

ILLINOIS DEPARTMENT OF CENTRAL MANAGEMENT SERVICES
CLASS SPECIFICATION

COMMUNICATIONS EQUIPMENT TECHNICIAN SERIES

<u>CLASS TITLE</u>	<u>POSITION CODE</u>
COMMUNICATIONS EQUIPMENT TECHNICIAN I	08831
COMMUNICATIONS EQUIPMENT TECHNICIAN II	08832
COMMUNICATIONS EQUIPMENT TECHNICIAN III	08833

Effective: 10-16-96

INTRODUCTION:

This series includes those positions which are responsible for servicing, or supervising the servicing of radio transmitting equipment, making electronic circuit repairs or adjustments which affect transmitter power, frequency or modulation.

Typically, such work includes the maintenance servicing, repair and calibration of other kinds of electronic equipment as well, such as receiver circuitry, breath analysis equipment, electronic circuitry associated with medical and laboratory instrumentation, public address systems, chart and tape recorders, video cameras, editing, signal processing and receiving equipment, computer logic circuitry and equipment.

Electronics Technicians possess a knowledge of electronic circuitry sufficient to understand the operation of the various component parts, and how these parts work together in the whole circuit. Circuit operation is explained in service manuals, and service literature, often accompanied by specific test procedures and schematic diagrams which specify normal circuit test measurements. A step-by-step calibration procedure is generally furnished in service manuals for equipment which would normally require periodic adjustment and testing. Regular use of test equipment, such as an oscilloscope, signal generator, distortion analyzer, volt-ohm-milliammeter (VOM), is a characteristic feature of this type of work, along with a knowledge of troubleshooting procedures to locate circuit faults.

INTRODUCTION (Continued)

Electronic engineering positions differ from Electronics Technicians in their emphasis on designing or evaluating circuits or systems through the application of physical/mathematical models and engineering principles and techniques. The Electronics Technician may build electronic circuits to solve a given need by adapting existing circuitry obtained from a circuit handbook. The technician's approach is practical, one of knowledgeably adjusting component values, signal levels and so forth, until the circuit operates reliably. Use is made of Ohm's Law, and various other practical tables and formulas, to assure that components operate within limits of published specifications.

Electricians are concerned with installing, altering, maintaining and repairing electrical power systems, equipment and fixtures, in conformance with the National Electrical Code and applicable local codes. Electronics Technicians in contrast, will install and maintain low voltage wiring to interconnect communications equipment, alarm systems, intercoms, closed circuit television systems, etc.

The Electronics Technician series is broadly inclusive of electronic equipment maintenance, repair, and adjustment except for radio transmitting equipment. Allocation of positions to this communications series is therefore contingent on the presence of a substantial portion of technician duties associated with servicing radar and radio transmitter circuitry.

This series describes positions located in the Department of State Police, where there are over 71 employees supporting a statewide radio communications network for State Police officers with 2,100 radio equipped cars maintained in the agency. Districts are interconnected by 33 department-owned microwave stations. Service technicians are located in 21 district service shops and one main facility in Springfield, and provide specialized communications equipment servicing for other agencies as well.

COMMUNICATIONS EQUIPMENT TECHNICIAN I POSITION CODE: 08831

DISTINGUISHING FEATURES OF WORK:

Under general supervision, performs journey-level Electronics Technician duties, repairing, adjusting and calibrating a variety of radio transmitting equipment and related communications circuitry, as a technician; diagnoses and corrects circuit faults in a variety of complex electronic equipment items including two-way mobile radios and hand-held portables, police radar, and various other electronic equipment items; participates in the installation of antenna systems, wiring and interconnection of equipment; makes use of hand tools, soldering gun, and various electronic test equipment.

ILLUSTRATIVE EXAMPLES OF WORK:

1. Studies service literature and schematic diagrams and, utilizing electronic test equipment, locates circuit faults in mobile and base station two-way radios, portables, radar speed meters; replaces defective components using various hand tools; makes frequency and modulation adjustments to radio transmitters, calibrates and certifies electronic speed measuring instruments, and may testify in court cases involving the calibration accuracy of speed measuring equipment.
2. Services a variety of other electronic equipment including audio and video tape recorders, digital voice scramblers, electronic weight scales and breath analysis devices.
3. Drives to field communications equipment field sites and performs routine maintenance and assists in the installation and repair of microwave transceivers and associated multiplex equipment, and communications antenna systems.
4. Prepares reports of repair and maintenance activities, stock records and inventories of equipment tools and supplies.
5. May construct electronic circuits and equipment from schematic diagrams, or incorporate recommended modifications; fabricates covert mobile radio antenna systems to accommodate unmarked cars.

