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INTERIM FEDERAL SPECIFICATION

ALARM SYSTEMS, INTERIOR, SECURITY, COMPONENTS FOR

This Interim Federal Specification was developed by Standardization Division, Federal Supply Service, General Services Administration, Washington, D.C. 20406, based upon currently available technical information. It is recommended that Federal agencies use it in procurement and forward recommendations for changes to the preparing activity at the address shown above.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers security alarm system units which are designed to conform to the standards for security equipment as set forth in the "National Security Council Directive Governing the Classification, Downgrading, Declassification And Safeguarding National Security Information." The alarm system units, when selectively assembled, provide interior alarm system specifically designed for security application (see 6.1). These properly assembled systems are highly resistive to neutralization or compromise by covert or surreptitious attack as specified herein.

1.2 Classification.

1.2.1 Units. Alarm system components furnished under this specification shall consist of at least one of the following units:

- Unit 1 - Detector (see 1.2.2 and 3.3).
- Unit 2 - Annunciator (see 3.4 through 3.4.4).
- Unit 3 - Circuit supervisor (see 1.2.3 and 3.5).
- Unit 4 - Premise control (see 3.6).

1.2.2 Detectors (Unit 1). Detectors furnished under this specification shall be one of the following types, as specified (see 6.2).

Types

- I - Balanced magnetic switch.
- II - Conductive foil.
- III - Breakwire.
- IV - Light Threshold motion detector.

- V - Infra red light beam detector.
- VI - Passive IR Detector.
- VII - Vibration Detector.
- VIII - Capacitance Detector.
- IX - Ultrasonic Motion Detector.
- X - Microwave-Radio Frequency Motion Detector.
- XI - Pressure Mat Detector.
- XII - Closed-Circuit Television Motion Detector.

1.2.3 Circuit supervisor. The supervised alarm transmission means furnished under this specification shall be one of the following classes, as specified (see 6.2).

Class A - Digital and Tone-Wire transmitted (see 3.5.1).

Class AB - Digital and Tone-Wire transmitted (see 3.5.1).

Class B - AC and DC - Wire transmitted (see 3.5.2).

Class C - Radio transmitted (see 3.5.3).

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issues in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Standard:

Federal Std. No. 123 - Marking for Domestic Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, D. C., Atlanta, Chicago, Kansas City, MO., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Specifications:

MIL-T-4807 - Tests, Vibration and Shock, Ground Electronic Equipment, General Requirement for.

MIL-E-17555 - Electronic and Electrical Equipment and Associated Repair
Parts, Preparation for Delivery Of.

(Copies of Military Specifications and Standards required by contractors in connection with specification procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Qualification. The detector units, annunciator units, premises control units, and the circuit supervisor units (circuit supervisor units may be integral with the annunciator) furnished under this specification shall be products which meet the requirements specified herein and which have been tested and passed the qualification tests specified in 4.6.

3.2 Common requirements for all units.

3.2.1 Parts and materials. Parts and material for components shall be as specified herein. Those not definitely specified shall be equivalent to and interchangeable with the corresponding part, material, or process in the manufacturer's normal commercial product. Normal commercial product shall be interpreted to mean an end item covered by this specification.

3.2.2 Equipment enclosure. All enclosures for equipment supplied under this specification shall be protected against tampering by being equipped with tamper switches or triggering mechanisms electrically compatible with the alarm system; or shall be fully filled with an epoxy compound. Internal wiring of equipment shall be such that the tamper switches and triggering mechanisms are not bypassed even though the detector itself is operating in the "ACCESS" mode. All controls which affect the sensitivity of the units shall be located inside the tamper resistant enclosures. Key locks or key operated switches used to protect enclosures shall have Underwriters' Laboratories listed locking cylinders.

3.2.3 Environmental requirements. All units shall be capable of operating in temperatures ranging from 32 degrees F to 120 degrees F. All units shall be Capable of operating at 86 degrees F temperature and 85 percent relative humidity. The units shall withstand the tests in 4.6.4, 4.6.5, and 4.6.6.

