**STATEMENT OF WORK**

**FOR**

**DESIGN A REPLACEMENT**
**ARSR4 POWER AMP MODULE TEST STATION (PAMTS)**
**WITH FUNCTIONS SIMILAR TO THE CURRENT STATION WITH**
**POWER AMP MODULE (PAM) BOARD INTERFACE ADAPTER**
**FIXTURE**
**WITH TEST/REPAIR SOFTWARE AND PROCEDURES TO TEST THE**
**ARSR4 PAM CCAS TO SPECIFICATION**

**PAMTS P/N: KA421400G01, NSN NA**
**PAM Interface Adapter Fixture: AD421410G01**

**Revision C**

| REV | DESCRIPTION | DATE | ENTERED BY |
|---|---|---|---|
| AA | Initial SOW | 15 Dec 2025 | RJB |
| B | Removed comments and watermark | 14 May 2026 | RJB |
| C | Updated 4.3B and added 6.3 Exhibit 3 | 18 May 2026 | RJB |

## 1.0 Overview

This Statement of Work (SOW) is issued by the Federal Aviation Administration (FAA), Radar Product Division, AJW-L900, for the design, development, fabrication, testing and delivery of a replacement Air Route Surveillance Radar (ARSR4) Power Amplifier Module Test Station (PAMTS) with similar features as outlined in Exhibit 6.1 that has the ability to test and repair the ARSR4 Power Amplifier Module (PAM) Boards in according to the specifications listed below in Exhibit 6.2. This new PAMTS will replace the legacy system due to high demand of the PAMs boards, obsolescence, and repair capability issues with the current PAMTS. The new PAMTS is required to have similar mechanical design requirements and equivalent electrical performance or better using current generation components compared to the legacy system.

**Reference Documents:**

Exhibit 6.1 reference document "TI 6340.49: ARSR4 SYSTEM POWER AMPLIFIER MODULE (PAM) TEST SET

Exhibit 6.2 reference document "TI 6340.56B: ARSR4 SYSTEM UUTs POWER AMPLIFIER MODULE (PAM) TEST SET

Exhibit 6.3 PAM CCA ASSEMBLY DRAWING AND SCHEMATIC

Military Standards:

| | |
|---|---|
| MIL-HDBK-217F-CHG 2 | Reliability Prediction of Electronic Equipment |
| MIL-STD-721C | Definition of Terms for Reliability and Maintainability |

The current legacy PAMTS consists of a PAM test console, computer/controller, PAM test fixture, self-test adapter, and various cables. It is a computer operated diagnostic test tool designed to perform functional testing, failure diagnostic, and repair verification of the ARSR4 lookdown Drivers Line Replacement Unit (LRU), Preamplifier LRU, and the Power Amplifier Modules LRUs. The PAMTS also provides instructions to the operator for the Unit Under Test (UUT) tuning and phasing. This tester includes both manual and automation test requirements.

The PAM test console is a multipurpose test console that is a two-bay cabinet containing custom equipment and commercial off-the-shelf (COTS) test equipment, which is controlled by a computer/controller. The computer/controller, monitor, and printer, for the printing of test results and test data sheets, are located on a mobile computer table. The PAM test console and applicable cables provide output loads, test points, signal conditioning and mechanical support for the lookdown driver and preamplifier UUTs. The PAM test fixture and applicable cables provide mechanical support for the PAM UUT and connect the PAM UUT to the PAM test console, which then provides output loads, test points, and signal conditioning for PAM UUT. The PAM test fixture also provides cooling for the PAM UUT.

This SOW's primary focus is on a replacement PAMTS and support for the two PAM boards with future consideration for testing and support of the ARSR4 Lookdown Drivers LRU and the Preamplifier LRU.

**Note:**
**Exhibit 6.2 refers to frequency of operation from 1215 MHz to 1400 Mhz. Unless otherwise specified, the unit shall be capable of operation within specified limits over the frequency range of 1215 MHz to 1372 MHz. Measurement of 1400 MHz shall not be made. The new limit of the FAA's operating frequency is 1372 MHz, therefore 1400 MHz is not a requirement.**

## 1.1 Contracting Officer's Representative (COR)

The Contractor Officer's Representative (COR) is formally designated with this responsibility by the Contracting Officer to provide direction and Government oversight to the Contractor on matters related to this contract.

## 2.0 Scope

The contractor shall furnish all labor, plant facilities, parts, supplies, materials, fixtures, equipment, tools, test equipment, technical data/expertise, and other facilities necessary to accomplish the design/redesign of a replacement PAMTS and PAM Boards test process and fixture in accordance with FAA's manufacturing and test specifications, FAA Specifications (listed in Exhibit 6.1 and 6.2) and all other terms, conditions and provisions contained herein**.**

This SOW will cover all engineering costs, design costs, and the labor and material necessary to furnish a test PAMTS unit and test process to specification for the two PAM boards and fixture hardware. It is anticipated that a Firm Fixed Price Contract will be utilized for award for this effort.

