

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

WORK ORDER

CERTIFICATE # 23203 ASSET # 005129 DATE 4 Nov 96

ITEM DATA:

Manufacturer FLUKE Model 26205A HYDRA DATA LOGGER

Description ← Serial # 5832650

Accessories 2620A INPUT module

ACTION REQUESTED Scheduled

CUSTODIAN RON GARDEN

Turned in by: Melissa Phone 2012

CHARGE # 20-UN 20-9998-001 Date Required ASAP

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 interval
 Reliability code

ACTION TAKEN: (Calibration/Repair/Parts)

CAL ENVIRONMENT:
Temperature 76 °F Humidity 46 %RH

CALIBRATED/REPAIRED:
By Melissa Cal Procedure MIS
Date Nov 14, 96 Accuracy MIS
Cal Interval 6m Time to complete:
Next Cal due May 14, 97 Cal 4.0 Repair
Standards used (Asset#) 182

DATE COMPLETED
DATE PICKED UP Melissa E. Hill PICKED UP BY

23203

CHANNEL O

Mfg# PN 889589

CALIBRATION CHECK FORM

Date Calibrated Nov. 14, 96 Work Order 23203
 Technician Thomas Henyon
 Unit Under Test HYDRA Data Acquisition Unit
 Manufacturer Fluke Model 2620A SN 5832650 ASN 5129

Rev _____ Chg _____
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STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/T
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						Pass
	300mv	Short (0v)			-0.01mv		
		150mv			150.00mv		
		290mv			290.00mv		
	3volt	2.9v			2.9000v		
		-2.9v			-2.9002v		
	30v	29v			28.999v		
	150v	150v			149.99v		
	300v	290v			289.99v		
	AC Volts						
	300mv	20mv, 1kHz			20.00mv		
		, 100kHz			20.12mv		
		290mv, 1kHz			290.00mv		
		290mv, 100kHz			297.47mv		
	3v	2.9v, 1kHz			2.9000v		
	30v	29v, 1kHz			28.999v		
	150v	150v, 1kHz			149.97v		
	300v	290v, 1kHz			289.98v		
	Resistance						Pass
	300Ω	Short			0.05Ω		
		190Ω			190.04Ω		
	3kΩ	Short			0.0000kΩ		
		1.9kΩ			1.8998kΩ		
	30kΩ	19kΩ			18.998kΩ		
	300kΩ	190kΩ			190.08kΩ		
	3MΩ	1.9MΩ			1.9004MΩ		

CHANNEL 1

Mfg# PN 889580

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Manufacturer Fluke Model 2620A

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						Pass ↓
	300mv	Short (0v)			-0.01mv		
		150mv			149.99mv		
		290mv			290.00mv		
	3volt	2.9v			2.9000v		
		-2.9v			-2.9002v		
	30v	29v			28.999v		
	150v	150v			149.99v		
	300v	290v			289.99v		
	AC Volts						
	300mv	20mv, 1kHz			20.00mv		
		, 100kHz			20.18mv		
		290mv, 1kHz	290.00		290.00mv		
		290mv, 100kHz			297.5mv		
	3v	2.9v, 1kHz			2.8999v		
	30v	29v, 1kHz			28.999v		
	150v	150v, 1kHz			149.99v		
	300v	290v, 1kHz			289.99v		
	Resistance						Pass ↓
	300 Ω	Short			0.00 Ω		
		190 Ω			189.99 Ω		
	3k Ω	Short			0.0001 kΩ		
		1.9k Ω			1.8998 kΩ		
	30k Ω	19k Ω			18.998 kΩ		
	300k Ω	190k Ω			190.01 kΩ		
	3M Ω	1.9M Ω			1.9004 MΩ		

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Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT	
			MIN	MAX	AS FOUND	RELEASED		
	DC Volts							
	300 mV	Short (0v)			-0.01 mV		Pass	
		150 mV			149.99 mV			
		290 mV			290.00 mV			
	3 V	2.9 V			2.9000 V			
		-2.9 V			-2.9002 V			
	30 V	29 V			28.999 V			
	150 V	150 V			149.99 V			
	AC Volts							
	300 mV	20 mV, 1 kHz			20.00 mV			Pass
		100 kHz			20.12 mV			
		290 mV, 1 kHz			290.00 mV			
		100 kHz			297.54 mV			
	3 V	2.9 V, 1 kHz			2.8999 V			
	30 V	29 V, 1 kHz			28.999 V			
	150 V	150 V, 1 kHz			149.97 V			
	Resistance							
	300 Ω	Short			0.01 Ω		Pass	
		190 Ω			190.01 kΩ			
	3 kΩ	Short			0.0001 kΩ			
		1.9 kΩ			1.8999 kΩ			
	30 kΩ	19 kΩ			19.000 kΩ			
	300 kΩ	190 kΩ			190.02 kΩ			
	3 MΩ	1.9 MΩ			1.9003 MΩ			

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Mfg. PN 889589

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Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT	
			MIN	MAX	AS FOUND	RELEASED		
	DC Volts							
	300 mV	Short (0v)			-0.01 mV		Pass	
		150 mV			149.99 mV		↓	
		290 mV			290.00 mV			
	3 v	2.9 v			2.9000 v			
		-2.9 v			-2.9002 v			
	30 v	29 v			28.999 v			
	150 v	150 v			149.99 v			
	AC Volts							
	300 mV	20 mV, 1 kHz			20.00 mV			Pass
		100 kHz			20.12 mV			↓
		290 mV, 1 kHz			290.00 mV			
		100 kHz			297.54 mV			
	3 v	2.9 v, 1 kHz			2.8999 v			
	30 v	29 v, 1 kHz			28.999 v			
	150 v	150 v, 1 kHz			149.99 v			
	Resistance							
	300 Ω	Short			0.00 Ω		Pass	
		190 Ω			189.99 Ω		↓	
	3 kΩ	Short			0.0000 kΩ			
		1.9 kΩ			1.8998 kΩ			
	30 kΩ	19 kΩ			18.998 kΩ			
	300 kΩ	190 kΩ			190.01 kΩ			
	3 MΩ	1.9 MΩ			1.9004 MΩ			

