

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

WORK ORDER

CERTIFICATE # 25531 ASSET # 002292 DATE 23 May 97

ITEM DATA:

Manufacturer ABB Model SE 120
Description 101-6r Serial # 0515265
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Div 10, Donell Dine

Turned in by: _____ Phone 6090

CHARGE # 4000 20-528-54 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) _____

CAL ENVIRONMENT:
Temperature 77 °F Humidity 47 %RH

CALIBRATED/REPAIRED:
By ABO Cal Procedure 3 00, 0 06 J, 0 3
Date 2 June 97 Accuracy _____
Cal Interval 12 Reliability Code: _____
Next Cal due _____ Cal Time 3 Repair Time _____
Standards used (Asset#) 158

DATE COMPLETED _____
DATE PICKED UP 6/4/97 PICKED UP BY [Signature]

25531

CPM 2 June 97

88 2292

	V	MV		mV	
	1	1.002	2	1.000	
1	1.004		1		+
2	2.009	2.01	1.995	2.000	1.995
5	5.009	5.02	4.996	5.000	
10	10.03	10.07	10	10.00	
20	20.05	20.01	20	20	
50	50.08	50.02	50	50	
100	100.05	100.4	100	100	
200	200.8	200.9	200	200	
500	502	502	500	500	

.2 Temp...

.5 % Accy

.25% Low

.5% Line U. Chng

1.95%

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

WORK ORDER

CERTIFICATE # 29976 ASSET # 002092 DATE 12 Jun 98

ITEM DATA:

Manufacturer ABB Model 3E 140
Description 1 Condor Serial # 0515465
Accessories _____

ACTION REQUESTED cert

CUSTODIAN D. W. D. D. D. D.

Turned in by: _____ Phone _____

CHARGE # 70-1402-571 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 MAC Date 06/03/98

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

29976

ACTION TAKEN: (Calibration/Repair/Parts) _____

CAL ENVIRONMENT: Temperature 71 °F Humidity 51 %RH

CALIBRATED/REPAIRED:
By IC Hughes Cal Procedure MFR manual
Date 8 Jun 98 Accuracy MFR
Cal Interval 12 months Reliability Code: 1
Next Cal due 8 Jun 99 Cal Time 2.5 Repair Time _____
Standards used (Asset#) 106

DATE COMPLETED 8 Jun 98
DATE PICKED UP 6/16/98 PICKED UP BY [Signature]

CALIBRATION CHECK FORM

Date Calibrated 11/11/98 Work Order 29976
 Technician K. K. P. S. S.
 Unit Under Test P10-111
 Manufacturer Arbeon Model SE 120 SN 6515265 ASN 7242

Rev. Chg.
 Page 1 of 1

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	Left channel						
1	Deflection (Basic cal. filament)	VDC	VDC				
	1mv	0.10mV	.097	.103	.098		F
		0.5mV	.495	.505	.498		F
		1.0mV	.9925	1.0075	1.002		F
	2mV	0.2mV	1.94	2.06	1.94		F
		0.4mV	.99	1.01	0.994		F
		1.0mV	1.985	2.015	2.003		F
	5mV	0.5mV	.485	.515	0.486		F
		2.5mV	2.475	2.525	2.49		F
		5.0mV	4.975	5.0375	4.99		F
	10mV	1mV	0.97	1.03	0.972		F
		5mV	4.95	5.05	4.98		F
		10mV	9.925	10.075	10.015		F
	20mV	2mV	1.94	2.06	1.95		F
		10mV	9.9	10.1	9.97		F
		20mV	19.85	20.15	20.03		F
	50mV	5mV	4.85	5.15	4.92		F
		25mV	24.75	25.25	24.95		F
		50mV	49.625	50.375	50.13		F
	100mV	10mV	9.7	10.3	9.998		F
		50mV	49.5	50.5	50.3		F
		100mV	99.25	100.75	100.60		F
	200mV	20mV	19.4	20.6	20.0		F
		100mV	99	101	100.5		F
		200mV	198.5	201.5	201.3		F

