



**CBRS Certified Professional Installer Accreditation
Technical Specification**

**Document WINNF-TS-0247
Version V1.6.0**

8 September 2022



TERMS, CONDITIONS & NOTICES

This document has been prepared by the Spectrum Sharing Committee to assist The Software Defined Radio Forum Inc. (or its successors or assigns, hereafter “the Forum”). It may be amended or withdrawn at a later time and it is not binding on any member of the Forum or of the Spectrum Sharing Committee.

Contributors to this document that have submitted copyrighted materials (the Submission) to the Forum for use in this document retain copyright ownership of their original work, while at the same time granting the Forum a non-exclusive, irrevocable, worldwide, perpetual, royalty-free license under the Submitter’s copyrights in the Submission to reproduce, distribute, publish, display, perform, and create derivative works of the Submission based on that original work for the purpose of developing this document under the Forum's own copyright.

Permission is granted to the Forum’s participants to copy any portion of this document for legitimate purposes of the Forum. Copying for monetary gain or for other non-Forum related purposes is prohibited.

THIS DOCUMENT IS BEING OFFERED WITHOUT ANY WARRANTY WHATSOEVER, AND IN PARTICULAR, ANY WARRANTY OF NON-INFRINGEMENT IS EXPRESSLY DISCLAIMED. ANY USE OF THIS SPECIFICATION SHALL BE MADE ENTIRELY AT THE IMPLEMENTER'S OWN RISK, AND NEITHER THE FORUM, NOR ANY OF ITS MEMBERS OR SUBMITTERS, SHALL HAVE ANY LIABILITY WHATSOEVER TO ANY IMPLEMENTER OR THIRD PARTY FOR ANY DAMAGES OF ANY NATURE WHATSOEVER, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF THIS DOCUMENT.

Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the specification set forth in this document, and to provide supporting documentation.

This document was developed following the Forum's policy on restricted or controlled information (Policy 009) to ensure that that the document can be shared openly with other member organizations around the world. Additional Information on this policy can be found here: http://www.wirelessinnovation.org/page/Policies_and_Procedures

Although this document contains no restricted or controlled information, the specific implementation of concepts contain herein may be controlled under the laws of the country of origin for that implementation. Readers are encouraged, therefore, to consult with a cognizant authority prior to any further development.

WinnForum™, WinnForum Standards™, Wireless Innovation Forum™ and SDR Forum™ are trademarks of the Software Defined Radio Forum Inc.

Table of Contents

TERMS, CONDITIONS & NOTICES	i
Contributors	iii
1 Introduction	1
2 Scope	1
3 References	1
3.1 Normative References	1
3.2 Informative References	2
4 Abbreviations and Definitions	2
5 Description of CPI Responsibilities	3
5.1 General	3
5.2 CPI Responsibilities	3
6 CPI Training Programs	3
6.1 Qualifications for administering a CPI Training Program	3
6.2 Application of the Training Program for Accreditation	3
6.3 Maintenance of records on instruction and CPI participation	4
6.4 CPI Training Program Curriculum Evaluation by the Accrediting Body	4
6.5 Non-curriculum review of operational procedures of a CPI Training Program	8
6.6 Accreditation of a CPI Training Program	8
7 CPI Certification Process	8
7.1 Certification Test	9
7.2 Registration of the CPI with the Accrediting Body	9
7.3 Ongoing relationship of a CPI with the Training Program	10
7.4 CPI Installer Data Accountability Structure	10
7.5 CPI Disciplinary and Problem Reporting and Review Process	10
8 The Accrediting Body	11
8.1 Accreditation activities	11
8.2 Record maintenance and availability	12
8.3 Program maintenance	12
8.4 Disciplinary Process for Training Program Administrators	13
9 CPI Database	13
9.1 CPI Public Key Identifiers	14
10 Document History	15

List of Figures

Figure 1 CPI Training and Certification Process	9
-------------------------------------------------------	---

List of Tables

Table 1 CPI Database Description	13
Table 2 Document Revision History	15

Contributors

The following individuals made significant contributions to this document:

Richard Bernhardt, WISPA

Greg Billock, Google

Andrew Clegg, Google

Mike Dolan, Nokia

Yi Hsuan, Google

Kumar Balachandran, Ericsson

Nancy Lee, Nokia

Idan Raz, Airspan

CBRS Certified Professional Installer Accreditation Technical Specification

1 Introduction

The Citizens Broadband Radio Service (CBRS) provides for sophisticated multi-tier shared spectrum with protected incumbents. Pursuant to the FCC, CBRS Devices (CBSDs) operating as Category A under certain scenarios, and all CBSDs operating as Category B, must be professionally installed. This technical specification provides information on the provision of a Certified Professional Installer (CPI) training program defined by the WinForum to ensure the professional installation process addresses the requirements set forth in WinForum Standards [n.1][n.4][n.5]. A CPI does not necessarily have to physically install the equipment but must certify the installation parameters with respect to the designated CBRS registration data provided to the SAS and is personally responsible for the correctness of this data.