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Unit Under Test HYDRA Data Acquisition Unit
Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT	
			MIN	MAX	AS FOUND	RELEASED		
	DC Volts							
	300 mV	Short (0V)			-0.01 mV		Pass	
		150 mV			150.00 mV		↓	
		290 mV			290.00 mV			
	3 V	2.9 V			2.9000 V			
		-2.9 V			-2.9002 V			
	30 V	29 V			28.999 V			
	150 V	150 V			149.99 V			
	AC Volts							
	300 mV	20 mV, 1 kHz			20.00 mV			Pass
		100 kHz			20.12 mV			↓
		290 mV, 1 kHz			290.00 mV			
		100 kHz			297.57 mV			
	3 V	2.9 V, 1 kHz			2.8999 V			
	30 V	29 V, 1 kHz			28.998 V			
	150 V	150 V, 1 kHz			149.97 V			
	Resistance							
	300 Ω	Short			0.00 Ω		Pass	
		190 Ω			189.99 Ω		↓	
	3 KΩ	Short			0.0001 kΩ			
		1.9 kΩ			1.8998 kΩ			
	30 kΩ	19 kΩ			18.998 kΩ			
	300 kΩ	190 kΩ			190.01 kΩ			
	3 MΩ	1.9 MΩ			1,900.4 MΩ			

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Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300 mV	Short (0V)			-0.01 mV		Pass
		150 mV			150.00 mV		
		290 mV			290.00 mV		
	3 V	2.9 V			2.9000 V		
		-2.9 V			-2.9002 V		
	30 V	29 V			29.000 V		
	150 V	150 V			149.99 V		
	AC Volts						
	300 mV	20 mV, 1 kHz			20.00 mV		Pass
		100 kHz			20.13 mV		
		290 mV, 1 kHz			290.00 mV		
		100 kHz			297.60 mV		
	3 V	2.9 V, 1 kHz			2.8999 V		
	30 V	29 V, 1 kHz			28.998 V		
	150 V	150 V, 1 kHz			149.97 V		
	Resistance						
	300 Ω	Short			0.01 Ω		Pass
		190 Ω			189.99 Ω		
	3 KΩ	Short			0.001 kΩ		
		1.9 kΩ			1.8998 kΩ		
	30 kΩ	19 kΩ			18.998 kΩ		
	300 kΩ	190 kΩ			190.01 kΩ		
	3 MΩ	1.9 MΩ			1.9004 MΩ		

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Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300 mV	Short (0V)			-0.01 mV		Pass
		150 mV			149.99 mV		↓
		290 mV			290.00 mV		
	3 V	2.9 V			2.9000 V		
		-2.9 V			-2.9003 V		
	30 V	29 V			28.999 V		
	150 V	150 V			149.99 V		
	AC Volts						
	300 mV	20 mV, 1 kHz			20.00 mV		Pass
		100 kHz			20.13 mV		↓
		290 mV, 1 kHz			290.00 mV		
		100 kHz			297.62 mV		
	3 V	2.9 V, 1 kHz			2.8999 V		
	30 V	29 V, 1 kHz			28.998 V		
	150 V	150 V, 1 kHz			149.97 V		
	Resistance						
	300 Ω	Short			0.005 Ω		Pass
		190 Ω			189.99 Ω		↓
	3 KΩ	Short			0.0001 kΩ		
		1.9 kΩ			1.8998 kΩ		
	30 kΩ	19 kΩ			18.998 kΩ		
	300 kΩ	190 kΩ			190.01 kΩ		
	3 MΩ	1.9 MΩ			1.9005 MΩ		

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 Unit Under Test HYDRA Data Acquisition Unit
 Manufacturer fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short(0v)			-0.01mv		Pass
		150mv			150.00mv		
		290mv			290.00mv		
	3v	2.9v			2.9000v		
		-2.9v			-2.9003v		
	30v	29v			29.000v		
	150v	150v			149.99v		✓
	AC Volts						
	300mv	20mv, 1kHz			20.00mv		Pass
		100kHz			20.14mv		
		290mv, 1kHz			289.99mv		
		100kHz			297.74mv		
	3v	2.9v, 1kHz			2.8998v		
	30v	29v, 1kHz			28.998v		
	150v	150v, 1kHz			149.97v		✓
	Resistance						
	300 Ω	Short			0.0005v		Pass
		190 Ω			190.005v		
	3kΩ	Short			0.0000kΩ		
		1.9kΩ			1.8998kΩ		
	30kΩ	19kΩ			18.998kΩ		
	300kΩ	190kΩ			190.01kΩ		
	3MΩ	1.9MΩ			1.9005MΩ		✓

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 Unit Under Test HYDRA Data Acquisition Unit
 Manufacturer Fluke Model 2620A SN _____ ASN _____

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STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short(0v)			-0.01mv		Pass
		150mv			150.00mv		↓
		290mv			290.00mv		
	3v	2.9v			2.9000v		
		-2.9v			-2.9003v		
	30v	29v			29.000v		
	150v	150v			149.99v		
	AC Volts						
	300mv	20mv, 1kHz			20.00mv		Pass
		100kHz			20.14mv		↓
		290mv, 1kHz			289.98mv		
		100kHz			297.75mv		
	3v	2.9v, 1kHz			2.8998v		
	30v	29v, 1kHz			28.997v		
	150v	150v, 1kHz			149.97v		
	Resistance						
	300 Ω	Short			0.005 Ω		Pass
		190 Ω			190.00 Ω		↓
	3k Ω	Short			0.0001k Ω		
		1.9k Ω			1.8998k Ω		
	30k Ω	19k Ω			18.998k Ω		
	300k Ω	190k Ω			190.01k Ω		
	3M Ω	1.9M Ω			1.9005M Ω		

