NIST HANDBOOK 150-11 CHECKLIST
ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

Instructions to the Assessor: This checklist addresses specific accreditation requirements prescribed in NIST Handbook 150-11, Electromagnetic Compatibility and Telecommunications (ECT). The Test Method Review Summary, which is used to review a laboratory's ability to perform ECT test methods, is to be used in conjunction with this checklist.

Place an "X" beside any of the following items that represent a nonconformity. Place a "C" beside each item on which you are commenting for other reasons. Record the item number and your nonconformity explanation and/or comments on the appropriate comment sheet(s). Write "OK" beside all other items you observed or verified as compliant at the laboratory.

Note 1: *The numbering of the checklist items correlates to the numbering scheme in NIST Handbook 150-11, clauses 3, 4, and 5.*

Note 2: *This document is a Microsoft Word form that has been protected to allow only certain types of editing. To fill out this protected form, you may enter information into the gray-shaded areas and click on the check box drop-down menus. Use the Tab key to move from one form field to another. Enter the date and the NVLAP Lab Code on page one and this information will automatically be printed in the header of all pages that follow. For additional tips on working with Microsoft Word forms, please visit the Assessor Resources page of the NVLAP web site.*

3 Accreditation process

3.2 Management system review

___ 3.2.1 Management system shall be fully implemented.

3.3 On-site assessment

___ 3.3.1.3 a) The laboratory shall make available all supporting technical information in a format this is conducive to a detailed review.

___ 3.3.1.3 b) If relevant documentation is in a language other than English, all supporting technical information shall be provided to NVLAP and its assessors in English prior to the assessment.

___ 3.3.2.2 Laboratory staff shall be available to answer questions.

___	3.3.3.1	All laboratory equipment required to perform accredited testing shall be available for assessment and in good working order.
___	3.3.3.2 a)	If necessary for performing accredited tests, the laboratory shall have appropriate OATS measurement description reports and OATS attenuation data available.
___	3.3.3.2 b)	Unless the OATS meets the description of a standard site, the site attenuation measurements shall be performed using the volumetric techniques described in ANSI C63.4:2003.
___	3.3.3.3	For FCC CFR Part 68 – Connection of Terminal Equipment to the Telephone Network, and other similar standards and regulations, an appropriate test artifact shall be used to demonstrate the test equipment.
___	3.3.4.2	Demonstrations shall include the use of receivers and/or spectrum analyzers in shielded enclosures, pre-scan areas, OATS, and/or fully or semi-anechoic chambers.
___	3.3.4.3	As part of the demonstration of measurement, an OATS (or an alternative site) shall be validated at three frequencies of measure in both horizontal and vertical polarization.
___	3.3.4.4	The laboratory shall be prepared to demonstrate the appropriate test methods in the scope of accreditation as requested by the assessor.
___	3.3.4.5	The laboratory shall ensure transportation to OATS (or alternative site) for the assessor.
___	3.3.4.7	Validation reports for all OATS and/or alternative sites shall be available that include all the requirements stated in 47 CFR Part 2.948.

4 Management requirements for accreditation

4.2 Management system

___ 4.2.1 The laboratory shall ensure that the requirements of NIST Handbook 150 are met so that staff are knowledgeable of the electronic- or paper-based documentation system and can demonstrate, if authorized, the retrieval of needed documents and/or records.

___ 4.2.2 The laboratory shall create a cross-reference document allowing the laboratory and a NVLAP assessor to verify that all requirements of clauses 4 and 5 and annexes A and B of NIST Handbook 150 and the corresponding NIST Handbook 150-11 are addressed in the management system documentation. The cross-reference document requirement can be satisfied in a number of ways. One way is to number and organize the management system documentation to be the same as the NIST Handbook 150 Checklist.

___ 4.2.3 The laboratory shall have readily available the regulation(s) and the applicable version of the standard(s) for the test methods for which accreditation has been requested.

___ 4.2.4 If a customer, for whatever reason (e.g., regulatory requirement), requires accreditation to a version of a test method that is not the latest published version, then the laboratory shall document that requirement and shall have readily available the required version of the test method.

___ 4.2.5 When a test method references another test method, guide, practice, or specification, the laboratory shall have readily available the referenced documents, where relevant.

4.2.6 In addition to the information specified in NIST Handbook 150, the management system documentation shall include:

___ a) testing facilities and scope of services offered

___ b) policy and procedures for use of subcontractors, if applicable

___ c) procedures for receipt, identification, and tracking of test items

___ d) procedures by which the laboratory describes the test items and the criteria for their acceptance or rejection

___ e) procedures and actions concerning damaged or altered test items

___ f) procedures for maintenance and calibration of the equipment used in conducting the tests

___ g) descriptions of the procedures, practices, and equipment that the laboratory uses in conducting tests

___ h) if the laboratory participates in any laboratory comparisons, procedures for interlaboratory comparison and the laboratory's participation in proficiency testing, a summary of the results, and a description of any corrective actions taken because of the results

___ i) the personnel training and competency evaluations, which demonstrate that the test procedures are being followed correctly.

4.3 Document control

___ The master list that identifies the current revision status and distribution of documents shall include all national and/or international standards on the scope of accreditation (see NIST Handbook 150, 4.3.2.1).

4.4 Review of requests, tenders and contracts

___ All requests, tenders and contracts shall be available for selection and examination by the assessor

4.14 Internal audits

___ 4.14.1 The internal audit shall cover compliance with NVLAP, the laboratory management system, as well as regulatory, contractual, and testing requirements.

___ 4.14.2 An internal audit of test method competency shall be included as part of the internal audit plan and its execution.

