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INCH-POUND
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COMMERCIAL ITEM DESCRIPTION

REFLECTOMETER, METALLIC TIME DOMAIN

The General Services Administration has authorized the use of this Commercial Item Description for all federal agencies.

1. SCOPE. This Commercial Item Description (CID) describes a Metallic Time Domain Reflectometer (herein know as Frequency Domain Reflectometer) for a Copper or Metallic Medium. The Metallic Time Domain Reflectometer is capable of locating faults, return loss, distance along any point of a cable or antenna system. This CID is meant as a minimum requirement for a Metallic Time Domain Reflectometer, and only those manufacturers that meet or surpass the following requirements are to supply the Metallic Time Domain Reflectometer per this CID.

2. CLASSIFICATION. The test set covered by this CID shall be commercially available equipment and may be modify to the extent necessary to meet the following description. The equipment shall be Class 3, in accordance with MIL-PRF-28800. The equipment shall be capable of operation within the accuracies, limits, and specifications herein.

3. SALIENT CHARACTERISTICS.

3.1 Item Description. These requirements describe a Frequency Domain Reflectometer for a Copper or Metallic Medium that shall be capable of locating faults, return loss, distance along any point of a cable or antenna system.

3.2 Frequency Range. The Frequency Domain Reflectometer shall be capable of operating over a frequency range of 200 MHz to 3 GHz

3.3 Return Loss. The Frequency Domain Reflectometer shall have a return loss range of 0 to -60 dB.

Comments, suggestions, or questions on this document should be addressed to: AFLCMC/WNZE, Robins AFB GA 31098-1813. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.,mil.

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3.4 Input Impedance. The Frequency Domain Reflectometer shall have an input impedance of 50 Ω. The instrument shall be able to cover other impedances with the use of matching impedance. This can be accomplished with the use of commercially available accessories that need to be provided with each instrument.

3.5 Near Instrument Fault Detection. The Frequency Domain Reflectometer shall contain means to measure faults that are within 250 ft. or 76m of the instrument itself.

3.6 Input Measurement Signal. The Frequency Domain Reflectometer shall have the ability to accept input signals that is less or equal to +22 dBm.

3.7 Measurement Signal Immunity. The Frequency Domain Reflectometer shall capability to reject interfering signals that is less or equal to +13 dBm

3.8 Test Port. The Frequency Domain Reflectometer shall have a test connector in the form of a Type-N female connector.

3.9 Spectral Analysis Capability. The Frequency Domain Reflectometer shall contain spectral analysis capacity to examine the entire frequency range and able to find a tap, no matter where it is located.

3.10 Accessories. Accessories to be supplied by the manufacturer with each deliverable Frequency Domain Reflectometer shall include but not limited to AC adapter (s), carrying case, user manual, and a traceable calibration certificate if required.

3.11 Interface. The Frequency Domain Reflectometer should be capable of interfacing with industry standard data interchangeable formats for files, format, storage, communication, plotting including but not limited to USB, RS-232, N-Type connector.

3.12 Battery. The Frequency Domain Reflectometer shall have a rechargeable battery for use when it is not connected to main power or external charge source that provides a minimum of 3 Hours operating time. The Frequency Domain Reflectometer must meet the full performance and accuracy requirements of the instrument when operating on battery. A fully discharge battery shall take up to 4 Hours to recharge to 100% level and an automatic protective device shall be included to prevent overcharging the batteries.

3.13 Eletrical Power Sources. The equipment power consumption of all components combined shall not exceed 400 watt and the Frequency Domain Reflectometer shall operate from nominal commercial military and shipboard/ flight power source over the ranges: 120Vrms (± 10% tolerance) at frequencies of 50 Hz, 60 Hz single-phase (± 5% tolerance), and 220/240 Vrms at 50 Hz, 60 Hz single-phase as outlined in MIL-PRF-28800 paragraph 3.5.1.

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3.14 Design and Construction. The Frequency Domain Reflectometer shall be design and constructed for commercial use and shall meet the definition of Commercial Off-The-Shelf (COTS) items in FAR 2.101 The Frequency Domain Reflectometer shall be designed and constructed in accordance with all applicable European Union (EU) requirements in order to have the "CE" marking affixed, International Organization for Standardization (ISO), the International Electro-technical Commission (IEC), the International Telecommunication Union (ITU), Underwriters Laboratories (UL) and the American National Standards Institute (ANSI). It shall be designed and constructed so that no parts will work loose in service, and to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, installation, and service.

