Dear Certification Seeker,

Electronics is one of the fastest growing industries today. We have come a long way from vacuum tubes and mechanical switches. ETA® International has remained committed to serving technicians and modeling certification programs to keep pace with emerging technologies.

ETA offers a career path that ranges from students with little or no experience to a master level for those who have dedicated several years to improving and expanding their skill sets. ETA International’s certifications are important for both individuals and business organizations.

For an individual, certifications:
- are a quantifiable milestone of achievement
- are a way to benchmark skills sets
- can link competency to compensation
- enable advancement or flexibility in conditions of job change
- create industry visibility of one of the highly recognized electronics certifications
- are personal and portable certifications
- show levels of certification progression and disciplines to continued skills development
- are proof of mastery of the technologies in the industry

For a business/organization, certifications:
- show workmanship that results in both internal and external customer satisfaction
- enhance credibility within the organization and with external customers
- identify employees who are qualified to provide leadership to team members
- maximize investment by accurately determining individual and organizational training needs
- support decisions of appropriate skill level when hiring or promoting
- support employee retention plans - present new challenges and career path choices to employees
- provide the company with confidence that contracted vendors are technically qualified

For a school/training facility, certifications:
- increase curriculum value by providing industry-recognized credentials
- increase marketability of programs
- provide end of course assessments
- satisfy Perkins and other federal requirements
- allow participating states to give students verified credits

ETA distinguishes itself from other associations by being an organization primarily composed of individuals. ETA is comprised of technicians, educators, trainers, and engineers from every conceivable area of electronics, communications, and technology. The interchange of information and the broad viewpoints that members are exposed to creates a unique and valuable entity.

The intent of ETA is to Connect (leaders in our industry); Innovate (through networking and discussions); and Evolve (initiatives that revitalize and strengthen our industry). This information booklet will help move you forward in your industry through certifications.

Sincerely,

Teresa Maher, CSS, KD9DCV
President
History

ETA® International (Electronics Technicians Association, International) founded in 1978, is a not-for-profit, professional association promoting excellence in electronics technologies through certification.

The association’s initiatives are to provide prominent certification programs of competency criteria and testing benchmarks that include international electronics standards and provide renowned professional electronics credentials.

The organization began with leaders like Richard “Dick” Glass, CETsr, Ron Crow, CETma, D.C. “Snow” Larson, CET and others who had earned much respect in the electronics industry. In the late 1970s, the founders decided never to affiliate too closely with any manufacturer. ETA was to be truly a group of technicians by technicians for technicians. Today, ETA is a strong and well-known organization with over 10,000 members and over 200,000 certifications and licenses delivered to date. ETA’s focus is to help new and upcoming technicians and the technical schools they attend achieve their career goals.

Although certification, specifically, was not an original goal, it occurred naturally as ETA grew. As a non-vendor-specific, independent third-party certifying organization, ETA receives inquiries each month from schools asking for assistance in either recommending and/or certifying curriculums or texts. In addition, the U.S. military, through their individual education offices, works with ETA for both ETA and FCC Commercial License testing at all U.S. military facilities worldwide.

ETA is not only strong in the certification field, but it provides many other services for technicians and electronics service firms. ETA has participated in governmental law and rule-making by commenting on behalf of technicians regarding pending local, state, or national actions of governments. The association works closely with other organizations such as the Army, Navy, Marine Corps, and Air Force COOL programs, National Technical Honor Society, U.S. Department of Labor’s Career One Stop, the FCC, and Certified Service Centers as well as other local, state, national, and international groups.

While ETA membership is also available to service dealerships and other institutions, the typical member is an electronics technician. By having a membership composed of technicians from every conceivable area of electronics, communications and networking technology, the interchange of information and the broad viewpoint members are exposed to creates a unique and valuable entity.

Hundreds of members have taken an active role in the association by participating as area representatives, becoming certification administrators, writing for the publications and journals or by teaching a class at seminars and conventions. ETA is not just an association that collects your dues and then issues an occasional report. It is a fellowship of technicians who love their jobs and see ETA as the adhesive that binds real professional technicians together for the greater good. ETA is a platform for members to share their expertise, revitalizing knowledge for all.

Benefits of ETA Certification

ETA certification signifies that the holder has demonstrated professional proficiency and has the technical knowledge and hands-on skills to meet international electronics industry standards.

Earning an ETA certification:

• Gives U.S. Armed Forces personnel validation of their Military Occupational Skill (MOS) training for meeting active duty responsibilities and transitioning to civilian careers as veterans
• Allows high school and postsecondary students, as well as working adults seeking new employment opportunities, to demonstrate and validate their technical electronics knowledge and skill with recognized industry credentials
• Assists experienced industry professionals in advancing their knowledge and excelling in their careers
• Provides employers with clear criteria for hiring and promotion that can lead to enhanced productivity and customer satisfaction

ETA certification exams are administered by ETA Certification Administrators, which ensures quality control. ETA testing sites are easily accessible with over 1,200 exam administrators at colleges, businesses, trade schools, and military bases worldwide.
Industry-Recognized Standards

An ETA certification signifies that the holder demonstrates professional proficiency within a certain discipline. Certification holders are recognized as having the necessary knowledge and technical skill to design, install, service, or repair electronic equipment according to industry standards—not specific to a manufacturer, vendor, or product.

Since 1965, the program has been proven effective. Aligning with the ISO 17024 standard, and collaborating with education providers and industry professionals, ETA provides the criteria which tests the knowledge and/or hands-on skills needed in today’s electronics industries. However, ETA constantly seeks information from employers, schools, and individuals verifying the validity and current relevance of its assessments.

Accreditation

ETA’s industry-based examinations are modeled after international competency standards. Each discipline utilizes its own group of educators and practitioners, plus industry-wide reviews, to align with the industry standards. The standards clearly articulate the skills and knowledge relevant to specific segments of the industry. ETA certifications are personal, portable worldwide, and are accredited by the International Certification Accreditation Council (ICAC) under ISO 17024 standards for accrediting bodies. ICAC is an alliance of organizations dedicated to assuring competency, professional management, and service to the public by encouraging and setting standards for licensing, certification, and credentialing programs.

About ICAC

In 1996, a group of association executives chartered the ICAC as a not-for-profit organization with the purpose of evaluating certification programs at an affordable rate that smaller organizations can afford. Over the years, the ICAC has developed a comprehensive process to evaluate certification programs against international standards. In this way, accredited organizations can both improve existing certification programs as well as demonstrate to the public that their programs comply with industry best practices.

By accrediting certification programs, the public and the industries represented have an additional level of assurance, knowing that the program has been reviewed by a neutral third party and been found to meet or exceed reasonable levels of record keeping, security, objectivity, and professionalism.

The ICAC itself operates under the international guidelines established as a quality assurance regime for accreditation bodies (ISO/IEC 17011 – Conformity Assessment: General Requirements for Accreditation Bodies Accrediting Conformity Assessment Bodies), and has established assessment tools and processes that assure certification bodies are in compliance with ISO/IEC 17024 (2012): Conformity Assessment – General Requirements for Bodies Operating Certification of Persons.

Who Takes ETA Certification Exams?

ETA certifies professionals from many different areas and industries. Whether it’s a military fiber installer, RF wireless technician, biomedical technician, service manager, or student, ETA has you covered! Every year ETA creates a snapshot of professionals and students who have taken an ETA exam during the previous year. You can see the results from 2017 on the right.

ETA certifications are listed on the Career One Stop website. Career One Stop is sponsored by the U.S. Department of Labor, and is a partner of the American Job Center network. The website provides tools to help job seekers, students, businesses, and career professionals find their pathway to success. Please visit www.careeronestop.org for more information.
ETA Certification Administrators

ETA believes that legitimate third parties, such as experts, practitioners, and instructors in the field, rather than those who may have a direct interest in the outcome of the programs, should administer and approve certified electronics technicians exams. ETA serves as that third party administrator to technical education, providing a way for school systems to validate their electronics courses.

ETA continually strives to make its exam testing sites easily accessible for examinees who wish to take one of the more than 90 different ETA certification exams. We currently have over 1,200 exam administrators at college electronics programs, community colleges, trade schools, military bases, proprietary trainers, and vocational-technical schools throughout the world. If your accredited institution/school or training facility is interested in becoming an ETA-approved examination site, please complete the online Certification Administrator application. Print a copy of the agreement form for your records and email an additional copy of each form to us at eta@eta-i.org.

Authorization to administer ETA certification exams is given to the individual. By gaining approval from ETA’s President, a Certification Administrator’s location is listed for the public to contact using the CA Locator. CAs are given the option to have their location listed or remain private. Upon approval, a CA may proctor all ETA certification exams that do not require hands-on skills assessments and FCC commercial operator licensing exams.

ETA Course Approvals

Approval of training for technicians is not something that should be done solely by educators who work mostly with the theoretical side of the field being critiqued. It should also not be done by those with a direct interest in the course providers. It should be done by a legitimate third party - composed of experts in the field; practitioners and educators at all levels. ETA has a network of more than 600 Subject Matter Experts (SMEs) in place to assist with course and text reviews. ETA’s Subject Matter Experts span all of the fields of certification available through ETA.

Today, with many governmental agencies (at all levels) looking to validate their educational processes, and authorities having jurisdiction scrutinizing validation, the need for recognition has become a mandate. Some states now use ETA certification as 3rd party final exams for electronics course students, but the process is not yet complete. A more formal program of validation is still needed. School systems are requiring the educational institutions to prove that their training actually is giving the student his or her money’s worth. They want proof that the time and money spent in learning this profession will pay off with a good career after graduation.

ETA has instituted a program to answer this call for help. We currently have over 1,200 Certification Administrators along with our 600 Subject Matter Experts. Because of this extensive network, ETA is in a position of being accountable to industry for reliable test results. ETA serves in its capacity as a 3rd party to technical education, providing a way for school systems to validate their courses. ETA is meeting these industry and educational needs.

ETA provides third-party reviews that many schools require of electronics courses, evaluating the instructor credentials, lab and classroom equipment, course outlines, etc. The reviews have been used by all levels of education, both public and commercial, as well as military.

