**Enter Date:** **dfd Enter NVLAP Lab Code:**

|  |
| --- |
| NIST HANDBOOK 150-11A CHECKLIST**ECT: FCC Parts 2, 15, and 18**(Based on the FCC Technical Assessment Evaluation Checklist - Feb 29, 2016)**Instructions to the Assessor:** This checklist addresses specific criteria relating to accreditation of a laboratory to determine the capability and competence of that laboratory to perform tests to show compliance of equipment subject to the FCC EMC Regulations contained in 47 CFR Parts 2, 15, and 18. It is intended for use during the assessment phase of the accreditation process as a guide to evaluate the capability of the applicant laboratory facility and to determine the competency of the laboratory personnel for performing the required measurements. It is not intended to replace the good engineering judgment of the technical assessor or a thorough evaluation of the facility. Other points may and should be added to this checklist as the on-site assessment progresses.Select one of the following for each item you observed and verified at the laboratory:* Select the letter "Y", representing "yes" to show conformance with the criteria.
* Select the letter "N", representing "No", to show a nonconformity.
* Select “N/A” if the item is “Not Applicable.”
* Record an explanation of any nonconformity or a comment in either the text box under each question or in the comments section at the end of the checklist.
 |
| **I. DOCUMENTATION** *(The laboratory should have copies of appropriate FCC rules, standards and measurement methods based on its scope of accreditation.)* |
|  | 1. ANSI C63.4-2003, *American National Standard for Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz*. |
|  | 2. ANSI C63.4-200*9, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.* |
|  | 3. ANSI C63.4-2014, *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz*. |
|  | 4. ANSI C63.10-2009*, American National Standard for Testing Unlicensed Wireless Devices.*  |
|  | 5. ANSI C63.10-2013, *American National Standard for Testing Unlicensed Wireless Devices.*  |
|  | 6. Is the testing laboratory familiar with *KDB Publications 789033* and *905462*, and capable of testing devices subject to all Unlicensed National Information Infrastructure policy and rule requirements?  |
|  | 7. ANSI C63.17-2013*, American National Standard Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices*.  |
|  | 8. ANSI C63.19-2007*, American National Standard for Methods of Measurement of Compatibility Between Wireless Communication Devices and Hearing Aids*.  |
|  | 9. ANSI C63.19-2011*, American National Standard for Methods of Measurement of Compatibility Between Wireless Communication Devices and Hearing Aids*.  |
|  | 10. Is the testing laboratory familiar with *KDB Publication 285076* and capable of testing devices subject to Hearing Aid Compatibility (HAC) requirements for mobile handsets?  |
|  | 11. ANSI/TIA-603-D-2010*, Land Mobile FM or PM Communications Equipment Measurement and Performance Standards*.  |
|  | 12. Is the testing laboratory familiar with *KDB Publication 971168* and capable of testing wideband devices operating in Commercial Mobile (Radio) Services?  |
|  | 13. RF exposure KDB publications, in conjunction with the fundamental SAR concepts in IEEE Std 1528- 2013, *IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques*. KDB publication requirements take precedence over any variations in IEEE Std 1528- 2013.  |
|  | 14. Is the testing laboratory familiar with *KDB Publications 447498* and *865664* and capable of testing devices subject to general RF exposure guidance and SAR measurement guidance, respectively?  |
|  | 15. FCC MP-5-1986*: Methods of measurement of radio noise emissions from Industrial, Scientific and Medical (ISM) equipment*.  |
|  | 16. Does the testing laboratory possess or can demonstrate access to all FCC Rules and Regulations (47 CFR) and standards for the scope of the assessment?  |
|  | 17. Are the measurement antennas properly calibrated in accordance with ANSI C63.5-2006?  |
|  | 18. Is any measurement software used by the testing laboratory documented in the test report?  |
|  | 19. For each type and size of EUT to be measured, does each radiated emission test facility comply with the conditions and requirements of the appropriate test procedure?  |
|  | 20. Are LISN(s), filters, and isolation transformers, if used, properly installed? Is the LISN bonded to the ground reference plane?  |
|  | 21. Does the radiated emission test site(s) meet the site validation requirements of 5.4 of ANSI C63.4-2014 for the frequency range of 30 MHz to 1 GHz?  |
|  | 22. Does the radiated emission test site(s) meet the site validation requirements of *5.5 of* ANSI C63.4-2014 for the frequency range of 1 GHz 40 GHz?  |
|  | 23. Does the radiated emission test site(s) meet the site validation requirements of CISPR 16-1-4:2010-04 for the frequency range of 1 GHz 40 GHz?  |
|  | 24. Was the test site validation for performing radiated emissions measurements completed in the last three years?  |
|  | 25. Does the EMI receiver or spectrum analyzer cover the required frequency range per the scope of accreditation for the measurements to be performed by the testing laboratory? (47 CFR § 15.33)  |