156

51/71

1A7-116

CALIBRATION CHECK FORM

Date Calibrated _____ Work Order _____

Technician _____

Unit Under Test Chest Recorder / Plotter

Manufacturer ABBEN Model SE 120 SN _____

Rev _____ Chg _____
Page 2 of 4

ASN _____

STEP	FUNCTION OR RANGE <i>left channel</i>	APPLIED	TOLERANCE		MEASURED VALUES		P/P
			MIN	MAX	AS FOUND	RELEASED	
	500mV	50mV	^{mVDC} 48.5 - 51.5		51.0		P
		250mV	247.5 - 252.5		251.8		P
		500mV	496.25 - 503.75		503.3		P
	1V		VDC				
	1V	0.1V	0.097 - 0.103		0.1015		P
		0.5V	0.495 - 0.505		0.504		P
		1V	0.9925 - 1.0075		1.006		P
	2V	0.2V	0.194 - 0.206		0.2		P
		1V	0.99 - 0.101		1.0		P
		2V	1.985 - 2.015		2.013		P
	5V	0.5V	0.485 - 0.515		0.5		P
		2.5V	2.475 - 2.525		2.51		P
		5V	4.9625 - 5.0375		5.02		P
	10V	1V	0.97 - 0.103		0.101		P
		5V	4.95 - 5.05		5.01		P
		10V	9.925 - 10.075		10.04		P
	20V	2V	1.94 - 2.06		2.015		P
		10V	9.9 - 10.1		10.025		P
		20V	19.85 - 20.15		20.06		P
	50V	5V	4.85 - 5.15		5.06		P
		25V	24.75 - 25.25		25.07		P
		50V	49.625 - 50.375		50.3		P
	100V	10V	9.7 - 10.3		10.1		P
		50V	49.5 - 50.5		50.2		P
		100V	99.25 - 100.75		100.6		P
	200V	20V	19.4 - 20.6		20.0		P
		100V	99 - 101		100.4		P
		200V	198.5 - 201.5		201		P

CALIBRATION CHECK FORM

Date Calibrated 8 Jun 98
 Technician Karin Hucal
 Unit Under Test 16700
 Manufacturer Altron

Work Order 29976
 Model SE 120
 SN 0515265 ASN 7272

Rev _____ Chg _____
 Page 3 of 4

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/P
			MIN	MAX	AS FOUND	RELEASED	
	RIGHT CHANNEL						
	Deflection (Basic Acc. Fluctuation)	VDC	VDC				
	10mV	0.10mV	.097	.103	0.98		F
		0.5mV	.495	.505	0.498		F
		1.0mV	.9925	1.0075	0.99	0.996	F
	2mV	0.2mV	.194	.206	0.195		F
		1.0mV	.99	1.01	0.9935		F
		2.0mV	1.985	2.015	1.993		F
	5mV	0.5mV	.485	.515	0.492		F
		2.5mV	2.475	2.525	2.495		F
		5.0mV	4.9625	5.0375	4.98		F
	10mV	1mV	0.97	1.03	0.98		F
		5mV	4.95	5.05	4.95	4.99	F
		10mV	9.925	10.075	9.97		F
	20mV	2mV	1.94	2.06	1.98		F
		10mV	9.9	10.1	0.99		F
		20mV	19.85	20.15	19.9		F
	50mV	5mV	4.85	5.15	4.98		F
		25mV	24.75	25.25	24.98		F
		50mV	49.625	50.375	49.98		F
	100mV	10mV	9.7	10.3	9.98		F
		50mV	49.5	50.5	49.98		F
		100mV	99.25	100.75	100.0		F
	200mV	20mV	19.4	20.6	20.1		F
		100mV	99	101	100.1		F
		200mV	198.5	201.5	200.0		F

CALIBRATION CHECK FORM

Date Calibrated _____ Work Order _____
 Technician _____
 Unit Under Test Chart Recorder / Plotter
 Manufacturer ABBON Model SE 120 SN _____ ASN _____

