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Product Specifications

INTREPID™ Model 334 Digital Microwave Link

Purpose of document

This document is intended to provide performance specifications requirements for the INTREPID™ 334 Digital Microwave Link perimeter sensor system. This specification may be copied to form a generic procurement specification.

1.0 Perimeter Intrusion Detection System	2
2.0 INTREPID™ Model 334 Digital Microwave Link.....	3
3.0 Installation/ Documentation/ Services.....	5

Procurement Specifications
INTREPID™ Model 334 Digital Microwave Link

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System Type: Microwave Perimeter Intrusion Detection System

Installation: By Contractor

Project: Sample "XYZ" Project

1.0 General

It is the intent of the **[XYZ Company]** to purchase microwave outdoor perimeter detection for the **[XYZ Facility]** as specified below and on referenced drawings and documents.

- 1.0.1 The following specifications are for a perimeter intrusion detection system utilizing bi-static microwave sensors consisting of separate microwave transmitter and receiver units.
- 1.0.2 The performance criteria required for this project shall meet or exceed that provided by the INTREPID™ Model 334 Digital Microwave Link as manufactured by Southwest Microwave, Inc., Tempe, Arizona USA (+1-480-783-0201).
- 1.0.3 The contractor shall provide all installation labor, hardware, and electronics for the system. After installation, the contractor shall secure the services of the manufacturer's technician to provide on-site technical assistance for installation inspection, testing, and training.
- 1.0.4 The contractor shall provide certification, as a part of the project submittals, and sensor manufacturer's on-site services will be provided as a part of this contract.

1.1 System Description

The complete perimeter detection system shall consist of:

INTREPID™ Model 334 Digital Microwave Link - Each microwave link shall be capable of protecting 183 meters (600ft). An acceptable product that meets or exceeds these requirements is the Model 334 Digital Microwave Link.

1.2 System Capabilities

- 1.2.1 The system shall utilize the standard mounting brackets common with all Southwest Microwave sensors.
- 1.2.2 The system shall be fully compatible with direct replacement of Model 300B on existing installations
- 1.2.3 The system shall have the capability to operate over a common voltage input from 10.5 to 60 VDC.

Procurement Specifications

INTREPID™ Model 334 Digital Microwave Link

1.3 System Setup

- 1.3.1 The system shall have an installation service tool, referred to as the Installation Service Tool (IST), to allow setup of the microwave intrusion sensors from a laptop or desktop computer.
- 1.3.2 The IST will provide intuitive setup, guided navigation and forward propagation to simplify setup and calibration in real time.
- 1.3.3 The IST shall support USB-B or RS422 communications for diagnostics of the sensors both locally or remotely.

2.0 INTREPID™ MicroWave 334 Digital Microwave Link

- 2.0.1 Outdoor microwave intrusion sensors shall be Southwest Microwave's INTREPID™ Model 334 Digital Microwave Links or approved equal having a maximum range of 183 meters (600ft).
- 2.0.2 The devices shall be bi-static and detect intrusions by sensing changes (increase and decrease) in the amplitude of the received signal. An automatic gain control (AGC) circuit shall be incorporated which will adjust the receiver gain, as needed, for various distances from the transmitter or changes in path loss, such as rain, snow, fog, etc. AGC Range shall be -54dB.
- 2.0.3 The microwave sensor shall have six crystal controlled field selectable transmitter and receiver modulation frequencies, which shall have a minimum of 700 KHz frequency separation with no more than +/- 4Hz tolerance to eliminate interference between adjacent units.
- 2.0.4 The microwave sensor shall have a range of 3 meters (10 ft) to 183 meters (600ft) and a beam diameter of 0.3 meters to 12.2 meters (1 ft to 40ft) depending on link length, and sensitivity setting.
- 2.0.5 The microwave sensor shall detect at minimum a 35 kilogram (77 lb) human - walking, running, hands and knees crawling, jumping, rolling or prone crawling (30.5cm diameter metal sphere) at a maximum range of 122 meters (400 ft)
- 2.0.6 The microwave sensor shall have a velocity response ranging from 30mm/sec to 15m/sec (0.1ft/sec to 50ft/sec).
- 2.0.7 Probability of detection (Pd) shall be 99% with a 95% confidence factor when the system is installed in accordance with the manufacturers' recommendations.
- 2.0.8 The microwave sensor shall provide a separate **RF Path Alarm** when the received signal changes by a predetermined level to show signal strength changes in the detection field. SPDT-Form C, 2 amps @ 28VDC.