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Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT	
			MIN	MAX	AS FOUND	RELEASED		
	DC Volts							
	300mv	Short (0v)			-0.01mv		Pass ↓	
		150mv			150.00mv			
		290mv			290.00mv			
	3v	2.9v			2.9000v			
		-2.9v			-2.9003v			
	30v	29v			29.000v			
	150v	150v			149.99v			
	AC Volts							
	300mv	20mv, 1kHz			20.00mv			Pass ↓
		100kHz			20.14mv			
		290mv, 1kHz			289.99mv			
		100kHz			297.75mv			
	3v	2.9v, 1kHz			2.8998v			
	30v	29v, 1kHz			28.997v			
	150v	150v, 1kHz			149.97v			
	Resistance							
	300 Ω	Short			0.00Ω		Pass ↓	
		190 Ω			190.00Ω			
	3kΩ	Short			0.0001kΩ			
		1.9kΩ			1.8999kΩ			
	30kΩ	19kΩ			18.998kΩ			
	300kΩ	190kΩ			190.01kΩ			
	3MΩ	1.9MΩ			1.9005MΩ			

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Date Calibrated _____ Work Order _____
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 Unit Under Test HYDRA Data Acquisition Unit
 Manufacturer Fluke Model 2620A SN _____ ASN _____

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STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300 mV	Short (0V)			-0.01 mV		Pass
		150 mV			150.00 mV		
		290 mV			290.00 mV		
	3 V	2.9 V			2.9000 V		
		-2.9 V			-2.9003 V		
	30 V	29 V			29.0000 V		
	150 V	150 V			149.99 V		↓
	AC Volts						
	300 mV	20 mV, 1 kHz			20.00 mV		Pass
		100 kHz			20.14 mV		
		290 mV, 1 kHz			289.99 mV		
		100 kHz			297.71 mV		
	3 V	2.9 V, 1 kHz			2.8998 V		
	30 V	29 V, 1 kHz			28.998 V		
	150 V	150 V, 1 kHz			149.97 V		↓
	Resistance						
	300 Ω	Short			0.00 Ω		Pass
		190 Ω			190.00 Ω		
	3 KΩ	Short			0.000 kΩ		
		1.9 kΩ			1.8998 kΩ		
	30 kΩ	19 kΩ			18.998 kΩ		
	300 kΩ	190 kΩ			190.01 kΩ		
	3 MΩ	1.9 MΩ			1.9005 MΩ		↓

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Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P.T
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3volt	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	300v	290v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		290mv, 100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	300v	290v, 1kHz					
	Resistance						
	300 Ω	Short					
		190Ω					
	3k Ω	Short					
		1.9k Ω					
	30k Ω	19k Ω					
	300k Ω	190k Ω					
	3M Ω	1.9M Ω					

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Date Calibrated _____ Work Order _____
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 Unit Under Test HYDRA Data Acquisition Unit
 Manufacturer Fluke Model 2620A SN _____ ASN _____

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STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P F
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

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Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		, 100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300Ω	Short					
		190Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

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Manufacturer fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		, 100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

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Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

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STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

CALIBRATION CHECK FORM

Date Calibrated _____ Work Order _____

Rev _____ Chg _____

Technician _____

Page _____

Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short(0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		, 100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

Mfg P/N 889589

CALIBRATION CHECK FORM

Date Calibrated _____ Work Order _____

Rev _____ Chg _____
Page _____ of _____

Technician _____

Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

CALIBRATION CHECK FORM

Date Calibrated _____ Work Order _____

Rev _____ Ckt _____
Page _____

Technician _____

Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

CALIBRATION CHECK FORM

Date Calibrated _____ Work Order _____
 Technician _____
 Unit Under Test HYDRA Data Acquisition Unit
 Manufacturer Fluke Model 2620A SN _____ ASN _____

Rev _____ Chg _____
 Page _____ of _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3kΩ	Short					
		1.9kΩ					
	30kΩ	19kΩ					
	300kΩ	190kΩ					
	3MΩ	1.9MΩ					

CALIBRATION CHECK FORM

Date Calibrated _____ Work Order _____

Rev. _____ Chg. _____
Page _____ of _____

Technician _____

Unit Under Test HYDRA Data Acquisition Unit

Manufacturer Fluke Model 2620A SN _____ ASN _____

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		PT
			MIN	MAX	AS FOUND	RELEASED	
	DC Volts						
	300mv	Short (0v)					
		150mv					
		290mv					
	3v	2.9v					
		-2.9v					
	30v	29v					
	150v	150v					
	AC Volts						
	300mv	20mv, 1kHz					
		100kHz					
		290mv, 1kHz					
		100kHz					
	3v	2.9v, 1kHz					
	30v	29v, 1kHz					
	150v	150v, 1kHz					
	Resistance						
	300 Ω	Short					
		190 Ω					
	3KΩ	Short					
		1.9KΩ					
	30KΩ	19KΩ					
	300KΩ	190KΩ					
	3MΩ	1.9MΩ					

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

WORK ORDER

CERTIFICATE # 25300 ASSET # 005129 DATE 02 May 97

ITEM DATA:

Manufacturer Fluke Model 2625A
Description Hydro data logger Serial # 5832050
Accessories Input module, power cord

ACTION REQUESTED cal

CUSTODIAN Div. 22, Ron Green

Turned in by: Melissa Green Phone

CHARGE # 20.0A 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 75 °F Humidity 45 %RH

CALIBRATED/REPAIRED:
By UNUSRALES Cal Procedure MET/CAL 5700A/CAN VER REV 2.4
Date 14 MAY 97 Accuracy MFG
Cal Interval 6 Reliability Code:
Next Cal due 14 NOV 97 Cal Time Repair Time
Standards used (Asset#) 182

DATE COMPLETED 14 MAY 97
DATE PICKED UP 15/5/97 PICKED UP BY Melissa Hill

25300

Southwest Research Institute (Calibration Lab) MET/CAL RESULTS

ASSET NUMBER: 005129
UNIT UNDER TEST: Fluke 2625A Hydra: (1 year) CAL VER RS-232C
SERIAL NUMBER: 5832650
RESULT: Y
TEST STATUS: COMPLETED
OPERATOR: Vince Morales
DATE: 14-May-97
TEMPERATURE: 75
RELATIVE HUMIDITY: 45
WORK ORDER NUMBER: 25300
TEST TYPE: f

TRACEABILITY INFORMATION

Fluke	5700A	000182	25-May-97
-------	-------	--------	-----------

TEST COMMENTS...