Rev _____ Chg _____
 Page 4 of 4

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/P
			MIN	MAX	AS FOUND	RELEASED	
	<u>Right Channel</u>						
	<u>500mV</u>	<u>50mV</u>	<u>48.5</u>	<u>51.5</u>	<u>5.05</u>		<u>P</u>
		<u>250mV</u>	<u>247.5</u>	<u>252.5</u>	<u>249.7</u>		<u>P</u>
		<u>500mV</u>	<u>496.25</u>	<u>503.75</u>	<u>499.90</u>		<u>P</u>
	<u>TV DC</u>		<u>VDC</u>				
	<u>1V</u>	<u>0.1V</u>	<u>0.097</u>	<u>0.103</u>	<u>0.099</u>		<u>P</u>
		<u>0.5V</u>	<u>0.495</u>	<u>0.505</u>	<u>0.50</u>		<u>P</u>
		<u>1V</u>	<u>0.9925</u>	<u>1.0075</u>	<u>1.00</u>		<u>P</u>
	<u>2V</u>	<u>0.2V</u>	<u>0.194</u>	<u>0.206</u>	<u>0.201</u>		<u>P</u>
		<u>1V</u>	<u>0.99</u>	<u>1.01</u>	<u>1.0</u>		<u>P</u>
		<u>2V</u>	<u>1.985</u>	<u>2.015</u>	<u>2.00</u>		<u>P</u>
	<u>5V</u>	<u>0.5V</u>	<u>0.485</u>	<u>0.515</u>	<u>0.502</u>		<u>P</u>
		<u>2.5V</u>	<u>2.475</u>	<u>2.525</u>	<u>2.51</u>		<u>P</u>
		<u>5V</u>	<u>4.9625</u>	<u>5.0375</u>	<u>5.00</u>		<u>P</u>
	<u>10V</u>	<u>1V</u>	<u>0.97</u>	<u>1.03</u>	<u>0.102</u>		<u>P</u>
		<u>5V</u>	<u>4.95</u>	<u>5.05</u>	<u>5.00</u>		<u>P</u>
		<u>10V</u>	<u>9.925</u>	<u>10.075</u>	<u>10.00</u>		<u>P</u>
	<u>20V</u>	<u>2V</u>	<u>1.94</u>	<u>2.06</u>	<u>2.03</u>		<u>P</u>
		<u>10V</u>	<u>9.9</u>	<u>10.1</u>	<u>10.01</u>		<u>P</u>
		<u>20V</u>	<u>19.85</u>	<u>20.15</u>	<u>20.07</u>		<u>P</u>
	<u>50V</u>	<u>5V</u>	<u>4.85</u>	<u>5.15</u>	<u>5.02</u>		<u>P</u>
		<u>25V</u>	<u>24.75</u>	<u>25.25</u>	<u>25.03</u>		<u>P</u>
		<u>50V</u>	<u>49.625</u>	<u>50.375</u>	<u>50.03</u>		<u>P</u>
	<u>100V</u>	<u>10V</u>	<u>9.7</u>	<u>10.3</u>	<u>10.1</u>		<u>P</u>
		<u>50V</u>	<u>49.5</u>	<u>50.5</u>	<u>50.1</u>		<u>P</u>
		<u>100V</u>	<u>99.25</u>	<u>100.75</u>	<u>100.1</u>		<u>P</u>
	<u>200V</u>	<u>20V</u>	<u>19.4</u>	<u>20.6</u>	<u>20.2</u>		<u>P</u>
		<u>100V</u>	<u>99</u>	<u>101</u>	<u>100.3</u>		<u>P</u>
		<u>200V</u>	<u>198.5</u>	<u>201.5</u>	<u>200.1</u>		<u>P</u>

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

WORK ORDER

CERTIFICATE # 34808 ASSET # 002292 DATE 07 June 99

ITEM DATA:

Manufacturer ABB Model SE 120
Description Chart Recorder / Plotter Serial # 0515265
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Div. 20, Darrell Dunn

Turned in by: _____ Phone 6090

CHARGE # 80-0H 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 07 June 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) Calibrated

CAL ENVIRONMENT:
Temperature 75 °F Humidity 42 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure CL-75 June 99
Date 15 June 99 Accuracy _____
Cal Interval 12 Reliability Code: _____
Next Cal due 15 June 00 Cal Time 2 Repair Time _____
Standards used (Asset#) 4764 4613
6413

DATE COMPLETED 15 June 99
DATE PICKED UP 6/22/99 PICKED UP BY [Signature]

34808

WORK ORDER 39644

Date Received 7/6/00

Asset No. 002292 Manufacturer ABBEON Model SE 120
Description PLOTTER Serial Number 0515265
Accessory Received/Required NONE
Div/CC ID NONE Accessory to Asset No. N/A
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 OK
Delivered By DARRELL DUNN Tel. 6090

WORK HISTORY

Date	Start Time	Stop Time	Notes
1 AUG 00	4 hr		Cal.

