

**ENGINEERING TEST REPORT**

**NUMBER: 4L0483EEU1**

**ON**

**Model No.(s):**

DS1921G iButton, (w/variants DS1921H, DS1921Z), DS1922L iButton (w/variant DS1922T)  
and DS1923 iButton.

**IN ACCORDANCE WITH:  
EN55022 FOR CLASS B  
&  
EN55024**

**TESTED FOR:**

Dallas Semiconductor  
4401 S. Beltwood Parkway

Dallas, TX 75244-3292

**TESTED BY:**

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APPROVED BY:



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DATE:

4/21/05

**NVLAP**

NVLAP LAB CODE: 100426-0

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## Section 1. Summary of Test Results

### General:

**All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with the following standards:

- EN55022: 1998, Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- EN55024: 1998, Information technology equipment – Immunity characteristics – Limits and methods of measurement.

All tests were performed using measurement procedure CISPR 16. Radiated emissions were performed on an open area test site.

Requirements and tests using the following standards as test methodologies:

### Abstract:

Name of Test	Basic Standard	Results
Conducted Emissions (Mains port)	EN55022: 1998 (CISPR 22)	N/A
Conducted Emissions (Telco port)	EN55022: 1998 (CISPR 22)	N/A
Radiated Emissions	EN55022: 1998 (CISPR 22)	Complies
Harmonics	EN61000-3-2: 2001	N/A
Flicker	EN61000-3-3: 2002	N/A

**Abstract: Continued****Immunities:**

Name of Test	Basic Standard	Test Specification	Results
Electrostatic Discharge	EN61000-4-2: 1995	4kV Contact Discharge 8kV Air Discharge	Complies
Radiated Electro-magnetic Field	EN61000-4-3: 1996	80MHz to 1000 MHz 80% AM @ 1 kHz 3V/m	Complies
Electrical Fast Transients / Burst	EN61000-4-4: 1995	0.5 kV on I/O Signal and Control Lines 1kV on Power Supply	N/A
Surge Immunity	EN61000-4-5: 1995	I/O Surge 0.5 kV Line to Earth 2kV Line to Line 1kV	N/A
RF Conducted Immunity	EN61000-4-6: 1996	150 kHz to 80MHz 3 Vrms 80% Mod.	N/A
Magnetic Immunity	EN61000-4-8: 1993	3A/M @ 50Hz (For CRT 1A/M)	Complies
Voltage Dips and Interruptions	EN61000-4-11: 1994	95% Reduction (10ms) 30% Reduction (500ms) 60% Reduction (100ms) <95% Reduction (5s)	N/A

Nemko Dallas, Inc.

EN55022 FOR CLASS B

& EN55024

REPORT NO.:4L0483EEU1

EQUIPMENT: DS1921G iButton, (w/variants DS1921H, DS 1921Z), DS1922L iButton (w/variant DS1922T) and DS1923 iButton.

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THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE: **NONE**

## **Section 2. Equipment Under Test (E.U.T.)**

Manufacturer: Dallas Semiconductor

Name: THERMOCHRON/HYGROCHRON

Model Number: DS1921G iButton, (w/variants DS1921H, DS1921Z),  
DS1922L iButton (w/variant DS1922T)  
and DS1923 iButton.

Serial Number: None

Part Number: DS1923-F5 DS1921G-F50

Production Status: Preproduction

E.U.T. Arrival Date: 4/9/2005

### **Description of E.U.T.:**

TEMP LOGGER and TEMP/HUMIDITY LOGGER

### **Clock, Oscillator, Highest Frequencies Utilized:**

4MHz

### **Modifications Incorporated in E.U.T.:**

The E.U.T. has not been modified from what is described by the brand name and unique type identification stated above.

**Justification:**

The E.U.T. was configured for testing as per typical installation. Position and bundling of cables were investigated to establish maximum amplitude of emissions.

The following combinations were investigated to establish worst-case configuration:  
Data Logging Mission

**Exercise Program:**

The E.U.T. exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

The EUT was in the following exercise mode:  
Data Logging Mission

**Performance Criteria:**

**Criteria A:** The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

**Criteria B:** The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

**Criteria C:** Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

**E.U.T. Photographs:**





### Section 3. Equipment Configuration

#### Equipment Configuration List:

**EQUIPMENT CONFIGURATION LIST (HARDWARE/PERIPHERALS):**

Place an "\*" next to EUT and any item that is part of the EUT.

Item	*	Generic Description	Manufacturer	Model No.	Serial #	Rev.	FCC ID Status <sup>1</sup>
(A)	*	TEMP LOGGER	Dallas Semiconductor	DS1921G-F50			3
(B)		TEMP/HUMIDITY LOGGER	Dallas Semiconductor	DS1923-F5			3
(C)							
(D)							
(E)							
(F)							
(G)							
(H)							
(I)							
(J)							
(K)							
(L)							

<sup>1</sup> **FCC ID STATUS**

- 1. FCC DOC
- 2. FCC A/B Verification
- 3. None - (If performing FCC testing, contact lab manager)
- 4. Certification (include FCC ID in parenthesis)

**INTER-CONNECTION CABLES:**

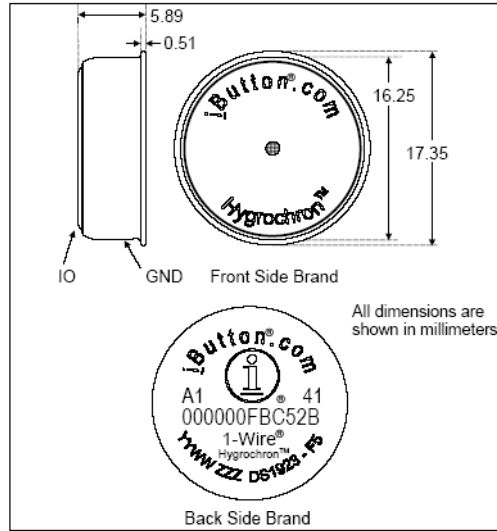
Place an "\*" next to EUT and any item that is part of the EUT.

