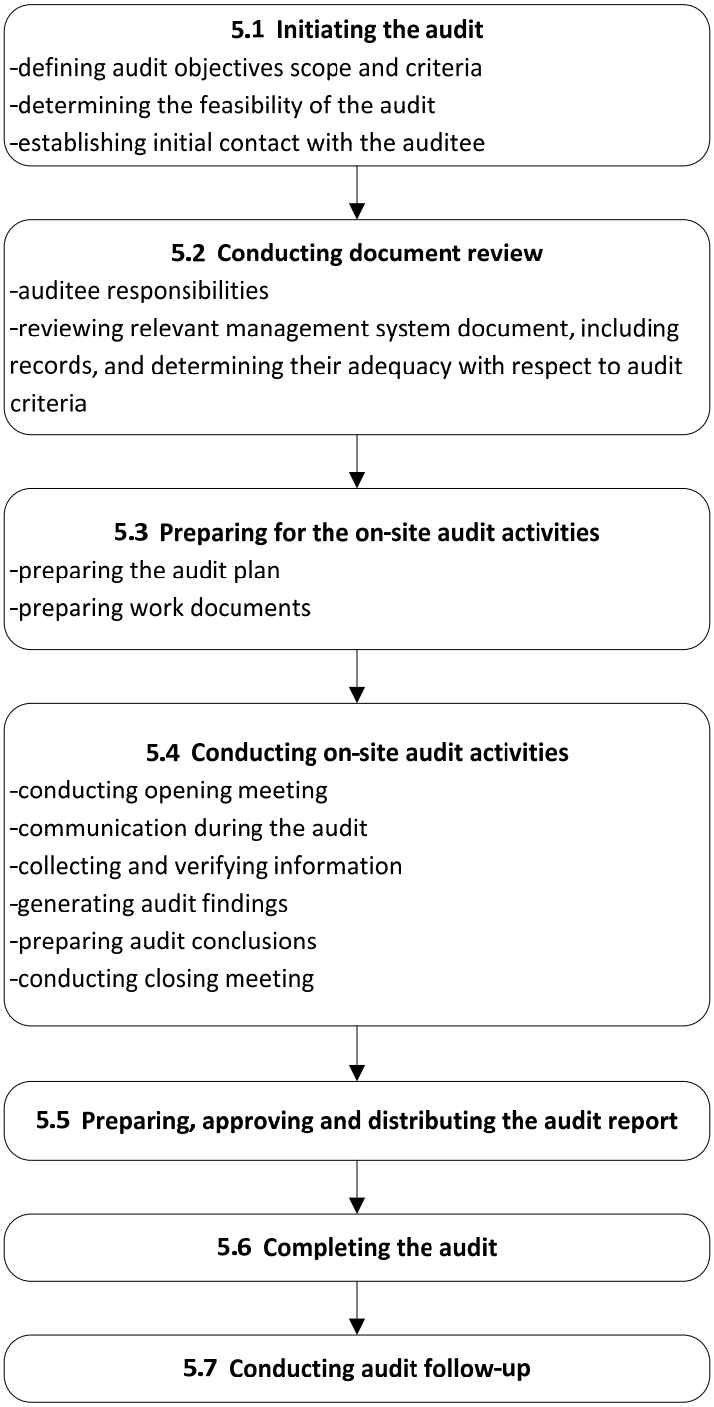

Figure 1 – Overview of typical audit activities

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5.1 Initiating the audit

A member of the NQA team will conduct the audit. For supplier audits, the supplier will contract with a Verizon-approved ITL. For all audits, the ITL will directly cover all travel expenses and billable hours of the NQA personnel. Billing of expenses by the ITL back to the supplier, when applicable, is handled solely between those two parties.

The audit objectives define what is to be accomplished by the audit and may include the following:

a) Determination of the extent of conformity of the auditee's management system, or parts of it, with audit criteria;
b) Evaluation of the capability of the management system to ensure compliance with statutory, regulatory and contractual requirements;
c) Evaluation of the effectiveness of the management system in meeting its specified objectives;
d) Identification of areas for potential improvement of the management system.

The audit scope describes the extent and boundaries of the audit, such as physical locations, organizational units, activities and processed to be audited, as well as the time period covered by the audit.

The audit criteria are used as a reference against which conformity is determined and may include applicable policies, procedures, standards, laws and regulations, management system requirements, contractual requirements or industry/business sector codes of conduct.

The feasibility of the audit should take into consideration the availability of sufficient and appropriate information for planning the audit, adequate cooperation from the auditee, and adequate time and resources.