|  | 26. Does the test laboratory have an up to date description of measurement facilities as required by 47 CFR § 2.948?  |
|  | 27. Is the testing laboratory familiar with KDB Publication 935210 and capable of testing devices subject to signal booster requirements?  |
| **II. EMISSION TESTS** |
|  | 28. Are the AC power-line conducted emission tests performed in accordance with the applicable parts of *ANSI C63.4-2014* and *47 CFR §§ 15.31-15.35 and 15.107*?  |
|  | 29. Are the guidelines in ANSI C63.4 and FCC MP-5 followed for large EUTs, including *in-situ* measurements, if appropriate?  |
|  | 30. Is the conducted emission test setup in accordance with ANSI C63.4 with the required separation between the EUT and any conducting surfaces maintained?  |
|  | 31. Is the EUT connected to one LISN and all the peripherals connected to one or more LISNs or a power strip to one LISN; i.e., per ANSI C63.4- 2014?  |
|  | 32. For each type of EUT, are measurements made over the correct frequency ranges and the correct detectors and bandwidth as required by 47 CFR §§ 15.33, 15.35, and 18.309?  |
|  | 33. Are the radiated emission tests performed in accordance with the proper standard?  |
|  | 34. Were radiated emission tests observed, and is the radiated emission test setup in accordance with proper standard?  |
|  | 35. Are unintentional radiators, other than ITE, tested in accordance with the requirements in 47 CFR § 15.31 and the procedures in the appropriate standard?  |
|  | 36. Are intentional radiators tested in accordance with the requirements in 47 CFR § 15.31 and the procedures in the appropriate standard?  |
|  | 37. Does the radiated emission measurement represent the maximized cable configuration and worst case mode of EUT operation?  |
|  | 38. For each type of EUT, are the correct frequency ranges investigated and the correct measurement detectors and bandwidth used per 47 CFR §§ 15.33 and 15.35*?*  |
|  | 39. If the laboratory has a TEM waveguide, are the requirements followed in making radiated emission measurements using TEM waveguides? (ANSI C63.4, KDB Publication 823311)  |
| **III. TEST REPORTS** *(Assessor should request to review several sample test reports for various types of products.)* |
|  | 40. Have several sample test reports for various types of products been reviewed for accuracy?  |
|  | 41. Does each of the test reports contain all the required information, and does the laboratory follow the report disposition procedure?  |
|  | 42. Does the test report reference the standard used and specify any deviations?  |
|  | 43. Is the rationale for selecting and arranging the EUT clearly stated, and are the components of the EUT system clearly identified?  |
|  | 44. Does the test report include photographs or detailed sketches of the EUT configuration?  |
|  | 45. Does the measurement report include a sample calculation with all conversion and correction factors used?  |
|  | 46. Does the testing laboratory use external resources/subcontractors to perform testing, and if so do they have procedures in place to ensure that the external resources are properly accredited and FCC recognized?  |
|  | 47. If external resources/subcontractors are used to perform testing, do the test reports clearly identify the work performed by the external resources/subcontractors and the results of the testing?  |
| **IV. PERSONNEL COMPETENCY** (*The following is a list of general or lead-in questions, which are intended to be used as a guide to assess competency of laboratory personnel. Additional specific questions should be used to determine the technical competency of the personnel performing the measurement.*) |
|  | 48. Are laboratory personnel able to obtain recent FCC Rules and appropriate KDB guidance?  |
|  | 49. Has each laboratory personnel responsible for testing been able to demonstrate performing a measurement of an applicable device?  |
|  | 50. Do the test personnel know how to determine if an emission is from the EUT or is an ambient signal? Do the test personnel know how to handle an emission that is close to, or coincident with, an ambient signal?  |
|  | 51. Can the test personnel explain the FCC requirements for testing a product in accordance with the requirements in 47 CFR §§ 15.31 to *15.35*? Are the test personnel knowledgeable of the FCC testing conditions for different types of products?  |
|  | 52. Arrange for one of the laboratory personnel, at each type of site, replicate at least three frequency points on the horizontal site attenuation, and at least three frequency points on the vertical site attenuation. Is the test performed correctly, and is the site attenuation data at these frequencies consistent with the previously recorded data? *Note: Select frequencies from previous data that have both low and high deviations from the NSA.*  |
|  | 53. For equipment requiring RF exposure evalusation (SAR and MPE), are the test personnel knowledgeable of the test reduction, test exclusion, and measurement, or if applicable, numerical simulation procedures and requirements in KDB Publications?  |
|  | 54. For measurements of equipment requiring Hearing Aid Compatibility (HAC) testing, are the test personnel knoweldgeable of the test setup and procedures?  |