ETA State Representatives

ETA has both state and national volunteer representatives who promote ETA within their community. We are always looking for new members to apply. Holding the title of state and/or national representative includes duties such as promoting ETA; contacting ETA with any local developments reported by the industry or in the education of electronics related fields; offering clarification, when a situation arises in the area, and providing further details; for example, a licensing requirement or change; reaching out to local schools or businesses with ETA material; visiting a school or business which has shown interest in ETA; being available to attend a show or event, including a career day or job fair.
ETA Certification Administration

ETA has over 1,200 certification administrators (CAs) around the world. Each examination must be proctored by a CA. To find a CA, either visit the ETA website or contact ETA. If a test site is not near the examinee’s location, then please call ETA at (765) 653-8262, or email at eta@eta-i.org for more information. All ETA exams must be proctored by an independent third party.

ETA Certification Examination Materials

Certification competencies are a well-ordered categorized structural listing of knowledge, standards reference, industry best practices, testing, and troubleshooting subject items necessary to be proficient in a given technology. Certification examination questions are derived from their respective competencies. ETA subject matter experts (SMEs) are vital proponents developing and improving each competency.

ETA aligns with individual professional goals, vocational and education curriculums, and businesses’ resource initiatives through certification programs, conferences, speaking engagements, books, and journal publications. ETA actively supports training and education through the development of study guides and seminars, as well as working with a large number of ETA-approved schools and courses. ETA also works with high schools, vocational schools, colleges, universities, educators, corporate trainers, correctional facilities, and electronics industry professionals to find proper and sufficient training resources in their area.

When preparing for an ETA certification examination, examinees are encouraged to use suggested study materials listed on the available competencies. In addition to the many offerings in the ETA online store, ETA offers study materials developed exclusively for the ETA Customer Service and Associate CET examinations. These were written by ETA professionals for ETA professionals.


$25 Members / $30 Non-Members

The CSS Study Guide contains all of the workforce readiness and soft skills information in previous editions plus new chapters such as Social Media. The best way to prepare for the popular Customer Service Specialist exam also prepares you for working with other technicians and service personnel at your place of employment and at the other firms your company may deal with. It contains chapter quizzes and an overall practice exam quiz similar to the actual CSS exam.

The information contained in this guide is applicable to anyone who works with the public: helpdesk, sales, educators, business owners, nurses, repair technicians, and coworkers!

The Associate CET Study Guide, 6th Edition

$50 Members / $60 Non-Members

The latest Associate CET Study Guide features 22 chapters authored by 16 practicing technicians and instructors from around the world, as well as new practice exams and test site locator access.

Technical topics range from Electronic Components, DC Circuits, Microprocessors and Transmitters to essential skills every Certified Electronics Technician needs such as Record Keeping and Technical Writing. Each chapter is followed by a practice quiz and the entire guide is covered in a final Online Practice Examination, which will further prepare an individual for the Associate CET examination. It also comes with a link to a complete online listing of current Certification Administrator locations. With this, an exam candidate can easily find a location for testing.

ETA’s store also offers study materials created by ETA members for ETA certifications. These materials are tailored to their specific certification exams. The EM-series of digital study guides gives students the knowledge they need to qualify as entry-level technicians, and provides the necessary foundation for further studies in specialized fields. The study guides are closely coordinated with the ETA competencies and exams. Each study guide builds on the one before it. Together they form an efficient, no-time wasted path to knowledge and certification.

There are five EM study guides covering: DC Basics, AC Basics, Analog Basics, Digital Basics, and Comprehensive. Please visit www.eta-i.org to order.
TAKING AN ETA EXAM

Taking an ETA Certification Examination

1. Decide which ETA certification(s) you would like to take and review the free objectives/competencies provided by ETA. Call to see if additional study materials are available.

2. Find an ETA certification administrator (CA) close to you to proctor the exam. You can search ETA’s online database of test sites at www.eta-i.org/test_sites.html, or contact ETA at (765) 653-8262.

3. Decide whether to take the exam online with Trapeza or paper/pencil. Note: A certification administrator must be present regardless of which test format is chosen.

4. Arrange a time to take the exam with the chosen certification administrator.

5. Arrive early with the proper materials to take the exam. You may bring scratch paper and a non-programmable calculator to the exam. For most exams, you will be given two hours if needed. Photo ID and #2 pencils required. No electronic devices are permitted.

6. Once completed, the certification administrator will submit your exam and information along with payment. If you test online with ETA, then you will be able to view your score(s) immediately.

8. Examinations are processed within 7-10 business days of arrival at ETA headquarters. However, scores may be requested online through the ETA website (www.eta-i.org/results_reviews.html).

**As provided for under the ADA (American’s with Disabilities Act), if you require special needs accommodation in order to complete the certification process, then please notify your Certification Administrator when scheduling your exam.

Ladder of Career Progression:

ETA provides a stackable, latticed path for career advancement. Basic entry levels for Student (SET), Basic Systems Technician (BST), and Associate Electronics (CETa); Journeyman (CET), Senior (CETsr), Master Specialty (CETms), and Master (CETma); Basic, endorsements, and master Smart Technology Systems professional (STS); Certified Satellite Installer and endorsements; Fiber Optics Installer (FOI), Fiber Optics Technician (FOT), Fiber Optics Technician-Outside Plant (FOT-OSP), and Fiber Optics Designer (FOD), and more, or other specific certification disciplines have been designed into the ETA program as the need occurs.
**ETA® International**

**ETA Certifications**

**BASIC ELECTRONICS**

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**Associate Certified Electronics Technician (CETa)**

*The Associate exam is HALF PRICE if taken with a Journeyman certification at the same time!*

The Associate certification is designed for technicians who have less than two years experience or trade school training for electronics technicians. The CETa is more in-depth than the Student Electronics Technician (SET) as it expands on all of the topics listed within the SET. Every Certified Electronics Technician (CET) candidate must pass the Associate exam before they can qualify to sit for the full Journeyman certification. Once a technician has completed the four year term, they should specialize and take a Journeyman option. A hands-on skills test is available.

**Basic Systems Technician (BST)**

The Basic Systems Technician (BST) stand-alone certification is for individuals trained in the basic foundational levels of electronics used in troubleshooting systems and their functions without the need for component circuit analysis. The intent is to introduce a foundation of skills (in a wide variety of electronic industries) needed by technical personnel to advance their competency and efficiency with their work endeavor. If not specifically stated, the most recent technical standard revision is referenced. The BST is the foundational electronics systems certification and the next concentration up in knowledge is the Associate CET or the Systems Level Technician.

**Electronics Modules (EM1-5)**

The EM program is based on ETA’s Associate level certification (CETa). The CETa competencies have been divided into five sections called “modules.” The purpose of this is to align with a growing portion of the electronics education industry that is charged with providing electronics training that does not include the total content of traditional Basic Electronics courses. In some instances, technical institutions are asked to provide training in only certain portions of electronics. This is so that companies that need only narrower skills and knowledge (than one expects of a complete CETa) can employ workers who have required knowledge and skills for only the technology and processes they currently use at that company.

To provide a path for the technician leading to the CETa credential, the five BASIC modules of the CETa can be acquired individually. Once a technician attains all five module certifications, ETA will issue an official CETa certification (all five must be passed within a two-year period). Hands-on skills exam components are available. The technician may also choose to gain only those modules needed in order to be employable.

The five basic Electronics Modules are:

- Direct Current (DC)
- Alternating Current (AC)
- Analog
- Digital
- Comprehensive

**Student Electronics Technician (SET)**

The SET allows high school students and entry-level technicians the opportunity to earn a basic beginner’s certification. The examination covers a variety of topics including: Electrical Theory; Electronic Components; Soldering-Desoldering and Tools; Block Diagrams-Schematics-Wiring Diagrams; Cabling; Power Supplies; Test Equipment and Measurements; Safety Precautions; Mathematics and Formulas; Electronic Circuits; Series and Parallel; Amplifiers; Interfacing of Electronics Products, Digital Concepts and Circuitry; Computer Electronics; Computer Applications; Audio & Video Systems; Optical Electronics; Basic Telecommunications; and Technician Work Procedures. The SET also has an optional hands-on component that can be used as a part of the training process and will be noted upon completion and passing of the SET examination.

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**CETa Exam Info**

- Price: $65
- Type of Certification: Stand-Alone
- Renewal/Maintenance Required: Yes
- Certification Term: 4 Yrs
- Hands-On Required: No
- Questions on Exam: 100
- Passing Score: 75%
- Time Allowed to Test: 2 hours

**BST Exam Info**

- Price: $80
- Type of Certification: Stand-Alone
- Renewal/Maintenance Required: Yes
- Certification Term: 4 Yrs
- Hands-On Required: No
- Questions on Exam: 75
- Passing Score: 75%
- Time Allowed to Test: 2 hours

**EM1-5 Exam Info**

- Price: $30 each
- Type of Certification: Stand-Alone
- Renewal/Maintenance Required: Yes
- Certification Term: 4 Yrs
- Hands-On Required: No
- Questions on Exam: 75
- Passing Score: 75%
- Time Allowed to Test: 2 hours

**SET Exam Info**

- Price: $35
- Type of Certification: N/A
- Renewal/Maintenance Required: No
- Certification Term: 2 Yrs
- Hands-On Required: No
- Questions on Exam: 100
- Passing Score: 75%
- Time Allowed to Test: 2 hours
Biomedical Electronics Technician (BMD)

Biomedical electronics technicians are expected to obtain knowledge of the principles of modern biomedical techniques, the proper procedure in the care, handling, and maintenance of biomedical equipment and to display an attitude/behavior expected of an electronics technician who works in a hospital or healthcare environment.

Biomedical Imaging Equipment Technician (BIET)

A BIET should be familiar with the following topics: Anatomy, Medical Terminology, Computer, Electro/Mechanical Safety, Picture Archive Communication System, Diagnostic Ultrasound Equipment, Building Wiring, Basic Radiographic Equipment, Film Processing, Test Equipment, Magnetic Resonance Imaging, Computed Tomography, Nuclear Medicine, Codes and Regulations, Troubleshooting, Radiation Safety, Radiation Physics, and Linear Accelerators.

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BMD Exam Info

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BIET Exam Info

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ETA Subject Matter Experts

ETA’s certification committees, specific for each certification, are composed of subject matter experts (SMEs) who are demographically, professionally, and educationally diverse with a broad range of experience. Certification committees require decisions on updating competencies; accommodating advances in technologies and best practices; when current exams should be replaced, edited, added to, and/or revised with the updated terminology and graphics. Continual awareness, review editing, vetting, and placing new exams into Beta formats for feedback are all thoroughly ‘gone over with a fine toothed comb’ to ensure the best positive understanding of the certification knowledge is tested and errors are kept at a minimum. Task analysis by educators, employers, and practitioners is an important part of the process of developing industry-based competencies, upon which the certification exams are based. Both internal and external judgments are included in development.

