W. W. Hansen Experimental Physics Laboratory

STANFORD UNIVERSITY

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Gravity Probe B Relativity Mission

FUNCTIONAL TEST OF UV SOURCE EU

GP-B P0342 Rev -

September 26, 1997

Prepared by:Bruce Clarke **Date**
Engineer

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Manager, Gyroscope Development

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Quality Assurance

Approved by: J. Turneaure **Date**
Hardware Manager

Note: This procedure was never used (July 27, 1999)

PROCEDURE FOR FUNCTIONAL TEST OF UV SOURCE EU

TEST PLAN
RESONANCE UV SOURCE FOR GP-B
ENGINEERING UNIT
9/24/97

Note: This Engineering unit has been fully flight qualified at the vendors facility. It has been vacuum baked to bring it to the required level of cleanliness. In order to maintain this cleanliness, this unit should be handled only while wearing gloves and kept in a clean organic free environment. TREAT THIS UNIT AS A FULLY QUALIFIED FLIGHT MODEL.

Handling: Follow handling procedures provided by vendor with unit.

Qualified test engineers: Bruce Clarke
Sasha Buchman

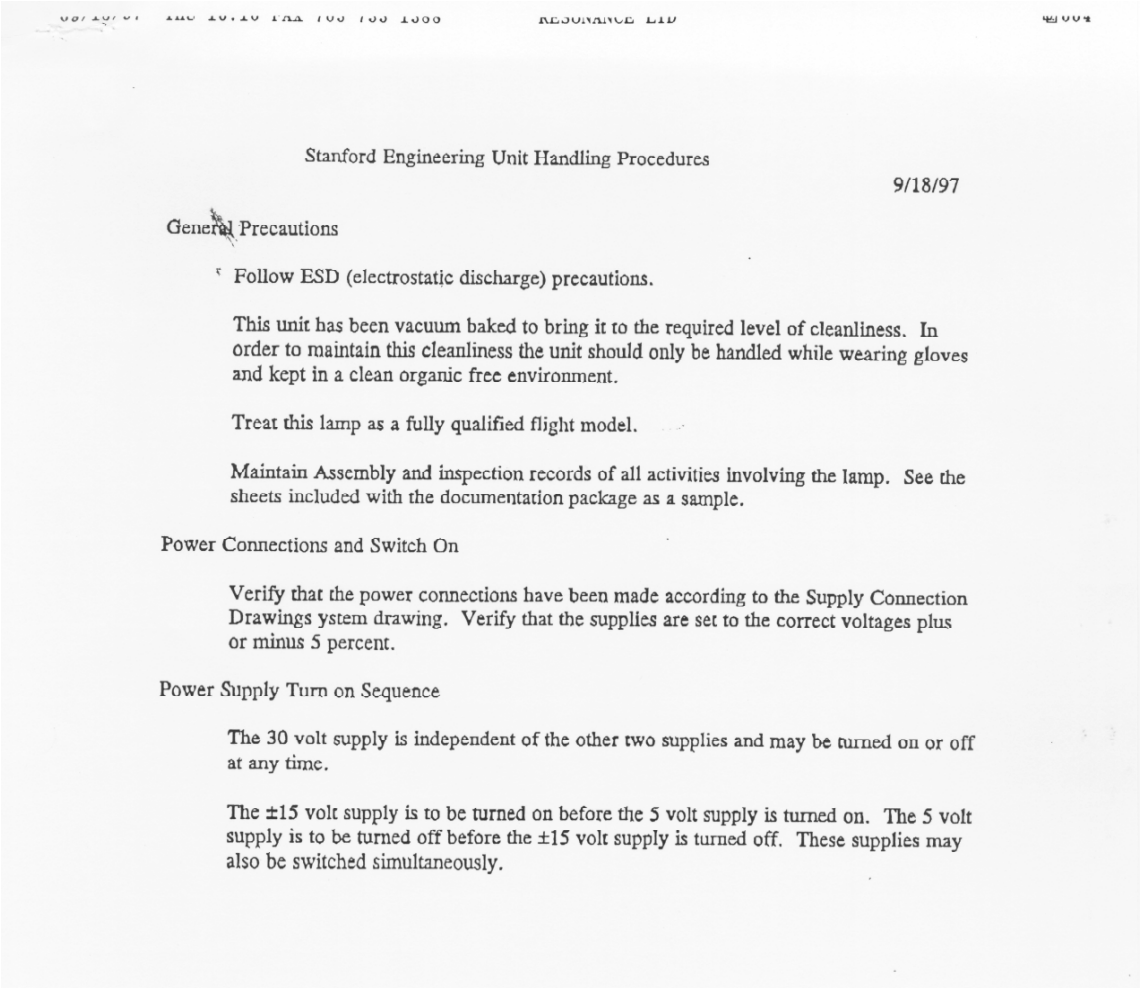
Authority to redline: Bruce Clarke
Sasha Buchman

This is a functional test to verify operation at atmospheric pressure and room temperature. Be sure to operate the RF circuit (+30V line) only with the lamp in a dry nitrogen environment in order to prevent the production of ozone within the lamp housing. Ozone will not only degrade the UV output but will begin to corrode materials inside the lamp.

