

SOUTHWEST RESEARCH INSTITUTE
 Department of Quality Assurance
 Calibration Laboratory • 522-5215

20001

WORK ORDER - 201

12/17/96

CERTIFICATE # 27527 ASSET # 003095 DATE 02 Dec. 96

ITEM DATA: SEP 21 1996

Manufacturer RESISTOR BOX Model OFFICE

Description RESISTOR BOX Serial # 771002

Accessories SEP 21 1996

ACTION REQUESTED SEP 21 1996

CUSTODIAN Comms. Div. Div 20

Turned in by: SEP 21 1996 Phone 6090

CHARGE # 20-945-001 Date Required SEP 21 1996

INSTRUMENT USED ON: NUCLEAR DOD NASA GLP SPPE
 OTHER

COPY OF CALIBRATION CERTIFICATE Yes No

- CONDITION RECEIVED:
- Out of tolerance, repaired to specifications
 - In tolerance, minor adjustments/repairs made
 - In tolerance, no adjustments/repairs
 - Out of tolerance, adjusted to specifications
 - Received into system, introduced or reactivated
 - Calibration internal
 - Reliability code

ACTION TAKEN: (Calibration/Repair/Parts) Four-wire Resistance measurement

As follows: WH TO GREEN JACK: 10.06724 ^{1st} 10.06784 ^{2nd} 10.06714 ^{3rd}

RED TO GREEN JACK: 10.06718 10.06714

TEMP 70°F 77.6°F

AVERAGE MEASURED VALUE OVER 10 SAMPLES: 10.06745 Ω

CAL ENVIRONMENT: Temperature 70°F Humidity 34%RH

CALIBRATED/REPAIRED:

By UMorales Cal Procedure CLCP-OR-001

Date 17 Dec 96 Accuracy 1%

Cal Interval 10 Time to complete:

Next Cal due 17 JUN 97 Cal _____ Repair _____

Standards used (Asset#) 1505

DATE COMPLETED 17 Dec 96

DATE PICKED UP 12/18/96 PICKED UP BY [Signature]

27527

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 2604 ASSET # 203095 DATE 10 July 97

ITEM DATA:

Manufacturer Swri Model 10 Ochr
Description MSstor 100 Serial # 171002
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Dr. P. Daniel Quinn

Turned in by: _____ Phone 609c

CHARGE # 705708 SKI Date Required _____

INSTRUMENT USED ON: DOD/NASA NUCLEAR GLP SPPE ISO
 OTHER _____

COPY OF CALIBRATION CERTIFICATE Yes No

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.
By _____ Date _____

CONDITION RECEIVED: _____ (F) Out of tolerance, repaired to specifications
_____ (G) In tolerance, minor adjustments/repairs made
 (J) In tolerance, no adjustments/repairs
_____ (K) Out of tolerance, adjusted to specifications
_____ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) 10.06803Ω 10.06804Ω
10.06804Ω 10.06804Ω } 10.06805Ω
10.06805Ω 10.06806Ω
10.06805Ω 10.06805Ω
10.06805Ω 10.06806Ω }

CAL ENVIRONMENT: Temperature 74 °F Humidity 47 %RH

CALIBRATED/REPAIRED:
By VMorales Cal Procedure CLCP-DR-001
Date 21 JUL 97 Accuracy +/- 1%
Cal Interval 10mo. Reliability Code: 7
Next Cal due ~~21 JUL 98~~ 21 JAN 98 Cal Time .5 Repair Time _____
Standards used (Asset#) 1505

DATE COMPLETED 21 JUL 97
DATE PICKED UP 7/25/97 PICKED UP BY [Signature]

2604

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 28681 ASSET # 00495 DATE 18 Feb 98

ITEM DATA:

Manufacturer Suol Model 10 OHM
Description 10550 box Serial # 171002
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Jim No, David Dunn