2 Scope

This Technical Specification sets forth the accreditation requirements including the creation of an Accrediting Body (i.e., the WinForum™), to oversee training curriculum and training programs. It provides the criteria to certify a training program and maintain valid certification records of both the training program and the CPI. It further sets forth review and discipline processes for CPIs.

The key words "required", "shall", "shall not", "should", "should not", "recommended", "may", and "optional" in this document are to be interpreted as described in [RFC-2119](#) [n.3]. In addition, the key word "conditional" shall be interpreted to mean that the definition is an absolute requirement of this specification only if the stated condition is met.

3 References

3.1 Normative References

The following referenced documents are necessary for the application of the present document.

- [n.1] WINNF-TS-0112 Version 1.3.0, "Requirements for Commercial Operation in the U.S. 3550-3700 MHz Citizens Broadband Radio Service Band".
- [n.2] Electronic Code of Federal Regulations, Title 47, Chapter I, Subchapter D, Part 96, <http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=0076fe7586178336d9db4c5146da8797&mc=true&n=pt47.5.96&r=PART&ty=HTML>
- [n.3] [RFC-2119](#), "Key words for use in RFCs to Indicate Requirement Levels", March 1997.
- [n.4] WINNF-TS-0016-V1.1.0, Spectrum Access System (SAS) - Citizens Broadband Radio Service Device (CBSD) Interface Technical Specification".
- [n.5] WINNF-TS-0022-V1.1.2, "WinForum CBRS Certificate Policy Specification".
- [n.6] WINNF-TS-1001 CBRS Operational and Functional Requirements (Release 2)

3.2 Informative References

- [i.1] Report and Order and Second Further Notice of Proposed Rulemaking, Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354, Federal Communications Commission, 21 April 2015.
- [i.2] Order on Reconsideration and Second Report and Order, Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354, Federal Communications Commission, 2 May 2016.

4 Abbreviations and Definitions

Accreditation Standard: The standard defining how a Training Program Administrator can be accredited to run a CPI Training Program. (This standard.)

Accrediting Body: Entity that accredits a Training Program Administrator to offer a CPI Training Program based on the Accreditation Standard. As of the publication of this version of this standard, "Accrediting Body" refers to the Wireless Innovation Forum (WinnForum™).

CA: Certificate Authority

CBRS: Citizens Broadband Radio Service.

CBSD: Citizens Broadband Radio Service Device

CPI: Certified Professional Installer

CPI Training Program Administrator: Entity such as a Network Equipment Operator, an equipment vendor, a SAS operator, or a third-party training organization that develops a CPI Training Program, gains accreditation, administers an objective certification test and maintains CPI records.

CPI Training Program: Mandatory training/curriculum required by the CPI Training Program Administrator as a prerequisite for taking the objective certification test.

CPIR-ID: Certified Professional Installer Registration Identification

ESC: Environmental Sensing Capability

EUD: End User Device

FCC: Federal Communications Commission

GAA: General Authorized Access

GWBL: Grandfathered Wireless Broadband Licensee

PAL: Priority Access License

PKI: Public Key Infrastructure

RFP: Request for Proposal

SAS: Spectrum Access System

WinnForum™: The Wireless Innovation Forum

5 Description of CPI Responsibilities

5.1 General

FCC requires that a CBSD's location information be recorded at SAS as part of the CBSD registration process. Location determination may be carried out via automated geolocation technologies or may be entered into the SAS by a professional installer.

When a CBSD is installed by a professional installer, subsequent CBSD movements shall be reported by a professional installer as well.

Given the importance of accurate reporting of CBSD installation parameters by professional installers, it is important for the SAS and user community, through multi-stakeholder fora or industry associations, to develop programs for accrediting professional installers who receive training in the relevant Part 96 rules and associated technical best practices. Section 154(f)(4)(D) of the Communications Act authorizes the Commission "to endorse certification of individuals to perform transmitter installation, operation, maintenance, and repair duties in the private land mobile services and fixed services (as defined by the Commission by rule) if such certification programs are conducted by organizations or committees which are representative of the users in those services and which consist of individuals who are not officers or employees of the Federal Government."