PARAMETER	TEST RESULT	ACCEPTANCE LIMITS	
		LOW	HIGH
1			
1			
DIRECT VOLTAGE PERFORMANCE VERIFICATION			
2	0.00mV	-0.01	0.02
3	150.00mV	149.99	150.07
4	290.00mV	290.00	290.11
5	2.9000V	2.9000	2.9012
6	-2.9000V	-2.9003	-2.8988
7	29.000V	29.000	29.010
8	150.00V	149.99	150.06
9	290.00V	289.99	290.10
10	0.000mV	-0.001	0.007
11	90.000mV	89.997	90.380
12	900.00mV	899.99	900.22
13			

ALTERNATING VOLTAGE PERFORMANCE VERIFICATION

13	20.00mV @ 1kHz	20.02	19.71	20.28
14	20.00mV @ 100kHz	20.15	18.50	21.50
15	290.00mV @ 1kHz	289.99	289.26	290.74
16	290.00mV @ 100kHz	297.70	275.00	305.00
17	2.9000V @ 1kHz	2.8998	2.8934	2.9066
18	29.000V @ 1kHz	28.998	28.931	29.069
19	290.00V @ 1kHz	289.98	289.34	290.66
20				

RESISTANCE PERFORMANCE VERIFICATION

20	0.00Z	0.00	0.00	0.09
21	190.00Z	189.99	189.86	190.19
22	0.0000kZ	0.0000	-0.0003	0.0003
23	1.9000kZ	1.8999	1.8986	1.9013
24	19.000kZ	18.999	18.986	19.012
25	190.00kZ	190.01	189.87	190.13
26	1.9000MZ	1.9003	1.8985	1.9013
27				

FREQUENCY PERFORMANCE VERIFICATION

27	10.000kHz	10.000	9.994	10.006
----	-----------	--------	-------	--------

CHANNEL 2 RESISTANCE VERIFICATION

28	0.00Z	0.00	-0.09	0.09
----	-------	------	-------	------

CHANNEL 3 RESISTANCE VERIFICATION

29	0.00Z	0.00	-0.09	0.09
----	-------	------	-------	------

Southwest Research Institute (Calibration Lab) 14-May-97

CALIBRATION DATA RECORD

MODEL NUMBER: 2625A

WORK ORDER : 25300

SERIAL NUMBER: 5832650

PARAMETER	TEST RESULT	ACCEPTANCE LIMITS		
		LOW	HIGH	
CHANNEL 4 RESISTANCE VERIFICATION				
30	0.00Z	0.00	-0.09	0.09
CHANNEL 5 RESISTANCE VERIFICATION				
31	0.00Z	0.00	-0.09	0.09
CHANNEL 6 RESISTANCE VERIFICATION				
32	0.00Z	0.01	-0.09	0.09
CHANNEL 7 RESISTANCE VERIFICATION				
33	0.00Z	0.00	-0.09	0.09
CHANNEL 8 RESISTANCE VERIFICATION				
34	0.00Z	0.01	-0.09	0.09
CHANNEL 9 RESISTANCE VERIFICATION				
35	0.00Z	0.00	-0.09	0.09
CHANNEL 10 RESISTANCE VERIFICATION				
36	0.00Z	0.00	-0.09	0.09
THERMOCOUPLE MEASUREMENT RANGE ACCURACY TEST				
37	0.000mV	0.000	-0.007	0.007
38	90.000mV	89.998	89.962	90.038
39	900.00mV	900.00	899.78	900.22

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

WORK ORDER

CERTIFICATE # 21258 ASSET # 005129 DATE 17 OCT 97

ITEM DATA:

Manufacturer Fuko Model 26254
Description Hydra Data Logger Serial # 5832650
Accessories cartridge input module

ACTION REQUESTED MI

CUSTODIAN DR. ROY SUNNY

Turned in by: Melissa Phone 2012

CHARGE # 20-09 Date Required 10/23/97

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 _____

Need NLT MON
UJM

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) allowed > 1 hour warm up time

CAL ENVIRONMENT:
Temperature 72 °F Humidity 54 %RH

CALIBRATED/REPAIRED:
By UJM Cal Procedure MET/CAL 5700A/CAL VER Rev
Date 24 Oct 97 Accuracy Mfg
Cal Interval 6 Reliability Code: 3
Next Cal due 24 APR 98 Cal Time 1.5 Repair Time 1.5
Standards used (Asset#) 182

DATE COMPLETED 24 Oct 97
DATE PICKED UP _____ PICKED UP BY J. Lopez

21258



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory

Certificate of Calibration

24 October 1997

Issued to: RON GREEN DIV20 B57
Manufacturer/Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial Number: 5832650
Asset Number: 005129

Environmental Conditions

Temperature: 72.00 Deg. F Humidity: 54 % RH

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Calibration Date: 24 Oct 97 Calibration Procedure: FLUKE 2625A HYDRA: (1 YEAR) CAL VER

Interval: 6 months

Next Calibration Due: 24 Apr 98 Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000182	FLUKE	5700A	CALIBRATOR	5200003	3 Jan 98

Certificate # 27258

Certificate of Calibration

24 October 1997

Issued to: RON GREEN DIV20 B57
Manufacturer/Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial Number: 5832650
Asset Number: 005129

Signed: *Victor Alford*

Title: *Cal. Tech.*

LAST PAGE OF REPORT
Total Pages Printed: 3

Certificate # 27258

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

WORK ORDER

CERTIFICATE # 29306 ASSET # 005129 DATE 09 Apr. 98

ITEM DATA:

