PREPARED BY:	***Multiband Imaging Photometer for SIRTF***	NUMBER	
		M22I15	
C. DAVIDSON		TYPE	
		INSPECTION	
APPROVALS			
ENGINEERING	University of Arizona Steward Observatory, IR Group	DATE	
		03/27/98	
QUALITY		SUPERSEDES SPEC. DATED	
	SPECIFICATION		
PI/DEPUTY PI		REV. NEW	PAGE 1 of 6

TITLE

INCOMING INSPECTION OF RIGHT FLEX CABLE ASSEMBLY (MIPSD-0211), PROCEDURE FOR

1.0 SCOPE

This specification defines the equipment, materials and procedure for incoming inspection of the Flex (flexible) Cable Assembly, P/N MIPSD-0211, used in the build of MIPS 2 X 20 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 flex cable assembly meets the specifications of drawings MIPSD-0211.

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.

Manual
University of Arizona Safety Manual

University of Arizona, Steward Observatory, IR Group

MIPS-0033C	Ge:Ga Focal Plane Array Quality Assurance Plan

Drawings

MIPSD-0212	Flex Cable, Right
MIPSD-0211	Flex Cable Assembly, 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
5	1 each	Spray bottle, solvent
6	1 each	Cleaner, ultrasonic
7	1 each	Cleaner, plasma

4.2 Materials

Item	Quantity	Description
1	as received	Flex cable assembly, P/N MIPSD-0211
2	as required	Isopropanol, electronic grade
3	as required	Nitrogen, gaseous (dry)
4	1 each	Tweezers, Teflon
5	as required	Wipes, cleanroom

5.0 PROCEDURAL REQUIREMENTS

Incoming inspection of the flexible cable assemblies is to be performed and tracked on a lot basis. The lot number to be recorded on the inspection summary sheet, document no. M22I15-A is the lot number designated by the cable assembly supplier on the shipper accompanying the cables or on other supplier provided documentation. If the supplier does not provide a lot number, then the U of A purchase order number and the date of receipt will be used as the lot number. The lot number will serve as the means for traceability as the cable assemblies are used in the fabrication of next higher level assemblies.

Individual cable assemblies are not to be assigned unique serial numbers or other distinguishing identifiers. For FPA build, acceptable flexible cable assemblies will be indistinguishable one from another.

In accordance with the MIPS Quality Assurance Plan, cable assemblies which fail to meet the acceptance requirements will be stored separately from those which meet acceptance requirements.

6.0 PROCEDURE

Notes:

1. Handling, storage and disposal of chemicals are to be in accordance with the University of Arizona Safety Manual.
2. Cleanroom gloves or finger cots are to be worn when handling hardware and equipment.
3. 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 Cable Assemblies Received.

6.1.1 Inspect the outer packaging for signs of damage incurred during transport. Record the results on the inspection sheet, document no. M22I15-A.

6.1.2 Carefully remove outer packaging and remove contents and paperwork. With a cleanroom wipe dampened with isopropanol, wipe the plastic bag that covers the container of cable assemblies. If the container is not within a plastic bag, wipe down the container, taking care not to obscure label information. Place the paperwork in cleanroom bags. Transport the packaged cable assemblies and the paperwork to the cleanroom.

6.1.3 Verify that the quantity of cable assemblies requested on the UA purchase order and on the supplier-generated shipper and other supplier-provided documents is in agreement with the quantity of cable assemblies received. Report to the lead engineer for resolution deficiencies or overages in the quantity of cable assemblies received. Verify receipt of all documentation requested on the purchase order, including a certificate of conformance.

6.2 Examine Flex Cable Assembly for Contamination and Defects.

6.2.1 Using tweezers or a gloved hand, place a cable assembly onto a clean microscope stage or a cleanroom wipe set on the microscope slide. Under 30-60x magnification, inspect the cable assembly to drawing MIPSD-0211. Inspect for gross contamination and for defects which would render the assembly unsuitable for process continuation.

6.2.2 Use dry N_2 or air from a blow gun to blow contaminating particles from the surface of the cable assembly. If non-particulate contamination is present, flush the cable assembly for a minimum of 30 seconds with isopropanol from a squeeze bottle or spray gun. Blow the cable assembly dry with dry N_2 or air.

Caution: Methyl ethyl ketone (MEK) or other strong bases will degrade the cable.