Item	*	Cable Type	Manufacturer	Ln (m)	Term <sup>2</sup>	Shield	Qty.
(1)							
(2)							
(3)							
(4)							
(5)							
(6)							
(7)							
(8)							
(9)							
(10)							
(11)							
(12)							
(13)							

<sup>2</sup> **TERMINATION**

- 1. Peripheral
- 2. Loopback
- 3. EUT
- 4. Resistive
- 5. Remote Equipment
- 6. Other \_\_\_\_\_

**Configuration of the Equipment Under Test (E.U.T.):**



## **Section 4. Conducted Emissions (Mains ports)**

### **Purpose:**

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to the limits for conducted disturbance as defined by EN55022: 1998 for Class B Information Technology Equipment.

Conducted Emissions testing was not performed for the following reason:

A 3 VDC BATTERY POWERS THE EUT

## **Section 5. Conducted Emissions (Telecom ports)**

### **Purpose:**

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to the limits for conducted disturbance as defined by EN55022: 1998 for Class B Information Technology Equipment.

Conducted Emissions on telecom ports testing were not performed for the following reason;

The E.U.T. does not contain any telecommunication ports.

## Section 6. Radiated Emissions

### Purpose:

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to the limits for radiated emissions as defined by EN55022: 1998 for Class B Information Technology Equipment.

### Specification Limits:

Limits for radiated emissions.

Frequency range (MHz)	Quasi-peak Limits dB ( $\mu\text{V/m}$ ) @ 10 m
0.15 - 30	Under consideration
30 - 230	30
230 - 1000	37

### Test Method:

See Section 16.

Test Information:		Test Conditions:	
Test # :	REHE-01	Test Voltage:	3 VDC
Tested By:	Kevin Rose	Temperature:	21°C
Date of Tests:	4/11/2005	Humidity:	42%

### Test Results:

The E.U.T. complies.

No emission were detected 20db below the limit

### TEST EQUIPMENT

Asset Number	Description	Manufacturer	Model Number	Serial Number	Last Cal	Cal Due
1480	Bilog Antenna	Schaffner-Chase	CBL6111C	2572	CalNotReq	N/A
1484	Cable 2.0-18.0 Ghz	Storm	PR90-010-072	N/A	08/26/04	08/26/05
791	PREAMP, 25dB	ICC	LNA25	398	11/12/04	11/12/05
1464	Spectrum analyzer	Hewlett Packard	8563E	3551A04428	07/30/04	07/31/06

**Test Data –Radiated Emissions, Electric Field, Test# REHE-01**

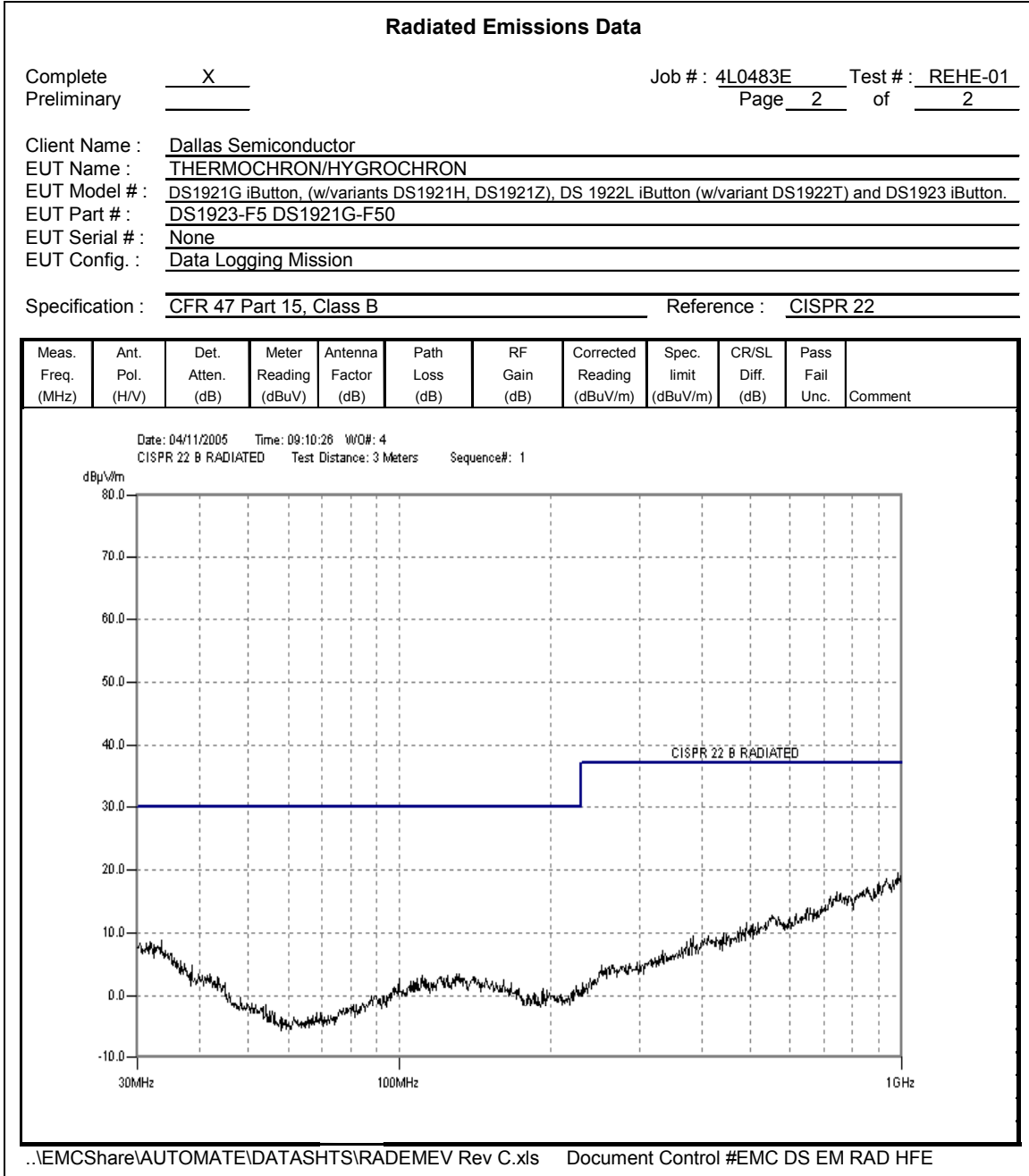
Radiated Emissions Data													
Complete	<u>  X  </u>		Job # : <u>4L0483E</u>				Test # : <u>REHE-01</u>						
Preliminary	<u>          </u>		Page <u>  1  </u>				of <u>  2  </u>						
Client Name :	<u>Dallas Semiconductor</u>												
EUT Name :	<u>THERMOCHRON/HYGROCHRON</u>												
EUT Model # :	<u>DS1921G iButton, (w/variants DS1921H, DS1921Z), DS1922L iButton (w/variant DS1922T) and DS1923 iButton.</u>												
EUT Part # :	<u>DS1923-F5 DS1921G-F50</u>												
EUT Serial # :	<u>None</u>												
EUT Config. :	<u>Data Logging Mission</u>												
Specification :	<u>CFR 47 Part 15, Class B</u>						Reference : <u>CISPR 22</u>						
Rod. Ant. #:	<u>NA</u>	Temp. (deg. C) :	<u>21</u>									Date :	<u>04/11/05</u>
Bicon Ant. #:	<u>760</u>	Humidity (%) :	<u>42</u>									Time :	<u>13:00</u>
Log Ant. #:	<u>NA</u>	EUT Voltage :	<u>3 VDC</u>									Staff :	<u>Kevin Rose</u>
Bilog Ant. #:	<u>NA</u>	EUT Frequency :	<u>NA</u>									Photo ID:	<u>REHE-01</u>
Dipole Ant. #:	<u>NA</u>	Phase:	<u>NA</u>									Peak Bandwidth:	<u>100 KHz</u>
Cable#:	<u>1522</u>	Location:	<u>AC 3</u>									Video Bandwidth:	<u>100 KHz</u>
Preamp#:	<u>791</u>	Distance:	<u>3 METERS</u>										
Limiter#:	<u>NA</u>												
Atten #:	<u>NA</u>												
Detector#:	<u>1464</u>												