Manufacturer Fluke Model 2685A
Description media data logger Serial # 5838650
Accessories universal input module

ACTION REQUESTED cal

CUSTODIAN Div. 20 Ron Green

Turned in by: Melissa Hill Phone 2012

CHARGE # 20 041 Date Required 21 Apr. 98

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 MJH Date 04/09/98

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) allowed > 1 hr warmup

29306

CAL ENVIRONMENT:

Temperature 7 °F Humidity _____ %RH

CALIBRATED/REPAIRED:

By VM
Date 9 APR 98
Cal Interval 6
Next Cal due 9 Oct 98
Standards used (Asset#) 182

Cal Procedure MET/CM 5700A/AC ULR Rev 14
Accuracy M9 4
Reliability Code: _____
Cal Time 2.0 Repair Time _____

DATE COMPLETED 9 APR 98
DATE PICKED UP 4/13/98 PICKED UP BY Melissa Hill



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory



Certificate of Calibration

10 April 1998

Issued to: RON GREEN DIV20 B57
Manufacturer/Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial Number: 5832650
Asset Number: 005129

Environmental Conditions

Temperature: 74.00 Deg. F Humidity: 34 % RH

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NC SL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Calibration Date: 10 Apr 98 Calibration Procedure: FLUKE 2625A HYDRA: (1 YEAR) CAL VER

Interval: 6 months

Next Calibration Due: 9 Oct 98 Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000182	FLUKE	5700A	CALIBRATOR	5200003	2 Jul 99

Certificate # 29306

Certificate of Calibration

10 April 1998

Issued to: RON GREEN DIV20 B57
Manufacturer/Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial Number: 5832650
Asset Number: 005129

Signed: Vincent Mondes
Title: Cal. Tech

LAST PAGE OF REPORT
Total Pages Printed: 3

Certificate # 29306

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

WORK ORDER

CERTIFICATE # 31307 ASSET # 005129 DATE 21 Sept 98

ITEM DATA:
Manufacturer Fluke Model 7625A
Description hydra data logger Serial # 5832650
Accessories input module
ACTION REQUESTED Cal

CUSTODIAN Dr. R. Ron Green

Turned in by: Melissa Phone 2012

CHARGE # 20-01 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 Melissa Date 21-98

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) _____

CAL ENVIRONMENT: Temperature 74 °F Humidity 41 %RH

CALIBRATED/REPAIRED:
By Melissa Cal Procedure MET/CAL 8700A/CAL VER. Nov 14
Date 22 Sep 98 Accuracy MFS
Cal Interval 6 Reliability Code: 5
Next Cal due 22 MAR 99 Cal Time 2.0 Repair Time _____
Standards used (Asset#) 182

DATE COMPLETED 22 Sep 98
DATE PICKED UP 23 Sep 98 PICKED UP BY mg mfu

31307

WORK ORDER HISTORY

DATE	START STOP	CAL	REP	REMARKS:
9/22	10:50	✓		

TOTAL CAL/REPAIR

TOTAL HOURS _____



Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory

ACCREDITED



Certificate #
0972-01

Certificate of Calibration

22 September 1998

Issued to: RON GREEN
Manufacturer/Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial Number: 5832650
Asset Number: 005129

DIV20

B57

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this calibration certificate have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report. The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Temperature: 74.0 Deg. F

Humidity: 41 % RH

Calibration Date: 22 Sep 98

Calibration Procedure: FLUKE 2625A HYDRA: (1 YEAR) CAL

Interval: 6 months

Received: IN TOLERANCE

Next Calibration Due: 22 Mar 99

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000182	FLUKE	5700A	CALIBRATOR	5200003	2 Jul 99

Certificate # 31307

Certificate of Calibration

22 September 1998

Issued to: RON GREEN
Manufacturer/Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial Number: 5832650
Asset Number: 005129

DIV20

B57

Signed:

Vincent Menden

Title:

Cal. Sec.

LAST PAGE OF REPORT

Total Pages Printed: 24/1

Certificate # 31307

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

WORK ORDER

CERTIFICATE # 33606 ASSET # 005149 DATE 08 March 99

ITEM DATA:

Manufacturer Fluke Model 2625A
Description Hydra data logger Serial # 5832650
Accessories 2620A-100 input module

ACTION REQUESTED Cal

CUSTODIAN Dirk 20, Ron Green

Turned in by: Melissa Hill Phone 2636

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 MHC Date 03-08-99

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) Limited Cal - Dhtms function not cold
Per Melissa Hill. Melissa will send an e-mail acknowledging
Limited Calibration

CAL ENVIRONMENT:
Temperature 74 °F Humidity 40 %RH

CALIBRATED/REPAIRED:
By MHC Cal Procedure MET/CA
Date 2 APR 99 Accuracy Mfg
Cal Interval 6 Reliability Code: 6
Next Cal due 2 Sep 99 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 6413

DATE COMPLETED 2 APR 99
DATE PICKED UP 4/6/99 PICKED UP BY Melissa E. Hill

33606

MEMORANDUM

TO: Vincent Morales
FROM: Melissa Hill
DATE: April 2, 1999
RE: Calibration of Fluke Hydra Data Logger serial # 5832650

This request is for a partial calibration for the Fluke Hydra Data Logger serial # 5832650. The Fluke Data Logger will be used to measure voltage and not resistance. Thank you for attending to this matter.



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

2 April 1999

Issued to: RON GREEN DIV20 B57
Manufacturer/Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial Number: 5832650
Asset Number: 005129

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NC SL 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.

