MODIFICATION RECOMMENDED –
CORRECTS MANUFACTURING OR DESIGN DEFECTS

SJ10-03

S E R V I C E N O T E

Supersedes:
N5000A-03
N5000A-04
N5002A-03
N5002A-04

Agilent SJ10 Optical Board Test System
Models: N5000A and N5002A

Serial Numbers: All

At present, SJ 10 and SJ10+ lighting heads in the field are degrading more quickly than originally anticipated. This may cause lighting head to be out of recommended lighting values.

To Be Performed By: Agilent-Qualified Personnel or Customer

Parts Required:

P/N	Description	Qty.
5186-2744	**Fotowand Grey Card**	**1**
5186-2012	**Pre-soldered Potentiometer**	**1**
5186-0891	**SJ10 Lighting Head**	**1 (Order only if lights are degraded)**

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	[ ] IMMEDIATELY [ ] ON SPECIFIED FAILURE X AGREEABLE TIME	STANDARDS: LABOR: 2.0 Hours	
LOCATION CATEGORY:	[ ] CUSTOMER INSTALLABLE X ON-SITE [ ] SERVICE CENTER	SERVICE INVENTORY: [ ] RETURN [ ] SCRAP X SEE TEXT	USED PARTS: [ ] RETURN [ ] SCRAP X SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	AGILENT RESPONSIBLE UNTIL:	

AUTHOR: MB PRODUCT LINE: 80

ADDITIONAL INFORMATION: 5186-2744 and 5186-2012 are orderable through GTLS (Global Trade & Logistics Solutions) at 1-800-816-8650.

Reference the service note number in the activity description field of the SR.

Agilent Technologies

February 23, 2004

Situation:
At present, SJ 10 and SJ10+ lighting heads in the field are degrading more quickly than originally anticipated. This may cause lighting head to be out of recommended lighting values.

Solution/Action:

The following is a service note detailing the steps that need to be taken to ensure that all SJ 10 lighting heads in the field meet lighting specification requirements.

A mono to colour lighting head change out procedure is available from IIO Technical Marketing if required for older lighting heads with red leds only.

Initial System Checks

1. Check the aperture setting is (a) F-stop 8 for Computar Lens
   (b) F-stop 5.6 for Navitar Lens
2. Check the diffuser cone inside the lighting head is aligned correctly and has no excessive glue which may distort light reflection.
3. Use **Appendix A** to setup and record the initial values of the machine ie. Camera ,lens, aperture , lighting values using a Fotowand grey card.

Appendix A

Camera Setup and Lighting Specifications

SJ10 (**Fotowand Grey Card**)

Parameter	Units	Mono Post/Pre	Colour Pre/Mixed	Tolerance	Actual
Camera Model					
Lens Type					
Lens F-Stop					
Field of View	Mm	32	29.5	+/-1.0	
Pixel Size	Microns	25	23	+/- 0.5	
30 degree ring mean	Grey Levels	125	125	+/-3.0	
30 degree ring sigma	Grey Levels	<20	<20	-	
30 degree ring range	Grey Levels	<80	<80	-	
45a degree blue ring mean	Grey Levels	81	120	+/-3.0	
45a degree blue ring sigma	Grey Levels	<10	<12	-	
45a degree blue ring range	Grey Levels	<40	<45	-	
45b degree green ring mean	Grey Levels	76	112	+/-3.0	
45b degree green ring sigma	Grey Levels	<10	<12	-	
45b degree green ring range	Grey Levels	<36	<45	-	
45 c degree red ring mean	Grey Levels	68	90	+/-3.0	
45c degree red ring sigma	Grey Levels	<10	<12	-	
45c degree red ring range	Grey Levels	<36	<45	-	
60 degree red ring mean	Grey Levels	58	41	+/-3.0	
60 degree red ring sigma	Grey Levels	<6	<6	-	
60 degree red ring range	Grey Levels	<25	<25	-	
70 degree blue ring mean	Grey Levels	55	55	+/-3.0	
70 degree blue ring sigma	Grey Levels	<6	<6	-	
70 degree blue ring range	Grey Levels	<25	<25	-	
80 degree led mean	Grey Levels	90	90	+/-3.0	
80 degree led sigma	Grey Levels	<12	<12	-	
80 degree led range	Grey Levels	<50	<50	-	

If any of the results are out of specification then the following service note checks are to be carried out.

Potentiometers:

The first step in this field upgrade would be to check the potentiometers. It must be first determined whether or not the existing potentiometers have not been 'maxed' out i.e. that the maximum amount of current is not flowing through the potentiometers. If the pots have not been 'maxed' out, obviously, it is necessary to turn the pots to ensure that all Leds are with the correct specification , loosen off the locking nut and turn the pots and record the values (See Appendix B).

Appendix B

Camera Setup and Lighting Specifications

Note: Record the settings for the lighting head for each ring, then also turn the pots on full to allow max current then return to normal scope.