5.2 CPI Responsibilities

Section 10 of the WinnForum Operational and Functional Requirements Specification lists the requirements for Certified Professional Installation (ref. [n.1]).

6 CPI Training Programs

6.1 Qualifications for administering a CPI Training Program

Training Program Administrators shall certify in the application/proposal that they have the right to conduct business and are in compliance with all relevant local, state, and Federal laws and regulations. A Training Program Administrator shall demonstrate the capacity to provide training through a compliant training program proposal that can be reviewed by the Accreditation Body as identified in the Sections herein.

The Accredited Training Program Administrator shall be responsible for protection of any certificates procured from the CA as established by the CA.

6.2 Application of the Training Program for Accreditation

An applicant Training Program Administrator may apply at any time to the Accrediting Body for accreditation of a CPI Training Program. At that time, the applicant shall submit to the Accrediting Body the following information [R2-CPI-07.b]:

- a. Name of Training Program Administrator,

- b. Accreditation review history, if any,
- c. Attestation that the Training Program Administrator has the right to conduct business and is in compliance with all relevant local, state, and Federal laws and regulations,
- d. Legal identity of responsible party or parties,
- e. Contact information for responsible party,
- f. The curriculum developed by the Administrator which will constitute the CPI Training Program,
- g. The objective certification criteria the Administrator will use to certify successful completion of the CPI Training Program by trainees,
- h. The continuing education requirements to be imposed by the CPI Training Program Administrator on CPIs trained by the program,
- i. A plan for record-keeping complying with the CPI Training Program requirements,
- j. A relationship with an WinForum PKI provider.

6.3 Maintenance of records on instruction and CPI participation

A CPI Training Program shall keep records concerning trainees and certified installers per Section 7.3.

6.4 CPI Training Program Curriculum Evaluation by the Accrediting Body

The Accrediting Body shall review the applicant's CPI Training Program to assure that the CPI shall have a full and strong operational understanding of the following curriculum areas:

- a) **Role of the CPI:** CPI roles and responsibilities and the importance of the CPI role in the CBRS ecosystem.
- b) **Accredited CPI Training Program:** A working understanding of:
 - the CPI training program,
 - the accreditation process,
 - certification requirements, including periodic renewal of certification status,
 - objective testing,
 - continuing education, i.e., ongoing responsibilities of a CPI to maintain current registration with the Training Program to receive notice of any updates to Part 96 regulations or other applicable and relevant regulatory requirements, standards or protocol requirements or Training Program requirements,
 - record keeping,
 - additional instructional information requirements of the CPI to attain and keep valid certification to perform CPI duties, i.e., awareness that the CPI shall stay abreast of technologies, formats, interfaces and other vendor and SAS related information which will be necessary to carry out the CPI duties,
 - mandatory training including requirements and industry standards, and
 - practices versus additional training offerings which are optional.

- c) **Understanding of the CBRS Band and its Tiers:** The structure of the CBRS band, including the support of incumbent, PAL, and GAA users. (Three-tier architecture).
- d) **CBRS and CBSD Devices:** Types of CBSDs (and non-CBSD CBRS ecosystem devices such as an EUD) including examples of such devices. This curriculum area shall include the definitions of Category A and B operations of CBSDs and examples of such. In addition, the CPI shall demonstrate a full working understanding of when a CBSD requires CPI installation, including when a CBSD operating as Category A is required to be professionally installed (such as when equipment is not capable of determining its own location, or power exceeds a certain level).
- e) **Devices Versus Users:** Impacts of CBSDs on other users of the band, including incumbent users and Grandfathered Wireless Broadband Licensees (GWBL).
- f) **SAS Role Protecting Incumbents:** High-level responsibilities of the SAS to protect incumbent and PAL users of the band from harmful interference, as well as an understanding of the need to protect ESC sensors and an understanding of ESC purpose, and to facilitate coordination among GAA users and resolve conflicting uses of the band. This curriculum area shall include the SAS ecosystem functional architecture and explain the roles of the architectural elements.
- g) **Radio Characteristics and Interference:** The radio characteristics of the CBRS band, spectrum, equipment, location, parameters and an explanation of what constitutes harmful interference.
- h) **CBSD: Registration Parameters:** An explanation of the relationship of the Part 96 registration data to any other industry-defined data which may be required to be collected and provided to the SAS as part of the installation process for particular CBSD equipment, and an enumeration of the CBSD registration parameters which Part 96 defines or are required by the industry standards [n.4], with an explanation of:
 - Each CBSD registration parameter including examples of how the parameter can be measured by the CPI,
 - Different types of registration parameters including “Required”, “REG-Conditional”, and “Optional” based on the SAS-CBSD protocol [n.4],
 - How each registration parameter can be obtained and provided to a CBSD or a SAS by the CPI,
 - The consistent use of parameter names, types, and units that shall be employed by all Training Programs.
- i) **CPI May Provide Group Identifiers in Registration:** Identifiers that the CPI may be required to provide while registering a CBSD along with information about any optional CBSD group identifier may be specified to the SAS along with other required device information, as well as an explanation that if present, such a group identifier designates a CBSD as a member of a particular group or network of CBSDs to the SAS.
- j) **CBSDs Interaction with SAS:** The interaction of a CBSD with the SAS including but not limited to registration and all registration parameters, spectrum requests, grants, heartbeats, transmission, suspension, revocation, reassignment, and deregistration.
- k) **CPI Entering Optional Vendor Specific Information to the SAS:** The CPI shall understand and be able to accurately enter, where required by the SAS, vendor-specific information about the CBSD being installed. The CPI shall be made aware that various SAS implementations have specific user interfaces and features and they may differ SAS