**Go to next page.**

Please include the upper frequency range for each technology in which the laboratory is requesting for recognition:

|  |  |  |
| --- | --- | --- |
| **Technology** | **Test Method**  | **Upper Frequency Range (MHz)** |
| Unintentional Radiators (FCC Part 15, Subpart B) | ANSI C63.4-2014 |       |
| Industrial, Scientific, and Medical Equipment (FCC Part 18) • Consumer ISM equipment • FCC MP-5 (February 1986) | FCC MP-5 (February 1986) |       |
| Intentional Radiators (FCC Part 15 Subpart C) | ANSI C63.10-2013 |       |
| UPCS (FCC Part 15, Subpart D) • Unlicensed Personal Communication Systems devices | ANSI C63.17-2013 |       |
| U-NII without DFS Intentional Radiators (FCC Part 15, Subpart E) • Unlicensed National Information Infrastructure Devices (U-NII without DFS) | ANSI C63.10-2013 |       |
| U-NII with DFS Intentional Radiators (FCC Part 15 Subpart E) • Unlicensed National Information Infrastructure UNII) Devices with Dynamic Frequency Selection (DFS) | FCC KDB Publication 905462 D02 UNII DFS Compliance Procedures New Rules v01 (April 8, 2016) |       |
| UWB Intentional Radiators (FCC Part 15, Subpart F) • Ultra-wideband Operation | ANSI C63.10-2013 |       |
| BPL Intentional Radiators (FCC Part 15, Subpart G) • Access Broadband Over Power Line (Access BPL) | ANSI C63.10-2013 |       |
| White Space Device Intentional Radiators (FCC Part 15, Subpart H)• White Space Devices | ANSI C63.10-2013 |       |
| Commercial Mobile Services (FCC Licensed Radio Service Equipment)• Part 22 (cellular) • Part 24 • Part 25 (non-microwave) • Part 27 | ANSI/TIA-603-D TIA-102.CAAA-D |       |