The purpose of the initial contact includes confirming the authority to conduct the audit, requesting access to relevant documents, including records, and to make arrangements for the audit.

5.2 Conducting the document review

Auditee Responsibilities
It is the responsibility of the auditee to

a) provide all the documentation in the English language;
b) remove proprietary or confidentiality statements from the documents and records for review, or provide a written release from proprietary and confidentiality obligation prior to audit;
c) provide all documents and records for evaluating requirements and performing the audit.

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This review may be done prior to the on-site audit when practical and at the discretion of NQA. The documentation may include relevant management system documents, records and previous audit reports.

If the documentation is found to be inadequate, NQA will inform the auditee. A decision will be made as to whether the audit should be continued or suspended until documentation concerns are resolved.

5.3 Preparing for on-site audit activities

NQA will prepare an audit plan to facilitate scheduling and coordination of the audit activities. The plan should cover the following:

a) The audit objectives;
b) The audit criteria and any reference documents;
c) The audit scope, including identification of the organizational and functional units and processed to be audited;
d) The expected time and duration of on-site audit activities;
e) The allocation of appropriate resources to critical areas of the audit;
f) Logistic arrangements (travel, on-site facilities, etc.)

Some work documents used during the audit include checklists, audit sampling plans and forms for recording information, such as supporting evidence and audit findings.

5.4 Conducting on-site audit activities

NQA will conduct an opening meeting to review how the audit activities will be undertaken, to confirm communication channels and to provide an opportunity for the auditee to ask questions.

Where the available audit evidence indicates that the audit objectives are unattainable, NQA will report the reasons to the auditee to determine appropriate action. Such action may include modification of the audit plan, changes to the audit objectives or audit scope, or termination of the audit.

The methods used to collect and verify information include interviews, observation of activities and review of documents. Only information that is verifiable may be considered evidence. Audit evidence is based on samples of the available information; therefore, there is an element of uncertainty in auditing, and those acting upon the audit conclusions should be aware of this uncertainty.

NQA will conduct a closing meeting to present the audit findings and conclusions in such a manner that they are understood and acknowledged by the auditee, and to agree on the timeframe for the auditee to present a corrective and preventive action plan.

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5.5 Preparing, approving and distributing the audit report

The audit report will be written by NQA and will be issued within the agreed upon time frame and distributed to the appropriate recipients.

5.6 Completing the audit

The audit is completed when all activities described in the audit plan have been carried out and the audit report has been distributed.

5.7 Conducting audit follow-up

The conclusion remarks of the audit may indicate the need for corrective, preventive or improvement actions, as applicable. Such actions are usually decided and undertaken by the auditee within an agreed timeframe and are not considered to be part of the audit. The auditee should keep NQA informed of the status of these actions. Recurring issues and some of the findings generally require a Root Cause Analysis (RCA).

The completion and effectiveness of corrective action shall be verified. This verification may be part of subsequent audits.

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APPENDIX A CHECKLIST FOR QUALITY AUDITS

Reference	Topics	Comment
TL 9000 / ISO 9001:2000	Provide an organizational chart	
	Who is the Quality Assurance Manager?	
	Describe the roles and responsibilities of the Quality Assurance Manager	
	Describe the roles and responsibilities of the Technical Manager	
	Is there an appeals process in place? Used when field or reliability testing related failures are reported	
	Does the QAM have access to senior mgmt to resolve conflicts?	
	Is there a documented quality manual?	
	What accreditations does the manufacturing facility hold?	
	Are policies and work instructions documented?	
	Are policies and work instructions communicated?	
	Are policies and work instructions implemented?	
	Are policies and work instructions uniquely identified?	
	Are policies and work instructions controlled?	
	Are policies and work instructions accessible to employees?	
	Are reference standards controlled?	
	Is there a policy and procedure that states "latest references shall be used"	
	Are data collection sheets for QC and final product controlled?	
	Are there any safeguards in the data collection system to prevent data tempering?	
	Is there a Non-Conformance policy?	
	Is there a Root Cause Analysis (RCA) registry?	
	Is the RCA system automated or mechanized?	
	Is there a Total Recall policy?	
	Is the RCA system monitored and reviewed by mgmt?	
	Are regularly scheduled internal audits conducted? Provide latest audit schedule.	
	Provide Records of CAR's and corrective actions from these audits.	
	Does manufacturer conduct quality audits of sub-contractor's facilities?	