to SAS. The CPI shall be able to demonstrate accurate understanding that a SAS may require additional non-standard registration information.

- l) **CPI Identification and Authentication:** CPIs shall demonstrate accurate knowledge of all the rules and requirements of authenticating themselves as a current and valid authorized CPI. This includes but is not limited to their CPIR-ID and required trust based certification and required digital certificate (PKI) or other type of signature. A working understanding of where CBRS data is kept including but not limited to CPI credentials and trust certificates.
- m) **Spectrum Assignment:** An explanation of how spectrum assignment occurs in CBRS. An explanation and understanding of PPAs.
- n) **Domain Proxy Information:** A full explanation of the process of the use of a Domain Proxy. The CPI shall be made aware that various Domain Proxy implementations may have specific user interfaces and features and they may differ.
- o) **Training Examples (Use Examples):** A minimum number of worked examples, both indoors and outdoors, including examples of CBSDs operating as Category A or B, providing training examples illustrating the gathering and entering to completion of a full set of CBSD registration data for a particular CBSD or set of CBSDs.
- p) **Responsibilities of the CPI and Information Gathering:** An explanation of the responsibility of the CPI to seek out methods for gathering CBSD registration data for unfamiliar equipment. An explanation of the processes whereby collected information may be validly provided to the SAS by a CPI (e.g. by SAS interface or other permitted means).
- q) (q is deprecated; content moved to h)
- r) **CPI Duty to Enter Accurate Information to SAS:** An explanation that the CPI is fully responsible for all required CBSD registration data reported to the SAS, even when working with other people or systems which may assist in gathering such data. An example of this includes determining, entering, and reporting to the SAS accurate geographic coordinates data to a degree of accuracy required by the regulations and standards.
- s) **Understanding When Equipment May Not Be Allowed to be Registered or Installed by a CPI:** An understanding of when a CBSD or other equipment may not be permitted to be professionally installed by a CPI or to be registered with the SAS, such as when it is blacklisted, registration is previously revoked, un-approved equipment, or is not the correct or appropriate equipment for CBRS as permitted by the rules.
- t) **Understanding of Complete Registration Information Required:** A CPI shall demonstrate knowledge that the SAS may reject information as incomplete, invalid, not allowed, or not in the correct format.
- u) **Inaccurate Data:** Awareness of the CPI that CPI data will be subject to accuracy checks by other parties and systems; and the obligation to provide correct data and correct any incorrectly entered data. The obligation that a CPI interfacing with the SAS to correct inaccurate data discovered in the course of operations. An explanation of the requirement that the SAS Administrator holds the CPI responsible for accurate data entry, and an explanation of the responsibility for the CPI to correct the inaccurately entered data.
- v) **Entering or Providing Registration Data to the SAS:** The CPI shall have a working understanding of choices of available methods for properly conveying registration and other required data to the SAS. This includes a working understanding of available SAS interfaces and other means of communicating with the SAS for an installation as well as how to communicate with the SAS administrator. An understanding of how to retrieve data

from the SAS or SAS Administrator for review and modification of CBSD registration data.