|  |  |  |
| --- | --- | --- |
| General Mobile Radio Services (FCC Licensed Radio Service Equipment) • Part 22 (non-cellular) • Part 90 (non-microwave) • Part 95 • Part 97 • Part 101 (non-microwave) | ANSI/TIA-603-D TIA-102.CAAA-D |       |
| Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment) • Part 96 | ANSI/TIA-603-D TIA-102.CAAA-D |       |
| Maritime and Aviation Radio Services (FCC Licensed Radio Service Equipment) • Part 80 • Part 87 | ANSI/TIA-603-D |       |
| Microwave and Millimeter Bands Radio Services (FCC Licensed Radio Service Equipment) • Part 25 • Part 74• Part 90 (90Y, 90Z, DSRC) • Part 101 | ANSI/TIA-603-D TIA-102.CAAA-D |       |
| Broadcast Radio Services (FCC Licensed Radio Service Equipment) • Part 73 • Part 74 (non-microwave) | ANSI/TIA-603-D TIA-102.CAAA-D |       |
| RF Exposure • Devices subject to SAR requirements | IEEE Std 1528™-2013 |       |
| Hearing Aid Compatibility (Part 20) • HAC for Commercial mobile services | ANSI C63.19-2007; or ANSI C63.19-2011 |       |
| Signal Boosters (Part 20) • Wideband Consumer signal boosters • Provider-specific signal boosters • Industrial signal boosters | FCC KDB Publication 935210 D03 Signal Booster Measurements v04 (February 12, 2016) FCC KDB Publication 935210 D04 Provider Specific Booster Measurements v02 (February 12, 2016) FCC KDB Publication 935210 D05 Indus Booster Basic Meas v01r01 (February 12, 2016) |       |

I hereby attest that at the time of assessment, the laboratory’s technical capabilities met the aforementioned requirements based on a reasonable assessment sampling basis subject to effective corrective action for any nonconformities noted in the overall Accreditation Body (AB) reports of the assessment.

 ***Assessor(s) Signature Date***

The FCC has developed the questions contained in this checklist to be used by the AB to assist in the assessment of EMC testing laboratories. The FCC also requires the AB to provide them with a copy of the completed checklist revealing the technical competence of the laboratory for the specific tests required by the FCC, and to meet APEC TEL MRA obligations. Please be advised that all information provided to the FCC will be made publicly available, as directed by the Freedom of Information Act (FOIA), unless a confidentiality request is submitted to the FCC with the recognition request pursuant to 47 CFR 0.457 and 0.459. Please note that failure to authorize NVLAP to submit this document to the FCC may result in the FCC’s not recognizing your laboratory as an “Accredited” testing laboratory.

I hereby grant permission to NVLAP, providing this assessment, at the request of the FCC to release a copy of this completed checklist to the FCC.

***Laboratory Authorized Representative Signature Date***

**Continue to Annex A to complete site attenuation information.**

**NIST HANDBOOK 150-11A 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*** |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |
|       |  |  |  |       |

|  |
| --- |
| **Annex A: SITE ATTENUATION INFORMATION** |
| Please complete the Site Attenuation information below during the on-site assessment. |
| NSA measurement verification facility address: |  |
|  |
|  |
|  |
| Site Description (i.e., 3 m, 10 m, OATS, Chamber): |  |

**Note:** Acceptance value is +/- 4 dB from the theoretical value (C63.4-2003, Clause 5.4.6; C63.4-2009, Clause 5.4.4, *Site quality validation; C63.4:2014, Clause 5.4.4.2 Site acceptability criterion*).

|  |
| --- |
| Transmit antenna height: |
| Test distance: |
| ***Frequency (MHz)*** | ***Old Value (dB)******(Deviation from Theoretical NSA)*** | ***New Value (dB)******(Deviation from Theoretical NSA)*** | ***Polarization*** | ***Position*** |
|  |  |  | Vertical |  |
|  |  |  | Vertical  |  |
|  |  | d | Vertical |  |
|  |
| Transmit antenna height: |
| Test distance: |
| ***Frequency (MHz)*** | ***Old Value (dB)******(Deviation from Theoretical NSA)*** | ***New Value (dB)******(Deviation from Theoretical NSA)*** | ***Polarization*** | ***Position*** |
|  |  |  | Horizontal |  |
|  |  |  | Horizontal |  |
|  |  |  | Horizontal |  |