

An ESCO Technologies Company

EMC Test Systems, L.P. 1301 Arrow Point Drive Cedar Park, Texas 78613

Phone 512.531.6400 Fax 512.531.6500 info@ets-lindgren.com www.ets-lindgren.com

Dear ETS-Lindgren Customer,

The Certificate of Calibration accompanying this product states the date this unit was calibrated according to ETS-Lindgren procedures. According to ISO 17025, para 5.10.4.4 we are advised not to identify an instrument recommended calibration due/recall date on a certificate or label. Therefore, the recalibration recall of this unit should be based on when the product is placed into service by the user, plus the user internal calibration interval. We have determined that the calibration of this product is not affected by storage prior to its initial receipt by the customer.

ANSI C63 series recommends a calibration interval of 12 months. To determine the date for recalibration, the customer should use the appropriate start date, and apply either the recommended ANSI calibration interval on the calibration label, or an interval that satisfies their own organization's internal quality system requirements. This label should then be applied to the instrument.

The recalibration due date should be annotated on the calibration label provided.

For information regarding the establishment of calibration intervals, please log on to our web page at www.ets-lindgren.com. For more information or questions, please call your local ETS-Lindgren Sales Representative or our home office in Cedar Park, TX at (512) 531-6400.

Sincerely,

Kevin R. Vest

ETS-Lindgren Quality Assurance

Recal Recommendation Notice (5-08)



Cert I.D.: 72041



1301 Arrow Point Drive

Cedar Park, Texas 78613 (512) 531-6498

METS - LINDGREN An ESCO Technologies Company

rack# J141083 Ltd Cal

By CAW Date 23-Feb-09

Next Cal Due

www.ets-lindgren.com

#### Certificate of Calibration Conformance

Page 1 of 6

The instrument identified below has been individually calibrated in compliance with the following standard(s):

ANSI C63.4 - 2003, American National Standard, Methods of Measurement of Radio Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz, American National Standards Institute, Inc.

Environment: Laboratory MTE is maintained in a temperature controlled environment with ambient conditions from 18 to 28 C, relative humidity less than 90%. The instrument under test has been calibrated in environment which has no known influences on measurement quality.

Manufacturer:

ETS-Lindgren

**Operating Range:** 

20 Hz - 1000 MHz

Model Number:

.94111-1L.

Instrument Type:

Clamp-on Current Probe

Serial Number / ID:

00109883

Tracking Number:
Date Completed:

J141083 23-Feb-09

Test Type:

Calibration Uncertainty:

, Transfer Impedance

Transfer Impedance

+/- 1.0 dB

k=2, (95% Confidence Level)

Test Remarks:

Calibration Traceability: All Measuring and Test Equipment (M/TE) identified below are traceable to the National Institute for Standards and Technology (NIST). Calibration Laboratory and Quality System controls are compliant with ISO/IEC 17025-2005.

Standards and Equipment Used:

Make / Model / Name / S/N / Recall Date

Hewlett Packard 4195A Hewlett Packard 8753C Network Analyzer Network Analyzer 2738J00128 3029A01587 20-Feb-10 03-Apr-09 Condition of Instrument On Release:

In Tolerance to Internal Quality Standards

Hewlett Packard

85047A

^

C 20

S-parameter Test Set

3033A02186

03-Apr-09

Calibration Completed By

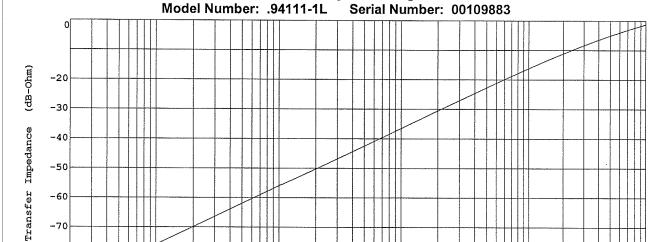
Corinthians White, Calibration Technician

Attested and Issued on 23-Feb-09
Ronald W. Bethel, Calibration Manager

This document provides traceability of measurements to recognized national standards using controlled processes at the ETS-Lindgren Calibration Laboratory. Uncertainties listed are derived from the methods described by NIST Tech Note 1297. This certificate and report may not be reproduced, except in full, without the written approval of ETS-Lindgren Calibration Laboratory in accordance with ISO/IEC 17025-2005. QAF 1107 (06/07)

## METS · LINDGREN TAL RESCO TO COMPANY

### Transfer Impedance for Inductive Current Clamp Manufactured by ETS-Lindgren



Frequency

10-2

(MHz)

10-1

10-3

-80

 $2x10^{-5}$ 

10-4

Frequency Transfer Impedance Transfer Impedance (MHz) (dB Ohms) (Ohms) 0.000020 -89.92 0.0000319 0.000050 -81.97 0.0000797 0.000100 -75.95 0.0001595 0.000500 -61.97 0.0007975 0.001000 -55.95 0.0015949 0.002000 -50.26 0.0030694 0.003000 0.0045614 -46.82 0.004000 -44.35 0.0060632 0.005000 -42.47 0.0075276 0.006000 -40.88 0.0090371 0.007000 -39.570.0105118 0.008000 -38.40 0.0120184 0.009000 -37.39 0.0135050 0.010000 -36.48 0.0149908 0.020000 -30.54 0.0297153 0.030000 -27.08 0.0442744 0.040000 -24.63 0.0586613 0.050000 -22.75 0.0728783