Procurement Specifications

INTREPID™ Model 334 Digital Microwave Link

- 2.0.9 The microwave sensor must have minimum of five (5) field selectable **DSP Digital Signal Processing** detection algorithms for optimization of detection for unique profiles of intruders walking, running or jumping and enhanced crawl and vehicle detection.
- 2.0.10 The microwave sensor must have field selectable **FSA (Fresnel Suppression Algorithm)** to improve rejection of outer field (Fresnel zone) disturbance detection.
- 2.0.11 The microwave sensor shall utilize a software-based installation service tool with graphic display in real time, referred to as the Installation Service Tool (IST), to setup and control sensor parameters with a laptop PC.
- 2.0.12 Remote adjustment with IST will be available via the RS422 direct connection.
- 2.0.13 The microwave sensors shall have an output power of 10mW peak 5mW average, and shall be square wave modulated.
- 2.0.14 The microwave units shall operate at a carrier frequency of X-band (10.525 GHz) and fully comply with F.C.C. Rules and Regulations Part 15.
- 2.0.15 The microwave sensor shall incorporate a X-band, mechanically-tuned FET oscillator as the signal source, illuminated by a parabolic reflector with a rear-entry dielectric feed.
- 2.0.16 The microwave sensor shall operate on an input voltage of 10.5 to 60 VDC (Tx, Rx).
- 2.0.17 The microwave sensor shall have standard relay alarm outputs for communication of alarms SPDT-Form C, 2 amps @ 28VDC.
- 2.0.18 The microwave sensor shall have a tamper switch that protects unauthorized removal of the radome SPDT-Form C, 2 amps @ 28VDC.
- 2.0.19 The microwave sensor shall have a diameter of 27 centimeters (10.6 in), depth of 23 centimeters (8.8 in) and weight of 2.04 kilograms (4.5 lbs). All electronics and antennas should be mounted to a rugged metal baseplate and enclosed in an ABS weatherproof, UV resistant radome.
- 2.0.20 The microwave sensor shall be hardened to operate within specification at temperatures between -40°C and +66°C (-40°F and +150°F) ambient, without assistance from cooling or heating apparatus.
- 2.0.21 The microwave sensor shall operate within all specifications when continuously exposed to 0 - 100% relative humidity.
- 2.0.22 The microwave sensor circuit board shall have a minimum 1 mm heavy duty conformal coating and metal baseplate shall be epoxy coated to enable reliable operation in high humidity and corrosive atmospheres.
- 2.0.23 The microwave sensor shall have advanced EMI / RFI shielding and surge protection ESD Rating of Class 3 (>16kV) per Human Body Model (HBM), Peak Power -600W @ 1.0ms.
- 2.0.24 The microwave sensor shall have an optically isolated USB-B port for local set-up using the Installation Service Tool (IST).

Procurement Specifications
INTREPID™ Model 334 Digital Microwave Link

3.0 Installation/Documentation/Services

- 3.0.1 Contractor shall provide the necessary documentation to confirm that the system is installed in accordance with on-site requirements and manufacturer's installation instructions. The contractor shall perform all wire terminations.
- 3.0.2 After installation of the system, the contractor shall make provisions for manufacturer's technical representative to perform final on-site inspection and installation verification.
- 3.0.3 Contractor performing installation shall be factory certified by Southwest Microwave on INTREPID™ microwave sensors.
- 3.0.4 The supplier shall provide three (3) years warranty from date of purchase with an additional two (2) years available at no cost with registration of the project installation.
- 3.0.5 The supplier shall provide technical support and warrant that spare parts and assemblies shall be available for a minimum of 10 years.

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