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass/Fail/Unc.	QP readings Comment
Date: 04/11/2005    Time: 09:13:15    WFO#: 4 CISPR 22 B RADIATED    Test Distance: 3 Meters    Sequence#: 1											

..\EMCShare\AUTOMATE\DATASHTS\RADEMEV Rev C.xls Document Control #EMC DS EM RAD HFE

Test Data Radiated Emissions, Electric Field, Test# REHE-01 Cont.



**Test Photographs - Test # REHE-01**





## **Section 7. Harmonics**

### **Purpose:**

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to the limits on the magnitude of harmonic currents created by the equipment, as specified in EN 61000-3-2: 2001.

This test was not performed for the following reason:

A 3VDC BATTERY POWERS THE EUT

## **Section 8. Flicker**

### **Purpose:**

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to the limits on the level of voltage fluctuations produced by the equipment, as specified in EN 61000-3-3: 2002.

This test was not performed for the following reason:

A 3VDC BATTERY POWERS THE EUT

## Section 9. Electrostatic Discharge Immunity

### Purpose:

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to electrostatic discharges.

Minimum Performance Criteria B

### Test Method:

See Section 16.

Test Information:		Test Conditions:	
Test # :	ESDI-01	Test Voltage:	3 VDC
Tested By:	Kevin Rose	Temperature:	21°C
Date of Tests:	04/11/05	Humidity:	42%

### Test Results:

The E.U.T. complies.

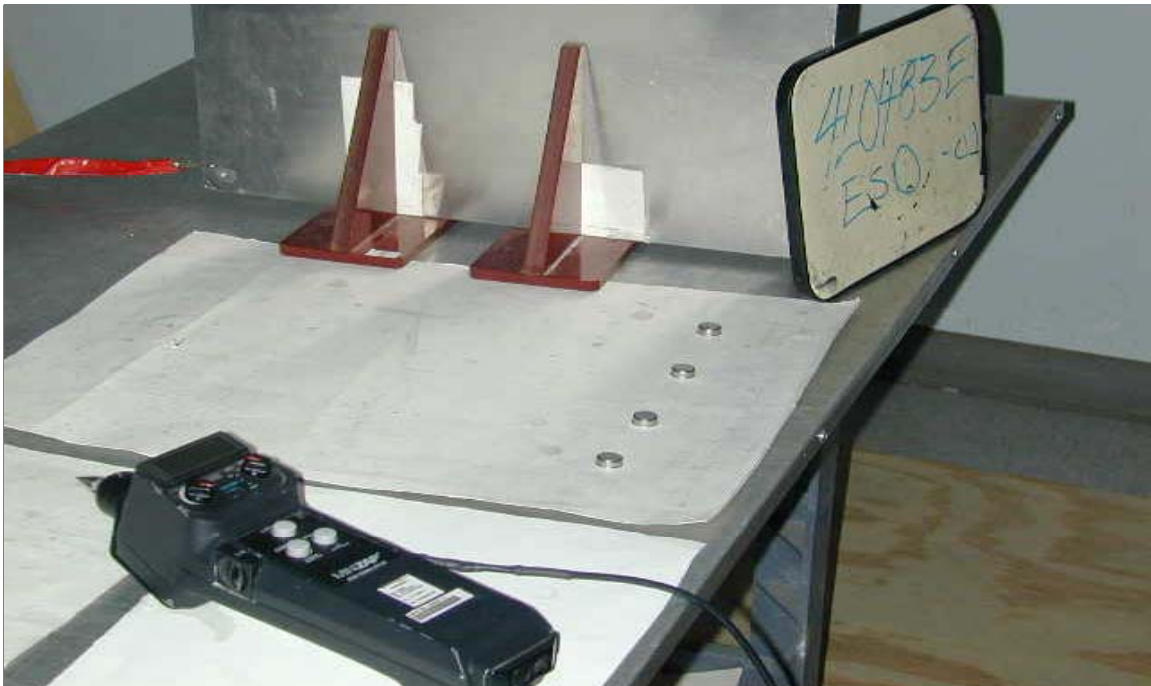
The E.U.T. meets Performance Criteria A.

### TEST EQUIPMENT

Asset Number	Description	Manufacturer	Model Number	Serial Number	Last Cal	Cal Due
560	ESD Simulator	Keytek	MZ-15/AC	9205392	04/06/05	04/06/06
564	Vertical coupling plane	ICC	PCA-1000	448	CNR	N/A



**Test Photographs - Test # ESDI-01**



## Section 10. Radiated Electromagnetic Immunity

### Purpose:

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to radiated electromagnetic field energy.

