PREPARED BY:	***Multiband Imaging Photometer for SIRTF***	NUMBER M21I15	
C. DAVIDSON		TYPE INSPECTION	
APPROVALS			
ENGINEERING	University of Arizona Steward Observatory, IR Group	DATE 03/27/98	
QUALITY		SUPERSEDES SPEC. DATED	
PI/DEPUTY PI	**SPECIFICATION**	REV.	PAGE 1 of 6

TITLE

INCOMING INSPECTION OF THE RIGHT FANOUT BOARD (MIPSD–0214), PROCEDURE FOR

1.0 SCOPE

This specification defines the equipment, materials and procedures for incoming inspection of the right fanout boards, P/N MIPSD-0214, used in the build of MIPS 2x20 stressed Ge: Ga focal plane array.

2.0 PURPOSE

The incoming inspection is to verify that the requirements of the purchase order have been satisfied and that the fanout boards meet the specifications of drawings MIPSD-0214.

3.0 APPLICABLE DOCUMENTS

The following documents form a part of this inspection procedure to the extent specified herein. In the event of conflict between the requirements of this document and the requirements of the engineering drawings called out, the requirements of the drawings shall take precedence. Unless otherwise specified, the most recent revision of the documents identified herein shall apply.

Non-Government Documents
Manual
University of Arizona Safety Manual

Drawings
University of Arizona, Steward Observatory, IR Group
MIPSD-0214 Fanout Board, Right

4.0 REQUIREMENTS

4.1 Equipment

Acceptable results are contingent upon the use of the recommended equipment listed below or equivalent equipment. Equivalent equipment may be substituted for the recommended equipment if and only if effectiveness and accuracy are not decreased by its use.

Item	Quantity	Description
1	1 each	Microscope, stereozoom, Bausch and Lomb
2	1 each	Microscope, measuring, x, y, and z-axes, Nikon
3	1 each	Measurement system, Nikon Digimicro System
4	1 each	Gun, blow

4.2 Materials

Item	Quantity	Description
1	as received	Fanout Boards, PIN MIPSD-0214
2	as required	Acetone, electronic grade
4	as required	Methanol, electronic grade
5	as required	Isopropanol, electronic grade
6	as required	Nitrogen, gaseous (dry) or air (dry)
7	1 each	Tweezers, Teflon
8	as required	Wipes, cleanroom

5.0 PROCEDURAL REQUIREMENTS

Incoming inspection of fanout boards is performed and tracked on a lot basis. The lot number to be recorded on the inspection summary sheet, document no. M21I15-A is to be the lot number which is designated by the fanout board vendor on the shipper accompanying the parts or on other vendor supplied documentation. If the vendor does not provide a lot number, then the purchase order number and the date of receipt will be used as the lot number

Individual boards are not to be assigned unique serial numbers or other distinguishing identifiers. Rather, boards of a given configuration, which meet acceptance requirements are to be stored only with boards of the same configuration, which also meet acceptance requirements. For FPA build, acceptable boards of a given configuration will be indistinguishable one from another.

Boards, which fail to meet the acceptance requirements, will be stored separately from acceptable boards.

For each lot of boards, the results of visual examination and dimensional measurement are to be summarized on one inspection sheet.

6.0 PROCEDURE

Notes:

- Handling, storage and disposal of chemicals is to be in accordance with the University of Arizona Safety Manual.
- Cleanroom gloves or finger cots are to be worn when handling hardware and equipment.
- Removal of outer wrappings and packaging material is to be done outside of the cleanroom.

6.1 Verify Receipt of Requested Paperwork and Quantity of Boards.

6.1.1 Inspect the outer packaging for signs of damage incurred during transport. Record the results on the inspection sheet, document no. M21I15-A.

6.1.2 Carefully remove outer packaging and remove contents and paperwork. With a cleanroom wipe dampened with isopropanol, wipe the plastic bags that cover the board containers. If the containers are not within plastic bags, wipe down the containers, taking care not to obscure label information. Place the paperwork in cleanroom bags. Transport the packaged wafers and paperwork to the cleanroom.

6.1.3 Verify that the quantity of boards identified on the paperwork is in agreement with the quantity received. Report any deficiencies or overages in quantity to the lead engineer for resolution.

6.2 Examine a Board for Contamination and Defects.

6.2.1 Using tweezers or vacuum pickup tool, place a board onto a clean microscope stage or a clean glass slide on the stage. Under microscope magnification, verify to drawing MIPSD-0214 that the configuration of the board is as identified on the packaging/container label.