## 3.0 QUALITY CONTROL

The contractor shall establish and maintain a Quality Control Program in accordance with the requirements of ISO-9001:2008. A compliant Quality Management System is required. An auditable system containing all elements of the ANSI/ASQ/ISO Q9001-2008 standard shall exist. Equipment will be inspected in accordance with conformance to Technical Specifications and Packaging Specifications as stated in the contract. The equipment will be accepted/rejected at destination by the FAA. Certificates of Conformance shall be supplied where applicable. The Contractor may find information at www.asq.com.

The Government and the contractor agree that equipment used to design the PAMTS and support of the PAM Boards are standard manufactured items and for that reason it may not be necessary to require Government inspection and examination of all work in progress at any time or place during normal working hours. However, in the event an abnormal failure rate (to be determined by a FAA Systems Engineer) is experienced, both parties agree that an in-plant quality control review shall be provided. Accordingly, the Government reserves the right to assign an in-plant Quality and Reliability Officer (QRO) to this contract if it is determined by the Contracting Officer to be in the best interest of the government.

## 4.0 Requirements

The Contractor shall design the PAMTS test unit and test process and fixture for two (2) PAM Boards (to be provided by the FAA) to a normally operating, serviceable condition, including all the following:

(a) Unit shall meet performance specifications listed in exhibits 6.1 and 6.2
(b) The unit shall meet standard workmanship requirements.
(c) Record test data, including any tuning data and provide with the unit shipments. Sample datasheet will be submitted to FAA, and datasheet will be subject to approval by the FAA.
(d) The PAMTS shall be marked with the serial number (S/N) and part number (P/N) being separate identification on separate lines so there is no confusion in receiving as to what the S/N and P/N are.

**The following format shall be used when marking the label:**
Contract or PO #
PAMTS P/N: KA421400G01 or vendor# S/N: 1xxx
Rev: A

### 4.1 Deliverables

Contractor shall**:**

A. Deliver a production PAMTS unit and test process to specification and fixture hardware for the PAM boards in a normally operating serviceable condition. It shall be delivered to the Enroute Shop at the FAA Logistics Center.

B. One (1) copy of the datasheet shall accompany the unit.

C. The contractor shall provide a block diagram of all parts and associated part numbers along with the identification of contractor that supplies the material except for internal components that are proprietary to the supplying vendors. This includes schematics, parts list, theory of operation, and other related documents that are not proprietary.

D. Shipping shall be standard contractor shipping and billing practices using FAA standards.

E. The contractor shall deliver an engineering report for the initial development work that specifies the measurements taken for the PAMTS and PAM fixture, parts utilized, and invoices for NRE effort. Invoices shall include any mechanical and electrical work for which NRE is paid.

F. The Contractor shall install the PAMTS unit and PAM software at the FAA's Enroute Shop in Oklahoma City.

G. The Contractor shall participate in the final acceptance and approval of the PAMTS unit and PAM software and fixturing qualification testing at the FAA's Enroute Shop in Oklahoma City.

H. The Contractor shall support/participate in meetings with the FAA as required.

FAALC, AJW-L900 will:

A. Provide assistance, cooperation, information, Government Furnished Equipment (GFE), data, a suitable work environment for onsite meetings or onsite work environment to OEM for successful completion of the project.

B. Furnish equipment, hardware, and Labview software (if required) to support project.

C. Government Furnished Equipment (GFE) will include two (2) Power Module CCAs (PN 3D56076G01 and 3D2739G01) and, if necessary, one (1) 4 to 1 combiner flex circuit.

D. Coordinate with all FAA organizations including Second Level Engineering (AJW-142) and OEM to execute the requirements to manufacture a PAMTS and software/fixturing for PAM for testing and repair capability of the PAM boards.

E. Participate in the final acceptance and approval of the PAMTS and PAM test and fixturing.

F. Provide status updates at Program Management Reviews

4.2 **Place of Performance**

The Contractor shall perform the work of the contract on the Contractor's premises.

4.3 **Inspection and Acceptance**

A. Final inspection, test, and acceptance will be accomplished by the FAALC, Oklahoma City, OK.

B. System will be tested by utilizing a serviceable CCA against the test station to ensure that the system meets all requirements contained in Exhibit 6.2.

## 5.0 SHIPPING

The items will be shipped to the FAALC at the following address:

**Enroute Shop, Rm A129, WC221**
**6500 S MacArthur Blvd Oklahoma City, OK 73169-6901**

All items, unless otherwise specified, shall be individually packaged in accordance with American Society for Testing and Materials (ASTM) D 3951 (Packaging). "Standard Practices for Commercial Packaging" are encouraged (unless it is shown that commercial packaging practices cannot provide adequate protection and preservation). MIL,-STD-2073-1 is applied only when commercial packaging cannot meet known distribution and environmental requirements. Performance testing of packaging will be in accordance with ASTM D-4169 assurance level II distribution cycle 18.