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Reference	Topics	Comment
	Provide proof of a sub-contractor audit?	
	Supplier audit minimum of every three years: assembly and test verified	
	Is product under evaluation made in more than one location?	
	What other accreditations supplier has? Provide copy of the certificates.	
	Who are the Technical mgrs.?	
	Verify always latest reference standards are used?	
	Do you have job descriptions for each employee?	
	Do you match the qualification of each employee with the job?	
	How does the mgmt evaluate an employee's competence?	
	Are training records for each employee on file? In Binders, with certificates	
	In-House Courses - trainer qualifications; formal curriculum, trainer is trained	
	Is production, maintenance and test equipment calibrated?	
	Is production, maintenance and test equipment secured?	
	Is production, maintenance and test equipment used by trained operators?	
	Is production, maintenance and test equipment safeguarded during handling?	
	Is production, maintenance and test equipment safeguarded during storage?	
	Is production, maintenance and test equipment safeguarded during transport?	
	Does a preventive maintenance program exist for no-cal test equipment?	
	Is calibration in sourced, self sourced or outsourced?	
	Is calibration traceable to NIST or equivalent?	
	Are reference standards used to conduct intermediary checks?	
	Are non-standard methods used to calibrate instruments?	
	Is "as found" data provided after calibration?	
	Provide an example of a calibration certification	
	Is equipment that does not require calibration identified with a no-cal sticker	
	Are copies of calibration certificates in secure area?	
	What method is used to calibrate the rented equipment?	

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APPENDIX B **SAMPLE AUDIT REPORT**

Verizon ITL - Fiber Optic Component (FOC) Test Lab Assessment Report

1. **Date of Test Facility Assessment:** August 18-19, 2008.

2. **Project Number/s:** SIT.2008.01111, SIT.2008.01112, SIT.2008.01113

3. **Requesting ITL & Location:** XYZ Labs located at One Lab Drive, Baltimore, MD 21202.

4. **Product Manufacturer:** Not a product manufacturer

5. **Product Name & Release Level:** No product – Scope Expansion audit for FOC testing to the requirements of:
   - Verizon/ISO 17025, Quality Management and Technical Competence Systems.
   - GR-3123-CORE, Generic Requirements for Indoor Fiber Distribution Hubs (FDHs), Issue 1, March 2006/ VZ.TPR.9420
   - GR-409-CORE, Generic Requirements for Premises Fiber Optic Cable, Issue 1, May 1994/ VZ.TPR.9437

6. **Type of Evaluation:** Technical Analysis to verify if FOC testing to GR-409/TPR.9437 and GR-3123/TPR.9420 at XYZ Lab's facility in Baltimore, MD is acceptable as part of the Verizon Independent Testing Laboratory Fiber Optic Component (ITL-FOC) Program.

7. **Verizon FOC Evaluator:** Vijay Jain, (Program Manager, Verizon Corporate Network & Technology).

8. **ITL-FOC Assessment Participants:**

XYZ Labs and Verizon Participants		
Name	**E-mail**	**Phone #**
Vijay Jain	Vijay.x.Jain@verizon.com	+1-410-736-7947
J. Smith – Sr. Mgmt Rep		

9. **Lab Participants:** See table above

10. **Evaluation Scope:** The purpose of this analysis was to follow up on findings from the May, 2008 audit and to determine whether XYZ Lab's facility in Baltimore, MD can effectively perform testing per GR-409/VZ.TPR.9437 and GR-3123/VZ.TPR.9420.

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11. **Evaluation Summary:** During August 18 – 19, 2008 an FOC Test Capability Analysis was conducted at XYZ Lab's Baltimore, MD facility by the Verizon audit team identified above. Based on the results of this analysis, XYZ is **compliant** for GR-409/VZ.TPR.9437 and GR-3123/VZ.TPR.9420 FOC testing at facility.

A detailed listing of XYZ Lab's demonstrated FOC test capability mapping with the existing approved GRs is provided in Appendix A-1, A-2 and A-3 of this report. All the open action items are listed in section 10 of this report.

12. **Action Items Affecting Certification:**

The following is a listing of notes and open action items identified during the audit.