- w) (w is deprecated; content moved to d)
- x) **Division of Responsibility in CBRS:** The division of responsibility between the CBSD Owner, the CPI and the SAS in the installation, registration, grant request, and other CPI processes and ongoing operations.
- y) (y is deprecated; content moved to b)
- z) (z is deprecated; content moved to u)
- aa) **Corrective, Disciplinary, or Legal Action for Inaccuracies:** The corrective or disciplinary actions the Training Program Administrator or regulatory entities will be entitled to take pursuant to inaccuracies in data provided to the SAS by a CPI. An understanding that the Federal Government may pursue legal action in the event of negligence or willful misconduct of a CPI.
- bb) (bb is deprecated; content moved to aa)
- cc) **CPI Certification is Held by CPI not Employer:** The rights and responsibilities of CPI Certification including but not limited to information that the rights and obligations of CPI Certification are held by the CPI and not an employer. Knowledge that a CPI may work with other personnel, such as installers or for an employer, but that ultimately the responsibility of the CPI's duties are solely the CPI's responsibility no matter if another assists in the process or who employs the CPI.
- dd) (dd is deprecated; moved to cc)
- ee) **Providing CBSD Serial Number for DAS and multi-sector Systems:** For the Distributed Antenna Systems (DAS), and Remote Radio Heads (RRH),-the CPI shall use mechanisms to enable the managing SAS to associate those DASs, RRHs, or sectors with CBSDs, and provide independence and recognition for those devices during CBSD registration process with the SAS. The same applies to multi-sector BTSs (Base Transceiver Stations), where each sector is registered as an independent CBSD. The mechanism by which these objectives are met could be proprietary. One such example is proposed in WINNF-TR-5001.
- ff) **Guideline for Indoor-Outdoor determination of a CBSD:** The CPI shall attest whether the CBSD is operating indoor or outdoor as part of the registration parameters. A CPI may follow guidelines for determining the indoor-outdoor deployment of a CBSD. One such guideline is provided in WINNF-TR-5001.
- gg) **Guideline for calculating outdoor CBSD Height Above Average Terrain (HAAT):** A CPI may follow the guideline provided in WINNF-TR-5001 for calculating the outdoor CBSD Height Above Average (HAAT) in order to identify correct category of CBSDs with maximum certified EIRP at or below 30 dBm/10 MHz that are deployed outdoor.
- hh) **Guideline for eirpCapability Calculation for CBSDs that are Transmission Points (TPs) in a Passive DAS:** Guidelines for calculating eirpCapability for CBSDs that are Transmission Points (TPs) in Passive DAS deployments are provided in WINNF-TR-5001.
- ii) **Requirements for supporting Release 2 Features as defined in [n.6]:**
 - Guidance for implementation of Release 2 features will be captured in WINNF-TR-5001
 - The CPI may choose not to support a Release 2 Feature
 - The CPI may choose to work with 3rd party subject matter expert (SME), , for Release 2 features:

- i) The CPI shall do reasonable due diligence on the qualifications of the subject matter expert and retain records on the basis of trust of this subject matter expert for traceability
- ii) The CPI shall not lose their credential if the qualifications of the “subject matter expert” are misrepresented
- iii) The CPI shall remain responsible for all other requirements as currently stated in this specification, including the obligation that a CPI interfacing with the SAS correct inaccurate data discovered in the course of operations, as per item u) above

Note that the training program administrator is not responsible for teaching the content of WINNF-TR-5001, but may choose to do so as a value added option.

6.5 Non-curriculum review of operational procedures of a CPI Training Program

The Accrediting Body shall review the application of a CPI Training Program Administrator applicant for compliance with the CPI Training Program requirements.

6.6 Accreditation of a CPI Training Program

Upon positive review by the Accrediting Body, the CPI Training Program submitted by the applicant shall be accredited for a period not to exceed five years [R2-CPI-07.a]. At the end of an accreditation period set by the Accrediting Body, and upon any substantial changes to the CPI Training Program, the CPI Training Program Administrator shall re-apply to the Accrediting Body for re-accreditation.

As a condition of accreditation, the applicant shall sign a contract with the Accrediting Body agreeing to abide by the operational requirements of the Accrediting Body, including:

- a. Timely updates to this information when it changes,
- b. A commitment to maintain in an up-to-date fashion the proper documentation on curriculum, instructors, and trainees and CPIs which have passed through the Training Program, and an agreement to transfer any such records to the custody of the Accrediting Body or another accredited CPI Training Program Administrator should the Administrator cease operations, (ref [n.1] requirements R2-CPI-07.c, R2-CPI-06.a).
- c. An agreement to enforce any disciplinary action on CPIs it has trained (see Section 7.5).

7 CPI Certification Process

CPIs will have to be trained by an accredited training program. Training programs are accredited by an Accrediting Body, which approves the curriculum and monitors approved training programs and associated trainers on a regular basis. WInnForum through this standard has established the criteria for a training program to create a professional and consistent testing process for CPIs, and to subsequently establish the review and disciplinary process for CPIs. CPIs through the CPI Accredited Training Program shall be taught required FCC Part 96 Rules and any applicable

additional rules and regulations; along with applicable industry standards, protocols and requirements.

