

A. General Functional RequirementsA1. General Requirements

The test system shall be designed to provide a range of perforated tape controlled, programmable test equipments which will automatically perform any desired test program or checkout sequence as may be required for fault isolation and verification of the operational readiness of a unit, subsystem, complete aircraft, missile electronic system or any other electronic system to which it is to be applied.

A2. General principles

The test system shall be provided basically by a network of electronic logic and memory designed to control, through a switching complex, the various operational elements to automatically accomplish the required test sequences under control of binary coded tape reading and decoding system.

A3. Reliability

The minimum reliability goal for the equipment is specified by RSAFB for each particular test set in SECTION II. The contractor shall guarantee the mean life associated with the equipments in field use.

The contractor shall be disposed to explain to the customer how the reliability goals were developed and be ready to deliver the calculation of the predicted reliability based upon the design and data on the types of parts or equipments used in the construction. All allowable failure rate of components or equipments shall be included in the calculation. Redundancy technique shall be considered when it becomes evident, it shall be obvious from the reliability calculation when this technique is used.

The contractor shall prepare and submit a recommendation showing what provisions shall be made to ensure that the equipment will be suitable for operational use. This recommendation shall include description of easy maintenance features to be included to meet the maintainability requirement, description of human engineering features to be embodied in the equipment and description of how the equipment should be tested and any special tests which may be required (see also paragraph A19). The contractor shall also give information on conditions that will improve or decrease the reliability of the equipment in operation with special consideration of storage, handling, environmental and maintenance requirements.

The contractor shall conduct reliability tests in such a manner as to demonstrate to a confidence level of 90% that the required reliability has been provided. The reliability demonstration test shall be accomplished under normal ambient temperature and humidity conditions. The acceptance criteria shall conform to that outlined in SECTION II.

A4. The controlling device

The controlling device in the test system shall, if specified for a given test set, be capable of controlling the following functions:

- a) Selection of appropriate external stimuli units (see paragraph A10) to be applied to the system under test and selection of all low frequency channels (see paragraph A9 and A12) for connection to the proper test point in the system under test.
- b) Selection of measurement channels for connection to the appropriate test point in the system under evaluation.
- c) Direction of appropriate stimuli, measurement and evaluation devices as to the type and range of stimuli and measurements to be made on the selected test points.

E. Control Capability

1. The control capability of this test set shall be able to meet all the requirements mentioned in SECTION I paragraph A4, A7 and A14.
2. The remote controlbox mentioned in SECTION II paragraph D1c shall have an automatic test start and stop button.

F. Required test and stimuli control points

1. Required number of test points  
(Ref SECTION I paragraph A9) : 1000
2. Required number of stimuli control points  
(Ref SECTION I paragraph A10) : see table B

G. Patch board

1. In order to cover a greater amount of flexibility a patch board preferable of printed circuit type shall be used. The connection place is dependent upon the switching system but shall be connected to the machine in its most efficient place (see SECTION I paragraph A15).

H. Installation area

1. The first type of this test set shall be placed in a workshop or equivalent area (see SECTION I paragraph A16).  
Note: In a later stage of the program the test set will be built into a movable vehicle.

I. Reliability requirement

1. Required MTBF: 500 hrs (see SECTION I paragraph A3)

2. To demonstrate that this reliability expression has been provided a number of the ordered equipment - mentioned in the inquiry or in the contract - shall be tested by sequential test. The accumulated operating time in relation to the number of failures shall conform to that outlined below:

Operating time, hrs	Number of failures		
	Acceptance	Rejection	Continuation of testing
1500	0	9	1 - 8
2500	1	12	2 - 11
3000	2	13	3 - 12
3500	3	14	4 - 13
4000	4	15	5 - 14
4500	5	16	

When the equipments under test have accumulated a sufficient number of operation hours - mentioned in the inquiry or in the contract - and the number of failures are more than the number in the acceptance column but less than the number in the rejection column, the customer have to make a decision of acceptance or rejection.

J. Environmental requirements

1. The environmental requirements for this test set are the same as specified in SECTION I paragraph B1 and B2.

K. Warm-up-time

1. The maximum allowable warm-up-time from an ambient temperature of  $\pm 0^{\circ}\text{C}$  shall be less than 10 minutes. After this time full service-ability with specified accuracy is required.