

## Certificate of Calibration

Manufacturer: **Radian Research, Inc.**  
Instrument Model: **RD-33-333 Dytronic Portable Standard**  
Serial Number: 300732  
Firmware Revision: 07.10.14  
Error Specification: .01% worst case



**Quality Management System  
ISO 9001 Certified**

Customer Name:  
Address:

P.O. Number:  
CE Number:  
RMA / Certificate Number:  
Calibration Date: 2-Dec-10

**Environmental Conditions**  
Temperature: 23°C +/- 1°C  
Humidity: between 35% and 60%

Based on the recommended calibration interval, the next calibration is due on: 2-Dec-11

**Radian Research's As-Found Test Results showed this Instrument to be:**

New  In Tolerance  Out of Tolerance  Inoperative  Limited Calibration  
For Out of Tolerance conditions, As-Found Data Reports are furnished.

Radian Research Inc. certifies the instrument listed above meets or exceeds all published specifications and was calibrated in compliance with ANSI/NCSL Z540-1 using applicable Radian Research procedures which meet the requirements of ISO 9001:2000.

This instrument was calibrated by a Radian Research RS-703A Syntron Automated Calibration System which is traceable to the National Institute of Standards and Technology (NIST). The RS-703A Calibration System is traceable within the limitations of NIST's services, by accuracies derived from accepted values of natural physical constants, or by accuracies derived from accepted ratio type calibration techniques. The RS-703A Calibration System is cross checked and calibrated on a schedule which is adjusted to maintain required accuracies and traceability.

Software used for Calibration: RS-703A Control Program Rel.04.20.02 Oct 09, 2006  
RS-703A serial number: 703143, 703144, 703146

**Applicable Traceability & Report Numbers for References used by Radian's Metrology Lab:**

Watt-hour, VA-hour, VAR-hour, Q-hour, Amp-hour,  
Volt-hour, Volt-Squared hour, AC Volt

Radian Dytronic Transfer Standards consisting of (3) RD-22-RTS,  
Serial Numbers: 202098, 202099, 202100  
NIST Test Report Number: 817/276681-08; Calibration Due Date 11-January-2011.

Time Base (Frequency)

Arbiter Systems Model 1083B Satellite-Controlled Frequency Standard s/n B1057. GPS controlled system with an uncertainty of 0.000002ppm. No calibration required.

DC Volts

Fluke Model 732B DC Volt Standard s/n 7703004 with an uncertainty of  $\pm .4$ ppm.  
Fluke Certificate Number 869144-7703004; Calibration Due Date: 8-March-2011.

Resistance

Guildline Standard Resistor Model 9330/10K s/n 62623, 62624. Guildline Certificate Numbers GCS C12661&2; with an Expanded Uncertainty of  $\pm .32$ ppm. Calibration Due Date: 5-Feb-2011.

Other

Hewlett Packard 8 Digit Multi-Meter Model 3458A s/n 2823A02816. Agilent Technologies  
Test Certificate Number 50872; Calibration Due Date 1-Mar-2011.

**Metrology Laboratory Technician Signature**

  
LAB  
223

*This report shall not be reproduced, except  
in full, without prior written approval of the  
Calibration Facility*

## Certificate of Calibration

Manufacturer: **Radian Research, Inc.**  
Instrument Model: **RD-33-333 Dytronic Portable Standard**  
Serial Number: 300273  
Firmware Revision: 07.10.01  
Error Specification: .01% worst case



**Quality Management System  
ISO 9001 Certified**

Customer Name: ENERCOM, S.A.  
Address: BALBOA, CALLE AKEE #1511-B, APDO.321  
BALBOA-ANCON

P.O. Number: Recalibration Package

### Environmental Conditions

CE Number:

Temperature: 23°C +/- 1°C

RMA / Certificate Number: 22866

Humidity: between 35% and 60%

Calibration Date: 17-Sep-10

Based on the recommended calibration interval, the next calibration is due on: 17-Sep-11

### Radian Research's As-Found Test Results showed this Instrument to be:

New  In Tolerance  Out of Tolerance  Inoperative  Limited Calibration

For Out of Tolerance conditions, As-Found Data Reports are furnished.

Radian Research Inc. certifies the instrument listed above meets or exceeds all published specifications and was calibrated in compliance with ANSI/NCSL Z540-1 using applicable Radian Research procedures which meet the requirements of ISO 9001:2000.

This instrument was calibrated by a Radian Research RS-703A Syntron Automated Calibration System which is traceable to the National Institute of Standards and Technology (NIST). The RS-703A Calibration System is traceable within the limitations of NIST's services, by accuracies derived from accepted values of natural physical constants, or by accuracies derived from accepted ratio type calibration techniques. The RS-703A Calibration System is cross checked and calibrated on a schedule which is adjusted to maintain required accuracies and traceability.

