FAA-E-2318
December 22, 1967

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION SPECIFICATION

ANTENNA, ATCRBS, DIRECTIONAL

1. SCOPE

1.1 Scope.- The equipment covered by this specification is a linear array antenna for directional transmission and reception of the Air Traffic Control Radar Beacon System interrogations and transponder reply codes respectively. The antenna is intended for mounting on top of the ASR and the ARSR type primary radar antenna reflectors.

2. APPLICABLE DOCUMENTS

2.1 FAA documents.- The following FAA specifications and the U. S. National Standard of the issues specified in the invitation for bids or request for proposals, form a part of this specification and are applicable to the extent specified herein.

2.1.1 FAA specification.-

FAA-D-638	Instruction Books, Electronic Equipment
FAA-R-1030	Packing of Electronic Equipment
FAA-G-2100/1	Electronic Equipment, General Requirements; Part 1, Requirements for All Equipments
FAA-G-2100/4	Part 4, Requirements for Equipments Employing Printed Wiring Techniques

2.1.2 National standard.- U. S. National Standard for Common System Component Characteristics for the IFF Mark X(SIF)/Air Traffic Control Radar Beacon Systems SIF/ATCRBS.

2.2 Federal specification.- The following Federal specification, of the issue in effect on the date of the invitation for bids or request for proposals, forms a part of this specification and is applicable to the extent specified herein.

TT-E-489	Enamel, Alkyd, Gloss

(Copies of this specification, other applicable FAA specifications, and the National Standard may be obtained from the Federal Aviation Administration, Washington, D. C., 20590, ATTN: Contracting Officer. Request should identify the material desired, i.e., specification numbers, issue dates, amendment numbers, complete drawing numbers; also request should state the contract involved or other use to be made of the requested material.)

(Information on obtaining copies of the Federal Specification may be obtained from General Services Administration Offices in Washington, D. C., Seattle, Washington; San Francisco, California; Los Angeles, California; Denver, Colorado; Dallas, Texas; Kansas City, Missouri; Chicago, Illinois; Atlanta, Georgia; New York City, New York; and Boston, Massachusetts.)

3. REQUIREMENTS

3.1 Definitions

3.1.1 Ambient conditions.- The ambient conditions for the antenna shall be those of Environment III (1-3.2.23, FAA-G-2100/1) with the following changes:

Elevation	0 to 12,000 feet above sea level
Relative humidity	5% to 100%, including condensation due to temperature changes
Barometric pressure	Maximum 30.5 inches of mercury

3.1.2 Equipment nomenclature.- The nomenclature of this equipment shall be "Air Traffic Control Beacon Interrogation Antenna".

3.2 Equipment, material, and services

3.2.1 Equipment, material, and services to be furnished by the contractor.- The contractor shall furnish the quantity of air traffic control interrogator antennas specified in the contract schedule. Any item or feature necessary for proper operation in accordance with the requirements of this specification

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throughout the United States including Alaska and Hawaii, coastal areas and locations at elevations up to 12,000 feet above sea level. The hardware, finish and mode of operation shall be such that deterioration of performance due to continued exposure to weather shall be negligible. The enclosure of any portion of the antenna assembly shall not depend solely on the finish coat for weatherproofing, or sealing.

3.4.2.6 Interchangeability.- The antenna assemblies shall meet the interchangeability requirements of paragraph 1-3.14.3, FAA-G-2100/1, with the further provision that when major assemblies, such as inter-cavity transmission line sections, feeder sections, or complete antenna sections, are interchanged, side lobes shall be at or below a level of -24 dB. The peak of any slope reversal shall be at or below -20 dB, and VSWR at the power divider input shall not exceed 1.5.

3.4.2.7 Connectors.- For inter-connection with type RG-17/U coaxial transmission line, the antenna input/output terminal shall be a type HN receptacle for mating with a type UG-333/U connector. A mating type UG-333/U cable connector shall be provided. To support the coaxial transmission line and relieve mechanical strain on the RF connector, a cable clamp shall be provided. The cable clamp shall be shaped to fit RG-17/U coaxial cable and be of sufficient length so as to grip the cable without deforming it. The inner surface of the clamp shall be lightly scored to maintain a firm grip on the cable and prevent migration under vibration. The cable clamp shall be located such that the external transmission line will approach the antenna from below and in line with the antenna connector. The cable clamp shall be supported by a triangular support fastened to the center mounting box of the antenna. The cable clamp shall be at least six inches away from the antenna connector.

3.4.2.8 Insulation resistance.- With the antenna and power divider assembled electrically, the insulation resistance shall be not less than 40 megohms when measured with a 500-volt megohmeter and when measured between the center conductor or the main input/output connector of the assembly and the antenna structure (ground).

3.4.2.9 Finish.- The exterior of the antenna assembly shall be finished by applying at least one uniform spray cost of primer, followed by a uniform spray coat of aviation surface orange (color No. 12197, in accordance with Federal Standard 595) enamel (alkyd gloss enamel, Federal Specification TT-E-489). All metal shall be cleaned in accordance with the requirements of paragraph 1-3.8.1, FAA-G-2100/1, prior to application of the finish. The antenna finish shall not crack, chip or peel in normal usage. The provisions of FAA-G-2100/1 (paragraph 1-3.8 and subparagraphs) shall apply to the finish of hardware and internal metal surfaces. External unpainted metal portions of the antenna shall be protected against deterioration due to exposure to the service conditions by adequate plating or other treatment. The radome shall not be painted.

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