ETA’s panels of experts are second to none. Strong educator input by committees of SMEs, multiple reviews by the ETA Advisory Board, many national associations, and technicians currently working in the field provide a level of review unprecedented in the electronics industry. Educators, practitioners, students, and employers have subjected ETA’s assessments to critical scrutiny. Reliability, Validity, and Consistency are hallmarks of ETA certifications. ETA examinations are reviewed for updating each year. If you would like to volunteer as a SME, then please visit www.eta-i.org/subject_matter_experts.html and contact ETA’s test development department.

“Obtaining an ETA certification brought a level of certification to the City of Fort Worth that it never had before. It opened new doors to customers that we previously were not able to obtain.”

Chris Dusseau, CETyr
Communications Technician, IT – Radio Services
City of Fort Worth, TX

“Culminating an educational program with a world-class ETA certification can boost employee performance and advancement potential. We have requests to provide training with an ETA certification option from companies all over the world. The demand is there for employees with this knowledge and skill set.”

Lee Kellett
General Manager, Light Brigade
Tukwila, WA

“Here I am on my new job at the City of Eugene that only an ETA certification would allow me to acquire. ETA helped transform my skills into an awesome career. Thank you ETA!”

Brian Greig, CETyr
Radio Communications Technician
City of Eugene, OR
5G Technician (5GT)
The 5G Technician standalone certification is aimed at cellular technicians and engineers with knowledge of the wireless industry. The certification serves as an introduction to 5th Generation (5G) communications technologies and gives cellular technicians the opportunity to earn a certification that has valuable industry application. Aspiring 5G Technician competencies will give first-hand looks at industry standards, real world examples and case studies provided by a committee of subject matter experts with backgrounds in engineering, construction, cell carriers, broadcasting and entertainment.

5G Technicians are expected to learn in preparation for the ETA® International 5GT certification written examination, which covers a variety of topics including: 5G industry terminology, uses of 5G (enterprise, consumers and government systems), 5G equipment upgrading specifications, 5G networks, 5G construction best practices, 5G infrastructure design and general design thinking principles and concepts.

Broadband-Voice over Internet Protocol (B-VoIP)
B-VoIP technicians are versed in telephone and Internet communications. They install, maintain, and repair/replace voice, data, and video over Internet Protocol equipment. They are capable of interconnecting B-VoIP equipment to local and wide area computer network systems. They are familiar with many acronyms used in the telecom industry. They are capable of performing cable installation, replacement/modernization and interconnection between different cable types and wireless equipment. They are knowledgeable in the protocols being used for the telecommunications industry. They are capable of configuring and provisioning B-VoIP equipment and transmission media.

Certified Satellite Installer (CSI)
*The Certified Satellite Installer exam is HALF PRICE if taken with one or more endorsements at the same time!*
The exams are practical and cover a broad range of hardware and broadcast technology, but are not limited to specific brands of products. The CSI covers: Satellite Communications History & Theory, Satellite Dish Reflectors, Cabling, Amplifiers, Satellite Dish Feed—horns – LNBs & LNBFs, Satellite System Installation – Site Surveys, Satellite Receivers – Digital Technology, Interfacing With Other Consumer Electronics Equipment, Transmission – Internet Systems, Troubleshooting, Repairs, Sun Outage, and Safety.

Available CSI Endorsements:
- Antenna - $65
- C and KU Band - $65
- Commercial - $65
- S-MATV - $65

Distributed Antenna Systems (DAS)
Distributed Antenna Systems technicians and installers cover basic knowledge concepts of distributed antenna systems and antenna/cell installation. This also includes service and skills applicable to all of the functions required to safely and completely install, maintain, troubleshoot and provide support of in-building distributed antenna systems, communications and electronic equipment. Carrier, Public Safety, and mission critical aspects of boosting signal transmission and reception are discussed.

General Communications Technician — Level 1 (GCT1)
The General Communications Technician certification is a program that is modeled after communication systems fundamentals, basic electronics, and the U.S. Department of Homeland Security (DHS) guidelines covering many of the disciplines in the COMT program. The purpose of the GCT is to provide a study guide and training program, along with the appropriate certification testing that covers all of the areas a radio communications technician and engineer will encounter in the public safety communications or business/commercial radio field.
General Communications Technician — Level 2 (GCT2)
*Prerequisite is the Associate CET (CETa) or General Communications Technician — Level 1 certification

The General Communications Technician Level 2 (GCT2) certification is a program modeled after wide-ranging private wireless industry communication systems encompassing more than the basics along with the U.S. Department of Homeland Security (DHS) guidelines covering many of the disciplines in the COMT program. The GCT2 competency comprises more complex areas which a radio communications technician and/or engineer will encounter in the public safety communications or business / commercial radio fields. This GCT2 certification will involve more knowledge of intricate skills and troubleshooting. The purpose of the GCT2 is to provide a certification program and testing that expands upon the coverage included in the ETA GCT1 competencies. The GCT2 certification technician candidate must hold the GCT1 or the Associate CETa as the minimum pre-requisite certification. Prior RF experience in industry and public safety best practices is highly suggested. The GCT program certifications are maintainable for all Levels.

Line & Antenna Sweep (LAS)

This Frequency Domain Reflectometer (FDR) certification includes hands-on testing and verification of line and antenna sweeping skills using modern FDR equipment, as well as a written exam. The LAS is a stand-alone certification, but it can be used as a Journeyman CET option when the Associate, or basic electronics, is also passed.

Microwave Radio Technician (MRT)

Microwave radio still plays a major role in radio and data transmission systems. Wireless carriers continue to deploy microwave systems for data backhaul, and with the advancement of LTE for public safety, the need for microwave communications continues to grow. This certification includes basic knowledge concepts technicians need to know to install, align, maintain, and operate point-to-point microwave radio systems. Prior experience with radio systems and equipment is suggested. This includes core concepts of radio frequency (RF) energy, including how to identify it and safety requirements when working in an RF environment.

Mobile Communications and Electronics Installer (MCEI)

This certification includes basic knowledge concepts of land mobile radio (LMR) and associated electronics equipment installation. This also incorporates required skills applicable to all of the functions required to safely and completely install mobile communications and associated electronic equipment, including removal and reinstallation.

Passive Intermodulation Testing (PIM)

Passive Intermodulation (PIM) is a form of interference where intermodulation mixing occurs within the confines of the transmission line and antenna network of a radio system. The ETA PIM certification assures site managers that quality antenna installation has taken place and meets the desired engineering and propagation standard for that site. The PIM test set operator knows how to use the testing equipment hardware, and can do so in a safe and harmless manner. Additionally, the ETA certification is based on the IEC 60237 standard covering the installation of antennas, connectors, jumpers, and related antenna network elements, allowing the holder of that certification to use any manufacturer’s test set at any frequency range. An ETA certified technician has a clear understanding of antenna theory and interference testing and will be well positioned to help resolve site PIM issues, so resolving these interference issues will be easier for the ETA-certified technician.
RF Interference Mitigation (RFIM)

RF interference mitigation technicians are expected to obtain knowledge of radio frequencies, how they interact in the environment and within equipment, how to identify and to correct interference problems. Prior experience with radio systems and equipment is strongly suggested (or taking a RF Interference hunting course) before taking this certification exam.

Advanced Interference Mitigation (AIM)

Advanced RF Interference Mitigation technicians are expected to obtain knowledge of radio frequencies, how they interact in the environment and within equipment, how to identify and to correct complex interference problems using advanced troubleshooting procedures and technology. Prior advanced RF experience with radio systems and radio equipment, such as spectrum analyzer utilization/techniques, OR taking the available two-day Advanced RF Interference Mitigation course with the optional Hands-On, is strongly suggested before comprehending the AIM competencies and sitting for this certification examination.

Radar (RAD)

Radar electronics technicians are expected to obtain knowledge of radar basics and concepts, which are then applicable to various types of avionics, maritime, and land radar systems. Radar electronics technicians must be knowledgeable and have abilities in the following technical areas: Block Diagrams and Schematics, Components, Cabling and Antennas, Hand Tools & Soldering, Mathematics, Amplifiers, Radar Transceivers, Interfacing, Satellite, Wireless, Data Communications, Computers and Digital Concepts, Software-Programming, and Troubleshooting.

Telecommunications (TCM)

Telecommunications electronics technicians are expected to obtain knowledge focused on wired and wireline communications basic concepts, which are then applicable to various types of voice, data and video systems. Telecommunications Electronics Technicians must be knowledgeable and have abilities in technical areas such as: Cabling, Analog Telephony, Equipment, Telecom Safety and Mathematics, Transmission Service Providers and Protocols, Distribution Methods, Digital Telephony, Interfacing, and Troubleshooting.

Wireless Communications (WCM)


ETF Exam Info

| Price: | $105 |
| Type of Certification: | Stand-Alone |
| Renewal/Maintenance Required: | Yes |
| Certification Term: | 4 Yrs |
| Hands-On Required: | No |
| Questions on Exam: | 100 |
| Passing Score: | 75% |
| Time Allowed to Test: | 2 hours |

AIM Exam Info

| Price: | $105 |
| Type of Certification: | Journeyman or Stand-Alone |
| Renewal/Maintenance Required: | Yes |
| Certification Term: | 4 Yrs |
| Hands-On Required: | No |
| Questions on Exam: | 100 |
| Passing Score: | 75% |
| Time Allowed to Test: | 2 hours |

RAD Exam Info

| Price: | $80 |
| Type of Certification: | Journeyman |
| Renewal/Maintenance Required: | Yes |
| Certification Term: | 4 Yrs |
| Hands-On Required: | No |
| Questions on Exam: | 50 |
| Passing Score: | 75% |
| Time Allowed to Test: | 2 hours |

TCM Exam Info

| Price: | $80 |
| Type of Certification: | Journeyman or Stand-Alone |
| Renewal/Maintenance Required: | Yes |
| Certification Term: | 4 Yrs |
| Hands-On Required: | No |
| Questions on Exam: | 75 |
| Passing Score: | 75% |
| Time Allowed to Test: | 2 hours |

WCM Exam Info

| Price: | $80 |
| Type of Certification: | Journeyman |
| Renewal/Maintenance Required: | Yes |
| Certification Term: | 4 Yrs |
| Hands-On Required: | No |
| Questions on Exam: | 100 |
| Passing Score: | 75% |
| Time Allowed to Test: | 2 hours |
ARINC Installer and Technician (AFT)
ARINC is a division of the SAE Group along with SAE International. ARINC organizes aviation industry committees and participates in related industry activities that benefit aviation at large by providing technical leadership and guidance. These activities directly support aviation industry goals: promote safety, efficiency, regularity, and cost-effectiveness in aircraft operations. ARINC recognizes ETA International as the industry trained fiber optics certification entity in regards to the aerospace industry. The ARINC certifications are based on the ARINC 807-3 report and SAE International-recognized standards. The ARINC Installer is the aerospace fiber and connector installation certification, while the ARINC technician includes the more advanced aerospace troubleshooting and repairing.