Item #	Reference	Description of Finding / Action Item	Severity	CAR # / follow up action	Status Open/Closed
Quality Findings					
1.	Items 4 & 8 VZ Report SIT.2008.01234	• There were multiple instances in the test plans where TPRs were not correctly referred. • Test plans reviewed were GR-3123/TPR 9420 & GR-409/TPR9437. • TPR 9445 not referred, though it was part of TPR 9431, and could seriously impact the outcome of a factory audit.	Major	TBD	Open
2.	ISO:17025: Section 5.5 Equipment, Item 10 VZ Report SIT.2008.01234	Repeatability and accuracy data is not included in all the test plans.	Major	TBD	Open
3.	ISO:17025: Section 5.5 Equipment	Cleaning procedure needs to be defined and included in the test plans for cleaning multi-fiber connectors using US Connect procedure.	Major	TBD	Open

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Item #	Reference	Description of Finding / Action Item	Severity	CAR # / follow up action	Status Open/Closed
Issues related to GR-409 (TPR-9437)					
4.	Section 3.1.2, 4.2.3, & 4.2.4	Multimode fiber is not identified as outsourced test in the executive summary and list of outsourced tests Test are also not identified in the test procedures as outsourced tests	Minor	TBD	Open
5.	Section 6.6.1	Optical test setup for conducting environmental tests that require in-situ testing was not setup for testing multiple fiber cables. No repeatability and accuracy data was available.	Major	TBD	Open
Issues related to GR-3123 (TPR-9420)					
6.	Test plan	Section 3.3- Labels: Requirements from GR-499, and associated methods to determine compliance, must be included in the test plan	Minor	TBD	Open
7.	Section 5.7, Craft Interaction	This test needs to be updated per new TPR-9446. A verification of the new test will be needed prior to conducting this test	Minor	TBD	Open

13. **Follow-up Action Items and Notes:** The list of all the open action items, identified during the audit, is listed in the table of section-12 above.

14. **Other Items Addressed:** Status update on ABC's five test programs

15. **Audit Conclusion/Comments:** XYZ Lab was well prepared for the GR-409/VZ.TPR.9437 and GR-3123/VZ.TPR.9420 Verizon ITL-FOC analysis. Test lab facilities required for testing were correctly configured, and were well maintained. The lab environment was acceptably well controlled to maintain the conditions necessary for this type of testing.

    Several issues were found during this audit were left unresolved. However, XYZ has committed to address all these issues within 45 days. Verizon's FOC team will review these items during next planned audit. Based on the results of this analysis, XYZ's facility in Baltimore, MD has demonstrated both the capacity and capability for FOC testing and is authorized under Verizon ITL-FOC Program to perform testing to GR-409/VZ.TPR.9437 and GR-3123/VZ.TPR.9420.

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Sample Audit Report Appendix A-1

August 18, 2008 Scope Expansion Audit of VZ.TPR.9420 (GR-3123) Test Program Capabilities Demonstrated at XYZ Labs, Baltimore, MD

Test Ref. #	Test Name	GR/DS Ref.	Required Capabilities	Demonstrated Capabilities	Conforms? Y/N/NA
GR-3123 Section 3.0: General Requirements					
GR-3123 Section 3.2: Markings, Packaging, and Shipping					
1.	General Requirements	3123: 3.0			Y
2.	Markings, Packaging, and Shipping	3123: 3.2			Y
GR-3123 Section 4.0: Functional Design Criteria					
GR-3123 Section 4.1: Materials					
3.	Functional Design Criteria	3123: 4.			Y
4.	……etc.				

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Sample Audit Report Appendix A-2

August 18, 2008 Scope Expansion Audit of VZ.TPR.9437 (GR-409) Test Program Capabilities Demonstrated at XYZ Labs, Baltimore, MD

Test Ref. #	Test Name	GR/DS Ref.	Ref. Spec.	Required Capability	Demonstrated Capability	Conforms? Y/N/NA
GR-409 Section 4: Requirements and Test Procedures for Optical Fiber						
GR-409 Section 4.1: Requirements for Single-mode Fiber						
1.	Requirements and Test Procedures for Optical Fiber	409: 4.0				Y
2.	Requirements for Single-Mode Fiber	409: 4.1	R4-1	Requirements from GR-20, Section 4, with the exceptions, additions, and modifications described in the rest of Section 4.1 of this document.	Per GR-20 Approval	Per GR-20 Approval
3.	…etc.					

Sample Audit Report Appendix A-3
Personnel Authorized to Conduct Verizon FOC Testing to GR-409, and GR-3123 at XYZ Labs, Baltimore, MD

Standard	Name of GR Test Demonstrated During Analysis	First Name of XYZ Lab Test Person(s) Primary/Support	# of Years Experience with FOC type testing	FOC Authorized? (Y/N)
GR-3123	***All Tests Except the Ones Identified as Outsourced in Appendix -1 of this report***	…etc.		Yes unless identified as outsourced in Appendix A-1
GR-409	***All Tests Except the Ones Identified as Outsourced in Appendix -2 of this report***	…etc.		Yes unless identified as outsourced in Appendix A-2

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