Turned in by: _____ Phone 690

CHARGE # 20-1408-571 Date Required _____

INSTRUMENT USED ON: DOD/NASA NUCLEAR GLP SPPE ISO
OTHER _____

COPY OF CALIBRATION CERTIFICATE Yes No

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.
By _____ Date 17 Feb 98

CONDITION RECEIVED: _____ (F) Out of tolerance, repaired to specifications
_____ (G) In tolerance, minor adjustments/repairs made
 (J) In tolerance, no adjustments/repairs
_____ (K) Out of tolerance, adjusted to specifications
_____ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts)
Measured Value: 10.048114 Ω

CAL ENVIRONMENT:
Temperature 73 °F Humidity 34 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure CLCP-OR-001
Date Feb 19 98 Accuracy $\pm 1\%$
Cal Interval 6mo Reliability Code: _____
Next Cal due 19 Aug 98 Cal Time 1.0 Repair Time _____
Standards used (Asset#) 5243

DATE COMPLETED Feb 19 98
DATE PICKED UP 2/19/98 PICKED UP BY [Signature]

28681

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 31063 ASSET # 003095 DATE 3 Aug 98

ITEM DATA:

Manufacturer Supri Model 10 ohm
Description cal box Serial # 171002
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Div. 20, Darrell Dunn

Turned in by: _____ Phone 6090

CHARGE # 20-1402-571 Date Required _____

INSTRUMENT USED ON: (DOD/NASA) (NUCLEAR) (GLP) (SPPE) (ISO)
 OTHER _____

COPY OF CALIBRATION CERTIFICATE (Yes) (No)

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.

By MWJ Date 08/31/98

Work involves proprietary/confidential information or equipment (Yes) (No)

CONDITION RECEIVED: _____ (F) Out of tolerance, repaired to specifications
_____ (G) In tolerance, minor adjustments/repairs made
 (J) In tolerance, no adjustments/repairs
_____ (K) Out of tolerance, adjusted to specifications
_____ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) Measured Value: 10.0725 ohm

CAL ENVIRONMENT: Temperature 72 °F Humidity 40 %RH

CALIBRATED/REPAIRED:
By MWJ Cal Procedure CLCP-02-001
Date 9 Sep 98 Accuracy MFS
Cal Interval 6 Reliability Code: 5
Next Cal due 4 MAR 99 Cal Time 1.0 Repair Time _____
Standards used (Asset#) 5243

DATE COMPLETED 4 SEP 98
DATE PICKED UP 9/22/98 PICKED UP BY Darrell Dunn

31063

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 33514 ASSET # 008095 DATE 05 MARCH 99

ITEM DATA:

Manufacturer Sahl Model 100km
Description Resistor box Serial # 171002
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Drugo, Danell Dave

Turned in by: _____ Phone 6090

CHARGE # 20-448-571 GA 03/12 Date Required _____

INSTRUMENT USED ON: (DOD/NASA) (NUCLEAR) (GLP) (SPPE) (ISO)
 OTHER _____

COPY OF CALIBRATION CERTIFICATE (Yes) (No)

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.

By [Signature] Date 03-05-99

Work involves proprietary/confidential information or equipment (Yes) (No)

CONDITION RECEIVED: _____ (F) Out of tolerance, repaired to specifications
_____ (G) In tolerance, minor adjustments/repairs made
 (J) In tolerance, no adjustments/repairs
_____ (K) Out of tolerance, adjusted to specifications
_____ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) Measured Resistance Value ^{1/M} 10.08965 Ω
STANDARD uncertainty for
Measured Value: ±0.06059% ^{1/M}
±0.06859% ^{1/M}
±0.00619%

CAL ENVIRONMENT: Temperature 74 °F Humidity 40 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure CLCP-OR-001
Date 1 APR 99 Accuracy Mfg
Cal Interval 6 Reliability Code: 10
Next Cal due 1 OCT 99 Cal Time 1.0 Repair Time _____
Standards used (Asset#) 5243

DATE COMPLETED 1 APR 99
DATE PICKED UP 4/2/99 PICKED UP BY [Signature]

33514
10.08965 Ω

SOUTHWEST RESEARCH INSTITUTE
 Department of Quality Assurance
 Calibration Laboratory • 522-5215