Data Cabling Installer (DCI)
ETA data cabling installers are expected to know the basic concepts of copper cabling installation and service—which are then applicable to all the procedures required to safely and competently install communications cabling. Basic electricity and safety; data communications basics; definitions, symbols and abbreviations; cable construction and types; cable performance characteristics; cabling standards; basic network topologies; basic network architectures; National Electrical Code (NEC®); cabling system components; DCI installation tools; connectors and outlets; cabling system design; cabling installation; connector installation; cabling testing and certification; cabling troubleshooting; documentation.

Fiber Optics Designer (FOD)
The ETA 40 hour Fiber Optics Designer training program is an optical designer certification that will provide an in-depth knowledge of optical local area networks. This certification covers all aspects of a successful fiber optic system design from network protocols, network configurations, optical cabling, industry communications standards, determination of fiber count, hardware selection, splicing/termination methods, and cable system testing and documentation. All that is learned in class is put into practice through multiple and intensive case studies. The ETA-certified Fiber Optics Designer program provides detailed instruction and practice of Local Area Network fiber optic design.

Fiber Optics Installer (FOI)
A fiber optic installer has a general understanding of optical fiber installation, connectorization, splicing, and testing. An FOI is also familiar with optical fiber, connector, and splice performance characteristics described in TIA-568-, TIA-569-, TIA-758-, ITU-T G.671, ITU-T G.652, Telcordia GR-326, and Telcordia GR-20. A fiber optic installer can perform connector endface examination as described in TIA-455-72 and is proficient in optical loss testing, as described in TIA-526-1A. He or she also understands the installation requirements described in articles 770 and 250 of the National Electrical Code (NEC®). A fiber optic installer is proficient at the installation of connectors on various types of fiber optic cables, using various types of epoxies, and performing mechanical and fusion splicing.

Fiber Optics Technician (FOT)
A fiber optics technician has a full understanding of inside plant optical fiber, connector, and splice performance characteristics as described in TIA-568 and can use these performance characteristics to create a worst-case power budget for a fiber optic cable plant. An FOT can proficiently perform optical loss testing as described in TIA/EIA-526-14A and perform connector endface assessment as described in TIA-455-57B. Using an OTDR, an FOT can effectively locate faults in a fiber optic cable, mated connector pair, or splice as well as evaluate optical fiber performance, mated connector pair performance, or splice performance for compliance with TIA-568-.
**ETA Certifications**

**Fiber Optics and Data Cabling Cont.**

A Fiber Optics Technician – Inside Plant (FOT-ISP)
A fiber optics inside plant technician must be able to accurately install, terminate, test, and troubleshoot fiber optic communication systems used in premises, LANs, enterprise and data center installations. Included are various techniques applicable to gigabit multimode and single-mode systems consisting of unique test requirements in Ethernet and Fibre Channel, but also pertinent to FTtx, security systems, and CATV networks. As many inside plant installations use multimode fiber, the FOT-ISP technician must recognize the various types - IEC defined OM2, 3, 4 & 5 multimode - and OS2 single-mode fibers along with the various proper launch conditions used when testing fiber spans as also defined by the TIA-568 and TIA-942 standards. Technicians must similarly comprehend various fiber optic cable connector types and termination used in these networks, using best practices for installing and testing fiber links.

Fiber Optics Technician—Outside Plant (FOT-OSP)
A fiber optics outside plant technician must be able to properly terminate, test and troubleshoot single mode fiber optic communication systems. This includes various types of termination techniques applicable to high-speed laser-based systems including SONET, DWDM, FTtx, and CATV networks using ITU-T G.652 and G.655 single mode fibers. Disciplines include mechanical and fusion splicing per the TIA-758 standard and the preparation of fiber optic cables and cable management products. Technicians must also know testing and troubleshooting of each element of the fiber optic communication systems along with unique test requirements of SONET, DWDM, FTtx, and CATV networks.

Fiber To Any Antenna (FTAA)
The Fiber To Any Antenna stand-alone certification is for individuals who have been trained in the practice of installing fiber optic cabling at wireless and cellular facilities. These disciplines are applicable to all the functions required to safely and competently install pre-terminated fiber optic transmission cable assemblies and connection devices onto equipment and antenna(s), wherever the antenna system may be located indoors or outdoors. Included are how to inspect, clean and test the fiber plant along with how to identify and troubleshoot problems during and after installation.

SAE Fabricator (SFF)
For individuals involved in the manufacturing, installation, support, integration and testing of fiber optics systems. Intended for managers, engineers, technicians, trainers/instructors, third party maintenance organizations, quality assurance and personal production. Both the SAE and ARINC certifications are based on SAE International standards. The Aerospace industry has always required the highest standards of workmanship to be maintained. This certification is universally recognized for competency, ability, and knowledge as an Aerospace Fiber Optics Fabricator (FAB). ETA worked with the SAE International’s Fiber Optics and Applied Photonics Committee to develop this certification. To be recognized for this honor, practicing fabricators must demonstrate the necessary skills and knowledge verifying their proficiency in Aerospace Fiber Optics Fabrication procedures and technology as defined in the SAE International Aerospace ARP5602/3 and ARP5602/4 competencies.

Termination and Testing Technician (TTT)
This certification covers knowledge to properly, terminate, connect, test, and troubleshoot IP-enabled voice/data/video cable and devices to each other. One of the key advantages to using Cat 5e/6/6x, and fiber-optic cables and connectors for electronic security and voice/video/data installations is that these cable connections can be readily built using the proper tools and techniques, which are taught in the required course. This part of the training will emphasize the ETA challenge of being vendor-neutral and applying industry standards for terminations and cable performance. The knowledge gained by the examinees will be applicable to any vendor’s products within the scope of the technology studied. One of the primary principles of the network cabling standard is that if a cable is properly terminated and tests satisfactory, that cable can be used to connect any proper device from any manufacturer. Vendors are making thousands of different devices, all of which can be readily connected to a network if the fiber, coax, and/or copper cable to be used is properly terminated and tested.
Fostering Excellence Through Certification Since 1978

**Computer Service Technician (CST)**

The Computer Service Technician performs hardware servicing and provides systems software skills for personal computers. The knowledge used includes Computer Assembly/Disassembly; Motherboards; Buses; System Resources, Processor Characteristics; Physical and Electronic Memory Characteristics; Secondary Storage Devices; Peripheral Devices; Ports; Power Concepts and Supplies; Basic Networking; Portables; Digital Concepts; Troubleshooting/Preventive Maintenance; Operating Systems; File Management; Safety, Security and Workplace Practices.

**Information Technology Security (ITS)**

The Information Technology Security certification covers all areas of cybersecurity for information technology. ITS-certified specialists are expected to have the major knowledge, skills, and abilities in order to perform the professional tasks associated with the development of security plans and processes for information technology and cybersecurity. This certification identifies a specialist’s knowledge of computer hardware and software security measures as well as wireless communications security, device security, cryptography, social engineering, virus detection/mitigation, troubleshooting, disaster prevention/recovery and site risk analysis. It is highly suggested that an ITS have prior computer systems and computer networking experience.

**Network Computer Technician (NCT)**

Network Computer Technicians are expected to obtain knowledge of computer electronics basic concepts, Internet and networking technology applicable to various areas of the computer industry. More specifically, NCTs must be able to function, structure, operate, file manage, install, configure/upgrade, manage memory, diagnose and troubleshoot operating systems and hardware (including motherboard and processors and printers).

**Network Systems Technician (NST)**

A Network Systems Technician is a network professional who is expected to obtain knowledge of computer network basic concepts, applicable to the various specialty areas of the computer industry. The NST must be familiar with the following: Computer Network Terminology, Network Administration, Wide Area Networks and Devices Used to Extend Networks, Network Architectures, Computer Network Topologies and Classifications, Network Services, Network Operations, Network Standards, Troubleshooting LAN/WAN Test Equipment, Network Server and Workstation Computer System Hardware, Network Operating Systems, and Disaster and Security Planning for Networks.

**Wireless Network Technician (WNT)**

The Certified Wireless Network Technician is a network professional who is expected to obtain knowledge of the operation and maintenance of wireless networking concepts, RF and IR propagation and modulation technologies, applicable to all the specialty areas of the wireless networking industry. Once the WNT has acquired these skills and knowledge, the technician will be able to enter employment in any part of the wireless networking industry. With minimal training in areas unique to the specific products and protocols, the WNT should become a productive member of computer industry workforce.

**CST Exam Info**

- **Price:** $80
- **Type of Certification:** Journeyman or Stand-Alone
- **Renewal/Maintenance Required:** Yes
- **Certification Term:** 4 Yrs
- **Hands-On Required:** No
- **Questions on Exam:** 75
- **Passing Score:** 75%
- **Time Allowed to Test:** 2 hours

**ITS Exam Info**

- **Price:** $105
- **Type of Certification:** Journeyman or Stand-Alone
- **Renewal/Maintenance Required:** Yes
- **Certification Term:** 4 Yrs
- **Hands-On Required:** No
- **Questions on Exam:** 100
- **Passing Score:** 75%
- **Time Allowed to Test:** 2 hours

**NCT Exam Info**

- **Price:** $80
- **Type of Certification:** Journeyman or Stand-Alone
- **Renewal/Maintenance Required:** Yes
- **Certification Term:** 4 Yrs
- **Hands-On Required:** No
- **Questions on Exam:** 75
- **Passing Score:** 75%
- **Time Allowed to Test:** 2 hours

**NST Exam Info**

- **Price:** $105
- **Type of Certification:** Journeyman or Stand-Alone
- **Renewal/Maintenance Required:** Yes
- **Certification Term:** 4 Yrs
- **Hands-On Required:** No
- **Questions on Exam:** 100
- **Passing Score:** 75%
- **Time Allowed to Test:** 2 hours

**WNT Exam Info**

- **Price:** $80
- **Type of Certification:** Journeyman or Stand-Alone
- **Renewal/Maintenance Required:** Yes
- **Certification Term:** 4 Yrs
- **Hands-On Required:** No
- **Questions on Exam:** 75
- **Passing Score:** 75%
- **Time Allowed to Test:** 2 hours
Photonics Technician Operator (PTO)
Photonics Technician Operators work in jobs where they assemble, measure, test, and repair optical components such as lenses, mirrors, filters, fiber optics, and electro-optic or other photonics devices plus optical sources such as lasers and light-emitting diodes (LEDs). Technicians typically work in applications where photonics is an "enabling technology" — manufacturing/materials processing, Internet/communications, biomedical equipment, and defense/homeland security systems development/integration. Due to the high technical standards and safety issues involved, technicians will receive specialized training in both knowledge and hands-on skill items.

