

Request for Information for New Telemetry Receivers and Combiners

I. Scope of Work

This Request for Information (RFI) will outline in detail the requirements of quantity 14 new receivers and combiners to be procured. Based on funding availabilities a lower quantity may have to be procured.

a. Background

The AFRC DATR operates and maintains legacy telemetry receivers in support of range operations. The telemetry receivers support the telemetry bands of 1435-1540MHz and 2200-2400MHz. With the recent drive to utilize the C-band frequencies of 4400-5250MHz a turner upgrade that additionally incorporates 300-1150MHz, the new IF band, must occur. Apparent is the decreasing number of spare parts available to support future repairs of these legacy PC-based units. With these facts it would be most advantages to buy new, non-pc based receivers with an updated set of requirements rather than modify the older legacy units.

b. Objectives

This document was written to provide a guideline for the Request for Information (RFI) of new telemetry receivers and combiners for NASA's range tracking systems, Dryden Aeronautical Test Range (DATR) located at Armstrong Flight research center (AFRC).

II. Applicable Document

Receiver Specifications for Dual channel and Pre-D/combiner receivers <u>Non-PC based</u>			
For test range and space based telemetry acquisition			
Electrical 110/120 VAC 60 cycle			
Receiver		AM output	
Frequency	300-1150MHz/1435-1540MHz/2200-2400MHz	AM level	2.0Vp-p at 50% AM adjustable
Noise Figure	8.0dB max.	AM type	normal or invert
Impedance	50 ohms	frequency Response	AGC TC to 40KHz min
VSWR	2.0:1.0 max	Distortion	5% max for modulation range of 30-50%
Dynamic Range	Threshold to -10dBm min	DOPPLER	(+/- 500KHz min)
Maximum input level	10dBm no damage	Video	
image rejection	60dB min.	Output range	0-3 volts pp.
IF rejection	50dB min.	Coupling	AC and DC
Spurious rejection	50dB min.	Data invert	normal and invert
tuner resolution	100KHz min		
Second IF	70MHz		
IF Filters	Filters applicable to data rates 10kbps to 40mbps		
Phase noise should meet applicable IRIG and not allow excess phase noise to increase bit error rate at a given Eb/No and degrade demodulator performance			
Reference Oscillator		Connections	
Internal frequency	5.0 or 10.0MHz	standard AC power	
Stability	Commercial minimum	RF inputs	N-Type 50 ohm X2
temperature range	32-75 F	Video output	BNC 75 ohm X2
		Reference output/input	BNC 50 ohm X1
		AM output	BNC 75 ohm X2
		AGC output	BNC 75 ohm X2
		IF output	BNC 50 ohm X2
		Combined IF output	BNC 50 ohm X1
		BIT sync output	BNC or best selectio X2 clock/data min.
		Ethernet control	RJ-45 X1
		Bit Sync	
		Output	40mbps TTL clock and data
		code types	NRZ-L/M/S, BiP-L/M/S, RNRZ and other IRIG options
		AGC	
			adjustable time constants and 20dB/volt linearity and adjustable
Code			
LDPC	IRIG Low Density Parity Check FEC		
STC	IRIG Space Time coding		

III. Technical Point of Contacts

N/A

IV. Specific Requirements

Please add the following criteria to your response/proposal:

- cost per unit
- delivery time
- number of current fielded units and known failure rates
- IRIG test capabilities and current specifications and brochures of existing product that meets the criteria of section II

Send responses/proposals via e-mail to afrc-rfess-procurement@mail.nasa.gov.

V. Period of Performance

N/A

VI. Deliverables

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 receivers but the witness by CSI or GSI may be sample only at a later date based on availability.

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.

Training

One day "on site" training shall be provided at NASA Armstrong Flight Research Center, Edwards, CA. 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.

Upgradeability, Reparability and Operability

The receiver should employ forward thinking in its design and be non-pc based. The receiver 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 demodulation techniques without rendering the unit obsolete.

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

N/A

VIII. Contractor/Government Furnished Property/Government Furnished Equipment

None

IX. Special Considerations

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

X. Security Requirements

Unclassified