Minimum Performance Criteria A

### Test Method:

See Section 16.

Test Information:		Test Conditions:	
Test # :	RIHE-01	Test Voltage:	3 VDC
Tested By:	Kevin Rose	Temperature:	21°C
Date of Tests:	04/11/05	Humidity:	42%

### Test Results:

The E.U.T. complies.

The E.U.T. meets Performance Criteria A.

## TEST EQUIPMENT

Asset Number	Description	Manufacturer	Model Number	Serial Number	Last Cal	Cal Due
411	SIGNAL GENERATOR	MARCONI	2022D	119223029	CNR	N/A
412	RF AMPLIFIER	Amplifier Research	100W1000M1A	21233	CNR	N/A
1550	CABLE 1.5	KTL	RG223	N/A	06/09/04	06/09/05
413	DIRECTIONAL COUPLER	AMPLIFIER RESEARCH	AR DC6080	22806	CBU	CBU
412	RF AMPLIFIER	Amplifier Research	100W1000M1A	21233	CNR	N/A
749	CABLE, 4.8m	KTL	RG223	N/A	11/13/04	11/12/05
572	CABLE, 6.7m	KTL	RG223	N/A	CBU	CBU



**Test Photographs - Test # RIHE-01**





## **Section 11. Electrical Fast Transient / Burst**

### **Purpose:**

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to repetitive electrical fast transients (bursts), on supply, signal, or control lines.

### Minimum Performance Criteria B

This test was not performed for the following reason:

A 3VDC BATTERY POWERS THE EUT

## **Section 12. Surge Immunity**

### **Purpose:**

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to electrical surge on supply lines and I/O lines.

Minimum Performance Criteria B

This test was not performed for the following reason:

A 3VDC BATTERY POWERS THE EUT

### **Section 13. RF Common Mode (A.M.)**

**Purpose:**

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to the electromagnetic fields generated from intentional radiators.

Minimum Performance Criteria A

This test was not performed for the following reason:

A 3VDC BATTERY POWERS THE EUT

## Section 14. Magnetic Immunity

### Purpose:

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) to magnetic disturbances at power frequency related to industrial installations and power plants.

Minimum Performance Criteria A

### Test Method:

See Section 16.

Test Information:		Test Conditions:	
Test # :	RILM-01	Test Voltage:	3 VDC
Tested By:	Kevin Rose	Temperature:	21°C
Date of Tests:	04/11/05	Humidity:	42%

### Test Results:

The E.U.T. complies.

The E.U.T. meets Performance Criteria A.

## TEST EQUIPMENT

Asset Number	Description	Manufacturer	Model Number	Serial Number	Last Cal	Cal Due
696	AC Power source	Elgar	3001	305	CBU	N/A
1461	Mag Loop	KTL	90T10A	1	09/03/04	09/03/06
286	Multimeter - True RMS	FLUKE	87	67310138	01/23/05	01/23/06



**Test Photographs - Test # RILM-01**



## **Section 15. Voltage Dips and Interruptions**

### **Purpose:**

The test is intended to demonstrate the compliance of the Equipment Under Test (E.U.T.) when subjected to voltage dips, short interruptions, and voltage variations.

Minimum Performance Criteria B (10ms) and Criteria B (100ms) for voltage dips and Criteria C (5000ms) for voltage interruptions.

This test was not performed for the following reason:

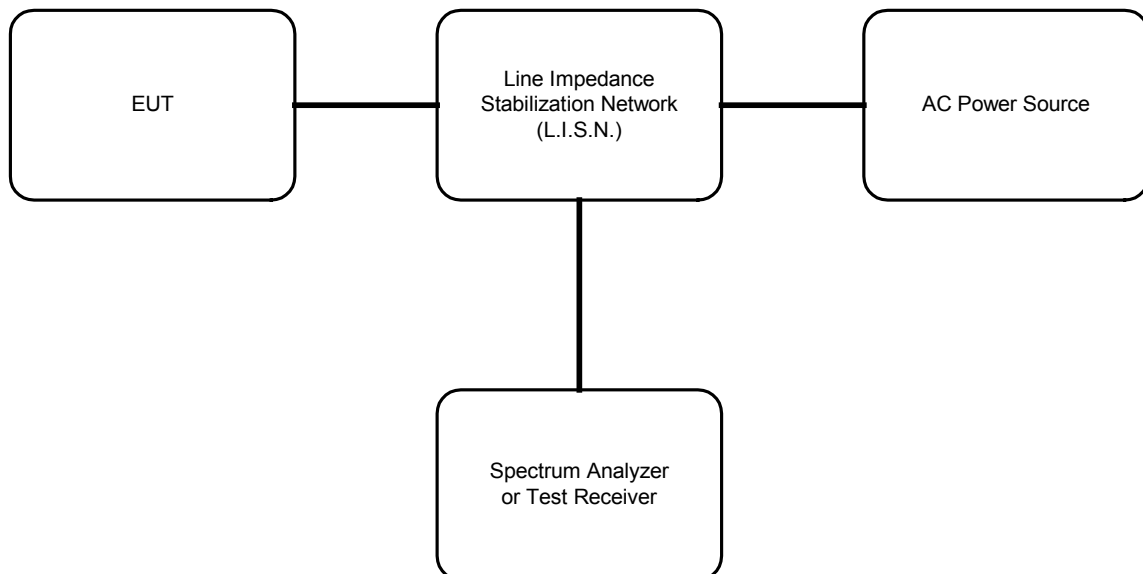
A 3VDC BATTERY POWERS THE EUT

## Section 16. Test Methods and Block Diagrams.

### Conducted Emissions (Mains Ports)

- Applicable Test Standard: EN55022: 1998 Information Technology Equipment.
- The test set-up is as per the test configuration diagram.
- The E.U.T. is configured as typically used.
- The E.U.T. and any accessories are operated with typical load conditions.
- Conducted powerline measurements are made from 150 kHz to 30 MHz.
- For each current carrying conductor of each power cord associated with the E.U.T., the emission closest to the limit is recorded.
- Final measurements are made using a spectrum analyzer with 10 kHz RBW, peak detector.
- Any emissions that are close to the limit are measured using a test receiver with 10 kHz bandwidth, CISPR quasi-peak detector.
- Bandwidths used on the test receiver are those specified in EN55022.