Photonics Technician Specialist (PTS)
Photonics Technician Specialists work in areas that utilize the skills and knowledge of the operator level, but also an additional higher level of optics, photonics physics, and technology and that require a greater variety of hands-on competencies in laser and optical components and systems. They typically work in applications such as the following: research and development laboratory; product development, test, and production specialists who are team members for original equipment manufacturers (OEMs) of lasers, optics, and photonics components and systems; field service specialists for OEMs or companies that manufacture and/or utilize lasers, optics, and photonics components and systems. They are graduates of AAS degree programs that focus specifically on optics, lasers and photonics.

Specialist in Precision Optics (SPO)
Precision Optics Specialists produce, test, and handle optical (infrared, visible, and ultraviolet) components that are used in lasers and sophisticated electro-optical systems for defense, homeland security, aerospace, biomedical equipment, digital displays, renewable energy production, and nanotechnology. SPOs also integrate precision optical components into these electro-optical systems and maintain them, including handling, storage and transport. SPOs will also have experience in shaping, polishing, and coating precision optics; using optical instruments; understanding procedures and guidelines for verifying optical component dimensions and tolerances. These technicians have a greater range of hands-on competencies and experience with fabrication and test a wider range of types of optics and optical coatings.

Technician in Precision Optics (TPO)
Precision Optics Technicians work in optical component fabrication technical areas in optical shops, optics manufacturers and in quality control departments (incoming and/or outgoing inspection) for organizations that incorporate precision optics into various systems. They must be able to examine the properties and uses of a variety of bulk materials; have experience in the use of equipment and procedures for shaping, polishing, and coating precision optics; and be able to use optical instruments, procedures and guidelines for verifying optical component dimensions and tolerances. They can also handle, store, and ship precision optical components. Precision optics technicians have the minimum required hands-on competencies and experience with fabrication and tests of fewer types of optics. Due to the high technical standards and safety issues involved, technicians will receive specialized training in both knowledge and hands-on skill items.
**Electric Vehicle Technician (EVT)**

Electric Vehicle Technicians (EVTs) work on vehicles powered solely by electricity. They perform routine maintenance like other mechanics; however, EVTs must have extensive knowledge of how lithium-ion batteries and automotive systems interact. In addition, they may replace hydraulically assisted systems with electric–powered systems, such as power-steering pumps or air-conditioning compressors, to improve fuel economy.

Certification is for individuals interested in attaining training from an ETA® International-approved EV school. In this program students will develop skills in safety, troubleshooting and repairing of Electric Vehicles. Due to the high voltage (300 VDC and above) and safety issues involved, technicians are required to receive specialized training in both knowledge and hands-on skill items.

**Photovoltaic Installer — Level 1 (PVI1)**

The Photovoltaics (PV) Level 1 certification is designed for individuals seeking an entry-level position in the solar electric industry. Individuals must have hands-on training from an ETA-approved school and be knowledgeable in topics such as solar resources and principles; proper product identification and selection criteria; system design options; system sizing and design for residential scale systems; proper installation techniques; safe installation practices; as well as maintenance and troubleshooting methods.

**Photovoltaic Installer/Designer — Level 2 (PV2)**

The Photovoltaics (PV) Level 2 certification is designed for individuals with existing field experience in the solar electric industry. Individuals will demonstrate experience in the installation of a number of system options, as well as receive training from an ETA-approved program. Current OSHA 10 certification is also a requirement. In addition to the subject matter covered in PV Level 1, successful applications must demonstrate knowledge in commercial-scale system design and installation; project management; site and crew management; economic considerations for various design options; permitting processes; and various paperwork requirements for large-scale systems.

**Small Wind Installer (SWI)**

The ETA International Small Wind Installer Certification provides practical assessments in wind power energy generation under 100 kW. Hands-on training from an ETA-approved school is necessary and individuals should be educated in the following topics including the theory of wind energy and electrical generation; site evaluation; design and selection of wind systems; proper installation, components and troubleshooting methods; safety; finance; and environmental assessment and management.

**ETA’s Annual Education Forum**

ETA’s Education Forum, a world-class technical education conference, is held annually at various sites in the United States. It is the ideal venue for both professional and curriculum development, regardless of skill level, focusing on hands-on training. The Education Forum is the focal point for technical and educational professionals to discover emerging technologies, network and collaborate with fellow technicians and educators, have access to training and speaking sessions with industry experts, sit for certification examinations, gain continuing education credits, and discuss classroom implementation strategies.

ETA hosts training workshops and sessions provided by industry leaders such as Light Brigade, Motorola Solutions, Corning Optical Communications, Slayton Solutions, Dover Telecommunication Services, Radio System Analytics, Ira Weisenfeld & Associates, Bird Technologies and more. In addition, ETA conducts an Annual Membership Meeting and Awards Banquet at the Education Forum. Visit the the ETA website for the current schedule at www.educationforum.info.
Certified Alarm Security Technician (CAST)
Alarm-Security technicians must be able to identify and describe the operations of alarms and have basic understanding of technology and its configuration, fiber optics – telecommunications, software, and computers and locks. The CAST will be able to explain, understand, and use block diagrams and schematics, digital concepts, software, hand tools—soldering, data communications, and cameras and intercoms.

Electronic Security Networking Technician (ESNT)
The ESNT was developed for technicians who have gained knowledge and skills needed to properly cable, connect, install, program, and troubleshoot IP-enabled security devices onto local area networks and the Internet. This certification is an acknowledgement of the examinee’s familiarization and understanding of the hardware and theory of operation of this medium. It is a stand-alone certification that can also be used as a Journeyman option.

Smart Technology Systems (STS)
*The Smart Technology Systems exam is HALF PRICE if taken with one or more endorsements at the same time!*
Smart Technology Systems is a professional certification for those who design and oversee the installation and integration of electronics systems in residences and light commercial buildings. The objective of the STS is to produce a residential or light commercial electronics systems package that will allow all data, control, and communication signals to be integrated at the premise controller and converged into one secure cohesive communication stream, to either be used within the premise or to be passed back and forth through the gateway. A STS should be proficient in the many IoT protocols used over diverse media to communicate with and control residential and light commercial electronics systems.

Available STS Endorsements:
- Audio-Video - $80
- Computer Networking - $80
- Security-Surveillance - $80
- Environmental Control - $80

Master Smart Technology Systems (STSma)
The Master STS will be proficient in all of the core STS skills and knowledge and in planning and designing electronics and communications equipment systems and layout for new and existing construction. The Master STS is capable of designing the entire system and network for audio, video, data and control of security and environment to function in one IP bit stream converged at the home controller. A Master STS is also capable of troubleshooting and debugging the system and planning installation or modifications. The Master STS has extensive knowledge of the operation and technology and is proficient in each of the basic five subcategories of residential electronics.
Certified Service Manager (CSM)
This is a valuable examination for those who serve as managers, owners or department heads of service businesses such as electronics, computer, communications and appliance repair facilities. Several of the topics covered in this examination include: Manager Responsibilities and Objectives, Personnel Profiles and Job Descriptions, Team Building, Training, Hiring and Employment Laws, Employee Compensation Systems, Customer Relations Policies and Skills, Service Policies, Service/Production Area Development, Test Equipment Needs and Procurement, Financial and Parts Department Management, Warranties and Risk of Liability, Contract Negotiation, Vehicle Procurement and Maintenance, Association Memberships/Involvement, Quality Systems, Security, Safety/OSHA, and Project Management.

Customer Service Specialist (CSS)
The Customer Service Specialist (CSS) is a soft skills certification that validates one’s work readiness skills through employability concepts. Though developed to meet the role of an evolving service oriented electronics technician, CSS is relevant to every industry, employer and employee. Topics included are Safety, Ethics, Respect, Teamwork, Communication, Telephone and E-mail Techniques, Social Media, Problem Solving, Interpersonal Relationships, and Sales and Marketing.

Audio-Video Forensic Analyst (AVFA)
An Audio Video Forensic Analyst’s task is to improve the perceived audio or visual clarity of a digital recording. An AVFA also comprehends the limitations of technology and the opinions that can be formed. However, AVFA work will also include measurements, cross referencing data, and handling everything in accordance with the highest ethics in preparation of your expert testimony in the service of justice. An AVFA will be expected to understand industry best practices, stay up-to-date on innovative peer-reviewed technologies and methods, maintain data integrity through the use of hash values and/or chain-of-custody control, keep detailed notes of activity, adapt existing knowledge to unexpected circumstances, and follow the procedures of the rules of evidence applicable to the jurisdiction of the case working solely for the evidence.

Avionics (AVN)
The avionics specialty is designed to assess the knowledge and skills of individuals who install, maintain and adjust electronics equipment, cabling and the accessories used in aviation communications and control equipment. Several of the topics covered in this examination include: Avionics Systems, Cabling, Computers and Digital Concepts, Amplifiers, Interfacing, Antennas and Transmission Lines Components, Mathematics, Network Topologies and Infrastructures, Optical Cabling, Safety, Test Equipment and Tools and Satellite Communications.

Commercial Audio Technician (CAT)
The Commercial Audio Technician (CAT) is a certification for sound system technicians who need to design, install and troubleshoot speech and music sound systems in commercial and institutional environments. Commercial Audio Technicians must be knowledgeable in Acoustics, Microphones, Speakers, Sound & Measurements, Wiring, 70-Volt Systems, Troubleshooting, Safety, and Codes and Standards.
**Digital Video Editor (DVE)**

Digital video editing is experiencing an unprecedented boom with a worldwide increase of not only professional digital editing, but the melding of amateur and professional video into a product available through the Internet and many social media venues. ETA is proud to announce a new vendor-neutral exam and certification for Digital Video Editor (DVE), created for all media professionals working with digital videos. Many video editor positions may not require a degree or extensive training, however professional video editors will need the knowledge of industry standards and the skills necessary to meet the demands of this growing field. Examinees will be required to know both audio and video fundamentals, screen for -mats, digital video formats and fundamentals, digital data rates, and fundamental video editing processes. Customer service basics are also covered in regards to schedule requirements, progress reporting, production and transmission costs, and hardware and software requirements for video editing.