WORK ORDER

WORK ORDER # 36050 ASSET # 003095 DATE 9/16/99

ITEM DATA:

Manufacturer SWRI Model 10 Ohm
 Description Resistor box Serial # 171002
 Accessories _____

ACTION REQUESTED cal

CUSTODIAN Div. 20, Darrell Dunn

Turned in by: _____ Phone 6090

CHARGE # 20-04 Date Required _____

INSTRUMENT USED ON: (DOD/NASA) (NUCLEAR) (GLP) (SPPE) (ISO)
 OTHER _____

COPY OF CALIBRATION CERTIFICATE (Yes) (No)

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.

By [Signature] Date 9/16/99

Work involves proprietary/confidential information or equipment (Yes) (No)

CONDITION RECEIVED: Out of tolerance
 In tolerance
 Damaged (Contact customer)
 Contact _____ Date _____
 Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) 1) 10.06886 +2.62mΩ 6.864mΩ
2) 10.06852 -0.078mΩ 0.045mΩ 6) 10.06893 +.332mΩ .11mΩ
3) 10.06843 -1.163mΩ 0.20mΩ 7) 10.06883 +.232mΩ 0.05mΩ 10.068598
4) 10.06832 -2.78mΩ 0.11mΩ 8) 10.06764 -9.58mΩ .918mΩ
5) 10.06837 -2.23mΩ 0.55mΩ 9) 10.06885 +.252mΩ .064mΩ
10) 10.06923 +.63mΩ .394mΩ 8.572mΩ

CAL ENVIRONMENT: Temperature 74 °F Humidity 40 %RH

CALIBRATED/REPAIRED:
 By V. Morales Cal Procedure NAAIR-17-20AQ-124 1 Dec 96
 Date 20 Sep 99 Accuracy MTS
 Cal Interval 6 Reliability Code 11
 Next Cal Due 20 MAR 00 Cal Time 10 Repair Time _____
 Standards used (Asset #) 1505

DATE COMPLETED 20 Sep 99
 DATE PICKED UP 11/1/99 PICKED UP BY [Signature]

36050



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory



Certificate #
0972-01

Certificate of Calibration

21 April 2000

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: SWRI 10 OHM
Description: RESISTOR BOX
Serial Number: 171002
Asset Number: 003095

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NC SL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 73.0 Degrees Fahrenheit Humidity: 36 % RH

Calibration Date: 21 Apr 00 **Calibration Procedure:** CL-70, JUN 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:



Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 38597

m:\a2la.rpt Rev date 14 Dec 99

Measurements performed by:



Vince Morales, Technician

Page 1 of 1

Standard Deviation for SwRI Resistance Box S/N 171001

10.06886
 10.06852
 10.06843
 10.06832
 10.06837
 10.06893
 10.06883
 10.06764
 10.06885
 10.06923
 0.000444342

$$\begin{aligned} & \text{HP 3458A} \\ & \pm (15 \text{ ppm} \times 10.068598) + (5 \text{ ppm} \times 10) \\ & = .201029 \times 10^{-3} \end{aligned}$$

$$U_{\text{meas}} = 2 \sqrt{.201029 \times 10^{-3}{}^2 + .444342 \times 10^{-3}{}^2}$$

$$U_{\text{meas}} = .00097$$

Standard Deviation for SwRI Resistance Box S/N S/N 171002

1.000471E+03
 1.000470E+03
 1.000471E+03
 1.000467E+03
 1.000460E+03
 1.000458E+03
 1.000457E+03
 1.000458E+03
 1.000466E+03
 1.000467E+03
 0.005681354

$$\begin{aligned} & \text{HP 3458A} \\ & \pm (10 \text{ ppm} \times R_{\text{ds}}) + (0.5 \text{ ppm} \times R_{\text{mg}}) \\ & = (10 \text{ ppm} \times 1.000464 \text{ k}\Omega) + 0.5 \text{ ppm} \times 1 \text{ k}\Omega \\ & = 10.00464 \times 10^{-3} + .5 \times 10^{-3} \\ & = 10.50464 \times 10^{-3} \end{aligned}$$