Keep a record of all test activities in the EU test log.

1. Carry the EU in a clean zip-lock bag from the QA inspection area to the class 1000 clean facility.
2. Place the EU the nitrogen purge chamber. Check that the 15-pin connector breakout on the purge chamber agrees with "Supply Connection Drawings" provided by the vendor in the EU. documentation package. Make the 15-pin electrical connection and record this make in the test log.
3. Using an SMA to SMA fiber jumper, make the connection to one of the SMA outputs on the lamp and record this make in the test log. Connect the other end to a Cs-Te photodiode in order to monitor the UV output on this fiber. Close the purge chamber.
4. Make the connections from the 15-pin breakout to the power supplies per "Supply Connection Drawings". Monitor the telemetry (lamp temperature and intensity) using a hand held multi-meter.
5. Begin a small flow (~1 scfm) in a dry nitrogen purge line and connect this line to the nitrogen inlet of the purge chamber. Open the purge valve. Allow this purge to run for at least 15 minutes before tuning the lamp power on.
6. Power up the lamp power connections (+30V, +/-15V, +5V) according to the sequence called out in "Stanford Engineering Unit Handling Procedures" in the EU documentation. Note that the +5V line shall be current limited at 1000 mA. Enter the time each of these lines is powered on in the test log.
7. Monitor the following parameters as the lamp warms: +30V line voltage and current, +/-15V line voltage and current, +5V line voltage and current, intensity monitor and temperature monitor output, base plate temperature, fiber output.
8. After the lamp output has stabilized, power down the +30V line (lamp RF power) and switch the SMA-SMA jumper to another output fiber. Record each fiber connection make and break in the test log. Allow the chamber to purge for at least 5 minutes before powering up the +30 line and measuring the output of this fiber.
9. Repeat 8 until all lamp output fibers have been tested.

10. Power down the +30V, +/-15V and +5V lines per sequence called out in "Supply Connection Drawings". Remove the EU from the purge chamber and place in a clean zip-lock bag.
11. Return the EU to the QA inspection area for storage.



Stanford Engineering Unit Handling Procedures

9/18/97

General Precautions

Follow ESD (electrostatic discharge) precautions.

This unit has been vacuum baked to bring it to the required level of cleanliness. In order to maintain this cleanliness the unit should only be handled while wearing gloves and kept in a clean organic free environment.

Treat this lamp as a fully qualified flight model.

Maintain Assembly and inspection records of all activities involving the lamp. See the sheets included with the documentation package as a sample.

Power Connections and Switch On

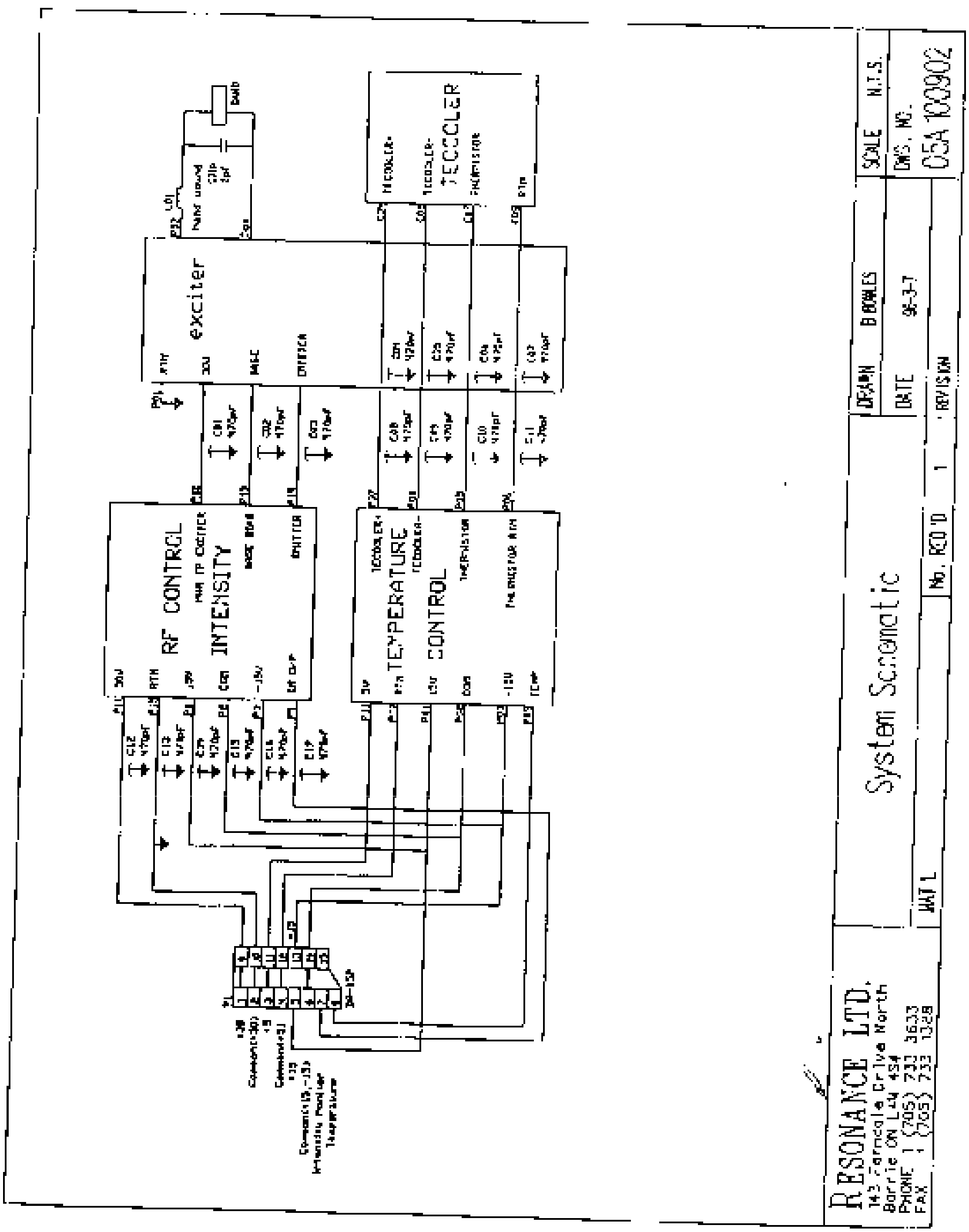
Verify that the power connections have been made according to the Supply Connection Drawings ystem drawing. Verify that the supplies are set to the correct voltages plus or minus 5 percent.