COMMUNICATIONS EQUIPMENT TECHNICIAN I (Continued)

6. Performs other duties as required or assigned which are reasonably within the scope of the duties enumerated above.

DESIRABLE REQUIREMENTS:

Education and Experience

Requires knowledge, skill and mental development equivalent to the completion of four years of high school supplemented by two years of technical school with coursework in electricity, electronics, and communications systems.

Requires valid F.C.C. licensure or certification by an approved organization (Active Radiotelephone, First or Second Class Operator's Licenses, while no longer issued by the F.C.C., remain applicable; Certification by the National Association of Business and Educational Radio or the Associated Public Safety Communications Officers or an equivalent approved organization is also substitutable.)

Knowledges, Skills and Abilities

Requires possession of an appropriate valid driver's license.

Requires working knowledge of practical electronics, with particular emphasis in radio communications principles, theory and equipment circuitry and operation, maintenance and repair.

Requires working knowledge of electronic test equipment operation and application in diagnostic and calibration procedures.

Requires ability to read schematic diagrams of electronic circuitry in order to gain an understanding of circuit operation, normal performance characteristics, and diagnostic and adjustment procedures.

Requires an experienced ability to recognize and correct communications equipment malfunctions.

Requires eye-hand coordination and fine motor skills in the use of hand tools to effect repairs to equipment.

Requires considerable physical effort in installing and removing heavy equipment items and in servicing antenna installations.

Work may necessitate occasional call-up outside of regularly scheduled work period in order to assure continuity of communications systems within a district service area.

COMMUNICATIONS EQUIPMENT TECHNICIAN II POSITION CODE: 08832

DISTINGUISHING FEATURES OF WORK:

Under direction, functions as a lead worker and advanced technical specialist in the maintenance and repair of complex radio communications equipment; trains other technicians within the service specialty area; specialists are responsible for one of the major agency-wide service program areas, and are typically headquartered in the central service facility.

1. Functions as an advanced technical specialist and lead worker in the servicing of two-way radio equipment and emergency warning devices in State Police vehicles; distributes service bulletins and coordinates a periodic staff training seminars in a communications equipment specialty area and provides consultation on a statewide basis in the delegated specialty area.
2. Instructs police officers in the theory and proper operation of moving and stationary radar speed meters.
3. Prepares written technical reports and service records for a service facility or summary repair records for certain specialized equipment.
4. Oversees communications equipment servicing at remote sites to make necessary installation, alterations or field repairs to complex communications equipment and antenna systems.
5. Calibrates and certifies electronic speed measuring instruments, and may testify in court cases involving the calibration accuracy of speed measuring equipment.
6. Performs other duties as required or assigned which are reasonably within the scope of the duties enumerated above.

DESIRABLE REQUIREMENTS:

Education and Experience

Requires knowledge, skill and mental development equivalent to the completion of four years of high school, supplemented by two years of technical school with coursework in electricity, electronics, and communications systems.

COMMUNICATIONS EQUIPMENT TECHNICIAN II (Continued)

Requires two years of experience in land/mobile two-way radio communications service work involving the diagnosis and repair of faulty electronic circuitry and calibration and adjustment of transmitters and other electronic equipment.

Requires valid F.C.C. licensure or certification by an approved organization (Active Radiotelephone First or Second Class Operator's Licenses, while no longer issued by the F.C.C., remain applicable; Certification by the National Association of Business and Educational Radio or the Associated Public Safety Communications Officers or an equivalent approved organization is also substitutable.)

Knowledges, Skills and Abilities

Requires possession of an appropriate valid driver's license.

Requires extensive knowledge of practical electronics, with particular emphasis in radio communications principles, theory and equipment circuitry operation, maintenance and repair.

Requires extensive knowledge of electronic test equipment operation and application in complex diagnostic and calibration procedures.

Requires ability to read schematic diagrams of electronic circuitry and associated equipment manuals and servicing literature in order to gain an understanding of circuit operation, normal performance characteristics, and diagnostic and adjustment procedures.

Requires an experienced ability to recognize and correct communications equipment malfunctions, and provide technical leadership to other technicians in servicing work.

Requires eye-hand coordination and fine motor skills in the use of hand tools to effect repairs to equipment.

Requires considerable physical effort in installing and removing heavy equipment items and in servicing antenna installations.