3.2.4 Dependability. The sensitivity and stability of all detectors shall be designed to withstand the neutralization or compromise test in 4.6.2 and the stability test in 4.6.3.

3.2.5 Electronic components. To the extent practical, all electronic components shall be the solid state type.

3.3 Detectors. All detectors shall initiate all alarm signal under any of the following conditions: (1) When sensing a stimulus or condition for which it was designed to react; (2) If primary power fails and secondary power does not take over properly; (3) If the detector's circuitry is opened, shorted, or grounded and if such condition is capable of compromising the device's normal operation; (4) If a tamper switch or triggering mechanism is activated. To the

extent feasible, the device shall be designed to initiate an alarm if any part or component fails or ages to the extent to render the detector ineffective. Terminals shall be located within the detector enclosure and readily accessible to permit wiring for required combinations of detector units. All controls and terminals which are not required for operation of the detector shall not be readily accessible.

3.3.1 Balanced magnetic switches (type I). The switch mechanism shall be of the balanced magnetic type and shall initiate an alarm upon increase, decrease, or attempted substitution of an external magnetic field when the switch is in the normally secured position. The switch and magnet shall be enclosed in separate housings of cast, nonferrous durable material and provided reasonable protection against moisture and dust. The mechanism shall be adjusted so that the operating gap between faces of the switch housing and the magnet housing may be adjusted from one-half inch to one inch to accommodate installation variances. The switch shall be electrically protected so that a sudden surge of voltage greater than required for normal operations will create an alarm. The switch shall be designed so an alarm is initiated whenever the switch housing is moved as much as one inch from the magnet housing. When simulating a closed position the switch shall be rated for minimum of 500,000 activations without malfunction.

3.3.2 Conductive foil (type II). This material is intended for application to glass and other surfaces to detect surreptitious and forcible penetrations. When properly installed and connected into an electrically supervised detector circuit, breaking or grounding the foil shall cause an alarm to be initiated. Foil shall not exceed 1.2 pounds in tensile strength and shall be capable of carrying a maximum electrical current of 60 milliamperes at 60 volts with a temperature rise of not more than 1 deg. C. Adhesive and protective coating material necessary for application shall be provided with the foil and shall be of types resistant to aging, moisture and temperature change. Foil for glass shall be not more than 1/2-inch wide. Foil for other purposes shall be not more than 1 inch wide.

3.3.3 Breakwire (type III). This wire is intended to be used in fabricating screens and grids, open wiring, and grooved stripping in various arrays and configurations necessary to detect surreptitious and forcible penetrations movable openings, floors, walls, ceilings, and skylights. When correctly arranged, properly installed, and connected into an electrically supervised detector circuit, cutting, breaking or grounding the breakwire shall cause an alarm to be initiated. Hard drawn breakwires used in fabricating security screens shall not exceed 4.0 pounds tensile strength and shall be capable of carrying a current of 60 milliamperes at 60 volts with a temperature rise of not more than one degree Centigrade. Wire shall be not larger than 24 AWG.

3.3.4 Light threshold motion detector (type IV). This detector shall create an alarm when ambient light conditions in a protected space are altered +/-5 %. The light threshold detector shall be adjustable for various light levels within the protected area.

3.3.5 Infra-red light beam detector (type V). This detector shall create an alarm when a modulate infra-red beam between a transmitting unit and a receiving unit is interrupted. The transmitter and receiver shall be so located that an alarm signal is initiated whenever the infra-red beam is attenuated 90 %

or more for a period of 75 milli-seconds. The receiver shall be designed to resist defeat by the substitution of an another light beam.

3.3.6 Passive IR detector (type VI). This detector shall initiate an alarm when a temperature differential occurs within the field of view. The sensor shall detect a person, of the size stated in 3.3.8, walking at the rate of 1 foot per second or faster out to a range of at least 30 feet. The system shall stabilize within two minutes after being turned on and shall not be capable of being defeated by the use of portable IR absorbent or reflective material placed between the sensor and a person moving in the protected area at the rate specified herein. The system shall not be susceptible to changes in temperature due to an air conditioner being turned on or off.