6.2.2 Inspect the board for contamination. Using dry N_2 or air from a blow gun, blow particulates from the surface of the board. If gross contamination is present, clean the board by flushing both surfaces for a minimum of 20 seconds each with acetone, methanol then isopropanol. Blow the wafer dry with dry N_2 or air.

Note: To prevent redistribution of contaminating materials, or possible solvent residue from remaining on the wafer, keep the wafer wet with solvents until it is blown dry.

6.2.3 Under microscope magnification, verify the wafer is free of contamination. Examine the wafer for lifting or peeling, opens or trace-to-trace shorting of the titanium-tungsten/gold (Ti -W/Au) metallization.

If visual examination or probe testing indicates the traces are shorted or if there are other defects which would render the board unusable, place the board in a storage container, label the container ‘reject’ and store in the appropriate area of the storage desiccator.

6.2.4 Under microscope magnification, visually verify that the metallization pattern on the board is both complete and positioned over the top surface of the board per drawing MIPSD-0214.

6.3 Verify the Board Dimensions

Note: If a contact measuring system (i.e., a Nikon Digimicro system or a surface profilometer) is used to measure the board thickness, take care not to damage the board.

6.3.1 Using a 3-axis measuring microscope, measure the length, width and thickness of the board. Each parameter is to be measured at three different locations, and a minimum of three measurements is to be made at each location. For board acceptance, the average of the measurements for a parameter must fall within the specification range identified on the drawing and on the inspection sheet.

6.4. Lot Acceptance Verification.

On each board in the lot, perform visual examination and dimensional measurements per paragraphs 6.2.1 through 6.3.2.

6.5 Store the Boards.

Place acceptable boards into a clean storage container. Cover the container and label the cover: 'MIPS Fanout Board, PIN MIPSD-0214', 'Lot No. xxxx, Acceptable.' For lot number identification, reference paragraph 5.0. Store container on appropriate shelf of N_2-purged desiccator.

In a similar manner label and store reject boards. On label record the word 'reject'.

6.6 Summarize on the Inspection Sheet the Fanout Board Lot Status

6.6.1 Complete an M21I15-A Inspection Sheet to summarize the results of the visual examination and dimensional measurement performed on the lot of fanout boards.

6.6.2 Advise the process lead engineer of the status of the lot of boards. Place all vendor-supplied paperwork and the inspection sheet in the process files.

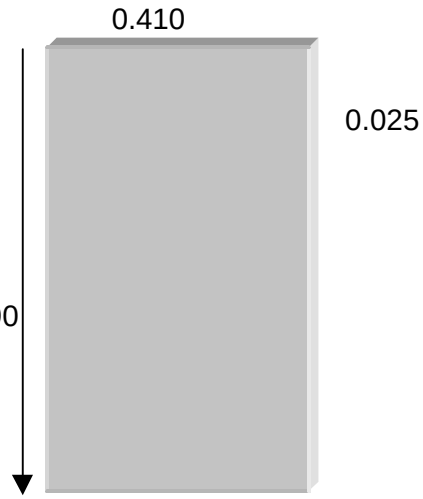
MIPS Right Fanout Board (P/N MIPSD-0214) Incoming Inspection Sheet
Document No. MS21I15-A

Lot ID: _____ Operator: _____ Date: _____

Supplier (Vendor): _____ Lot Number: _____

1. Outer Packaging: No damage noted ☐ Comments:
   Damage noted ☐

2. Quantity of Fanout Boards Ordered: _____
   Quantity of Fanout Boards Received: _____



3. Visual Examination: Instrument Used _____
   Calibration Date _____

4. Dimensional Measurement:
   Length & Width: Instrument Used _____
   Calibration Date _____

   Board Thickness: Instrument Used _____
   Calibration Date _____

SPECIFICATIONS:

PARAMETER	REQUIREMENT	MEASURED
LENGTH (L) (Inches)	0.590 ± 0.002”	
WIDTH (W) (Inch)	0.410 ± 0.002”	
THICKNESS (t) (Inch)	0.025 ± 0.002”	

5. Metal thickness: Vendor documentation _____
   Spec. all configurations: 5600-5000 Angstroms (0.56-0.50μ)

Inspection Summary

Qty. Acceptable _____
Qty. Reject _____

Primary cause for rejection:
- a. out of spec dimension ☐
- b. metallization (i) thickness ☐
  (ii) peeling, shorts, opens ☐
- c. other