Software used for Calibration: RS-703A Control Program Rel.04.20.02 May 30, 2006

RS-703A serial number: 703143, 703144, 703146

### Applicable Traceability & Report Numbers for References used by Radian's Metrology Lab:

#### Watt-hour, VA-hour, VAR-hour, Q-hour, Amp-hour,

#### Volt-hour, Volt-Squared hour, AC Volt

Radian Dytronic Transfer Standards consisting of (3) RD-22-RTS,

Serial Numbers: 202098, 202099, 202100

NIST Test Report Number: 817/276681-08; Calibration Due Date 11-January-2011.

#### Time Base (Frequency)

Arbiter Systems Model 1083B Satellite-Controlled Frequency Standard s/n B1057. GPS controlled system with an uncertainty of 0.000002ppm. No calibration required.

#### DC Volts

Fluke Model 732B DC Volt Standard s/n 7703004 with an uncertainty of ± .4ppm.

Fluke Certificate Number 869144-7703004; Calibration Due Date: 8-March-2011.

#### Resistance

Guildline Standard Resistor Model 9330/10K s/n 62623, 62624. Guildline Certificate Numbers GCS C12661&2; with an Expanded Uncertainty of ± .32ppm. Calibration Due Date: 5-Feb-2011.

#### Other

Hewlett Packard 8 Digit Multi-Meter Model 3458A s/n 2823A02816. Agilent Technologies

Test Certificate Number 50872; Calibration Due Date 1-Mar-2011.

#### Metrology Laboratory Technician Signature

*Scott Blackwell* LAB  
47

*This report shall not be reproduced, except in full, without prior written approval of the Calibration Facility*

## Certificate of Calibration

Manufacturer: **Radian Research, Inc.**  
Instrument Model: **RD-31-337 Dytronic Portable Standard**  
Serial Number: 300051  
Firmware Revision: 07.10.01  
Error Specification: .02% worst case



**Quality Management System  
ISO 9001 Certified**

Customer Name: ENERCOM, S.A.  
Address: BALBOA, CALLE AKEE #1511-B, APDO.321  
BALBOA-ANCON

P.O. Number: Recalibration Package

### Environmental Conditions

CE Number:

Temperature: 23°C +/- 1°C

RMA / Certificate Number: 22865

Humidity: between 35% and 60%

Calibration Date: 17-Sep-10

Based on the recommended calibration interval, the next calibration is due on: 17-Sep-11

### Radian Research's As-Found Test Results showed this Instrument to be:

New  In Tolerance  Out of Tolerance  Inoperative  Limited Calibration

For Out of Tolerance conditions, As-Found Data Reports are furnished.

Radian Research Inc. certifies the instrument listed above meets or exceeds all published specifications and was calibrated in compliance with ANSI/NCCL Z540-1 using applicable Radian Research procedures which meet the requirements of ISO 9001:2000.

This instrument was calibrated by a Radian Research RS-703A Syntron Automated Calibration System which is traceable to the National Institute of Standards and Technology (NIST). The RS-703A Calibration System is traceable within the limitations of NIST's services, by accuracies derived from accepted values of natural physical constants, or by accuracies derived from accepted ratio type calibration techniques. The RS-703A Calibration System is cross checked and calibrated on a schedule which is adjusted to maintain required accuracies and traceability.

Software used for Calibration: RS-703A Control Program Rel.04.20.02 May 30, 2006

RS-703A serial number: 703143, 703144, 703146

**Applicable Traceability & Report Numbers for References used by Radian's Metrology Lab:**

### Watt-hour, VA-hour, VAR-hour, Q-hour, Amp-hour,

### Volt-hour, Volt-Squared hour, AC Volt

Radian Dytronic Transfer Standards consisting of (3) RD-22-RTS,

Serial Numbers: 202098, 202099, 202100

NIST Test Report Number: 817/276681-08; Calibration Due Date 11-January-2011.

### Time Base (Frequency)

Arbiter Systems Model 1083B Satellite-Controlled Frequency Standard s/n B1057. GPS controlled system with an uncertainty of 0.000002ppm. No calibration required.

### DC Volts

Fluke Model 732B DC Volt Standard s/n 7703004 with an uncertainty of  $\pm .4$ ppm.

Fluke Certificate Number 869144-7703004; Calibration Due Date: 8-March-2011.

### Resistance

Guildline Standard Resistor Model 9330/10K s/n 62623, 62624. Guildline Certificate Numbers GCS C12661&2; with an Expanded Uncertainty of  $\pm .32$ ppm. Calibration Due Date: 5-Feb-2011.

### Other

Hewlett Packard 8 Digit Multi-Meter Model 3458A s/n 2823A02816. Agilent Technologies

Test Certificate Number 50872; Calibration Due Date 1-Mar-2011.

### Metrology Laboratory Technician Signature

*Scott Blackwell* LAB  
47

*This report shall not be reproduced, except in full, without prior written approval of the Calibration Facility*