3.3.7 Vibration detector (type VII). This detector shall consist of piezoelectric pickup devices designed to be mounted on masonry or reinforced concrete surfaces connected through an amplifier/accumulator designed to initiate an alarm signal in response to structurally-borne vibration caused by an explosion, a short series of blows, a longer series of lighter blows, or similar phenomenon. The amplifier/accumulator shall integrate the amplitude of input stimuli with respect to time up to a preset alarm level. In addition the amplifier/accumulator shall be so designed that stimuli of insufficient magnitude to initiate an alarm are bled-off to the normal quiescent level at a rate of decay from the level immediately below alarm to 10% to 15% of alarm level in not less than 5 or more than 15 minutes. Amplifier/accumulator adjustments shall include, as a minimum, a gain control and a repetition rate. The performance of the system shall be adjustable so that at mid-range sensitivity, with pickup devices mounted on monolithic reinforced concrete, or solid concrete block walls or slabs at least six inches thick, the detector shall be capable of initiating an alarm whenever the protected surface is struck on the exterior side, within a minimum radius of 8 feet from a pickup device, by ten or less blows at five-second intervals, from a 1-1/2 pound steel sphere free-falling through a 90 degree arc at a radius of 12 inches. With the controls set at minimum sensitivity, the detector shall not respond to the above impact test beyond a radius of 10 feet from the detector. When tested in the secure mode, an alarm shall be initiated if a single inoperable sensor exists, regardless of the setting gain and the accumulation interval.

3.3.8 Capacitance detector (type VIII). This detector shall consist of a control unit containing circuitry designed to detect a change in the capacitive coupling which exists between one or more antennas and ground. Antennas shall be energized to create an electrostatic or electromagnetic field, so that if the protected object is touched by a person wearing a heavy glove or approached within 6 inches by a conductive mass of the density and size of a human (minimum size: 5 feet tall weighing 80 pounds), the capacitive coupling between antennas and ground will be unbalanced and an alarm will be initiated. The detector shall be designed to disconnect antennas when the detector is in the "access" mode and will create an alarm when the detector is placed in the "secure" mode.

3.3.9 Ultrasonic motion detector (type IX). This detector shall consist of one or more transmitter receiver elements and the necessary control circuitry. The detector shall sense disturbances in a field (minimum height of field: 8 feet) of acoustic energy above a frequency of 18KHz. Movement of a human

(minimum size: 5 feet tall weighing 80 pounds) within the protected area for a distance of 5 feet or less at any velocity between 20 fpm and 600 fpm shall cause the control unit to initiate an alarm signal.

3.3.10 Microwave-Radio frequency motion detector (type X). This detector shall consist of transmitter/receiver elements and necessary control circuitry to saturate the protected area with electromagnetic energy. Movement of a human (minimum size: 5 feet tall, 80 pound weight) within the protected area for a distance of 5 feet or less at any velocity between 10 fpm and 600 fpm shall cause the detector to initiate an alarm signal. The microwave detectors shall be designed so that nuisance alarms due to electromagnetic emission of other equipment such as fluorescent lights or motors are prevented. Microwave detectors shall operate within a frequency range and power output allocated by the Federal Communications Commission.

3.3.11 Pressure mat detector (type XI). This detector shall be in the form of a flat mat and shall initiate an alarm when a weight of 80 pounds is applied to any 3-inch square top surface of the mat. Detectors shall be resistant to water and dust and the wiring circuitry shall be capable of supervision. The detector shall be rated to withstand not less than 500,000 activations without failure.

3.3.12 CCTV detector (type XII). This detector shall detect the presence of an intruder by electronically comparing successive scenes for differences in images. An alarm shall be initiated when the compared images differ by more than 6%. The detector shall be capable of desensitizing portions of the viewed area where naturally moving objects occur. Comparison of the video information within the protected area shall occur at not less than one sample per second. Failure of the camera shall produce an alarm independent of any detectable scene difference occurring in the secure area. The CCTV motion detector shall be designed to operate with cameras which automatically compensate for scene illumination.