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: 74.0 Degrees Fahrenheit Humidity: 40 % RH

Calibration Date: 2 Apr 99 **Calibration Procedure:** FLUKE 2625A HYDRA:(1 YEAR)5520ACA

Condition as Received: IN TOLERANCE

Condition as Released: LIMITED CALIBRATION

Remarks: LIMITED: OHMS NOT CAL

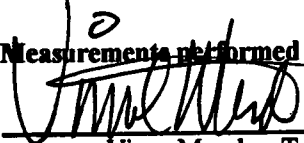
Approved by:


Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 33606

m:\a2la.rpt Rev date 10 Mar 99

Measurements performed by:


Vince Morales, Technician

Page 1 of 1

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

RUSH

Received by RCRUZ, 2/28/02 4:16:58PM

Arrived 2/28/02

Work Order **444047456**

Asset No. 005129 Manufacturer FLUKE

Model 2625A

Equipment Type HYDRA DATA LOGGER

Serial No. 5832650

Accessory No.

Interval 6 M

Calibration Procedure _____

Location B57

Div/Client DIV20

Custodian RON GREEN

Mail Stop T1

Tel 5305

QUEUE

Special Instructions Limited cal for K type -100°F to 200°F

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

Charge/Project No. 04572.02.001 1.18

Requester / Telephone

JUAN MAGALLAN X2349

This information is correct for the work requested.

WORK NOTES

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

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

WORK SUMMARY

Failure Description _____

Repair Action _____

Tech 8216 Cal Hrs. 2 Repair Hrs _____ Parts Cost _____ Temp 72 F Hum. 40 %

Standards Used 182, 108, 4965, 117

Date Picked Up 3-5-02 Picked Up By R. Loban

47456

CALIBRATION CHECK FORM

Date Calibrated 5/14/02 Work Order 443047456 Cal By 8216

Procedure No./Date: CL-186, Aug99 Unit Under Test: DATA LOGGER

Mfg FLUKE Model: 2625A SN 5832650 AN 5129

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	DC VOLTS						
	SLOW READING RATE						
	CHANNEL 0						
	300mV	0.00V	-0.02	0.02V	-0.01V		P
		150mV	149.93	150.07mV	149.99V		P
		290mV	289.89	290.11mV	289.99V		P
	3V	2.9V	2.8988	2.9012V	2.8999V		P
		-2.9V	-2.8988	-2.9012V	-2.9002V		P
	30V	29V	28.990	29.010V	29.999V		P
	150V	150V	149.94	150.06V	149.99V		P
	300V	290V	289.90	290.10V	289.99V		P
	AC VOLTS						
	300mV	20mV,1Kh	19.71	20.28mV	20.15mV		P
		20mV,100kh	18.50	21.50mV	20.14mV		P
	300mV	290mV,1kh	289.26	290.74mV	290.02mV		P
		290mV,100k	275.00	305.00mV	297.65mV		P
	3V	2.9V,1Khz	2.8934	2.9066V	2.9000V		P
	30V	29V,1Khz	28.931	29.069V	29.000V		P
	150V	150V,1khz	149.54	150.46V	149.99V		P
	300V	290V,1Khz	289.34	290.66V	290.00V		P

CALIBRATION CHECK FORM

Date Calibrated 5/1/02 Work Order 444677456 Cal By 8216

Procedure No./Date: : CL-186, Aug99 Unit Under Test: DATA LOGGER

Mfg FLUKE Model: 2625A SN 5832650 AN 5129

STEP	FUNCTION OR RANGE CONT'D	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	RESISTANCE						
	300Ohm	0.0Ohm	0.00	0.09Ohm	0.02 Ohm		P
		190Ohm	189.87	190.20Ohm	190.06Ohm		P
	3 khm	0.0Ohm	0.0000	0.0003Kohm	0.0000 K Ohm		P
		1.9KOhm	1.8987	1.9014KOhm	1.8999 Kohm		P
	30KOhm	19KOhm	18.987	19.013Kohm	18.998 Kohm		P
	300KOhm	190KOhm	189.87	190.13Kohm	190.01 Kohm		P
	3MOhm	1.9MOhm	1.8986	1.9014Mohm	1.9000 Kohm		P
	FREQUENCY						
		10Kh,2Vpp	9.994	10.006 KHz	10.000 KHz		P
	CHANNEL INTEGRITY						
	CHANNEL 1						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.41 Ohm		P
		OPEN	"OL"		O.K.		P
	300V	0.0V	.000	.020V	-0.01 V		P
		290V	289.90	290.10V	289.99V		P
	CHANNEL 2						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.42 Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	0.01 V		P
		150V	149.94	150.06V	149.99 V		P

CALIBRATION CHECK FORM

Date Calibrated 5/11/02 Work Order 444247456 Cal By 8216

Procedure No./Date: : CL-430, FEB 00 Unit Under Test: DATA LOGGER

Mfg FLUKE Model: 2635A SN 5832650 AN 5129

STEP	FUNCTION OR RANGE CONT'D	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	CHANNEL 3						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.52 Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 4						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.51 Ohm		P
		OPEN	"OL"		O.K.		P
	150 V	0.0V	-0.02	0.02	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 5						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.51 Ohm		P
		OPEN	"OL"		O.K.		P
	150 V	0.0V	-0.02	0.02	-0.01V		P
		150V	149.94	150.06V	149.99V		P
	CHANNEL 6						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.48 Ohm		P
		OPEN	"OL"		O,K.		P
	150 V	0.0V	-0.02	0.02	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P

CALIBRATION CHECK FORM

Date Calibrated 5/1/02 Work Order 444047456 Cal By 8216

Procedure No./Date: : CL-430, FEB 00 Unit Under Test: DATA LOGGER

Mfg FLUKE Model: 2635A SN 5827650 AN 5189

STEP	FUNCTION OR RANGE CONT'D	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	CHANNEL 7						
	300Ohm	0.0Ohms	</= 1.5Ohms		09.45 Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 8						
	300Ohm	0.0Ohms	</= 1.5Ohms		0.45 ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 9						
	300Ohm	0.0Ohms	</= 1.5Ohms		0.43 ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 10						
	300Ohm	0.0Ohms	</= 1.5Ohms		0.57. Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P