**Gaming and Vending Technician (GVT)**

The Gaming and Vending Technician (GVT) certification is intended for entry-level technicians with a sound background in electronics. Technicians will work in the field to troubleshoot, repair and calibrate gaming and vending type equipment. Money handling, basic electrical, circuitry, computer hardware and software, and safety are topics included in this certification. The GVT is a stand-alone certification and must be maintained every four years.

**Industrial (IND)**

Industrial journeyman-level electronics technicians are expected to obtain knowledge of industrial electronics basic concepts, which are then applicable to all the various specialty areas of industry. Industrial Electronics Technicians must be knowledgeable and have abilities in the following technical areas: Amplifiers, Optical Wiring, Block Diagrams-Schematics, Robotics, Hydraulics, Power Supplies, Test Equipment-Tools, Mathematics, Computers-Digital Concepts, Safety, Satellite-Wireless-Data, Communications, Cabling, Troubleshooting, Motors, Programmable Logic Controllers, and Software.

**Radio Frequency Identification Technical Specialist (RFID)**

This certification is intended for an electronics technician with an understanding of RFID. The technician should have a basic understanding of the hardware and theory of operation of radio communications as it applies to RFID radio transceiver technology. RFID is a stand-alone but can be used as a journeyman option when the Associate exam is also taken and passed.

**DVE Exam Info**

- Price: $105
- Type of Certification: Stand-Alone
- Renewal/Maintenance Required: Yes
- Certification Term: 4 Yrs
- Hands-On Required: No
- Questions on Exam: 75
- Passing Score: 75%
- Time Allowed to Test: 2 hours

**GVT Exam Info**

- Price: $105
- Type of Certification: Stand-Alone
- Renewal/Maintenance Required: Yes
- Certification Term: 4 Yrs
- Hands-On Required: No
- Questions on Exam: 75
- Passing Score: 75%
- Time Allowed to Test: 2 hours

**IND Exam Info**

- Price: $80
- Type of Certification: Journeyman
- Renewal/Maintenance Required: Yes
- Certification Term: 4 Yrs
- Hands-On Required: No
- Questions on Exam: 75
- Passing Score: 75%
- Time Allowed to Test: 2 hours

**RFID Exam Info**

- Price: $105
- Type of Certification: Journeyman or Stand-Alone
- Renewal/Maintenance Required: Yes
- Certification Term: 4 Yrs
- Hands-On Required: No
- Questions on Exam: 75
- Passing Score: 75%
- Time Allowed to Test: 2 hours

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Many ETA Standalone certifications in certification maintenance can be upgraded to a Journeyman Certified Electronics Technician (CET). If the certification holder successfully completes the Associate CET (CETa) certification examination, then the maintained original standalone is combined with the CETa to upgrade to a CET. To apply for the Journeyman CET, you must have two or more years of combined work and electronics training. To upgrade, please fill out the Journeyman CET upgrade form. Journeyman upgrades are $50.

ETA also offers rollovers for popular industry certifications that are comparable to an ETA equivalent certification. Some examples are CompTIA A+ (ce) Rollover to CST, CertTEC BEE to Associate CET, CompTIA Network+ (ce) Rollover to NST, FCC Element 8 + Associate CET/GCT1/Journeyman CET to RADAR, CEA MCEP to MCEI, Anritsu PIM to ETA PIM, and FCC GROL + Associate CET/GCT1/Journeyman CET to WCM.
Commercial Radio Operator Licenses

FCC Licenses are required by law to operate and maintain many types of communications equipment. The broadcast, aeronautics, and maritime industries are the primary employers of commercial license holders, although many other fields now require FCC licenses. ETA has proudly served as an FCC COLEM (Commercial Operator License Examination Manager) since 1993. You can read more about the FCC and its programs at www.fcc.gov.

Marine Radio Operator Permit (MP) — Element 1

MPs, or MROPs, are required to operate radiotelephone stations aboard certain vessels that sail the Great Lakes. They are also required to operate radiotelephone stations aboard vessels of more than 300 gross tons and vessels which carry more than six passengers for hire in the open sea or any tidewater area of the United States. They are also required to operate certain aviation radiotelephone stations and certain coast radiotelephone stations.

General Radiotelephone Operator License (PG) — Elements 1 & 3

A PG, or GROL, is required to adjust, maintain, or internally repair FCC licensed radiotelephone transmitters in the aviation, maritime, and international fixed public radio services. It conveys all of the operating authority of the MP.

Global Maritime Distress and Safety System Operator (DO) – Elements 1 & 7

The DO, or GMDSS Operator, qualifies the holder to operate, and make some basic equipment adjustments to, Global Maritime Distress and Safety System (GMDSS) radio installations. It also confers the operating authority of the MP.

Global Maritime Distress and Safety System Operator - Restricted (RG) – Elements 1 & 7R

The RG, or GMDSS Restricted, qualifies the holder to operate, and make some basic equipment adjustments to, Global Maritime Distress and Safety System (GMDSS) radio installations, but only on voyages that remain within twenty (20) nautical miles of shore. It also confers the operating authority of the MP.

Global Maritime Distress and Safety System Maintainer (DM) – Elements 1, 3, & 9

The DM, or GMDSS Maintainer, qualifies personnel as GMDSS radio maintainers to perform at sea repair and maintenance of GMDSS equipment. It also confers the operating authority of the PG and MP. NOTE: In instances where an applicant qualifies for both a DO and a DM, the applicant qualifies to hold a GMDSS Radio Operator/Maintainer License (DB).

Radiotelegraph Operator (T)

The T authorizes the holder to operate, repair, and maintain ship stations, and to repair and maintain coast radiotelegraph stations in the maritime services. It also confers all of the operating authority of a T2.

Ship Radar Endorsement – Element 8

Only persons whose commercial radio operator license bears this endorsement may repair, maintain, or internally adjust ship radar equipment.
Association membership is voluntary—a fundamental premise of ETA’s member eligibility requirements that sets us apart from most certification associations. If you plan to or are currently working in any technical or related business area, then you are eligible to join ETA. Students, instructors, technicians, trainers, distributors, company owners, military personnel, and certified technicians all hold membership in ETA. You can too!

Members receive benefits such as the High Tech News (ETA’s bi-monthly digital publication), communication with peers through regular members-only technical access message boards and forums, association voting privileges, as well as discounts on various industry publications, events, and services. ETA International offers six types of membership: individual, student, institutional, master, retiree, and lifetime. All memberships are good for one year with the exception of the lifetime and two-year individual options. Each will receive a wallet card and wall certificate. You can view more information at www.eta-i.org/membership.html.

**Individual:**
Price: $40.00 per year or $75.00 for two years
Members of ETA receive a digital subscription to the High Tech News (HTN), ETA’s bi-monthly publication and discounts on ETA study materials, merchandise, and the Career Resource Center, in addition to access to the “Members Only” site that includes free practice exams, HTN archives, and many other exclusive materials. ETA also offers a two year individual membership (USA only) for $75.00.

**Student:**
Price: $20.00 per year
*Current student ID or course schedule is required.
Student memberships apply to those who are enrolled at state and commercial electronics training institutes or in correspondence and military courses. Students also receive the same benefits as those who are individual members of ETA in addition to assistance in developing a successful career. ETA offers professionals help in improving their resumes and other materials needed by employers.

**Institutional (includes four Individual memberships):**
Price: $250.00 per year
Hardware manufacturers, public and private educational institutions, service providers, and affiliated groups can have a voice as an institutional member with ETA. Institutional memberships enjoy the same benefits as individual memberships plus additional advertising opportunities.

**Master CET:**
Price: $25.00 per year
You’ve earned distinction within the industry by becoming a Master Certified Electronics Technician (CETma). ETA can help you connect with other professionals from around the world to discuss issues, share experiences, and learn from one another. In addition, your membership gives you access to our members-only technical publications, seminars, workshops, newsletters and special services, in the same way as the individual membership.

**Retiree:**
Price: $10.00 per year
If you have retired, and would like to stay involved in your industry, then an ETA retiree membership might be right for you. These memberships offer the same benefits of an individual membership, but at a reduced cost.

**Lifetime:**
Price: $500
If you would like a lifetime membership with no annual renewals at a great discount, then this is the option for you! Included are all of the perks of the individual membership plus the satisfaction of knowing you are supporting your industry with a lifetime commitment to ETA.

### BENEFITS

<table>
<thead>
<tr>
<th>Member Benefit</th>
<th>Non-Member</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Tech News</strong>, ETA’s bi-monthly magazine</td>
<td>FREE</td>
</tr>
<tr>
<td>Online Practice Exams</td>
<td>FREE</td>
</tr>
<tr>
<td>Association Voting Privileges</td>
<td>FREE</td>
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<tr>
<td>Study Materials</td>
<td>Discounts on selected texts</td>
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<tr>
<td>Discounted rates for ETA’s annual convention</td>
<td>Discount on registration fees</td>
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<tr>
<td>Innovation &amp; Tech Today magazine</td>
<td>FREE (contact ETA for details)</td>
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</tbody>
</table>
In 2018 alone, technicians at the following companies chose to become certified through ETA International. This list does not include the thousands of students in electronics-related industries who also became ETA-certified in 2018.
Where are ETA-Certified Individuals?