3.15 Noise. The design shall ensure that noise created by the Frequency Domain Reflectometer is compatible with the environment and minimize exposure of personnel to noise hazards during operations and maintenance activities.

3.16 Electrostatic Discharge (ESD). The design of the Frequency Domain Reflectometer shall preclude equipment damage due to ESD, protect personnel from electrical shock due to static charging, and prevent ignition of explosive atmospheres due to sparking.

3.17 Operating Temperature Range. The Frequency Domain Reflectometer shall meet the performance and accuracy requirements for operating temperature ranges 0 to 50 degree Celsius as outlined in class 3 of MIL-PRF-28800 paragraph 3.8.2.2.3 and Table 2.

3.18 Storage Temperature Range. The Frequency Domain Reflectometer shall meet the performance and accuracy requirements for non-operating temperature ranges -40 to 71 degree Celsius as outlined in class 3 of MIL-PRF-28800 paragraph 3.8.2.1.2 and Table 2.

3.19 Humidity. The Frequency Domain Reflectometer shall conform to the specified performance and accuracy for conditions where the relative humidity is 5 to 95 ±5 percent in the temperature range of 10 to 30 degrees Celsius, and it shall be subjected to conditions where the relative humidity is 5 to 75 ±5 percent in the temperature range of 30 to 40 degrees Celsius, and where the relative humidity is 5 to 45 ±5 percent in the temperature range above 40 degrees Celsius as outlined in class 3 of MIL-PRF-28800 paragraph 3.8.2.3 and 3.8.2.3.2.

3.20 Altitude. The Frequency Domain Reflectometer shall conform to the specified performance and accuracy requirements when operated at an altitude of up to 15091.9 ft. or 4600 meters as outlined in MIL-PRF- 28800 paragraph 3.8.3.

3.21 Weight and Dimensions. The Frequency Domain Reflectometer dimension shall be suitable for use to make field measurements or easily portable and its weight including battery shall not exceed 10 pounds, (4.5 kilograms).

3.22 Calibration. The Frequency Domain Reflectometer dimension shall be suitable for use to make field measurements or easily portable and its weight including battery shall not exceed 10 pounds, (4.5 kilograms).

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3.23 Reliability. The Frequency Domain Reflectometer shall have a mean time between failures (MTBF) of at least 5,000 hours of operation with statistical certainty of 95% as outlined in MIL-PRF-28800 paragraph 3.13.

3.24 Preventive maintenance. The recommended routine preventive maintenance interval (PMI) shall be more than 15 minutes per a 30-day period. Preventive maintenance shall not require breaking of the equipment seams where calibration seals would normally be placed in accordance with MIL-PRF-28800 paragraph 3.14.2.

4. REGULATORY REQUIREMENTS.

4.1 Recycled Recovered Materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with 23.403 of the Federal Acquisition Regulation (FAR). However, used, rebuilt, or refurbished items shall not be provided.

4.2 Green Procurement Program. Green Procurement Program (GPP) is a mandatory federal acquisition program that focuses on the purchase and use of environmentally preferable products and services. GPP requirements apply to all acquisitions using appropriated funds, including services and new requirements. FAR 23.404(b) applies and states the GPP requires 100% of EPA designated product purchase that are included in the Comprehensive Procurement Guidelines list that contains recovered materials, unless the item cannot be acquired: a) competitively within a reasonable timeframe; b) meet appropriate performance standards, or c) at a reasonable price. The prime contractor is responsible for ensuring that all subcontractors comply with this requirement.

5. PRODUCT CONFORMANCE PROVISIONS.

5.1 Contractor Certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this commercial item description, and the product conforms to the producer's engineering drawings, specifications, standards, and quality assurance practices. The government reserves the right to require proof of such conformance prior to first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

6. PACKAGING. Preservation, packing, and marking shall be as specified in the contract or order.

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7. NOTES

7.1 Source of Documents.

7.1.1 Military Specifications, Standards and Handbooks referenced herein may be obtained at https://assist.dla.,mil or available from the Standardization Documents Order Desk, 700 Robbins Ave, Bldg. 4, Section D, Philadelphia, PA 19111-5094.

7.1.2 FAR. FAR may be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh PA 15250-7954. Electronic copies of the FAR may be obtained from https://www.acquisition.gov/far/ .

7.2 Key Words.

Antenna
Cable
Frequency
Signal

Custodians:
Air Force – 84

Reviewers:
Air Force – 99

Preparing Activity:
Air Force – 84

Agent:
Air Force – 99

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