CALIBRATION CHECK FORM

Date Calibrated 5/1/02 Work Order 444047456 Cal By 8216

Procedure No./Date: : CL-430, FEB 00 Unit Under Test: DATA LOGGER

Mfg FLUKE Model: 2635A SN 5832650 AN 5129

STEP	FUNCTION OR RANGE CONT'D	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	CHANNEL 11						
	300Ohm	0.0Ohms	</= 1.5Ohms		0.48 Ohm		P
		OPEN	"OL"		O.K.		P
	300V	0.0V	-0.02	0.02 V	-0.01 V		P
		290V	289.90	290.10V	289.99 V		P
	CHANNEL 12						
	300Ohm	0.0Ohms	</= 1.5Ohms		0.48 ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02 V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 13						
	300Ohm	0.0Ohms	</= 1.5Ohms		0.64 ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02 V	-0/01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 14						
	300Ohm	0.0Ohms	</= 1.5Ohms		0.56 ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02 V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P

CALIBRATION CHECK FORM

Date Calibrated 5/22/02 Work Order 444047456 Cal By 8216

Procedure No./Date: : CL-186, Aug99 Unit Under Test: DATA LOGGER

Mfg FLUKE Model: 2625A SN 5832650 AN 5129

STEP	FUNCTION OR RANGE CONT'D	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	CHANNEL 15						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.55 ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 16						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.57 Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 17						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.52 Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 18						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.49 Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P

CALIBRATION CHECK FORM

Date Calibrated 5/1/02 Work Order 444047456 Cal By 8216

Procedure No./Date: : CL-186, Aug99 Unit Under Test: DATA LOGGER

Mfg FLUKE Model: 2625A SN 5892650 AN 515

STEP	FUNCTION OR RANGE CONT'D	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	CHANNEL 19						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.52 Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	-0.02	0.02V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	CHANNEL 20						
	300Ohm	0.0Ohms	<= 1.5Ohms		0.53 Ohm		P
		OPEN	"OL"		O.K.		P
	150V	0.0V	.000	.020V	-0.01 V		P
		150V	149.94	150.06V	149.99 V		P
	THERMOCOUPLE						
	TEMPERATURE TEST						
	TYPE T TC	(24.2)°C	+/- .5°		24.4 Deg. C		P
	OPEN THERMOCOUPLE						
	RESPONSE TEST						
		820Ohms	Approximate ambient temp		25.8 Deg.C		P
		4KOhm	Verify rdg of "otc"		O.K.		P



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

Certificate of Calibration

5 March 2002

Issued to: RON GREEN DIV20 T1
Manufacturer/Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial Number: 5832650
Asset Number: 005129
Work Order Number: 444047456

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: 72.0 Degrees Fahrenheit Humidity: 40 % RH


Calibration Date: 5 Mar 02 **Calibration Procedure:** CL-460, Aug 99

Condition as Received: IN TOLERANCE

Condition as Returned: IN TOLERANCE

Remarks:

Approved by:



Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:



Ken Harp, Technician



SOUTHWEST RESEARCH INSTITUTE™

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

Certificate of Calibration

Submitted By: DIV20

Address: TI

Contact: RON GREEN

Manufacturer Model: FLUKE 2625A

Description: HYDRA DATA LOGGER

Serial No: 5832650

Asset No: 005129

Procedure: CL-460, AUG 99

Work Order: 444051940

Date Issued: Feb 12, 2003

Calibration Date: Feb 12, 2003

**Calibration Due: Aug 12, 2003

Calibration Location: Bldg. 64

Environment: Temp. 73.0°F Hum. 41 %RH

*As Found: IN TOLERANCE

*As Left: IN TOLERANCE

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999 and ANSI/NCCL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government.

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of $k=2$ to approximate a 95% confidence level. The calibration process provides a Test Uncertainty Ratio (TUR) of less than or equal to 25% (4:1) of the test limit unless otherwise stated in remarks or an attachment.


*The client has sole responsibility for determination of in/out of tolerance or compliance/noncompliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

**Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

Remarks: None

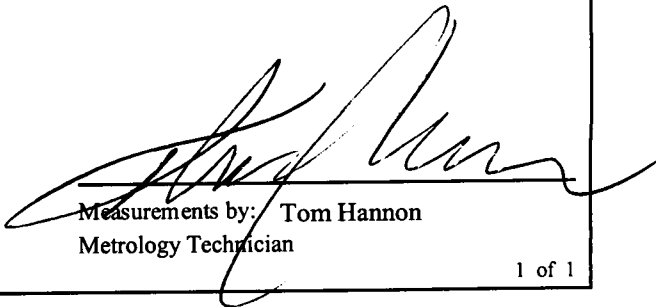
Standards Used

Asset	Manufacturer	Model	Description	Cal Due
000182	FLUKE	5700A/EP	CALIBRATOR	Feb 19, 03

Approved by: 
Walt Hill

Metrology Group Leader

m:\Nona2\al.rpt Rev date 15, August 02

Measurements by: 
Tom Hannon

Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	444051940	Mfr.	FLUKE	Technician	Thomas Hannon
Asset No.	005129	Model	2625A	Cal Date.	12-Feb-03
Serial No.	5832650	Type.	DATA LOGGER		
Remarks:					