Electrostatic or electromagnetic sensitive items shall be initially wrapped in Electrostatic Sensitive Discharge (ESD) shielding material conforming to MIL-STD-2073-1, Code GX, Preserve by Method 41. ESD Intermediate and exterior containers shall be marked with the yellow and black ESD label IAW MIL-STD2073-129, "Marking for Shipment and Storage".

## 6.0 Exhibits

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## 6.3 Exhibit 3, PAM CCA ASSEMBLY DRAWING AND SCHEMATIC

**7.0 REQUIRMENTS**:

**7.1 Electrical Requirements**:
**7.1.1 Frequency of Operation**: Unless otherwise specified, the unit shall be capable of operation within specified limits over the frequency range of 1215 MHz to 1372 MHz.

**7.2 Mechanical Requirements**:
**7.2.1 Internal Wiring**: All internal hookup wiring shall be MIL-W-16878/4 (PTFE insulated).

**7.2.2 Internal Wire and Cable Marking**: All internal wiring shall have shrink wire labels applied at both ends. At a minimum, the wire labels shall indicate the terminal to which the wire is attached. All cables shall have cable labels that at a minimum indicate the connector to which the cable is connected.

**7.2.3 Subassembly Labeling**: All subassemblies that are designed to be removed, replaced, or repaired shall be marked with a vendor supplied part number unique to that part. All connectors and terminals on the subassemblies shall be marked with a plug, jack, or terminal number that matches the connected wire or cable.

**7.2.4 Assembly Marking**: The PAMTS shall be externally marked according to the vendor part number, serial number, and contract number and date of manufacturing.

**7.3 Reliability and Maintainability**:
**7.3.1 Reliability**: The unit shall have a minimum meantime between failure (MTBF) rates of 10,000 hours. Reliability shall be predicted in accordance with MIL-HDBK- 217F (CHG 2), using the parts count reliability prediction method found in appendix
A. For component failure rate calculations, use the "Ground, Fixed" or Gf environment. Suitable part failure rates provided from a documented source for the specific parts used in the design may be substituted for those found in MIL-HDBK- 217F (CHG 2).

**7.3.2 Electromagnetic Susceptibility and Interference**: The unit shall be designed or shielded so that it is not susceptible to conducted or radiated emissions to interfere with other test systems or be affected by other test systems or cause human harm.

**7.3.3 Operating Environment** The unit shall meet all specifications during operation with an ambient temperature between +10 to +40 degrees C, a relative humidity from 5 to 90 percent noncondensing.

**7.3.3.1 Unit Startup**: The unit shall meet all electrical requirements in paragraph 9.1 within 90 seconds of being turned on from an unpowered condition for all ambient temperatures between +10 degrees and +40 degrees C.

**7.3.4 Repair Capabilities**: The PAMTS shall be designed and constructed so that it can be disassembled, tested, and repaired down to the subassembly level. Disassembly, reassembly, and testing shall not require any specialized tools, materials, or equipment other than those found in a typical electronics repair shop.

**7.4 Additional Requirements**:
**7.4.1 Test Documentation**: Test plans, test data sheets, procedures, assembly drawings, part list, and schedules to meet the requirements in this document shall be submitted to the FAA for

review and comment at least two weeks prior to testing. The FAA shall approve these plans prior to testing.

**7.4.2 Development and Testing**:

**7.4.2.1 Development** The Contractor shall deliver an engineering report for a production PAMTS unit and test process and fixture hardware for the PAM boards that specify the measurements taken for the PAMTS, parts utilized, performance parameters, block diagram, and invoices for purchased parts. Invoices shall include any mechanical work for which NRE is paid.

**7.4.2.2 Qualification Testing**: After passing qualification testing at the Contractor, the PAMTS and other hardware and software shall be provided to the FAA for qualification testing at the FAA Enroute Shop. Qualification testing shall consist of operational testing, self-testing, testing of the PAM CCAs and tuning testing. The qualification test duration shall be at least one (1) week of continuous operation. The Contractor shall provide an engineering report detailing the results of the in-system qualification test.

**7.4.2.3 Repair Instructions**: The Contractor shall provide a repair instruction manual containing the disassembly, testing, repair, and reassembly instructions for the PAMTS and PAM test fixture. These instructions shall list all tools, equipment, and materials needed to disassemble the unit, test each subassembly, repair or replace each subassembly, tune each subassembly, tune the overall assembly, and test the overall assembly. A Test Data Sheet (TDS) that has space to record every Factory Acceptance Test (FAT) measurement shall be included in the repair manual. Included in the repair instruction manual shall be a list of manufacturers and part numbers for each replaceable subassembly.

**7.4.2.3.1 Repair Instruction Approval**: The Contractor shall submit the repair instruction manual to the FAA for approval. If there are any changes needed to the manual, the changes shall be submitted to the FAA for approval.