3.4 Annunciator units. Annunciator units shall be so designed that when connected with their ancillaries into a detection circuit they provide the means to monitor the condition and control the operation of the detection circuit at a location removed from the detector(s). Annunciator units shall be electrically compatible with the detectors and circuit supervisor equipment described herein and shall be of modular design capable of being installed with other annunciators in a rack, console, or cabinet. When specified (see 6.2), individual annunciator units shall be furnished in appropriate enclosures. To the extent practicable, equipment related to the annunciator such as standby-battery, power supply, battery charging equipment, audible alarm, and circuit supervisor functions, shall be contained in the same enclosure.

3.4.1 Annunciator access/secure, and reset switches. The annunciator panel shall have an access/secure switch and an alarm reset switch. An alarm shall create a lock-on condition which shall require manual restoration and controls shall be provided to reset the system. The annunciator shall have a means of silencing the audible signal from a particular zone during prolonged alarms. However, the visible signal shall remain illuminated on the annunciator panel until the system is restored to normal operation at the protected site. The

silencing control shall be so connected that the audible alarm signal will be activated upon receipt of an alarm from another zone. When a detection circuit is conditioned for authorized entry into the protected area ("Access Mode"), the annunciator shall continue to indicate alarms if circuit supervisor limits are exceeded or if any tamper switches are disturbed.

3.4.2 Annunciator readout. The annunciator shall be equipped with a readout of the type specified in 3.4.2.1 or of the type specified in 3.4.2.2.

3.4.2.1 Electronic or solid state type readout. This type of readout shall have either a cathode-raytube (CRT), a nixie tube, or a light-emitting diode (LED) type of display and a printer for recording alarm conditions. The electronic or solid state type of display shall have a life expectancy of not less than 1 million hours and, as a minimum, shall display any location that has a change of status, and show the present status of that location. The printer shall print out any location that has a change of status, the present status of that location, and the time of day the change occurred.

3.4.2.2 Colored signal lights type. This type shall indicate by duplicate colored signal lights of not less than 50,000 hour life expectancy the following conditions:

- (1) That the detectors and circuits are in the secure condition (green lights);
- (2) that a detector in the protected area is in an alarm condition, or that power failure, or malfunction of a component has caused the alarm system to be inoperative, or that circuit supervisor limits have been exceeded (red lights);
- (3) that the system is operating in an access condition (white lights);
- (4) that the system is operating on standby power (yellow lights).

In addition to the visual signal lights, an audible signal shall be annunciated whenever the system changes from one condition to another. However, the audible signaling device need not be part of each individual module.

3.4.3 Annunciator construction. Individual annunciators of a given manufacturer shall be interchangeable to facilitate maintenance. Plugs and sockets shall be used to the extent possible. All parts of the annunciator shall be easily identified and readily accessible to authorized maintenance personnel. All controls required for normal operation shall be permanently and conspicuously marked. All controls not required for operation of the system shall not be readily accessible to the operator when the equipment is installed in a rack or console.

3.4.4 Annunciator connections to other components. The annunciator shall be provided with terminals for the purpose of connecting the power supply (normal and standby) to the detectors and for inter-connecting with other annunciators.

3.5 Circuit supervisor units. The circuit supervisory shall provide security to the communication link between the detectors and the annunciator. The circuit supervisors shall be class A, AB, B or C as specified hereunder.

3.5.1 Digital and tone-wire transmitted (classes A and AB). The systems using digital or tone type modulation over transmission lines shall use an interrogation and reply scheme. The signal technique used for the interrogation shall be different than that of the reply. Each alarm signal shall cause a lock-in condition which shall be transmitted to the annunciator in not more than the times specified hereunder:

Class A - Not more than 30 seconds.

Class AB - Not more than 90 seconds.

It shall not be possible to compromise class A and class AB systems by the urge of resistance, voltage, or current substitution techniques. The circuits and methods employed shall be highly immune to transmission line noise, such as crosstalk, hum, transients, and the like.