PARTS

Part Name	Part Number	Cost	Failure Description

39644

WORK SUMMARY

Failure Description _____

Repair Action _____

Cal Procedure CL 75 6/99 Temp 74 F Hum 38 %

Tech ADL Cal Hrs. 4 Repair Hrs. _____ Part Cost _____

Action Taken Calibrated

Standards Used 4164

Date Cal 2 AUG 00 Int. 12 Mo. Date Due 1 AUG 01 Reliability Code 4

Date Picked Up 8/8/2000 Picked Up By [Signature]

Southwest Research Institute
Calibration Laboratory

Work Order <i>39644</i>	Mfr. Abb	Tech <i>ADL</i>
Asset No. <i>2292</i>	Model SE 120	Procedure CL-75, 6/99
Serial No. <i>0515265</i>	Type Strip Chart Recorder	Cal Date <i>2 AUG 99</i>

Calibration As Found/As Released Data

Parameter	Standard Reading	UUT As Found	Tolerance	UUT As Released
5.2 Time Unit				
60cm/min Range	60 cm		Pass/Fail	
30cm/min Range	30 cm		Pass/Fail	
12 cm/min Range	12 cm		Pass/Fail	
6 cm/min Range	6 cm		Pass/Fail	
3 cm/min Range	3 cm		Pass/Fail	
1 cm/min Range	1 cm		Pass/Fail	

5.3 Voltage Measuring Unit 811

5.3.1 Calibrated zero suppression	< 0.2 % of Setting	<i>✓</i>	0.2 % of Setting	
Dead Band	50 mV	<i>✓</i>	± 0.3 mV	
Setting Time	< 0.5 sec	<i>Pass</i>	Approximately 0.5 sec	
Damping			≤ 1 %	

Right (UPPER)

Input accuracy

1 mV DC Range	1 mV	<i>1.000</i>	± 0.010 mV	
2 mV DC Range	2 mV	<i>1.997</i>	± 0.010 mV	
5 mV DC Range	5 mV	<i>4.992</i>	± 0.025 mV	
10 mV DC Range	10 mV		± 0.050 mV	
20 mV DC Range	20 mV	<i>19.97</i>	± 0.10 mV	
50 mV DC Range	50 mV	<i>49.90</i>	± 0.25 mV	
100 mV DC Range	100 mV	<i>99.82</i>	± 0.500 mV	
	50 mV	<i>50.0</i>	± 0.250 mV	
	25 mV	<i>25.0</i>	± 0.125 mV	
1 V DC Range	1 V	<i>.9986</i>	± 0.005 V	
2 V DC Range	2 V	<i>1.998</i>	± 0.010 V	
5 V DC Range	5 V	<i>4.99</i>	± 0.025 V	
10 V DC Range	10 V	<i>9.96 9.994</i>	± 0.05 V	
20 V DC Range	20 V	<i>19.9</i>	± 0.10 V	
50 V DC Range	50 V	<i>49.9 2</i>	± 0.25 V	
100 V DC Range	100 V	<i>99.9</i>	± 0.50 V	
200 V DC Range	200 V	<i>199.56</i>	± 1.0 V	