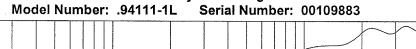
## Transfer Impedance for Inductive Current Clamp Manufactured by ETS-Lindgren

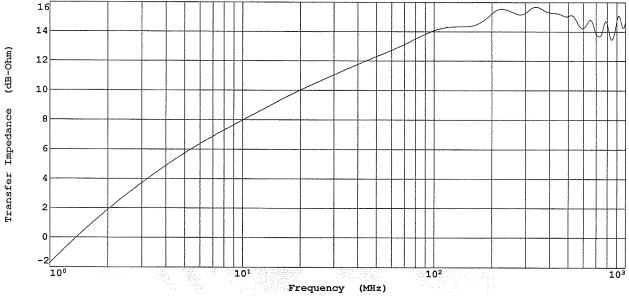
Model Number: .94111-1L Serial Number: 00109883

Frequency (MHz)	Transfer Impedance (dB Ohms)	Transfer Impedance (Ohms)
0.060000	-21.22	0.0869191
0.070000	-19.93	0.1007681
0.08000	-18.83	0.1144528
0.090000	-17.86	0.1279485
0.100000	-17.00	0.1412537
0.200000	-11.57	0.2639618
0.300000	-8.63	0.3701480
0.40000	-6.68	0.4634740
0.500000	-5.24	0.5467285
0.600000	-4.14	0.6211600
0.700000	-3.23	0.6896644
0.80000	-2.47	0.7525724
0.90000	-1.82	0.8111327
0.950000	-1.53	0.8382977

# **METS-LINDGREN**

#### **Transfer Impedance for Inductive Current Clamp** Manufactured by ETS-Lindgren





Frequency (MHz)	Transfer Impedance (dB Ohms)	Transfer Impedance (Ohms)
1.000000	-1.71	0.8217621
2.00000	1.89	1.2436544
3.000000	3.72	1.5351632
4.000000	4.90	1.7571077
5.000000	5.74	1.9362289
6.00000	6.38	2.0835522
7.000000	6.87	2.2042229
8.000000	7.30	2.3176042
9.000000	7.66	2.4164031
10.00000	7.98	2.5063087
20.00000	10.02	3.1692367
30.00000	11.05	3.5700869
40.00000	11.76	3.8744097
50.000000	12.29	4.1163427
60.000000	12.73	4.3296653
70.000000	13.12	4.5308685
80.00000	13.50	4.7306564
90.00000	13.83	4.9119735



## Transfer Impedance for Inductive Current Clamp Manufactured by ETS-Lindgren

Model Number: .94111-1L Serial Number: 00109883

Frequency (MHz)	Transfer Impedance (dB Ohms)	Transfer Impedance (Ohms)
100.000000	14.07	5.0531338
110.000000	14.22	5.1422095
120.000000	14.31	5.1943676
130.000000	14.34	5.2101864
140.000000	14.34	5.2148980
150.000000	14.36	5.2234228
160.000000	14.42	5.2579961
170.000000	14.53	5.3290153
180.000000	14.73	5.4483268
190.000000	14.97	5.6027607
200.000000	15.23	5.7721779
225.000000	15.54	5.9839032
250.000000	15.39	5.8820513
275.000000	15.17	5.7354017
300.000000	15.28	5.8071672
325.000000	15.61	6.0311589
350.000000	15.65	6.0595712
375.000000	15.43	5.9120787
400.000000	15.29	5.8165963
425.000000	15.27	5.7976855
450.000000	15.20	5.7525604
475.000000	15.06	5.6605221
500.000000	15.05	5.6584827
525.000000	15.10	5.6875001
550.000000	14.78	5.4830536
575.000000	14.34	5.2133299
600.000000	14.23	5.1478843
625.000000	14.50	5.3082408
650.000000	14.81	5.5020716
675.000000	14.50	5.3078218
700.000000	13.88	4.9444969
725.000000	13.69	4.8335335
750.000000	13.89	4.9497029
775.000000	14.55	5.3424525
800.000000	14.56	5.3458709
825.000000	13.76	4.8742155



## Transfer Impedance for Inductive Current Clamp Manufactured by ETS-Lindgren

Model Number: .94111-1L Serial Number: 00109883

Frequency (MHz)	Transfer Impedance (dB Ohms)	Transfer Impedance (Ohms)
850.000000	13.47	4.7143869
875.000000	13.91	4.9606911
900.000000	14.75	5.4619608
925.000000	15.06	5.6646541
950.000000	14.57	5.3530596
975.000000	14.27	5.1714132
1000.000000	14.71	5.4393484