### Test Configuration - Powerline Conducted Emissions:



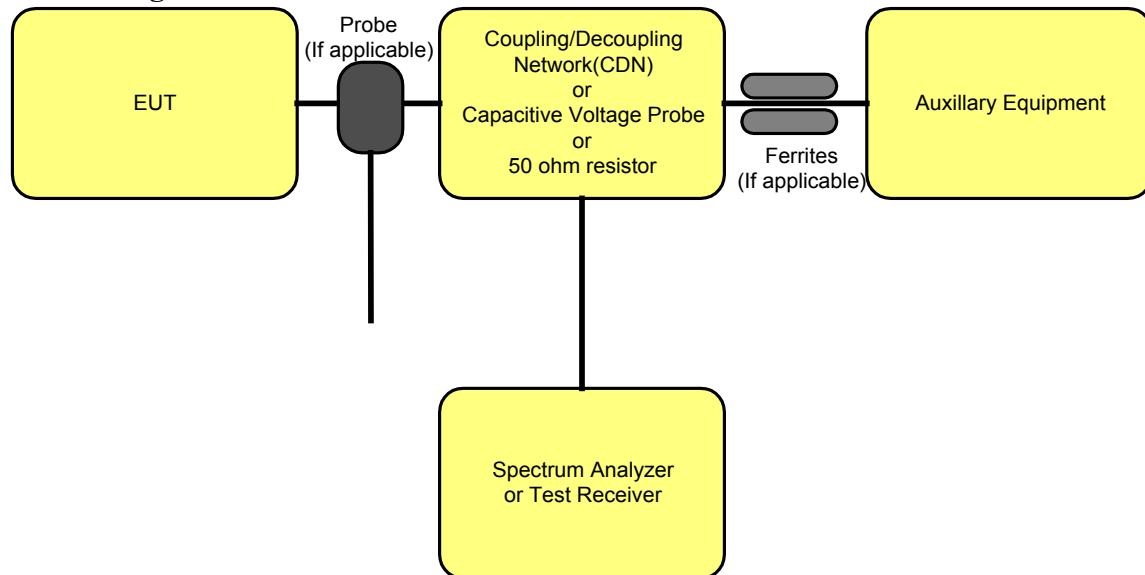


## Conducted Emissions (Telecommunication Ports)

### Test Method:

- Applicable Test Standard: CISPR 22: 1997 Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement (EN 55022: 1998).
- The test set-up is as per the test configuration diagram and as further defined in CISPR 22: 1997 (EN 55022: 1998).
- The E.U.T. is configured as typically used.
- The E.U.T. and any accessories are operated with typical load conditions. LAN cable measurements may be taken with a LAN utilization in excess of 10%.
- For each telecommunication port, conducted current and/or voltage measurements are made from 150 kHz to 30 MHz.
- Measurements are taken with peak, quasi-peak, and/or average detectors. Quasi-peak and/or average detector measurements take precedence over peak detector measurements.
- Detector bandwidths are those specified in CISPR 22: 1997 (EN 55022: 1998).

