

Statement of Work for Range Radio Transceivers

I. Scope of Work

a. Background

The AFRC DATR operates and maintains legacy VHF and UHF radio transceivers in support of range operations. The transceivers support the communications bands of 116-152 MHz and 225-399.974 MHz. Apparent is the decreasing number of spare parts available to support future repairs of these legacy radio transceivers. With these facts it would be most advantages to buy new, transceivers.

This SOW will outline in detail the requirements of 56 new transceivers to be procured. Based on funding availabilities a lower quantity may have to be procured.

b. Objectives

This document was written to provide a guideline for the RFI of radio transceivers for NASA's communications systems, Dryden Aeronautical Test Range (DATR) located at Armstrong Flight research center (AFRC).

II. Applicable Document

N/A

III. Technical Point of Contacts

N/A

IV. Specific Requirements

Please provide cost per unit, delivery time, number of current fielded units and known failure rates, test capabilities and current specifications and brochures of existing product that meets the criteria of section II. E-mail responses to procurement at afrc-rfess-procurement@mail.nasa.gov

V. Period of Performance

N/A

VI. Deliverables

a. Testing

In the best interest of the government and the end user a formal Acceptance Test Procedure (ATP) shall be performed and documented by the manufacturer in the presence of the customer at the manufactures facility. This document shall be made available to the customer. Any failure during ATP shall include appropriate documentation showing the cause and effect of the failure. The formal ATP must occur on all purchased transceivers but the witness by CSI or GSI may be sample only at a later date based on availability.

b. Quality Control and tracking

All practical commercial quality control standards shall be conformed to during all processes of manufacturing and testing. Any practical quality control documents or test procedures

shall also be available. A tracking document should be kept for each unit, by serial number to allow for the proper documented history of each unit. This history should include the chronology of all dispositions of the manufacturing and testing of the unit.

c. Training

One day "on site" training shall be provided at NASA Armstrong Flight Research Center. Documentation of the operations, maintenance and theory of operation should be provided at this time. The training shall be scheduled in cooperation with the customer and shall be flexible to allow changes due to mission requirements.

d. Upgradeability, Reparability and Operability

The transceiver should employ forward thinking in its design and be non-pc based. The transceiver should be configured such that repairs and upgrades do not keep the unit out of service for more than two days if spares are available. A modular rack mount design approach should be employed to allow for rapid troubleshooting and quick parts replacement. Additionally, the unit should be flexible enough to support changes in the industry so as to employ future technology without rendering the unit obsolete.

e. Pertaining to product behavior

Any system that demonstrates any unusual or unexpected behavior must be addressed within the period of time listed below.

1. If the behavior affects the normal operation of the unit, then a hardware/ firmware fix must be provided within 10 working days. If the hardware/ firmware fix cannot be provided within the specified time allowance, then documented progress of efforts to provide such a fix must be provided with a reasonable deadline specifying when the fix will be made. If a fix cannot be provided, then alternative equipment of equal or better value and performance must be offered as a replacement subject to customer approval.
2. If the behavior does not affect the normal operation, then a hardware/firmware fix must be provided within 60 working days. If the hardware/firmware fix cannot be provided within the specified time allowance, then documented progress of efforts to provide such a fix must be provided.
3. Any upgrades or equipment replacements are bound to this agreement as well.

VII. Acceptance Criteria

Testing of deliverables is subject to agreement and must at a minimum meet FCC: 47 CFR- Telecommunications, Part 87 Aviation Services, Subpart D Technical Requirements as applicable

VIII. Contractor/Government Furnished Property/Government Furnished Equipment

None

IX. Specific Requirements

The specifications herein are not limited and may have additional items if necessary

UHF & VHF TRANSCEIVER SPECIFICATIONS

Feature	Specification	Comments
<u>Mechanical / Electrical</u>		
Rack mountable	Standard 19 inch	
Chassis	RFI Shielded	
Power switch or button	Front of chassis	
Power indicator	Front of chassis	Both AC & DC Status
Transmitt / PTT indicator	Front of chassis	
Power	120VAC 60 Hz and +12 or +24 Vdc	
Squelch	Knob adjust	
Carrier test switch	Front of chassis	
Speaker or external audio jack	Front of chassis	With Volume adjust
Microphone jack	Front of chassis	Provide Microphone
Status / Error indicator	Front of chassis	
Antenna connection	Rear of chassis. Type "N"	BNC also acceptable
Power connection	Rear of chassis	TBD
External audio, PTT, I/O	Rear of chassis	
Frequency Adjust	Front of chassis	
<u>Receiver Characteristics</u>		
Minimum Sensativity	-103 dBm for 10 dB SINAD	
Audio Response	300 Hz to 3000 Hz	Compressed level preferred
Squelch Adjustable	From minimum to above -80 dBm	
Adjacent channel rejection	35 dB at 25 kHz	
Spurious response	Less than 80 dB	
<u>Transmitter Characteristics</u>		
Output Power	10 W minimum	With optional 50 W Amp
Spurious Output	70 dB below carrier	
Harmonic Output	50 dB below carrier	
Adjacent channel power	50 dB at 25 kHz	
<u>General</u>		
Frequency range VHF	116 to 152 MHz	
Frequency range UHF	225 to 399.975 MHz	
Tuning Increments	25 kHz	
Modulation Type	AM and FM	AM only would also be considered
Frequency Stability	+ / - 1PPM	
Operating Temperature	5 to 45 degrees Centigrade	41F - 113F
Staats Meters	Forward & Reflected Power	Selectable display
<u>Remote Capability</u>		
Optional Remote	Hard wired up to 300 Ft	
Control features	Frequency & squelch adjust, Power on/off	
<u>Notes :</u>		
The transceiver shall be NON PC based. It shall be of the "instant on" variety.		
The user interface shall not consist of menus & submenus with single button access.		
All items specified herein shall be negotiable to meet customer needs.		

X. Security Requirements
Unclassified