___ 4.14.3 An applicant laboratory shall conduct at least one complete internal audit prior to the first on-site assessment.

___ 4.14.4 For accredited laboratories, internal audit reports conducted since the previous on-site assessment shall be made available for review.

4.15 Management reviews

___ 4.15.1 Periodic reviews of the management system shall reflect adherence to NVLAP requirements and the laboratory's quality objectives.

___ 4.15.2 Management reviews shall review all nonconformities and may reflect positive aspects of the management system.

___ 4.15.3 An applicant laboratory shall perform at least one complete management review prior to the first on-site assessment.

___ 4.15.4 The report of the management review shall be available during the NVLAP on-site assessment.

5 Technical requirements for accreditation

5.2 Personnel

___ 5.2.1 a). An observation and an evaluation of performance shall be conducted at least annually by the immediate supervisor or a designee appointed by the laboratory director.

___ 5.2.1 b) A record of the annual evaluation of each staff member shall be dated and signed by the supervisor and the employee.

___ 5.2.2 Accredited test method competency shall be included as part of the personnel competency evaluations.

5.3 Accommodation and environmental conditions

___ 5.3.1 All appropriate personnel safety precautions and warnings shall be taken.

___ 5.3.2 a) FCC Part 15-Radio Frequency Devices: A facility layout plan of the laboratory, including a complete description of the laboratory's OATS, and drawings and descriptions of the surrounding area and adjacent structures shall be available, if applicable.

___ 5.3.2 b) FCC Part 15-Radio Frequency Devices: If a facility other than an OATS is used, a complete description shall be available along with documentation of equivalence. The laboratory's submission to the FCC Description of Measurement Facilities Program shall be documented.

___ 5.3.3 a) All parts of OATS shall be operational and available for inspection during the on-site visit.

___ 5.3.3 b) The site attenuation of the OATS shall be checked per ANSI C63.4 at least once per year and complete written records shall be maintained.

___ 5.3.3 c) The site attenuation shall also be checked if significant changes are made in or near the OATS.

___ 5.3.4 FCC Part 68-Connection of Terminal Equipment to the Telephone Network: The laboratory shall have a procedure for checking the testing system before each use. This is especially important for automated systems. The laboratory shall have at least one telephone device reserved for use in periodic checks of the test system.

5.4 Test and calibration methods and method validation

___ 5.4.1 All appropriate safety precautions and warnings shall be incorporated in test and calibration methods.

___ 5.4.2 Measurement uncertainty (MU) shall be estimated for all test methods within the laboratory's scope of accreditation.

___ 5.4.3 a) If MU can be calculated from Type A and B uncertainties, then the procedure shall follow GUM or NIST Technical Note 1297 (see references in NIST Handbook 150, 1.4). Unless stated by the standard, the coverage factor (k) shall be equal to 2 (two) such that the confidence interval is 95 %.

___ 5.4.3 b) If the standard provides a MU budget as part of the test method, then each MU budget shall be supported with calibration and computational data applicable to the test method as performed by that laboratory.

___ 5.4.3 c) If the standard provides a tolerance for the test method (and does not refer to "measurement uncertainty"), then the tolerance stated in the standard shall be supported by calibration data, MU budgets and/or other appropriate calculations.

5.5 Equipment

___ 5.5.1 a) Shielded enclosure: The laboratory shall specify how it will monitor and record the performance of its shielded enclosure, how often, and what data shall be recorded.

___ 5.5.1 b) Requirements for checking associated critical equipment, such as power line filters, and grounding systems shall also be specified and the results documented.

___ 5.5.2 Line impedance stabilization networks (LISN) (for Canadian Standards CS10 and CS11 only) shall be calibrated for insertion loss and the impedance verified at least once per year.

___ 5.5.3 Surge generator: The waveform of the surge generator shall be verified with an oscilloscope at least once per year and photographs of the waveform shall be kept on file.

___ 5.5.4 Software and/or firmware associated with automated test equipment (either stand-alone or computer-controlled) shall be validated before use. This includes validation of any software updates from the original equipment manufacturer (OEM) or other source.

5.6 Measurement traceability

___ 5.6.1 a) If a laboratory calibrates its own antennas, spectrum analyzers, and/or measurement receivers, explicit procedures and instructions for those calibrations shall be maintained.

___ 5.6.1 b) Measurement uncertainties associated with these calibrations shall be estimated and reported in the calibration report.

___ 5.6.1 c) Antennas shall be calibrated to a standard (e.g., ANSI C63.5:2005 or SAE ARP-958).

___ 5.6.2 When automated test equipment or automated test systems are used, appropriate documentation, instructions for use and training are required.

___ 5.6.3.1 Computer software shall be included in the laboratory inventory system.

___ 5.6.3.2 When software or firmware in an automated system is changed by the equipment manufacturer or supplier, whether for maintenance, repair, or upgrade, the laboratory shall verify or validate that the changed software is correct before using it in testing.

___ 5.6.3.3 A staff member shall be responsible for implementing, documenting and verifying changes to software and associated hardware.

___ 5.6.3.4 Documentation shall include initial testing, error detection and resolution, updates, and upgrades.

6 Additional requirements

___ A NVLAP-accredited laboratory shall not provide a test report that uses subcontractor data from a non-MRA member foreign economy as part of the DoC equipment approval process.

NIST HANDBOOK 150-11 CHECKLIST
COMMENTS AND NONCONFORMITIES

Instructions to the Assessor: Use this sheet to document comments and nonconformities. For each, identify the appropriate item number from the checklist. Identify each comment with a "C" and each nonconformity with an "X." If additional space is needed, make copies of this page or use additional blank sheets.

Item No.	*C or X*	*Comments and/or Nonconformities*

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