2.1 SJ10 (**Fotowand Grey Card**) - Note set aperture depending on lens.

Parameter	Units	Setting Required	Actual	Tolerance	Max Setting
Camera Model				-	
Lens Type				-	
Lens F-Stop				-	
Field of View	Mm	29.5		+/-1.0	
Pixel Size	Microns	23		+/- 0.5	
30 degree ring mean	Grey Levels	125		+/-3.0	
30 degree ring sigma	Grey Levels	<20		-	
30 degree ring range	Grey Levels	<80		-	
45a degree blue ring mean	Grey Levels	120		+/-3.0	
45a degree blue ring sigma	Grey Levels	<12		-	
45a degree blue ring range	Grey Levels	<45		-	
45b degree green ring mean	Grey Levels	112		+/-3.0	
45b degree green ring sigma	Grey Levels	<12		-	
45b degree green ring range	Grey Levels	<45		-	
45 c degree red ring mean	Grey Levels	90		+/-3.0	
45c degree red ring sigma	Grey Levels	<12		-	
45c degree red ring range	Grey Levels	<45		-	
60 degree red ring mean	Grey Levels	41		+/-3.0	
60 degree red ring sigma	Grey Levels	<6		-	
60 degree red ring range	Grey Levels	<25		-	
70 degree blue ring mean	Grey Levels	55		+/-3.0	
70 degree blue ring sigma	Grey Levels	<6		-	
70 degree blue ring range	Grey Levels	<25		-	
80 degree led mean	Grey Levels	90		+/-3.0	
80 degree led sigma	Grey Levels	<12		-	
80 degree led range	Grey Levels	<50		-	

Note: Record the settings for the lighting head for each ring, then also turn the pots on full to allow max current then return to normal scope.

If the pots refuse to turn to the maximum rotation this does not necessarily mean that the pots are at a max. Sometimes the pots can become jammed before the maximum has been reached. In this case it will be necessary to change the Pots. It may also be necessary to do this if the pots are defective.

To Replace the Pots, you must have pre-soldered pots**.**

Removing Potentiometer

1. Remove the lid from the potentiometer box unscrewing the 4 retaining screws with a Phillips screwdriver. Next use a small flat blade screwdriver to remove the pot cabling from the connector block.

2. Take a note of the cabling numbers on the connector as you will need them later.

3. Using a pair of pinch nose pliers carefully remove the locking nut from the potentiometer see fig 1.1. See parts of potentiometer Fig 1.0 for reference.

Fig 1.0

Fig 1.1

4. Grip the pot from inside the pot box and then remove the threaded retainer from the pot shaft.

5. Next remove the locking spring and gently remove the pot from it's housing.

Replacing Potentiometer

1. Refit the new potentiometer into the old space as in Fig 1.2.
2. Replace the locking washer on to the assembly.
3. Fit the threaded retainer and screw down tightly.
4. Screw on the locking nut tight ensuring the pot shaft cannot turn .
5. Now rewire the pot cabling to the connector (see fig 1.3)
6. Replace the pot box lid and the fixing screws.

Fig 1.2

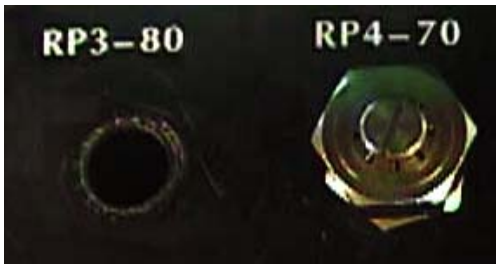
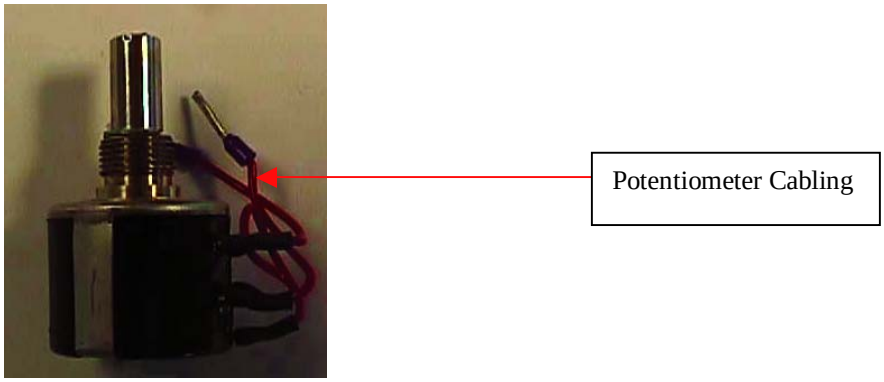


Fig 1.3



If none of these engineering measures brings the lighting values within specification then progress to next section.

Replacing the old lighting head.

Before we put on the new lighting head, we must first remove the old lighting head from the back plate (See Figure 1.4).

Fig 1.4

Note: Figure 1.4 contains an image of the removed lighting head/camera assembly. It is not necessary to remove this. This was done for illustration purposes.
At this point the new lighting head may be placed on the system. Care must be taken to ensure that all cables are secured to the backplate neatly, with cable ties. Any excess material on the cable ties must be removed. Also check that the LED rings are centered 90 degrees to the system so we have even dispersion of light over the grey card. Once the lighting head has been replaced, the individual rings must be calibrated as per appendix (A) lighting setup checklist and be within specification.