Repeat on second sheet for additional 811 plug-ins

Southwest Research Institute
Calibration Laboratory

Work Order	Mfr. Abb	Tech		
Asset No.	Model SE 120	Procedure CL-75, 6/99		
Serial No.	Type Strip Chart Recorder	Cal Date		
Calibration As Found/As Released Data				
Parameter	Standard Reading	UUT As Found	Tolerance	UUT As Released
5.2 Time Unit				
60cm/min Range	60 cm		Pass/Fail	
30cm/min Range	30 cm		Pass/Fail	
12 cm/min Range	12 cm		Pass/Fail	
6 cm/min Range	6 cm		Pass/Fail	
3 cm/min Range	3 cm		Pass/Fail	
1 cm/min Range	1 cm		Pass/Fail	
5.3 Voltage Measuring Unit 811				
5.3.1 Calibrated zero suppression	< 0.2 % of Setting	.1%	0.2 % of Setting	
Dead Band	50 mV	.2	± 0.3 mV	
Setting Time	< 0.5 sec	Pass	Approximately 0.5 sec	
Damping			≤ 1 %	
Left (Lower) Input accuracy				
1 mV DC Range	1 mV	1.004	± 0.010 mV	
2 mV DC Range	2 mV	2.008	± 0.010 mV	
5 mV DC Range	5 mV	5.019	± 0.025 mV	
10 mV DC Range	10 mV	10.015	± 0.050 mV	
20 mV DC Range	20 mV	20.045	± 0.10 mV	
50 mV DC Range	50 mV	50.17	± 0.25 mV	
100 mV DC Range	100 mV	100.30	± 0.500 mV	
	50 mV	50.0050.23 50.11	± 0.250 mV	
	25 mV	25.03	± 0.125 mV	
1 V DC Range	1 V	1.003	± 0.005 V	
2 V DC Range	2 V	2.008	± 0.010 V	
5 V DC Range	5 V	5.015	± 0.025 V	
10 V DC Range	10 V	10.014	± 0.05 V	
20 V DC Range	20 V	20.05 20.08	± 0.10 V	
50 V DC Range	50 V	50.11	± 0.25 V	
100 V DC Range	100 V	100.22	± 0.50 V	
200 V DC Range	200 V	200.53	± 1.0 V	
Repeat on second sheet for additional 811 plug-ins				



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

Certificate of Calibration

2 August 2000

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: ABBEON SE 120
Description: PLOTTER
Serial Number: 0515265
Asset Number: 002292

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL 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: 74.0 Degrees Fahrenheit Humidity: 38 % RH

Calibration Date: 2 Aug 00 **Calibration Procedure:** ci-75 6/99

Condition as Received: IN TOLERANCE

Remarks:

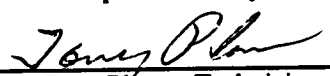
Approved by:


Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 39644

m:\nona21a.rpt Rev date 22 May 00

Measurements performed by:


Tony Planas, Technician

Page 1 of 1

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Received by RCRUZ, 8/22/01 8:35:28AM

Arrived 8/22/01

Work Order **444044941**

Asset No. 002292 Manufacturer ABBEON

Model SE 120

Instrument Type/Class STRIP CHART RECORDER

Serial No. 0515265

Accessory No.

Calibration Procedure

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel. 6090

IN4CAL

Special Instructions _____

Notify before making adjustments or repairs. Provide measurment readings

Charge/Project No. 00751.006 1.20

Requested By / Telephone

The above is correct for the work requested.

Darrell Dunn

WORK NOTES

Date	Hours	Remarks/Notes
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

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

WORK SUMMARY

Failure Description _____

Repair Action _____

Calibration Procedure CL-75 June, 99 Temp 72F Hum 42%

Tech AP Totals Cal Hours 2 Repair Hours _____ Parts Cost _____

Standards Used 4164

Date Picked Up 9/21/01

Picked Up By Darrell Dunn

444941

Southwest Research Institute
Calibration Laboratory

Work Order 444044941	Mfr. Abb	Tech TPlanas
Asset No. 002292	Model SE 120	Procedure CL-75, 6/99
Serial No. 0515265	Type Strip Chart Recorder	Cal Date 4 Sep, 01

Calibration As Found/As Released Data

Parameter	Standard Reading	UUT As Found	Tolerance	UUT As Released
5.2 Time Unit				
60cm/min Range	60 cm	Pass	Pass/Fail	Pass
Upper Pen				

5.3 Voltage Measureing Unit 811

5.3.1 Calibrated zero suppression	< 0.2 % of Setting	0.0%	0.2 % of Setting	Pass
Dead Band	50 mV	0.3 mV	± 0.3 mV	Pass
Setting Time	≈ 0.5 sec	0.3 S	Approximately 0.5 sec	Pass
Damping		0.5%	≤ 1 %	Pass