Cook Construction Service
Cooper Mtn Metro
Cooper Valley Telephone
Covellite Indian Tribe
Corfin Industries
Creative Communications/Phoenix
Creative Machine Repair
Creative Security
Crimson Media Services
Critical Hub Networks
Croft Electrical
Crosspoint Communications
Crosstown Elec & Data
Crowl Castle
Crystal Computing
CTF North Textiles
CTF Solelad
Cumberland Telephone Co
Custer Telephone
Customs and Border Protection
Cyber Communications/East Taunton/Woburn
Cyber on Demand
D & D Comms dba First Wireless/Lincoln
D & D Comms dba First Wireless/Omaha
Dairyland Power Coop
Dallmann Systems Inc
Daniel Morgan Technology Center
Danielson Inc
Daryl's Electric Inc
Dauphin County Technical School
Davidson Technologies
Davis Electric
Day Management Corp dba Day Wireless Systems
Day Starr Communication
DC Electric Group
DC Telecomm
Decentraca Labs
Deep Down Inc
Defense Information Systems
DeGroods Appliance Co Inc
Delcom Products Inc
Dell Telephone Coop Inc
Delta Airlines
Delta Wireless/Sacramento/Stockton
Desert Comm
Desert Media Group LLC
Designing Cat LLC
DFW Communications/Ft Worth
Digicel Group
Digicel TCI
Digitcom Electronics/La Junta
Dilling Group
Direct Communications
Direct TV
Diversified Electronics Inc/Marietta
Divine Electrical Limited
Dixie Power
Doco roaming
Dolores Water Conservancy Dist
Dominion Energy
Douglas County Sheriff's Office
Douthits Radio Service Inc
DRC-HVAC Technician
DRD Enterprises
DSC Communications
DuBose Electric
Ducross Electrical Inc
Duke Energy
Dunne Communications
Dupage Public Safety Communications
Dura-Line
DY Wireless Systems
Eagle County
Eagle Radio Technologies
Earthlink
ecoATM
Ecolift Corporation
ECPI University
Edge Communications
Edgecombe County Public Schools
EDS Technology
Egyptian Military of Defence
Elcon Corporation
Electrical Corporation of America
Electronic Alarms
Electronic Applications Company, Inc
Electronic Engineering Company
Electronic Maintenance & Comm Inc
Electronic Service Solutions
Elite & Associates
Elite Auto
EMCI Wireless
Emergency Radio Service Inc
Enbridge Energy
End Point Technologies
Energy Keepers Inc
Energy Northwest
Englewood Hospital and Medical Center
Enterprise Products
Entertainment Solutions
Envision Technology Group
EPS Security
Ervin Cable
Estat Global Systems
ESP Security
ESPN Inc
ETA International
ETIS Group
Evergreen Fire & Security
Ewing Foley
Excel USA
Express Technologies
F&B Communications
Facility Solutions Inc
Faith Technologies Inc
Farmers Cooperative Association
Farquhar Tech
FCL Co-op
FDI Construction
Federal Correctional Institution Ray Brook
Federal Correctional Institution Otisville
Federal Emergency Management Agency
Federal Express
Folsom Holt & Ullevig
Fiber Optic Cable Shop
Fiber Works
FiberOpt.com
FiberOpt Asia Pte Ltd
Figure 8 Communications Inc
Finger Lakes Communications
First Digital Telecom
Five Points Infrastructure Services Inc
Flathead Electric Co-Op
Florida Air National Guard
Fluor Corp
Focused Support LLC
Forensic Protection
Fort Knox
Fort Mojave Telecom
Foundation for an Independent Tomorrow
Fourier Network Solutions
FramAco
Fullscone Wireless
Funai Service Corp
Fundacions Belen Education
Future Technologies Inc
FX Solutions Inc
G & G Inc
GA Technical
Garber World
Gately Communication Co/Chesapeake/Hampton
GC & E Systems Group Inc
Geek Squad
GEM State Communications
General Dynamics
General Dynamics Mission Systems
Georgia Transmission Corp
Gila Electronics of Yuma Inc
Gila River Telecommunications Inc
Gillespie, PS & Associates
Gilytek LLC
GlasWeld LLC
Glenwood Telephone
Global Technical Systems Inc
Global Telecom
Google Asia Pacific Pte Ltd
Google Fiber
Google Inc
Googde Switzerland
Google UK LTD
Goosetown Communications/Congers
GPD Telecom Inc
Grace Communications/North Little Rock
Granite Electronics
Grapevine-Coleville Independent School District
Great House Broadcast
Great Plains Comm
Greenbox Communications
Green's Communications Inc
Greens Creek Mine
Gresham Smith
Greystone Power
GRU Com
GSI Technology
GTA Telecommunications
Guilford County Schools
Gulfstream Aerospace
Halliburton
Hancock-Wood Electric Co
Hankey's Radio Inc
Hardline Electric
Harris & Hl Weaver Excavating
Harris Corporation
Harvest Christian Academy
Hassler Enterprise LLC
Hasty's Communications East
Hasty's Communications of Florida Inc/Jacksonville
Hasty's Communications Waycross
Hawaiian Electric
HDR Engineering Inc
Healthcare Facilities Maintenance
Heartland Business Systems
HEI Inc
Her Majesty's Cayman Island Prison Service
Herkimer Radio Service
HHD 94th Military Police
Hicap's Inc
High Desert Broadband
High-Tech Communication
High-Tech Tronics
HII Mission Driven Innovative Solutions
Hobbs Group
Home Depot
Home Telecom
Hong Yuen Pte Ltd
Hoip Telecommunications Inc
Horrocks Engineers
Hotwire Elec
Houston 2-Way Radio
Houston Communications
Hubbell Power Systems
Huntington Ingalls Industries
Huntsville Utilities
Huntsville-Madison Co 9-1-1 System
Hyatt HOTELS Corporation
Hyper Networks Inc
IBEW LU 993
Ice Technical Services
IES Residential
IPCS Recycling
IL Coop Assoc Inc Buchanan Comm/Decatur
Illinois Department of Transportation
Illinois Electric Coop
Illinois State Police
Illuma Electric Design
Indiana Dataline
Where are ETA-Certified Individuals?

Indiana National Guard
Indianola Municipal Utilities
Industrial C & E Inc-Mansfield
Industrial Communications
Inex Surgical Inc
InfoCom Communications
Infotrac Technology
Institute for Career Development
Integrated Communications Inc/Memphis/Tupelo
Integrated Systems Group Inc
Integrated Wireless Technology LLC
Intelligent Decisions
Intermountain Communications
Intermountain Rural Electric Association
Intregated Group Systems
Ira Wiesenfeld and Associates
Irby Utilities
Island County Emergency Services
Island Electronics Ltd
ITT + Tech Direct LLC
ITC Service Group Inc
IWTG Norfolk
J Williams Electrical Service
J&H Auto and Truck Repair
J. Daniel & Company
Jackson Communications Inc
Jackson Electric Cooperative
Jackson Purchase 2-Way Radio
Jacobs Engineering Group Inc
Jacobs Technology
James A Rhodes State College
Japanese Navy
JC Cable Company
J D Carr
JDH Contracting
Jefferson County Schools
JM Controls & Electric
John Deere Rennan Electronics
Johnston Controls
Johnston County Schools North Carolina
Joint Communications Support Element
JR Simplot Company
J’s Communication
JTV LLC
K & C Communications
K2 Group Inc
Kansas City Board of Public Utilities
Kansas Dept of Transportation
Kansas Turnpike Authority
Kay Radio & Electronics Service Inc-Alexandria
KDE Handyman Inc
KE Services
Keithly Electric
Kelcom
Keltek LLC
Keltron Corporation
Kenny Electric
Kentucky Boys State
Kerry Foods
Keystone Communications
Killington Ski Resort
Kinder Morgan COG
King County Radio Communications Services
King Tech High School
Kitco Fiber Optics
Kitsap Public Utility District
Klein Communications Service
Klepps
KM Telecom
Korean Navy
Kratos PBS
Kros-Wise
Kryonyx Corp
KST Security
KTS Underground
L & K Communications
L’S Networks
L-3 Technologies
Lafayette Utilities Systems
Lake County Office of Public Safety Support
Lamar Institute of Technology
Lane Council of Government
Large Binocular Telescope Observatory
Las Vegas Metro Police
Lawson State Community College
Lawton Communications
LB Communications
Legacy Telecommunications
Leidos
Leidos/Iron Horse Signal University
Leo Palace Resort
Leonard (Air & Space) MW Ltd
Leonardo MW Ltd
LES Residential
Leverage Communications
Leviton
Life Access
Lifespan Inc
Light Brightlight
Light Scalpel LLC
Lightspeed Networks
Lima Radio Hospital Inc
Lindsey Telecom
Lingo Networks
Lite Access
LivCom
LNO Inc
Lockheed Martin
Lockbro Inc
LogiCore
Long Lines Ltd
Los Alamos County Transportation
Los Alamos National Labor
Louisiana Radio Communications Inc
Louisville Metro
Low Voltage Companies
Lower Colorado River Authority
Lower Kuskokwim School District
Lucky Joint Construction PTE LTD
Luthansa Technik
Lumbee River EMC
LUS Fiber
LVC Companies
 lynxnet LLC
M Communications
M.U.K.S. 2 Way Radio Sales/Service
Mason Communications Inc/Macon
Macon Communications Inc/Milledgeville
Maersk Training
Manatee County Florida
Management Technology
ManTech International Group
Marshalls
Martin Marietta
MasTec North America
Maui Electric
Mayday Communications Inc
Mayo Clinic
MBF Inspection Services
M-Communications
MCW Solutions
Mecklenburg Electric Coop
Mehegan Sun Casino
MEI Tech (Parsons)
Melrose MAC
Memphis Light Gas & Water
Mendocino County Sheriff
Metro Communications LLC
Metrocom NYC Inc
Metropole
MetroNet
Metronix Integration
Metropolitan Communications Inc
Metropolitan Radio Communications
MGM Resorts
Mi Sueno Ranch
Michigan State Police
Michigan State University
Micro Control Systems
Micron Technology Inc
Microsoft
Mid State Communications & Electronics Inc
Midco
Midstate Mobile Radio
Midwest Alarm Services
Midwest Communication Tech
Miner Communications Corp/Munster
Ministry of The Attorney General & Legal Affairs
Mirage Casino
Mission Critical Partners
Missouri Department of Transportation
Mitsu Phenol
MJM Communications
Mini Wiconi WTP - Ogilala Sioux Tribe
MobilComm Inc
Mobile Business Communications Ltd
Mobile Comm of Dekalb Inc/Charleston/Tucker
Mobile Comm of Gwinnett
Mobile Communication Services Inc/Livonia
Mobile Communications of America
Mobile Communications Service of Bowling Green Inc
Mobile Radio Service/Great Bend
Mobile Relay Associates
Mohegan Sun Casino
Mohegan Tribe
Mon Valley Integration
Monarch Plastics
Monroe Communications
Monroe Telephone Corp
Montana Dakota Utilities Co
Moog Components
Moore Control Systems
Morley Electric
Moses Lake School Dist
Motorola Canada
Motorola Solutions - Chile
Motorola Solutions Inc
Mud Lake Telephone Co-op
Mule Creek State Prison
Multiband
Multi-Net Communications
MV Communication LLC
Myrtle Beach Communications
N & T Engineering Enterprise
NAK Services
NASA - Michoud Assembly
Nashville Communications
Nashville Electric Service
National Archives and Records Administration
National Car Rental
National Grid
National Radio Astronomy Observatory
Navajo Nation Social Services
Navajo Tribal Utility Authority
Nebraska Link
Neptune
Network Controls
Nevada Energy
Nevada Irrigation District
New Horizon Adult School
New Mexico Department of Transportation
New York Communications Co Inc
Newkirk Electric
Newport News Ship Builders
Newport Utilities
Newrent LLC
NexGen Communications
Neyers Communication Services Inc
NIC Partners Inc
Nic Rohlfsen Construction
Nielsen Communications
Norcom CT
North Dakota State University
North Sight Communications
North Slope Borough
North Stat Electric
Northeast Communications
Where are ETA-Certified Individuals?