$$U_{\text{meas}} = 2 \sqrt{10.50464 \times 10^{-3}{}^2 + 5.681354 \times 10^{-3}{}^2}$$

$$U_{\text{meas}} = 0.0238$$

WORK ORDER 38597

Date Received 4/10/00

Asset No. 003095 Manufacturer SWRI Model 10 OHM
Description RESISTOR BOX Serial Number 171002
Accessory Received/Required NONE
Div/CC ID NONE Accessory to Asset No. N/A Accuracy +/-1%
Div/CC DIV20 Location B57 Custodian DARRELL DUNN Tel. 6090
Charge/Project No. 20.00751.006 Proprietary/Confidential N Date Required ROUTINE
Work Requested CALIBRATION
Receiving Inspection O.K.
Delivered By DARRELL DUNN Tel. 6090

WORK HISTORY

Date	Start Time	Stop Time	Notes

PARTS

Part Name	Part Number	Cost	Failure Description

WORK SUMMARY

Failure Description _____
Repair Action _____
Cal Procedure 06-70, Jun 99 Temp 73 F Hum 36 %
Tech U Morel Cal Hrs. .5 Repair Hrs. _____ Part Cost _____
Action Taken Calibrate
Standards Used 7001
Date Cal 21 APR 00 Int. 6 Mo. Date Due 21 OCT 00 Reliability Code 12
Date Picked Up 8/2/00 Picked Up By [Signature]

38597

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Processed by RCRUZ at 8:44:40AM on 10/24/00

I4213

1 10000 0000 0000 0000 0000 0000 0000

Work Order No 444041093

Arrived 10/24/00

Asset No. 003095 Manufacturer SWRI

Model 10 OHM

Instrument Type/Class RESISTOR BOX

Serial No. 171002

Accessory No. Calibration Procedure CL-70, JUN 99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel. 6090

Charge/Project No. 20.00751.006

Delivered By / Telephone DARRELL DUNN

IN4CAL

Special Instructions _____

WORK NOTES

Date	Hours	Remarks/Notes
<u>Oct 24, 00</u>	<u>0.5</u>	<u>Calibrate</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

REPAIR PARTS

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

WORK SUMMARY

Failure Description None

Repair Action None

Calibration Procedure CL-70, Jun 99 Temp 72 F Hum. 43%

Tech Ruiz Totals Cal Hours 0.5 Repair Hours _____ Parts Cost _____

Standards Used 7001

Date Picked Up 10/25/2000

Picked Up By [Signature]

41093



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory



Certificate #
0972-01

Certificate of Calibration

24 October 2000

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: SWRI 10 OHM
Description: RESISTOR BOX
Serial Number: 171002
Asset Number: 003095

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NC SL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 72.0 Degrees Fahrenheit Humidity: 43 % RH

Calibration Date: 24 Oct 00 **Calibration Procedure:** CL-70, JUN 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 444041093

m\A2la.rpt Rev date 22 May 00

Measurements performed by:

Tom Hannon, Technician

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Processed by RCRUZ at 4:00:53PM on 4/26/01

||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||

Work Order 444043365

Arrived 4/26/01

Asset No. 003095 Manufacturer SWRI

Model 10 OHM

Instrument Type/Class RESISTOR BOX

Serial No. 171002

Accessory No. Calibration Procedure CL-70, JUN 99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel. 6090

Charge/Project No. 20.00751.006

Delivered By / Telephone

IN4CAL

Special Instructions 20.00751.006

WORK NOTES

Date	Hours	Remarks/Notes
<u>4-27-01</u>	<u>.5</u>	<u>Calibrate</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

REPAIR PARTS

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

WORK SUMMARY

Failure Description None

Repair Action None

Calibration Procedure CL-70, JUN 99 Temp 72 F Hum. 40 %

Tech R Dykstra / T Hannon Totals Cal Hours .5 Repair Hours _____ Parts Cost _____