Function/Range	Test Point	TI Reading	Difference	Test Limits+/-	Uncertainty	Found/Left
DCV	mVolt	mVolt	mVolt	mVolt	mVolt	Result
300 mV	0.00	-0.01	-0.01	0.02	0.01	Pass
	150.00	149.99	-0.01	0.07	0.02	Pass
	290.00	290.00	0.00	0.11	0.02	Pass
	Volts	Volts	Volts	Volts	Volts	
3 V	2.9000	2.9000	0.0000	0.0012	0.0002	Pass
	-2.9000	-2.9002	-0.0002	0.0012	0.0002	Pass
30 V	29.000	28.999	-0.001	0.010	0.002	Pass
150 V	150.00	149.99	-0.01	0.06	0.02	Pass
300 V	290.00	289.99	-0.01	0.10	0.02	Pass
AC Volts	mVolt	mVolt	mVolt	mVolt	mVolt	
300 mV 1 kHz	20.00	20.01	0.01	0.28	0.04	Pass
100 kHz	20.00	20.17	0.17	1.50	0.07	Pass
1 kHz	290.00	290.00	0.00	0.74	0.11	Pass
100 kHz	290.00	297.00	7.00	15.00	0.60	Pass
	Volts	Volts	Volts	Volts	Volts	
3 V 1 kHz	2.9000	2.8999	-0.0001	0.0066	0.0010	Pass
30 V 1 kHz	29.000	28.998	-0.002	0.069	0.008	Pass
150 V 1 kHz	150.00	149.98	-0.02	0.46	0.08	Pass
300 V 1 kHz	290.00	289.99	-0.01	0.66	0.27	Pass
Ohm	Ohm	Ohm	Ohm	Ohm	Ohm	
300 Ohm	0.00	0.04	0.04	0.09	0.01	Pass
	190.00	190.05	0.05	0.20	0.02	Pass
	k Ohm	k Ohm	k Ohm	k Ohm	k Ohm	
3000 Ohm	0.0000	0.0000	0.0000	0.0003	0.0001	Pass
	1.9000	1.9000	0.0000	0.0014	0.0002	Pass
30 kOhm	19.000	19.000	0.000	0.013	0.002	Pass
300 kOhm	190.00	190.02	0.02	0.13	0.02	Pass
	M Ohm	M Ohm	M Ohm	M Ohm	M Ohm	
3 MOhm	1.9000	1.9004	0.0004	0.0014	0.0003	Pass
Frequency	kHz	kHz	kHz	kHz	kHz	
90 kHz 2V p-p	10.000	10.000	0.000	0.006	0.001	Pass

Function/Range	Test Point	TI Reading	Difference	Test Limits+/-	Uncertainty	
Ambiant	Deg F	Deg F	Deg F	Deg F	Deg F	
72	72.0	73.0	1.0	2.0	0.10	Pass

END OF REPORT



SOUTHWEST RESEARCH INSTITUTE™

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

Certificate of Calibration

Submitted By: DIV20
Address: T1
Contact: RON GREEN
Manufacturer Model: FLUKE 2625A
Description: HYDRA DATA LOGGER
Serial No: 5832650
Asset No: 005129
Procedure: MULTIMETERS, DEC/02

Work Order: 444055468
Date Issued: Sep 24, 2003
Calibration Date: Sep 24, 2003
****Calibration Due:** Mar 24, 2004
Calibration Location: Bldg. 64
Environment: Temp. 72.0°F Hum. 38 %RH
***As Found:** IN TOLERANCE
***As Left:** IN TOLERANCE

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999 and ANSI/NCCL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government.

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of k=2 to approximate a 95% confidence level. The calibration process provides a Test Uncertainty Ratio (TUR) of less than or equal to 25% (4:1) of the test limit unless otherwise stated in remarks or an attachment.

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**Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

Remarks: CAL'D WITH 2620A-100 INPUT MODULE A/N 10466

Standards Used

Asset	Manufacturer	Model	Description	Cal Due
004164	FLUKE	5500A/SC300	CALIBRATOR	Aug 04, 04

Approved by: Walt Hill
Metrology Group Leader
m\Nona21a1.rpt Rev date 15, August 02

Measurements by: Vince Morales
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	444055468	Mfr.	FLUKE	Technician	Vmorales
Asset No.	5129	Model	2625A	Cal Date.	24-Sep-03
Serial No.	5832650	Type.	DATA LOGGER		

Remarks:

Function/Range	Test Point	TI Reading	Difference	+/- Limit	+/- Uncertainty	Found/Left
						Result
DCV	mVolt	mVolt	mVolt	mVolt	mVolt	
300 mV	0.00	-0.01	-0.01	0.02	0.000	Pass
	150.00	149.99	-0.01	0.07	0.027	Pass
	290.00	289.99	-0.01	0.11	0.027	Pass
	Volts	Volts	Volts	Volts	Volts	
3 V	2.9000	2.8999	-0.0001	0.0012	0.00021	Pass
	-2.9000	-2.9002	-0.0002	0.0012	0.00021	Pass
30 V	29.000	28.998	-0.002	0.010	0.0210	Pass
300 V	290.00	289.98	-0.02	0.10	0.012	Pass
AC Volts	mVolt	mVolt	mVolt	mVolt	mVolt	
300 mV 1 kHz	20.00	20.02	0.02	0.28	0.035	Pass
100 kHz	20.00	20.16	0.16	1.50	0.070	Pass
1 kHz	290.00	290.03	0.03	0.74	0.111	Pass
100 kHz	290.00	297.47	7.47	15.00	0.577	Pass
	Volts	Volts	Volts	Volts	Volts	
3 V 1 kHz	2.9000	2.9002	0.0002	0.0066	0.00059	Pass
30 V 1 kHz	29.000	29.000	0.000	0.069	0.0082	Pass
300 V 1 kHz	290.00	290.00	0.00	0.66	0.155	Pass
Ohm	Ohm	Ohm	Ohm	Ohm	Ohm	
300 Ohm	0.00	0.02	0.02	0.09	0.010	Pass
	190.00	190.01	0.01	0.20	0.024	Pass
	kOhm	kOhm	kOhm	kOhm	kOhm	
3000 Ohm	0.0000	0.0000	0.0000	0.0003	0.00010	Pass
	1.9000	1.8999	-0.0001	0.0014	0.00019	Pass
30 kOhm	19.000	18.999	-0.001	0.013	0.0019	Pass
300 kOhm	190.00	190.00	0.00	0.13	0.022	Pass
	MOhm	MOhm	MOhm	MOhm	MOhm	
3 MOhm	1.9000	1.9004	0.0004	0.0014	0.00025	Pass
Frequency	kHz	kHz	kHz	kHz	kHz	
90 kHz 2V p-p	10.000	10.000	0.000	0.006	0.0013	Pass
Temperature	Deg F	Deg F	Deg F	Deg F	Deg F	
76	76.0	75.9	-0.1	2.0	0.13	Pass

END OF REPORT