Northeastern Communications Inc
Northrop Grumman Corp
Northeastern High School
Northway Communications
NOSC Alameda
NOSC Atlanta
NRG Energy
Nutrient
NW Radio
Ocean Works Asia Pte Ltd
Oglala Sioux Rural Water
Ohio Department of Rehabilitation and Correction
Ohio State University
Ohio Valley Solar
Oklahoma Electric Coop
Oman Fiber Optics
One Net
One Source Integration
OneVoice International
Opelika Power Services
Optic Solutions
Orbital Contracting
Ordnance Electronics Maintenance Training Dept
Oregon Telephone
Osage Municipal Utilities
Oscoda County
OTC Connections / Pine Telephone
Otelco
OTT Communications
Outsource Utility Corp
Owen Forensic Service
Owens Community College
Ozarks Technical College
P&R Communications
Pacific Aerospace & Engineers
Pacific Bell
Pacific Wireless Communications LLC/Honolulu
Pacific Wireless Communications LLC/Kahului
Pacific Wireless Communications LLC/Lihue
Page Net
Palmetto CSI
Paris Board of Public Utilities
Parkdale Mills
Parsons Electric
Parsons Technologies
Past Loft
Patco Machine & Fab
Pathways-VA Inc
Patriot Techs
PCT Communications
Peabody Energy - Bear Run
Peabody Veterans Memorial High School
Pedernales Electric Coop
Peel Regional Police
Peerless Technologies Corp
Penelli Professional Services
Pennsylvania General Energy
Peoples Telecom
PEPCO
Per Mar Security
Petro Communications
Petty’s Electronics
Phoenix Wiring Pros
Pierce County Emergency Management
Pierce County Radio
Pilot Fiber
Pinnacle Project Management
Pinnacle Wireless USA Inc - Fair Lawn
Pioneer Communications
Pittsburg Technical College
Pittsfield Communications Systems Inc
Platte Valley Comm of Kearney/ Kearney
PMC Wireless
Point To Point Communications
Ponca City Energy
Port of Portland
Port of Saginaw
Potomac Electric Power Co
Pottawattamie County 911 Center

Power Technology Inc
Precision Contracting Services
Precision Fiber Inc
Preformed Line Products
Premier Communications
Premier Industrial Grp
Premier Power Electric
Prestige Metal Products
Pride Communications
PRIDE Enterprises
Prime Communications
Prime Photonics
Primex Mfg Ltd
Prison Industry Authority
ProComm Inc
Progressive Dynamics
Prored Zona Norte
Protex
Provo City Power
PSC York County SC
Public Service Enterprise Group
Puerto Rico Police Dept
Pulau/Range Division
PWC Inc
PVT Solutions
QC Islands Net LTV
QCPS Management
QDS Communications Inc
Quality Cable & Fiber Services
Quantum Security
Quest Service Lab
Quintillion
R & R Communications
Ra-Comm Inc/Lafayette/Terre Haute
Radio Comm Service Inc/Eddystone/Orem
Radio Communication Services
Radio Communications of Virginia/Glen Allen
Radio Maintenance Inc/Reading
Radio Man
Radio One Communications
Radiophone Engineering Inc/Springfield
Radiophone of NW Arkansas
Radios Unlimited dba Onelink Wireless
RadioTrans
Rain Custom LLC
Randolph County School District
Range Telephone
Ratecom Communication Serv Inc dba Day Wireless
Rath Southeast
Raytheon
RBM Transport
R-Comm Systems
Red Lake Nation
Redhawk Solutions
Reece Complete Security Solutions
Region of Waterloo
Regional Communications Inc
Remote Imagery Technology Inc
Renoe Tahoe Airport
Reynolds & Reynolds
Reynolds, Smith & Hills
RiverCom 911
Robbys’s Total Security
Rock Networks
Rock Sol Consulting
Rockwell Telecom
Roe Communications Inc
Roger’s Two Way Radio
RowanY Technical Center
Roy Walker Communications/Makanda
Royal New Zealand Air Force
RT Communications
Rulumen Electrical
Russell Enterprises
Ryan Electronics Inc
RZ & Associates Inc/ RZ Communications/Laredo
S & P Communications
Sai Communications Inc/Buffalo
SAIC

Salem Specialties Inc
Salt River Project
Samartan’s Purse
San Carlos Apache Telecommunications Utility Inc
San Diego City College
San Luis Valley Electric Co
San Manuel Casino
Sanders Contracting
Sarasota County Communications Operations Center
Sarasota County Government
Saudi Telecom
Saunders Contracting
Savannah Comm & Elect
School Board of Highlands
SCI Mahanoy Education
Scientific Solutions LLC
SDA Engineering Pte Ltd
SDT Management
Seattle Telecom/RCI
Secure Vision Inc
Security Specifiers
SEI Group
Select Staffing
Seminole Communications
Sentry View Systems
SFC Skaggs Electronics Maint Shop
Sharp Communications Inc
Shelby Electric Company
Shentel
Shimadzu USA Manufacturing
Show Me Power Electric Coop
Show Pros Entertainment
Shreveport Comm dba Monroe Communications
Shreveport Communication Service Inc
SICE Inc
Siemens Industry Inc
Sierra Comm Southwest Inc
Sierra Nevada Corporation
Signal Group
Sikorsky International Operations
Silicon Security
Silvils IT Consulting
Simplex Grinnell
Sin Chew Alarm Pte Ltd
Sioux Falls Two-Way
Sky Mobile Corp
Skywave Communications
SLAC National Accelerator Laboratory
Slayton Solutions Ltd
Smartronix
Smith Two-Way Radio Inc/Fayetteville
SMP Bangers
Snohomish County PUD
Sonic Communication
Soon Yong Trading Pte Ltd
Sooner Irrigation
SOS Communications
South Central Regional Medical Center
Southeastern Communications
Southern Company
Southern Light
Southwestern Power Admin
Southwestern Wireless Inc/El Paso
SP Telecommunication Pte Ltd
Spartanburg School Dist 3
Spectrum Communications Limited
Speedy Gonzalez Construction
Spirit Aeronautics Inc
Splicing Glass
SRK International
St Clair & Associates
St Clair Telecomm
St Joseph Air Port Authority
St Vincent Electricity Services
Stacy & Witbeck
Stake Consulting
Staley Communication Inc/Pittsburgh
Stanley Security
Stars Engineering Technologies Pte Ltd
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of Alaska</td>
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<tr>
<td>Sterling Communications &amp; Electronics</td>
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<td>Sterling Telecom</td>
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<td>Stewart C Irby Co</td>
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<td>Stork A Flor Company</td>
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<td>Strategic Resources Inc</td>
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<td>Stratis IOT</td>
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<td>Subsite Electronics</td>
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<td>Sun City Communications LLC</td>
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<td>Suncoast Comm &amp; Elect Inc</td>
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<td>Sunflower Electric Power Coop</td>
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<td>Sunlight Security</td>
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<td>Supreme Radio Comm/Macom/Porcia Heights</td>
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<td>Surrey Telephone</td>
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<td>Suttons Siding</td>
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<td>Swift-Service</td>
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<td>Swomnith County PUD</td>
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<td>Sys Electrical Low Voltage</td>
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<td>System Services Broadband</td>
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<td>Systems Definition Inc-Motorola Solution</td>
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<td>Tacoma Public Utilities</td>
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<td>Tactical Communications</td>
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<td>Tactical RF - Authorized Hytera Dealer</td>
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<td>Taft Broadcasting</td>
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<td>Talk Wireless Inc</td>
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<td>Talus Development</td>
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<td>Target</td>
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<td>Taunton Municipal Lighting Plant</td>
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<td>TBS Electronics INC</td>
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<td>TC Electric</td>
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<td>TCM Network Solutions</td>
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<td>TDS Telecom</td>
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<td>TE Subcom</td>
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<td>Team Multicom Inc</td>
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<td>Team One Communication dba Comm Engineering Svc</td>
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<td>Tech Com</td>
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<td>TEK Systems</td>
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<td>Telephone Authority</td>
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<td>Telephone Technology Systems</td>
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<td>Tennessee Valley Authority</td>
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<td>Tesla Energy</td>
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<td>Texarkana Water Utilities</td>
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<td>Texas Communications Of Bryan Inc</td>
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<td>Texas Communications Of San Angelo Inc</td>
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<td>Texas Department of Transportation</td>
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<td>Texas Fleet Pro</td>
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<td>TFM Comm Inc/Topeka</td>
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<td>TFS Development</td>
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<td>TG Solutions LLC</td>
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<td>Thales Group - UK</td>
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<td>The Aerospace Corp</td>
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<td>The Fiber Guys</td>
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<td>The MIL Corporation</td>
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<td>The Protection Bureau</td>
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<td>The Villas of Hollybrook</td>
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<td>Tidewater Communications</td>
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<td>Tidewater Communications &amp; Electronics</td>
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<td>Ting Fiber</td>
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<td>Ting Internet</td>
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<td>TJ Maxx Distributing</td>
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<td>TMC Design</td>
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<td>T-Mobile USA</td>
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<td>TMT Quick Service Eng &amp; Auto</td>
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<td>Tobyhanna Army Depot</td>
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<td>Tombota Communications &amp; Electronics/Marrero/Metairie</td>
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<tr>
<td>Total Radio Inc</td>
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<td>Tottono Oooham Utility Authority</td>
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<td>Tower Resource Management</td>
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<td>Town Communications</td>
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<td>Trace Staffing</td>
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