### Test Configuration:



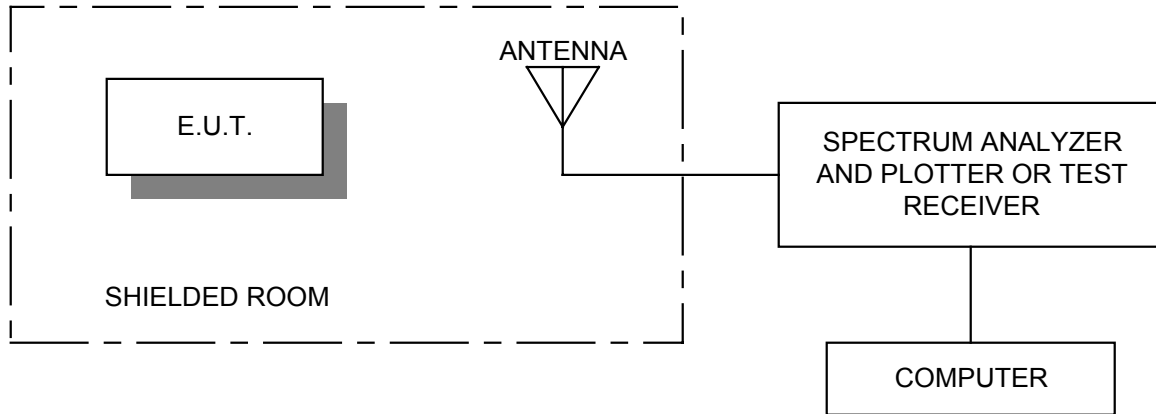
## **Radiated Emissions**

### **Test Method - Radiated Emissions:**

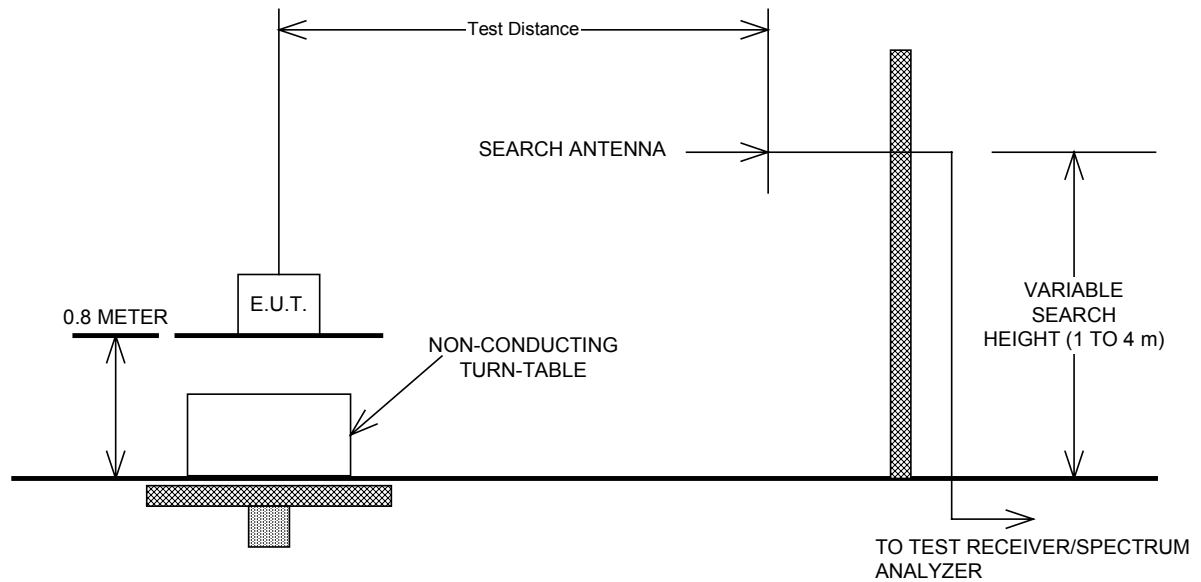
- Applicable Test Standard: EN55022: 1998 Information Technology Equipment.
- The test set-up in the shielded room is as per the test configuration diagram.
- The E.U.T. is configured as typically used.
- The E.U.T. and any accessories are operated with typical load conditions.
- Radiated emissions measurements are made from 30 MHz to 1000 MHz.
- The equipment was prescanned in the shielded room using a spectrum analyzer and broadband antenna to produce a list of frequencies to be investigated in the open area test site.
- The equipment is then set-up on an open area test site.
- Variations in antenna height, antenna polarization, and E.U.T. azimuth are explored to produce the emission that has the highest amplitude relative to the limit.
- The frequencies noted in the preliminary test are investigated on the open-air site where amplitude measurements are made.
- If ambient signal field strength is high at 10 meter, the measurements may be performed at 3 meter and extrapolated to the requisite distance.
- All emissions within  $\pm 5$  dB of the limit are re-measured using a dipole antenna.
- If less than six emissions are better than 20 dB below limit, the noise level of the measuring instrument at representative frequencies is also reported.
- Any emissions above 1 GHz are measured using a horn antenna and low noise pre-amplifier.

**Test Configuration - Radiated Emissions:**

**Radiated Pre-scan:**



**Outdoor Test Site for Radiated Emissions:**

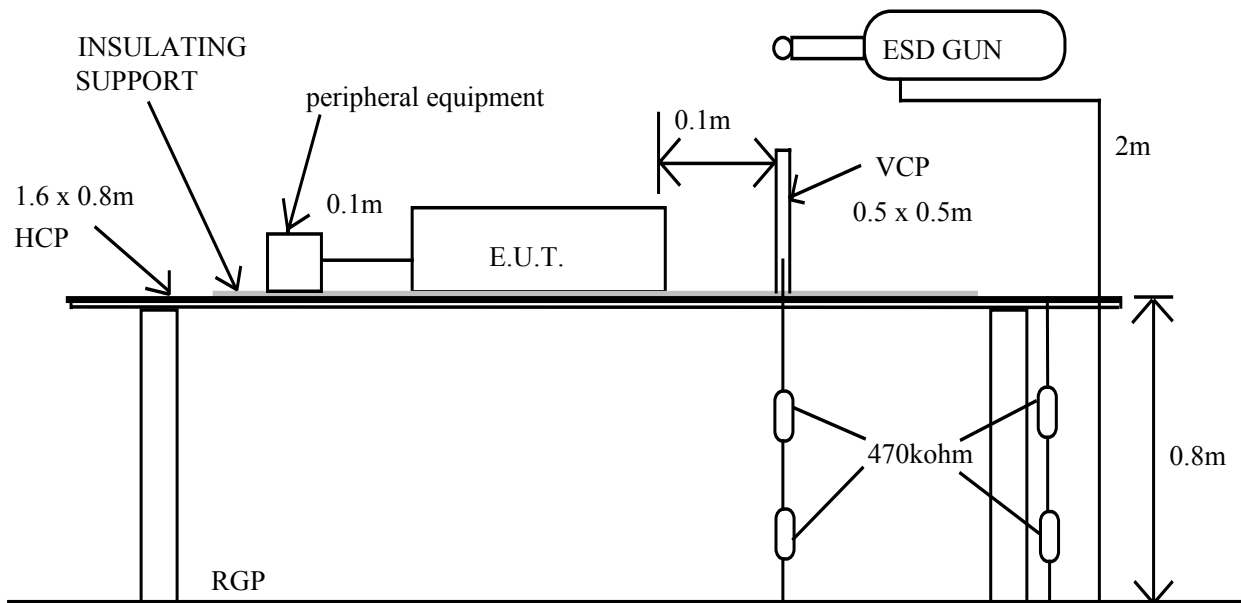


## Electrostatic Discharge

### Test Method - Electrostatic Discharge:

- Applicable Test Method: EN61000-4-2: 1995.
- The test set-up is as per the test configuration diagram.
- The electrostatic discharge has been applied to all points and surfaces which are accessible to personnel during normal usage of the E.U.T. (refer to test data table for a listing).
- The generator is re-triggered for a new single discharge.
- This procedure is repeated ten times in each polarity for each point.
- The E.U.T. is exercised during testing.

### Test Configuration - Electrostatic Discharge:



The reference ground plane size projects beyond the horizontal coupling plane by at least 0.5 m on all sides.