The Training Program Administrator has the option to add relevant industry, technology, SAS, or vendor specific information as part of their training program above and beyond the required curriculum. The Training Program Administrator administers the objective certification test to CPI's and keeps records of all candidates and both successful and unsuccessful outcomes. This is reported to the Accrediting Body that maintains a database of CPIs.

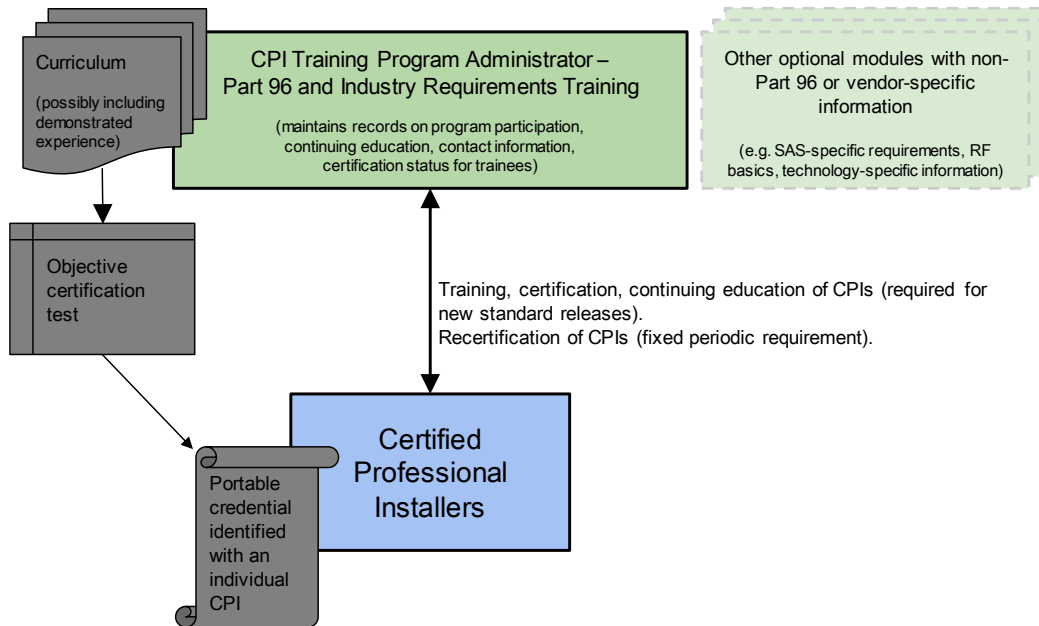


Figure 1 CPI Training and Certification Process

7.1 Certification Test

Questions shall be submitted as part of the Training Program application for the stated curriculum (multiple choice). The Accrediting Body shall evaluate questions for suitability for inclusion in the CPI certification test. All copyright shall be transferred to the Accrediting Body. For the purpose of CPI certification a 50-question exam will be provided by the WInnForum SSC that shall include at least one question from each of the listed curriculum subject areas outline in section 6.4 of this TS-0247. Passing is 75% or greater correct answers.

7.2 Registration of the CPI with the Accrediting Body

See Section 9 for a list of information required to be registered with the Accrediting Body by the Training Program Administrator for each CPI that the Administrator certifies. The Training Program Administrator shall assign a date at which the CPI certification becomes effective, normally the date of successful completion of the CPI certification test. The CPI certification shall be effective for five years, unless a change in rules (section 7.4) or a disciplinary action (section 7.5) takes precedence.

7.3 Ongoing relationship of a CPI with the Training Program

The accredited training program shall maintain accurate records of a CPI's certification at least five years after the expiry of the CPI's certification. The CPI is qualified for recertification of training up to one year after expiry of the last CPI certification. The CPI shall undergo complete training and certification through an accredited training program when seeking certification through a training program at any time after one year from expiry of the last certification.

The accredited training program will provide the CPI with a certificate from a qualified Certificate Authority (CA) derived from a WinnForum approved Root of Trust that the CPI will use to certify the installation of a CBSD. The certificate validity shall extend to expiry (including renewals, if applicable) of certification credentials [n.5].

7.4 CPI Installer Data Accountability Structure

The Accredited Training Program Administrator shall facilitate the secure issuance of certificates from the CA to the CPI. Any private certificates shall be visible only to the CA and CPI according to the WinnForum Certificate Policy Specification [n.5].

The Accredited Training Program that is maintaining records of a CPI's training shall inform the CPI of any impending expiry of credentials with enough time for the CPI to reasonably seek recertification of their qualifications.