3.5.2 AC and DC - wire transmitted (class B). The class B circuit supervisor units shall provide an alarm response in the annunciator in not more than one second as a result of the following changes in normal transmission line current:

- (1) Five percent or more in normal line signal when it consists of direct current from 0.5 milliamperes through 30 milliamperes.
- (2) Ten percent or more in normal line signal when it consists of direct current from 10 microamperes to 0.5 milliamperes.
- (3) Five percent or more of any component or components in a complex signal upon which the security integrity of the system is dependent. This tolerance will be applied for frequencies up to 100 Hz. Components as used in this specification mean an AC or DC voltage of current, AC phase, or frequency duration.
- (4) Fifteen percent or more of any component or components in a complex signal upon which the security integrity of the system is dependent. This tolerance will be applicable for all frequencies above 100 Hz. Components as used in this specification mean an AC or DC voltage or current, AC phase, or frequency duration.

3.5.3 Radio transmitted (class C). The class C circuit supervisor units shall provide an alarm response in the annunciator in not more than one second as a result of a change of at least 10 percent in the amplitude, frequency, or phase of the carrier signal used for the transmission of signals from the detector component.

3.6 Premises control units. The premises control unit shall be so designed that when operated it permits access to a protected area without activating an alarm signal. The unit shall consist of circuitry installed in a metal enclosure, the cover of which shall contain a two or more position, key-operated switch. The positions shall be labeled ACCESS and SECURE plus whatever other labels are required to denote the functions designed into the unit submitted for qualification. Turning the switch from SECURE to ACCESS shall alter the signal(s) to the annunciator and shall deactivate the detection device, however, the tamper switches shall continue to be monitored. Turning the switch from ACCESS to SECURE shall alter the signal(s) to the annunciator and shall activate the detection device to enable monitoring of alarm and tamper signals.

3.7 Power requirements. Power requirements for the alarm system components shall be 115 volts (+/- 10%) and either 60 Hz or 50 Hz, as specified (see 6.2).

3.7.1 Standby-battery. A standby-battery source for use in the event the primary power source fails shall be provided in components submitted for qualification. The standby-battery power source when fully charged, shall be capable of maintaining full operation of the alarm system for not less than 24 continuous hours. Switchover to battery power shall be instantaneous and automatic upon failure of the primary power source and shall not create alarms on annunciator modules.

3.7.2 Batteries. Except for Nicad batteries, which shall be constant current charged and never fully discharged, batteries shall be float charged and so arranged that they are fully charged at all times when primary power is available. Charges shall be of ample capacity to recharge the batteries from a fully discharged state to not less than 85% of capacity within 24 hours.

3.7.3 Voltage tolerance. Stable operation of detector units, annunciator units, and circuit supervisory units shall be maintained to both primary and auxiliary power source within plus or minus 10 percent of the supplied voltage. The system shall maintain stable operation if the power supply varies plus or minus two cycles from normal operating frequency of the primary power.

3.7.4 Ventilation. Power supplies shall be vented or otherwise protected against excessive heat.

3.8 Identification markings. Each major component furnished under contract or order shall have the manufacturer's name and address, unit model and serial number, year manufactured, and the symbol W-A-00450B, indented or embossed on a metallic plate which shall be firmly affixed in such a place so as to prevent identification of the unit without removing the cover.

3.9 Technical manuals and operator instructions. Technical manuals and operators instructions containing complete and comprehensive instruction shall be furnished by the manufacturer. The manufacturer's literature shall be delivered with the alarm equipment. The manuals shall include schematics and wiring diagrams for all components and a complete electrical parts list fully identifying the parts and reflecting electrical values and ratings as well as a section containing the theory of operation of all portions of the total system, i.e., specific technical description relating to respective circuit schematics.

3.10 Workmanship. All components shall be manufactured and finished in such a manner as to meet specification requirements. Circuit wiring shall be neat with good electrical connections which are mechanically secure. Components and parts shall be free from characteristics and defects which might affect appearance or serviceability.