Input accuracy

1 mV DC Range	1 mV	0.999	± 0.010 mV	Pass
2 mV DC Range	2 mV	1.996	± 0.010 mV	Pass
5 mV DC Range	5 mV	4.983	± 0.025 mV	Pass
10 mV DC Range	10 mV	9.98	± 0.050 mV	Pass
20 mV DC Range	20 mV	19.95	± 0.10 mV	Pass
50 mV DC Range	50 mV	49.82	± 0.25 mV	Pass
100 mV DC Range	100 mV	99.80	± 0.500 mV	Pass
	50 mV	49.98	± 0.250 mV	Pass
	25 mV	25.0	± 0.125 mV	Pass
1 V DC Range	1 V	0.999	± 0.005 V	Pass
2 V DC Range	2 V	1.996	± 0.010 V	Pass
5 V Range	5 V	4.993	± 0.025 V	Pass
10 V DC Range	10 V	9.98	± 0.05 V	Pass
20 V DC Range	20 V	19.94	± 0.10 V	Pass
50 V DC Range	50 V	49.93	± 0.25 V	Pass
100 V DC Range	100 V	99.94	± 0.50 V	Pass
200 V DC Range	200 V	199.7	± 1.0 V	Pass

Repeat on second sheet for additional 811 plug-ins

Southwest Research Institute
Calibration Laboratory

Work Order 444044941	Mfr. Abb	Tech TPlanas
Asset No. 002292	Model SE 120	Procedure CL-75, 6/99
Serial No. 0515265	Type Strip Chart Recorder	Cal Date 4 Sep, 01

Calibration As Found/As Released Data

Parameter	Standard Reading	UUT As Found	Tolerance	UUT As Released
5.2 Time Unit				
60cm/min Range	60 cm	Pass	Pass/Fail	Pass
Lower Pen				

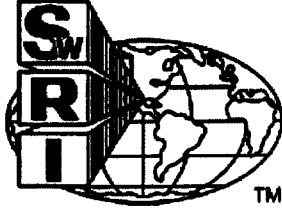
5.3 Voltage Measureing Unit 811

5.3.1 Calibrated zero suppression	< 0.2 % of Setting	0.005%	0.2 % of Setting	Pass
Dead Band	50 mV	0.1 mV	± 0.3 mV	Pass
Setting Time	≈ 0.5 sec	0.3 S	Approximately 0.5 sec	Pass
Damping		0.3%	≤ 1 %	Pass

Input accuracy

1 mV DC Range	1 mV	1.001	± 0.010 mV	Pass
2 mV DC Range	2 mV	2.004	± 0.010 mV	Pass
5 mV DC Range	5 mV	5.002	± 0.025 mV	Pass
10 mV DC Range	10 mV	10.02	± 0.050 mV	Pass
20 mV DC Range	20 mV	20.05	± 0.10 mV	Pass
50 mV DC Range	50 mV	50.15	± 0.25 mV	Pass
100 mV DC Range	100 mV	100.2	± 0.500 mV	Pass
	50 mV	50.0	± 0.250 mV	Pass
	25 mV	24.98	± 0.125 mV	Pass
1 V DC Range	1 V	1.002	± 0.005 V	Pass
2 V DC Range	2 V	2.003	± 0.010 V	Pass
5 V Range	5 V	5.016	± 0.025 V	Pass
10 V DC Range	10 V	10.02	± 0.05 V	Pass
20 V DC Range	20 V	20.05	± 0.10 V	Pass
50 V DC Range	50 V	50.15	± 0.25 V	Pass
100 V DC Range	100 V	100.2	± 0.50 V	Pass
200 V DC Range	200 V	200.3	± 1.0 V	Pass

Repeat on second sheet for additional 811 plug-ins



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

4 September 2001

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: ABBEON SE 120
Description: STRIP CHART RECORDER
Serial Number: 0515265
Asset Number: 002292
Work Order Number: 444044941

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: 42 % RH

Calibration Date: 4 Sep 01 **Calibration Procedure:** CL-75 6/99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:

Tony Planas, Technician