In the event of a change of rules in 47CFR Part 96 (ref. [n.2]) pertaining to professional installation of CBSDs, the CPI may be required to seek recertification within a deadline. Under such circumstances, the training program shall contact CPIs whose records are being maintained by that program, and shall inform them of their obligation to seek recertification within the required period of time, if such a time has been identified by the FCC. CPIs who have not sought recertification shall be informed that their certification has expired.

The CPI has the choice to be recertified by an accredited training program of their choice or the choice of their employer, as applicable. When seeking recertification, the accredited training program with record of the CPI's existing or recently expired certification shall offer conveyance of records to any recertifying training program with accreditation. The conveyance of records and transcripts of the training may be offered as a service.

The accredited training program maintaining records of a CPI shall allow the CPI to update their contact address when warranted.

7.5 CPI Disciplinary and Problem Reporting and Review Process

A party finding the likelihood of a significant error in information entered by a CPI, or mishandled registration procedures (such as a CBSD owner or a SAS Administrator) may report such occurrence to the Training Program Administrator and request review. Generally, this would fall into two categories: a) where a CPI has willfully entered incorrect information to the SAS; or b) the CPI repeatedly enters erroneous information such that the accuracy of the information is called into question.

The Training Program Administrator will then investigate and evaluate the report regarding the CPI and based on its finding, undertake one of the following actions:

- a) No Disciplinary Action Taken: Determine that the action was not significant. Ask that erroneous or missing information be updated or corrected by the CPI.
- b) Take Disciplinary Action: Suspend or terminate a CPI's credentials. Determine if a negative action on the behalf of the CPI was willful and if so, either suspend or terminate the CPI's credentials.
- c) Suspend and Require Retraining: If found that the CPI is repeatedly making material errors in information entry to the SAS, then the CPI may be suspended and required to retrain and retest in order to reinstate credentials.

The CPI has the right to appeal any action taken by the Training Program Administrator to the Accrediting Body. The Accrediting Body shall have the full right and authority to accept or deny any appeal request. If corrective or disciplinary action is taken, such action shall be recorded in the CPI's records maintained by the Training Program. In cases where actions are reviewed by regulatory agencies or civil/criminal authorities, all parties shall support the review as required by law.

8 The Accrediting Body

8.1 Accreditation activities

The Accrediting Body shall undertake the following activities in support of the accreditation process:

1. Issue a Request for Proposal (RFP) seeking qualified Training Program Administrators wishing to be designated as WinnForum Approved. The RFP shall be open with no closing date, allowing proposals to be submitted at any time.
2. Receive proposals as they are submitted.
3. Establish a task group to review proposals as they are submitted to ensure that they meet the requirements established in Section 6 of this standard. The task group shall be made up of industry stakeholders operating independently of the Accrediting Body.
4. Approve training program administrators that meet the requirements as identified by the evaluation task group.
5. Provide an accreditation agreement with WinnForum which identifies the duties and responsibilities of each party and would entitle the Training Program Administrator to display a WinnForum owned trademark indicating that the Administrator is a "WinnForum Approved CPI Training Program Administrator".

A fee may be charged by the Accrediting Body to cover administrative charges associated with these activities. Should a candidate Training Program Administrator believe that it has been

unfairly denied approval, the candidate can petition the WinForum Board of Directors for reconsideration.

8.2 Record maintenance and availability

The Accrediting Body shall maintain a public record of Accredited Training Program Administrators, including contact information that can be accessed by candidate certified professional installers who wish to receive training.

The Accrediting Body shall provide a web form for the Accredited Training Program Administrator to enter the credentials of each professional installer they certify, as per Section 9 of this standard.

The Accrediting Body shall maintain a database accessible by certified SAS Administrators containing the CPI credentials as identified in Section 9 of this standard.

The Accredited Training Program Administrator shall keep *status* field current. *status* shall be INACTIVE whenever the CPI is not allowed to attest to CBSD Installation data for any reason (e.g., the CPI's X.509 certificate is expired or revoked, the CPI's private key is lost or compromised, today's date is outside [*licenseStartDate*, *licenseEndDate*], CPI is temporarily suspended due to pending training or disciplinary reasons).

The Accredited Training Program Administrator shall promptly generate a new complete database record any time any database field changes or the X.509 certificate is changed, replaced, or revoked. In case of revocation, Training Program Administrator shall create a new record with *status*=INACTIVE.

All records and transactions pertaining to a CPI shall be retained in the CPI Database (refer to section 9).

The Accredited Training Program Administrator and the CA shall promptly notify each other of any certificate changes, revocation, or key compromise.