Notes:
1. The flex cable may be ultrasonically cleaned in isopropanol.
2. If it has been shown that plasma cleaning does not degrade the flex cable or the connector, then plasma cleaning alone, or following solvent or solvent/ultrasonic cleaning may be used to clean the flex cable assembly.
3. To prevent redistribution of contaminating materials, or possible solvent residue from remaining on the cable assembly, keep the cable assembly wet with solvent until it is blown dry.

6.2.3 Under microscope magnification, verify that the cable assembly is free of contamination. If not, repeat paragraph 6.2.2.

If inspection shows the gross contamination is still present, reject the assembly.

6.2.4 Under 30-60x magnification, inspect the cable assembly to drawing MIPSD-0212. Inspect for :

1. complete removal of insulating or other materials from over the Au/Ni-coated copper wire bond pads,
2. the presence of gold on each of the wire bond pads,
3. Shorting of bond pads one to another,
4. shorts or excess Pb/Sn solder at the cable/connector pin interfaces, and
5. voids or air pockets in the kapton. (Note: The total volume of voids or air pockets within the kapton is not to exceed 2% of the total volume of kapton, and not more than 5% of the total 2% volume of voids or air pockets is to be at any one location.
6. bent, damaged or deformed connector pins.

Au/Ni which bridges or shorts bond pads and Pb/Sn solder which shorts connector pins shall be cause for rejection. If visual examination is not adequate to assure the absence of shorts, probe the pads or pins in question to verify that they are not electrically connected.

If visual examination or probe testing indicate the presence of shorts or if there are other defects which would render the cable assembly unusable, place the assembly in a storage container, label the container 'reject' and store in the appropriate area of the storage desiccator.

6.3 Verify the Dimensions of the Flex Cable Assembly.

Note: If a contact measuring system (i.e., a Nikon Digimicro System or a surface profilometer) is used to make any of the measurements, take care not to damage the assembly.

Using a 3-axes measuring microscope, measure the length, width and thickness of the cable assembly. Each parameter is to be measured at two different locations and, as a minimum, three measurements are to be made at each location. For cable assembly 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.

Visually examine and measure each flex cable assembly per paragraphs 6.2.1 through 6.3.

6.5 Store the Cable Assemblies.

Place acceptable cable assemblies into a clean storage container. Cover the container and label the cover: 'MIPS Flex Cable Assembly, P/N MIPSD-0211, Lot No. xxxx, Acceptable.' For lot number identification, reference paragraph 5.0. Store container on an appropriate shelf of the N_2-purged desiccator.

In a similar manner, but in a separate location, label and store reject cables. On the label, record the word 'reject'.

6.6 Summarize on the Inspection Sheet the Flex Cable Assembly Lot Status.

6.6.1 Complete an M22I15-A Inspection Sheet to summarize the results of the visual examinations and dimensional measurements performed on the lot of cable assemblies.

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

MIPS Left Flex Cable Assembly (P/N MIPSD-0211)
Lot Incoming Inspection Sheet
Document No. M22I15-A

Lot No: _____ Operator: _____ Date: _____

Supplier (Vendor): _____ UA Purchase Order No. _____

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

2. Quantity of Cable Assemblies Ordered: _____; Quantity Received: _____

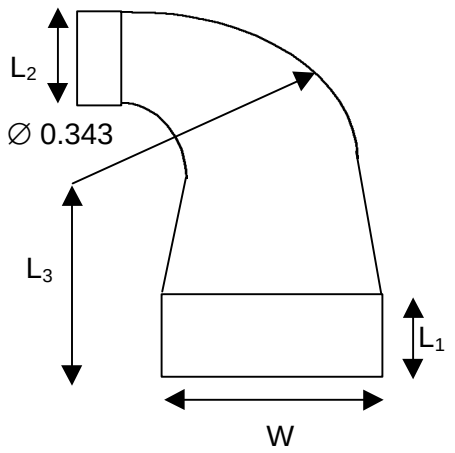
3. Visual Examination: Instrument Used _____ Calibration Date _____

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

   Thickness: Instrument Used _____ Calibration Date _____

Specification (Reference Drawings MIPSD-0212 & -0211)

Parameter	Spec. Range (in inches)
Length (L_1)	0.300
Length (L_2)	0.268
Length (L_3)	0.797
Width (W)	0.550
Thickness (T)	0.005
Radius ∅	0.343



5. Flex Cable Assembly Lot Inspection/Measurement Summary:

Quantity Rejected: _____ Quantity Acceptable: _____

Primary cause for rejection:
a. out of spec dimension ☐ b. contamination ☐ c shorted connector pins ☐
d. shorted or open wire bond pads ☐ e. other ☐