3.11 Spare parts. Spare parts as required by the procuring activity shall be furnished as specified (see 6.2).

3.12 Electromagnetic radiation interference. Alarm system units shall be designed to minimize susceptibility to external electromagnetic fields and to minimize adverse effects on electronic equipment in the unit's vicinity.

4. QUALITY ASSURANCE PROVISIONS

4.1 Inspection responsibility. Except as otherwise specified herein, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facility or services acceptable to the Government. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Component and material inspection. In accordance with 4.1, the supplier is responsible for insuring that components and materials used are manufactured, tested, and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified, or if none, in accordance with this specification.

4.3 Inspection for acceptance. Units to be offered for acceptance may be inspected by a Government inspector at any time during manufacturing processes to assure that the units function as intended, that parts and materials are complete and as specified, that parts and components are properly matched, that panels and racks are neatly wired, that junction and terminal points are properly located, that mechanical and electrical connections are secure, that soldered connections provide good electrical conductivity, that component enclosures are protected against tampering, and that all workmanship details are of good quality. When specified (see 6.2), acceptance inspection shall be performed at destination after equipment is installed ready for use.

4.3.1 Testing for acceptance. To assure continued compliance with specification requirements relating to operation performance, the Government reserves the right to select from the manufacturers' regular production, samples of alarm system components for testing in accordance with 4.6.1 thru 4.6.6. The testing shall be performed by a facility designated by the Government and shall be at no cost to the manufacturer. Failure to meet testing requirements shall provide reason to suspend acceptance of the manufacturer's production until the Government inspector is satisfied that the manufacturer has corrected all defects in his products.

4.4 Inspection of preparation for delivery. An inspection of preparation for delivery shall be made in accordance with section 4 of MIL-E-17555.

4.5 Qualification. In accordance with 3.1, products submitted for qualification shall be inspected for workmanship as specified in 4.3 and subjected to the tests in 4.6.1 through 4.6.6. Failure to meet inspection or testing requirements shall be considered as failure to meet requirements for QPL approval.

4.5.1 Testing agency. Qualifications testing shall be performed by a Government testing agency designated by the General Services Administration.

4.5.2 Testing costs. All costs entailed in the testing of QPL samples shall be borne by the supplier. Testing fee information and other QPL details relating to the QPL may be obtained from the Standardization Division, Federal Supply Service, General Services Administration, Washington, D. C. 20406.

4.5.3 Test sample. The samples submitted for qualification in accordance with 3.1 shall consist of all components necessary for a complete working unit of the type the supplier proposes to furnish. The samples, transportation fee prepaid, shall be forwarded at a time and to a place designated by Standardization Division, Federal Supply Service. In the event the product is approved for QPL, the test sample may be retained by the Government during the term of qualification. Any sample not approved shall be returned to the manufacturer as is. Samples shall be identified by tags, legibly marked as following:

Sample for qualification under Int. Fed. Spec. W-A-00450B

Type of component _____.

Date of manufacture _____.

Manufacturer's name and address _____.

Location of manufacturer's Plant _____.

4.5.4 Technical manuals, diagrams and schematics. The manufacturer shall furnish with the test sample a complete set of technical manuals, wiring diagrams, and schematics specified in 3.8 for use during the testing of the products for qualification.

4.6 Tests.

4.6.1 Performance tests. Detectors shall be tested for ability to provide an alarm response under the conditions specified in 3.3. Annunciators shall be tested for ability to indicate the alarm system conditions specified in 3.4.2 and comply with alarm and reset conditions specified in 3.4.1. Circuit supervisors shall be tested for ability to provide an alarm response as a result of changes in transmitted signal characteristic as specified in 3.5. Premises control units shall be tested for ability to operate as specified in 3.6. Nonconformance with the requirements of the indicated paragraphs shall constitute failure of this test.