The Accrediting Body shall have the capability to extract from the CPI database the subset of fields (*cpId*, *status*, and *publicKeyIdentifier*) from the most recent database record for a CPI, and the capability to make this information available to a SAS in .csv format. This should be done through automated means.

8.3 Program maintenance

The Accrediting Body shall notify the Training Program Administrator that their accreditation requires renewal at least 90 days in advance of the renewal date established in Section 7 of this standard.

The Accrediting Body shall notify approved Training Program Administrators of changes to this standard and other referenced WinForum standards requiring an update in Training Program Curriculum, and provide a deadline for the Training Program Administrator to provide evidence

that such changes have occurred and that the new information has been propagated to their certified professional installer’s clients.

8.4 Disciplinary Process for Training Program Administrators

Complaints lodged against the Training Program Administrator by a certified professional installer or by any third party impacted by the actions of a CPI shall be evaluated by the evaluation task group, within the Accrediting Body, against the requirements outlined in this standard. Should the findings of the evaluation task group conclude that action is required, the task group may direct that the Training Program Administrator update its program to address any shortcomings found, or in extreme cases direct the Accrediting Body to suspend the accreditation of a Training Program Administrator. Failure of the Training Program Administrator to support the evaluation may also lead to suspension of Approval.

9 CPI Database

The Accrediting Body shall prepare a database accessible to SAS Administrators containing registration data for Certified Professional Installers which contains the registration information for CPIs (see [n.1], requirement R2-CPI-03).

Table 1 CPI Database Record Description

FIELD NAME	FIELD DESCRIPTION
cpId	The system-wide unique, and case insensitive, CPIR-ID assigned to the CPI by the Training Program Administrator upon successful registration.
cpName	The name of the CPI
mailingAddress	The contact address of the CPI
legalAddress	The legal address of the CPI
email	The email address for the CPI
phone	The phone number contact for the CPI
trainingProgram	The name of the training program completed by the CPI
completionDate	The date the training program was completed by the CPI. Format is “YYYY-MM-DD”
trainingProgramAdministrator	The name of the Training Program Administrator of the completed program.

FIELD NAME	FIELD DESCRIPTION
licenseStartDate	The initiation date of the CPI credential issued by the Training Program Administrator. Format is “YYYY-MM-DD”
licenseEndDate	The expiration date of the CPI credential issued by the Training Program Administrator. Format is “YYYY-MM-DD”
status	Indicator of the CPI status. One of “ACTIVE”, “INACTIVE”
publicKeyIdentifier	The location (URL) of a file containing the latest public key (in .PEM format) issued to the CPI. If the public key changes then the URL also changes.
publicX509Certificate	The location (URL) of a file containing the latest full X.509 public certificate issued to the CPI in .PEM format. If the public certificate changes then the URL also changes.
timestamp	The UTC date and time that the record was entered in the CPI database. Format is “YYYY-MM-DDThh:mm:ssZ”. Minute-level accuracy is not required provided the timestamp is unique for a given cpiId.

Should the SAS Administrator find an issue with the CPI database, the SAS administrator shall provide the CPI Training Program Administrator with notice of applicable issues in a timely fashion. The Accrediting Body shall respond in a timely fashion to any inquiries by the SAS administrator for relevant contact information about a training program and other relevant information.

The Accrediting Body shall make updates to this file in a timely manner reflecting status changes for CPIs. SASs shall retrieve the information in the file daily. Should an issue occur, the Accrediting Body shall make best effort to promptly notify the CPI Training Program Administrators by email list. SAS Administrators who wish to be on the notification list may provide contact information to the Accrediting Body.

9.1 CPI Public Key Identifiers

The Accrediting Body shall make corresponding CPI public key information available to SAS Administrators at a location determined by the publicKeyIdentifier of the CPI Database file.

10 Document History

Table 2 Document Revision History

V1.0.0	16 October 2017	V1.0.0 Approved and Published
1.1.0	22 January 2019	V1.1.0 Approved and Published
1.1.1	29 January 2019	Editorial change to the introduction clarifying the role of the CPI
1.2.0	06 May 2019	V1.2.0 Approved and Published
1.2.1	10 July 2019	Clarification that cpiID is case insensitive
1.3.0	20 January 2020	Size of the CPI examination kept at 50 questions after ICD
1.4.0	2 April 2020	Communications requirements between SAS Administrators, Accreditation Body and Training Program Administrators clarified
1.5.0	27 October 2020	CPI Responsibilities WRT WinnForum CBRS Release 2 Standards
1.6.0	8 September 2022	Updated to make Passive DAS release independent