Standards Used 007001

Date Picked Up 5/2/01

Picked Up By [Signature]

43365



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory



Certificate #
0972-01

Certificate of Calibration

27 April 2001

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: SWRI 10 OHM
Description: RESISTOR BOX
Serial Number: 171002
Asset Number: 003095
Work Order Number: 444043365

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 72.0 Degrees Fahrenheit Humidity: 40 % RH

Calibration Date: 27 Apr 01 **Calibration Procedure:** CL-70, JUN 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:

Tom Hannon, Technician

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Received by RCRUZ, 10/26/01 11:23:26AM

Arrived 10/26/01

Work Order **444045920**

Asset No. 003095 Manufacturer SWRI

Model 10 OHM

Equipment Type RESISTOR BOX

Serial No. 171002

Accessory No.

Interval 6 M

Calibration Procedure CL-70, JUN 99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel 6090

IN4CAL

Special Instructions 20.00751.006

Notify before adjustments or repairs. Provide data with certificate Certificate Type B540

Charge/Project No. 00751.006 1.20

Requester / Telephone

This information is correct for the work requested.

WORK NOTES

Date	Hours	Remarks/Notes
<u>Oct. 29, 2001</u>		<u>Calibrate</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

WORK SUMMARY

Failure Description None

Repair Action None

Tech RCR Cal Hrs. 0.5 Repair Hrs _____ Parts Cost _____ Temp 71 F Hum. 43 %

Standards Used 1505

Date Picked Up 1/16/01

Picked Up By B. Edz

444045920



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory



Certificate #
0972-01

Certificate of Calibration

29 October 2001

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: SWRI 10 OHM
Description: RESISTOR BOX
Serial Number: 171002
Asset Number: 003095
Work Order Number: 444045920

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 71.0 Degrees Fahrenheit Humidity: 43 % RH

Calibration Date: 29 Oct 01 **Calibration Procedure:** CL-70, JUN 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:

Tom Hannon, Technician



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory

Certificate of Calibration

18 April 2002

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: SWRI 10 OHM
Description: RESISTOR BOX
Serial Number: 171002
Asset Number: 003095
Work Order Number: 444048241

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCCL Z540-1-1994. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 72.0 Degrees Fahrenheit Humidity: 42 % RH

Calibration Date: 18 Apr 02 **Calibration Procedure:** CL-70, JUN 99

Condition as Received: IN TOLERANCE

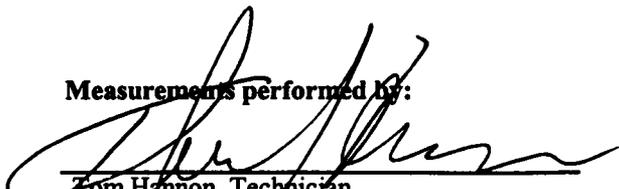
Condition as Returned: IN TOLERANCE

Remarks:

Approved by:


Walt Hill, Metrology Group Leader
Institute Calibration Laboratory

Measurements performed by:


Tom Hannon, Technician

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Received by RCRUZ, 4/17/02 4:03:18PM

Arrived 4/17/02

Work Order **444048241**
Model 10 OHM

Asset No. 003095 Manufacturer SWRI

Equipment Type RESISTOR BOX

Serial No. 171002

Accessory No. _____

Interval 6 M

Calibration Procedure CL-70, JUN 99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel 6090

IN LINE

Special Instructions 20.00751.006

Notify before adjustments or repairs. () Provide data with certificate (✓) Certificate Typ _____

Charge/Project No. 00751.006 1.20

Requester / Telephone DARRELL DUNN X6090

This information is correct for the work requested.

WORK NOTES

Date	Hours	Remarks/Notes
<u>April 18, 2002</u>		<u>Calibrate</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

WORK SUMMARY

Failure Description None
Repair Action None
Tech JK Cal Hrs. 0.5 Repair Hrs _____ Parts Cost _____ Temp 72 F Hum. 42 %
Standards Used 1505

Date Picked Up 5/9/02 Picked Up By Darrell Dunn

48241