Work may necessitate occasional call-up outside of regularly scheduled work period in order to assure continuity of communications systems within a direct service area.

COMMUNICATIONS EQUIPMENT TECHNICIAN III

POSITION CODE: 08833

DISTINGUISHING FEATURES OF WORK:

Under general direction, functions with technical independence as an expert communications technician accountable to the central repair facility of the Illinois Department of State Police responsible for overseeing the proper and reliable functioning of the agency's extensive communications network of microwave and multiplex communications equipment with regard to technical servicing, adjusting and maintenance; determines and schedules work priorities; may travel extensively throughout the State in a service vehicle responsible for establishing or reestablishing major emergency communications systems, applying a thorough knowledge of microwave communications systems and electronic servicing techniques; a feature of this work is the need to be reasonably available for call up on a 24 hour basis.

ILLUSTRATIVE EXAMPLES OF WORK:

1. Installs, tests and maintains point-to-point microwave, multiplex, and associated antenna systems. Includes the direction and coordination of subordinate technicians and equipment vendor responsibilities.
2. On an area or statewide basis, addresses major technical problems requiring a high degree of technical skills and knowledges. Assists district technical staff with complex or unusual technical communications systems problems.
3. Functions as a district technician-in-charge, responsible for the overall technical operations of one of the 21 district service facilities, where a technical supervisor is not established, ensuring the proper and reliable functioning of a district communications system, primary base station, associated satellite stations and microwave links; coordinates the work activities of lower level technicians in the installation and repair of district mobile equipment such as digital voice protection equipment, vehicle repeaters, radar, video surveillance equipment, and other electronic equipment employed by the Department of State Police; and serves as technical staff advisor to the district commander.
4. Establishes temporary communications systems necessary to coordinate Police and other emergency service efforts during civil disturbances, prison riots, natural and manmade disasters.
5. Provides on-site supervision of contractual work performed by private contractors (tower, antenna and electrical) while working on departmental projects.
6. Assumes responsibility for the coordination and installation of common carrier control circuit interfacing, receiver sites and other major equipment additions or modifications to the statewide communications system.
7. Provides assistance in planning and implementing technical projects and programs within the communications system and in training system technicians to properly maintain and restore malfunctioning equipment.

COMMUNICATIONS EQUIPMENT TECHNICIAN III (Continued)

8. Assists with routine technical inspections of departmental communications facilities, evaluates technical skills of system technicians, and provides remedial training as necessary.
9. Upon request, evaluates specific technical problem areas, quality of technical services provided other agencies, degree of departmental compliance with electronic maintenance contracts, prepares formal repairs identifying problems and recommending solutions.
10. Occasionally performs general servicing work described at lower working levels.
11. Performs other duties as required or assigned which are reasonably within the scope of the duties enumerated above.

DESIRABLE REQUIREMENTS:

Education and Experience

Requires knowledge, skill and mental development equivalent to the completion of four years of high school, supplemented by two years of technical school with coursework in electricity, electronics, and communications systems.

Requires three years of progressively responsible experience in land/mobile two-way radio communications servicing work involving the diagnosis and repair of faulty electronic circuitry and calibration and adjustment of transmitters and other electronic equipment.

Requires valid F.C.C. licensure or certification by an approved organization (Active Radiotelephone First or Second Class Operator's Licenses, while no longer issued by the F.C.C., remain applicable; Certification by the National Association of Business and Educational Radio or the Associated Public Safety Communications Officers or an equivalent approved organization is also substitutable.)

Knowledges, Skills and Abilities

Requires possession of an appropriate valid driver's license.

Requires thorough knowledge of practical electronics, with particular emphasis in radio communications principles, theory and microwave communications systems circuitry operation, system maintenance and repair.

Requires extensive knowledge of electronic test equipment operation and application in complex diagnostic and calibration procedures.

Requires ability to read schematic diagrams of electronic circuitry and associated equipment manuals and servicing literature in order to gain an understanding of circuit operation, normal performance characteristics, and diagnostic and adjustment procedures.

Requires an experienced ability to recognize and correct highly complex microwave communications system malfunctions, and provide technical leadership and training to others in maintaining the communications network.

Requires ability to establish and maintain work controls and effective working relationships.

Requires eye-hand coordination and fine motor skills in the use of hand tools to effect repairs to equipment.

Requires ability to travel widely within the State in order to service geographically distributed communications systems.

Requires considerable physical effort installing and removing heavy equipment items and in servicing antenna installations.

Work may necessitate occasional call up outside of regularly scheduled work period in order to assure continuity of communications systems.