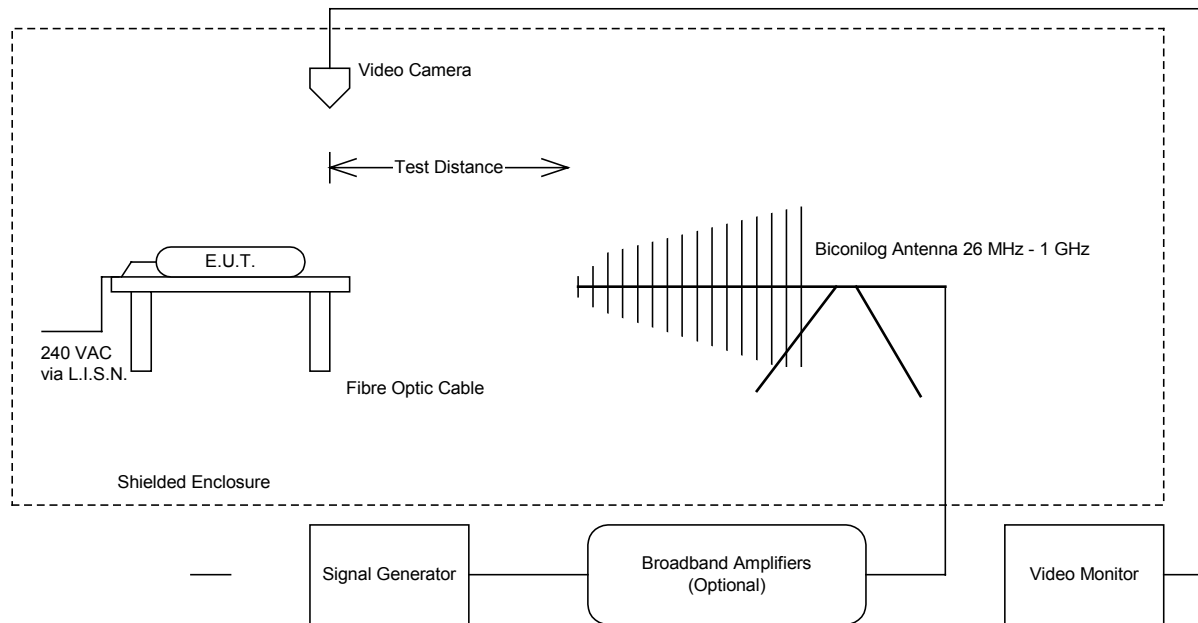
HCP - Horizontal Coupling Plane    VCP - Vertical Coupling Plane    RGP - Reference Ground Plane

## Radiated Electromagnetic Field (Shielded Room)

### Test Method - Radiated Electromagnetic Field (Shielded Room):

- Applicable Test Method: EN61000-4-3: 1997.
- The E.U.T. is placed in the center of the Shielded Room and connected to power and signal leads.
- The test set-up is as per the test configuration diagram.
- The frequency range is swept from 80 to 1000 MHz.
- The modulation is 80% AM with a 1 kHz sinewave.
- The sweep rate is  $1.5 \times 10^{-3}$  decades second or slower.
- The step size is 1% of previous frequency (i.e. previous frequency \* 1.01).
- The antenna is rotated in order to test both horizontal and vertical polarization.
- The E.U.T is exercised during testing.

### Test Configuration - Radiated Electromagnetic Immunity (Shielded Room)

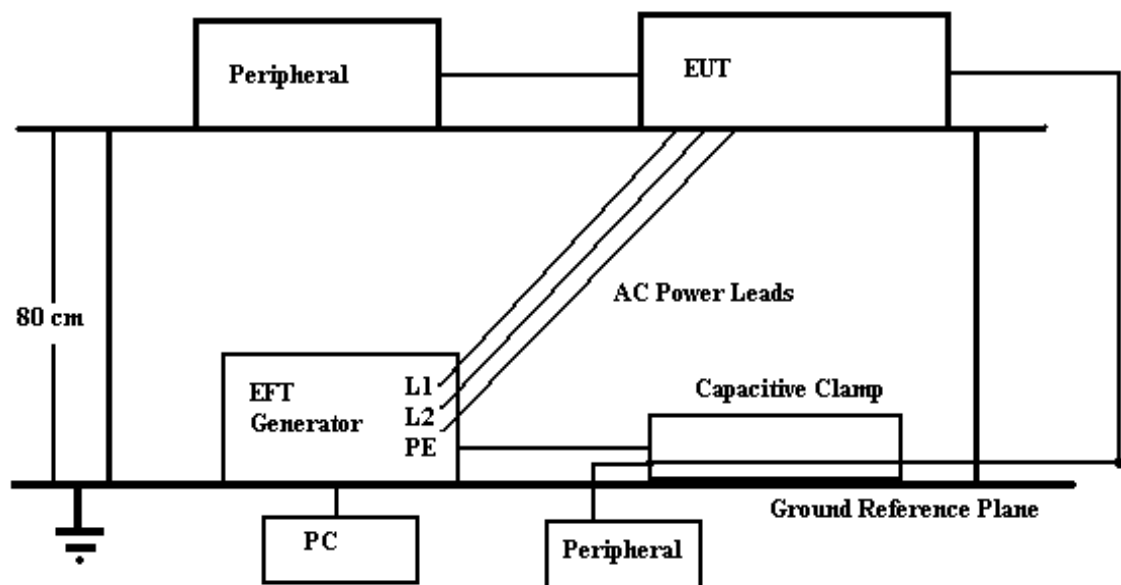


## Electrical Fast Transient/Burst/Surge

### Test Method - Electrical Fast Transient/Burst/Surge:

- Applicable Test Method: EN61000-4-4: 1995 and EN61000-4-5: 1995.
- The E.U.T. is configured as shown in the test configuration diagram.
- The waveform is verified before testing commenced.

### Test Configuration – Electrical Fast Transient/Burst/Surge:



The EFT/Burst/Surge waveform is directly coupled to the AC mains cable of the E.U.T. via Mains Coupler E4551. EFT/Burst only are indirectly coupled to the data I/O cables via the CCL-4/S Capacitive Clamp.

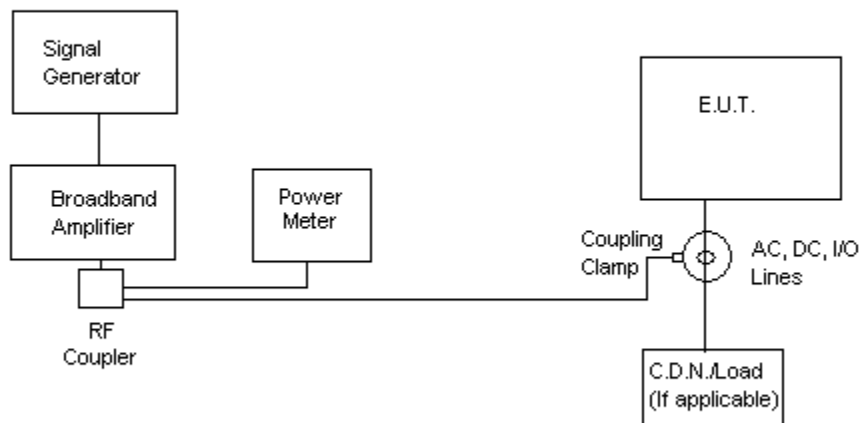
## R.F. Common Mode (A.M)

### Test Method - R.F. Common Mode (A.M.):

- Applicable Test Method: EN61000-4-6: 1996.
- The E.U.T. is configured as shown in the test configuration diagram.
- The frequency range is swept from 150 kHz to 80 MHz.
- The disturbance signal is 80% amplitude modulated with a 1 kHz sinewave.
- The rate of sweep is  $1.5 \times 10^{-3}$  decades per second or slower.
- The frequency is incremented at 1% of the start and thereafter 1 % of the preceding frequency value.

