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CERTIFICATION OF MEASUREMENTS

This report certifies that the measurements performed and detailed below, performed by the listed customer, were witnessed and verified by Tescom senior metrology engineering staff below. Witnessed measurements included in this CERTIFICATION OF MEASUREMENTS report were performed in accordance with accepted metrological practices, and are traceable to the U.S. National Institute of Standards and Technology, as detailed in each measurement. This document applies only to measurements listed and described herein.

MEASUREMENT DATE: 11 October, 2013

MEASUREMENT LOCATION: EESTOR, Inc.
715 Discovery Boulevard, Bldg I, Suite 107
Cedar Park, Texas 78613

CUSTOMER NAME/CONTACT: EESTOR, Inc. / Richard Weir
ZENN Motor Company / Roger Hammock

MEASUREMENTS MADE BY: Richard Weir, and EESTOR Staff

OBSERVED/WITNESSED BY: Jerry L. Eldred, Senior Metrology Engineer, Tescom USA

MEASUREMENT 1 – EESTOR REFERENCE CAPACITANCE TEST BOARD

EESTOR CAPACITANCE REFERENCE TEST BOARD (Nominal value 0.8378 μF at 100 Hz / 1 Vrms)

Instrument: Quadtech 1715 LCR Meter Serial Number: AAQ17150350
Calibrated by Tescom 28 May 2013, Due 28 May 2014.

Technique: EESTOR Reference Calibration board was connected directly to, and measured using the calibrated LCR meter above, after running **OPEN** and **SHORT** routines (both routines **PASS**ed).

Measured Value:

CAPACITANCE:	0.8375 μF
DISSIPATION FACTOR:	0.0003



MEASUREMENT 2 – LAYER DATED “10-9-12” – PHASE III

MEASUREMENT 2A: CAPACITANCE MEASUREMENT

Instrument: Quadtech 1715 LCR Meter Serial Number: AAQ17150350
Calibrated by Tescom 28 May 2013, Due 28 May 2014.

Technique: Verified capacitance of sample using Quadtech 1715 LCR Meter with input cabling. Set to 100 Hz, 1 V rms, resolution 100 K Ω . Measurements were made after running **OPEN** and **SHORT** routines (both routines **PASSEd**).

Measured Value:

CAPACITANCE: 0.377 nF

DISSIPATION FACTOR: 0.352

MEASUREMENT 2B: RESISTANCE MEASUREMENT

Instrument: Alpha Lab High Resistance Meter (Resistance Transfer Standard) & Caddock 10 Giga Ohm resistors calibrated 21 May 2013 by Tescom.

Technique: Verified using high resistance meter; which was verified using set of Caddock 10 Giga Ohm resistors calibrated by Tescom.

Measured Value: 860 Meg Ohms

MEASUREMENT 2C: THICKNESS MEASUREMENT

Instrument: Keyence model 260-248-8030 Serial Number: 92017014 Calibrated by Tescom 26 June 2013 Due 26 June 2014

Technique: Zero thickness meter on stainless steel substrate. Place intermediate metal plate (measured at 26.8 microns) to minimize zeroing error. Then and reference sample of copper substrate (same as copper backing on reference samples (measured at 36.8 microns) – to be mathematically subtracted from calculated value. Copper reference is removed (intermediate metal plate remains). Layer is inserted and measured. The layer contains a copper backing of equal thickness to above copper reference. The sum value of the copper sample and metal plate are subtracted to derive actual measured thickness of LAYER sample.

Measured Value: 64.8 microns (actual/corrected)

MEASUREMENT 2D: WATT HOUR TESTING

Instruments: Yokogawa WT3000 Precision Power Analyzer (Power Transfer Standard)
EESTOR Capacitance Test Board Calibrated via MEASUREMENT 1 above
Stanford Research high voltage power source
Calibrated by Tescom 19 March 2013, Due 19 March 2014

Technique: EESTOR Capacitance Test Board is used to establish a reference for Watt-hour measurements made by application of high voltage from the calibrated Stanford Research HV supply to the calibrated capacitance test board and measured with the Yokogawa analyzer. Watt-hour measurements subsequently made with the capacitance test board (known capacitance value) with a known applied voltage value establish a correlation to provide quantitative confidence in readings from the Yokogawa analyzer. Note: Watt-hour values established as above on date of these measurements (27 Sept 2013) matched to within 0.4% of expected measurand value. The LAYER sample is then substituted into the correlated measurement system (all above instruments), and Watt hour values are measured listed values of applied voltage.

Measured Value:

VOLTAGE (VDC): 650

WATT-HOURS: 917.571 μ W Hours



TESCOM CALIBRATION SERVICES



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CERTIFICATE NOTES:

Measurements were performed at the customer site using material sample owned and controlled by the customer. The material sample was contained in clear plastic sample case with date written on case. Sample was identified per customer by date written by customer on case. Tescom does not make any claims regarding the material sample; only to measurement methods used as described in this certificate report. Use of term "Transfer Standard" refers to the accepted NIST traceable practice of making a primary measurement with one measurement instrument; then directly extrapolating those measured values for use in a second measurement, which then also becomes NIST traceable through the Transfer.

OBSERVER/WITNESS:		<u>Jerry L. Eldred</u>	<u>10-11-2013</u>
	Signature	Printed Name	Date
REVIEWED/APPROVED:		<u>MELISSA LECCLAIR</u>	<u>10-11-2013</u>
	Signature	Printed Name	Date