Power Supply Turn on Sequence

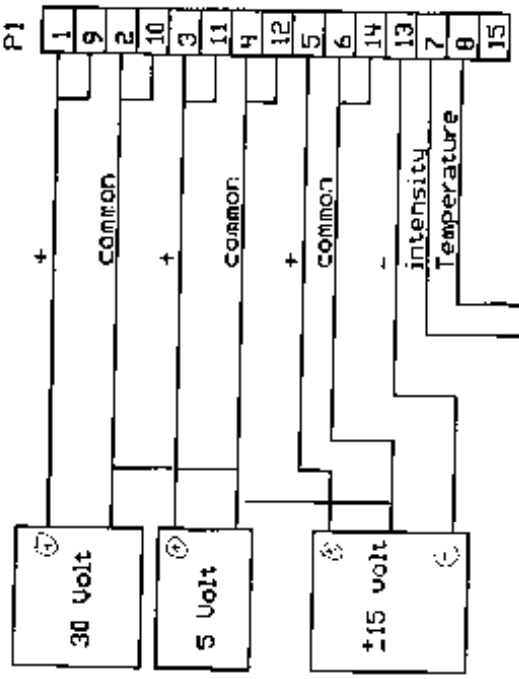
The 30 volt supply is independent of the other two supplies and may be turned on or off at any time.

The ±15 volt supply is to be turned on before the 5 volt supply is turned on. The 5 volt supply is to be turned off before the ±15 volt supply is turned off. These supplies may also be switched simultaneously.

HANDLING PROCEDURES PROVIDED BY VENDOR (Resonance Ltd.)


RF CONTROL
INTENSITY
TEMPERATURE
CONTROL
exciter
TECOOLER
SCALE N.T.S.
DWG. NO.
05A 100902
DRAWN B BOWLES
DATE
REVISION
No. RQ'D 1
System Schematic
MAT'L
RESONANCE LTD.
143 Ferndale Drive North
Barrie ON L4N 4S4
PHONE 1 (705) 733 3633
FAX 1 (705) 733 1328

Power Supply Connections



Note: The common connections between the supplies to be close to the supplies

FUNCTIONAL TEST LOG - Date: _____ page ___ of ____.

Time	+30V line voltage (V)	current (mA)	+/- 15V line voltage (V)	current (mA)	+5V line voltage (V)	current (mA)	Monitors lamp temp (V)	intensity (V)	plate temp (C)	fiber (nA)	Comment

FUNCTIONAL TEST LOG - Date: _____ page ___ of ____.

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FUNCTIONAL TEST SUMMARY

Date
S/N

RESONANCE UV SOURCE FOR GP-B
ENGINEERING UNIT

LAMP USAGE (Watt-hours)

+30V line
+/-15V line
+5V line

CONNECTOR MAKE/BREAK

15-pin fiber #	Talley	Total
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

LAMP OUTPUT

fiber #	output (uW)	comment
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

fiber map