### Test Configuration - R.F. Common Mode (A.M.):

#### Setting Immunity Levels:

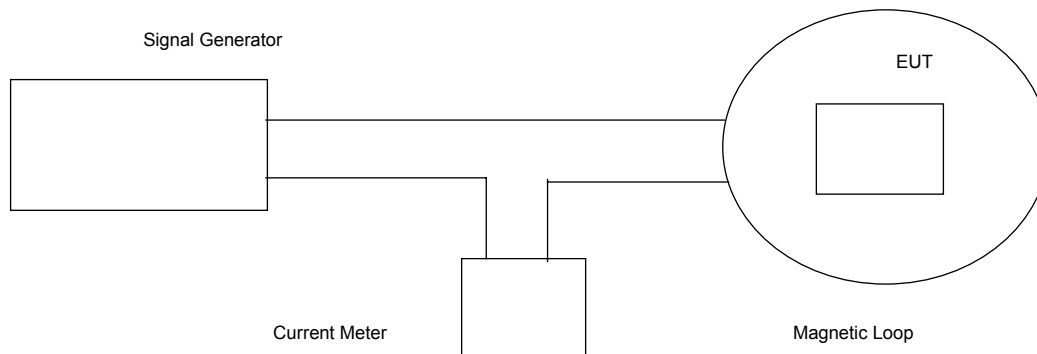


## Magnetic Immunity

### Test Method - Magnetic Immunity:

- Applicable Test Method: EN 55024-1: 1998 (EN 61000-4-8: 1993).
- The test set-up is as per the test configuration diagram.
- Power and other functional electrical quantities are applied to the E.U.T.
- Preliminary verification of equipment performance is carried out.
- The continuous magnetic field is applied at 50 Hz.

### Test Configuration - Magnetic Immunity:



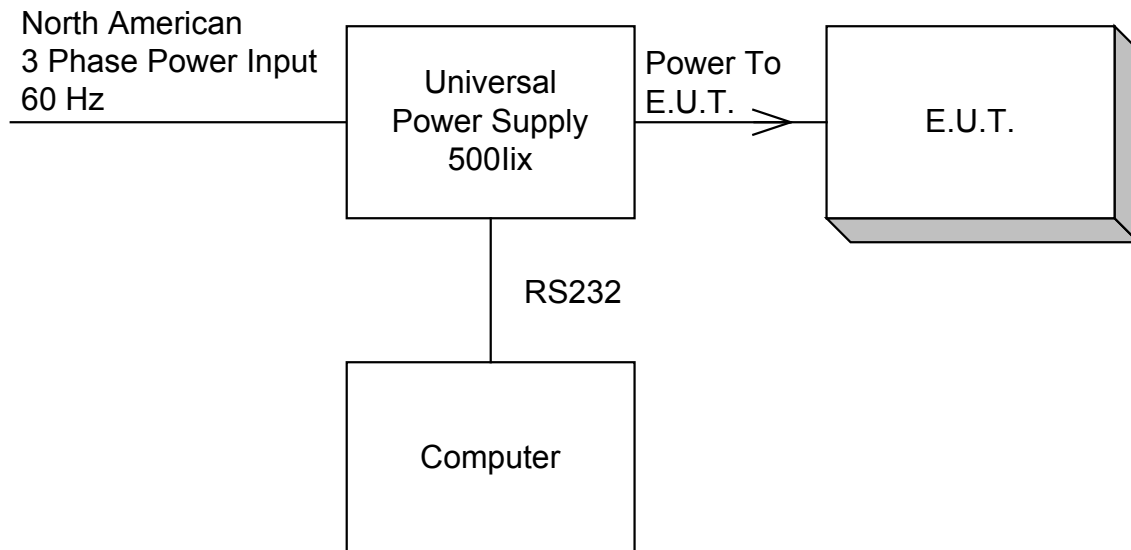


## Voltage Dips and Interruptions

### Test Method - Voltage Dips and Interruptions:

- Power to the E.U.T. is varied per the requirements specified in EN61000-4-11.
- The E.U.T. is monitored for normal operation.

### Test Configuration – Voltage Dips and Interruptions Tests:



## Section 17. Performance Criteria.

Date: 4/11/2005

**Nemko USE ONLY**  
JOB #: 4L0483E

Company: Dallas Semiconductor

### MANUFACTURER'S PERFORMANCE CRITERIA

The enclosed Performance Criteria Form is required to be completed before the start of immunity tests. The passing or failing of the test is almost exclusively dependent on the criteria that have been established by the manufacturer. However, some cases

*Performance criteria have been grouped into three categories, namely A, B, and C:*

**Performance Criteria A:** Normal operation of the EUT is expected.

**Please define:**

NORMAL TEMPERATURE AND HUMIDITY LOGGING

**Performance Criteria B:** Degradation of product performance is allowed only during the application of the test. No change of stored data is allowed.

**Please define:**

NORMAL TEMPERATURE AND HUMIDITY LOGGING WITH SOME LOSS OF FUNCTION DURING THE APPLICATION OF THE TEST

**Performance Criteria C:** Temporary loss of function is allowed as long as the operator can restore proper operation after completion of the test.

**Please define:**

FAILURE TO LOG TEMPERATURE AND HUMIDITY

**Manufacturer's Representative:** \_\_\_\_\_

*Performance Criteria should be as specific as possible. For example:*

**Criteria A:** Green LED indicator ON. Meter reading between 5 and 10.

**Criteria B:** Meter reading outside the 5 and 10 range but returning to normal range after application of the electromagnetic phenomena. Red LED on would be considered a failure.

**Criteria C:** Display indicates "error" message. User must press reset button in order for normal operation to continue. EUT behaves normally after the reset button has been depressed.