4.6.2 Neutralization and compromise test. Tests shall be conducted to determine the detector's resistance to neutralization or compromise when installed in a supervised circuit in accordance with the manufacturer's instructions and tested under the following conditions: Various methods of neutralizing and compromising will be attempted. The tools and devices used during this test shall not exceed the quantity capable of being carried in two cases or containers, each case or container to be not more than 10 inches by 20 inches by 27 inches in size. The alarm-transmission medium (wire or airwave) shall not be attacked. Detectors shall withstand neutralization or compromise attempts for not less than 12 hours. A successful neutralization or compromise shall be achieved when the stimulus or condition for which the detector was designed to react has been created, when no notification of such a situation is transmitted to the annunciator, and when after the lapse of the specified time period, there remains no externally visible evidence of the neutralization or compromise. Such a neutralization or compromise, within the time and tool limitations specified, shall be considered as failure of the detector to withstand this test.

4.6.3 Stability test. The unit submitted for qualification testing shall not be the source of more than one nuisance alarm per month while performing its intended function in a stable environment free of stimuli that would generate a nuisance alarm for a test period of 90 days of continuous operation with any adjustable controls set to provide the specified security. The test period shall commence after the unit has been installed in accordance with the manufacturer's instructions and after a "shakedown" operation period of not more than seven days.

4.6.4 High temperature test. Units submitted for qualification shall be placed in a high temperature chamber and operated for a period of four hours with the internal temperature of the chamber raised to 120 degrees F. After not less than 2 hours of such operation, the units shall be tested as specified in 4.6.1.

4.6.5 Low-temperature test. Units submitted for qualification shall be placed in a low temperature chamber and operated for a period of 72 hours with the chamber cooled to and maintained at a temperature of 32 degrees F. After not less than 36 hours of such operation, the units shall be tested as specified in 4.6.1.

4.6.6 Humidity. Units submitted for qualification shall be placed in a humidity test chamber for a period of 240 hours. Chamber humidity shall be maintained at not less than 85 percent relative humidity at a temperature of not less than 86 degrees F. The test chamber shall be vented to the atmosphere to prevent the buildup of moisture. Alarm unit components in the test chamber will be protected from the dripping of moisture. After not less than 120 hours of such operation, the units shall be tested as specified in 4.6.1.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging, packing, and marking shall be in accordance with MIL-E-17555. The level of preservation and packaging shall be A or C, and the level of packing shall be A, B, or C, as specified (see 6.2).

5.1.1 Civil agency marking. In addition to any special markings (see 6.2) required by the contract or order, the interior packages and shipping container shall be marked in accordance with Fed. Std. No. 123.

6. NOTES

6.1 Intended use. Alarm systems constructed with components qualified under this specification are intended to supplement or support protective personnel (e.g., guards) for areas requiring special security measures. These properly assembled systems are highly resistive to neutralization or compromise by covert or surreptitious attack. Guidance in selecting a particular item covered by this specification for a particular security situation is not intended and is beyond the scope of this document. Qualification approval merely means that the item met the specification requirements at the time it was tested for qualification.

6.2 Ordering data. Purchaser should exercise any desired options permitted herein and include the following information in procurement documents:

- (a) Title, symbol, and date of this specification.
- (b) Type of detector unit and numbers required (see 1.2.2).
- (c) Number of annunciators required (see 1.2.1).
- (d) Type of annunciator readout required (see 3.4.2).
- (e) Enclosure for single annunciator required (see 3.4).
- (f) Class of circuit supervisor unit required (see 1.2.3 and 3.5).
- (g) Number of premise controls desired (see 3.6).
- (h) Power requirements (see 3.7).
- (i) Spare parts required (see 3.11).
- (j) Destination inspection required (see 4.3).
- (k) Levels of packaging and packing required (see 5.1).
- (l) Whether special marking required (see 5.1.1).

6.3 Qualification. With respect to products requiring qualification under this specification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved for inclusion on the applicable Federal Qualified Products List, whether or not such products have actually been so listed by that date. The attention of suppliers is called to this requirement, and manufacturers are urged to arrange to have the products they propose to offer to the Federal Government tested for qualification so that they may be eligible to be awarded contracts or orders for the products covered

by this specification. The activity responsible for the Qualified Products List is Standardization Division, Federal Supply Service, General Services Administration, Washington, D. C. 20406. Information pertaining to qualification may be obtained from that activity.