

# Certificate of Calibration

Manufacturer: **Radian Research, Inc.**  
Instrument Model: **RD-33-333 Dytronic Portable Standard**  
Serial Number: 301653  
Firmware Revision: 07.34.06  
Error Specification: .01% worst case



**Quality Management System  
ISO 9001 Certified**

Customer Name:  
Address:

P.O. Number: **Environmental Conditions**  
CE Number: Temperature: 23°C +/- 2°C  
RMA / Certificate Number: Humidity: between 30% and 60%  
Calibration Date: 21-Nov-15  
Based on the recommended calibration interval, the next calibration is due on: 20-Nov-16

**Physical Condition: Undamaged**

**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 9001:2008. 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) and / or other National Metrology Institute (NMI). 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 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.

Procedure used for Calibration: 9912987  
Software used for Calibration: RS-703A Control Program Rel.04.30.03 Release Apr 6, 2010  
RS-703 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

Master Reference Bank consisting of (3) RD-22-RTS  
Serial Numbers: 200717, 200718, 200719, Calibration Due Date: 1-Jun-2016  
Traceable to (3) RD-22-RTS SN's 202098, 202099, 202100 calibrated by NIST

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 ± .1ppm.  
Fluke Certificate Number 13D5460; Calibration Due Date: 8-Jan-2017.

Resistance

Guildline Standard Resistor Model 9330/10K s/n 62623, 62624 with an Expanded Uncertainty of ± .320ppm.  
Test Certificate GCS15794, GCS15795. Calibration Due Dates: 4-Jan-2017.

Other

Hewlett Packard 8 Digit Multi-Meter Model 3458A s/n 2823A02816. Agilent Technologies  
Test Certificate Number 64173: Calibration Due Date 17-Feb-2016.

**Metrology Laboratory Technician Signature**

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 **LAB 223**

## Certificate of Calibration

Manufacturer **Radian Research, Inc.**  
Instrument Model: **RD-33-333 Dytronic Portable Standard**  
Serial Number 300273  
Firmware Revision: 07.34.06  
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 Panama

**Environmental Conditions**  
Temperature: 23°C +/- 2°C  
Humidity: between 30% and 60%

P.O.Number: E-1983  
CE Number:

RMA / Certificate Number: 29800  
Calibration Date: 15-Dec-15

Based on the recommended calibration interval, the next calibration is due on: 14-Dec-16

**Physical Condition:** Undamaged

**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 9001:2008.

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) and / or other National Metrology Institute (NMI). 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 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.

Procedure used for Calibration: 9912987  
Software used for Calibration: RS-703A Control Program Rel.04.30.03 Test Release Apr 6  
RS-703A serial number: 703125, 703140, 703192  
**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

Master Reference Bank consisting of (3) RD-22-RTS  
Serial Numbers: 200717, 200718, 200719, Calibration Due Date: 1-Jun-2016  
Traceable to (3) RD-22-RTS SN's 202098, 202099, 202100 calibrated by NIST

### 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  $\pm .1$ ppm.  
Fluke Certificate Number 13D5460; Calibration Due Date: 8-Jan-2017.

### Resistance

Guilidine Standard Resistor Model 9330/10K s/n 62623, 62624 with an Expanded Uncertainty of  $\pm .320$ ppm.  
Test Certificate GCS15794, GCS15795. Calibration Due Dates: 4-Jan-2017.

### Other

Hewlett Packard 8 Digit Multi-Meter Model 3458A s/n 2823A02816. Agilent Technologies  
Test Certificate Number 64173: Calibration Due Date 17-Feb-2016.

**Metrology Laboratory Technician Signature**

LAB  
88

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## Certificate of Calibration

Manufacturer: **Radian Research, Inc.**  
Instrument Model: **RD-33-333 Dytronic Portable Standard**  
Serial Number: 300732  
Firmware Revision: 07.34.06  
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 Panama

P.O.Number: E-1983  
CE Number:

**Environmental Conditions**  
Temperature: 23°C +/- 2°C  
Humidity: between 30% and 60%

RMA / Certificate Number: 29801  
Calibration Date: 14-Dec-15

Based on the recommended calibration interval, the next calibration is due on: 13-Dec-16

**Physical Condition:** Undamaged

**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 9001:2008.

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Procedure used for Calibration: 9912987  
Software used for Calibration: RS-703A Control Program Rel.04.30.03 Test Release Apr 6  
RS-703A serial number: 703125, 703140, 703192

**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

Master Reference Bank consisting of (3) RD-22-RTS  
Serial Numbers: 200717, 200718, 200719, Calibration Due Date: 1-Jun-2016  
Traceable to (3) RD-22-RTS SN's 202098, 202099, 202100 calibrated by NIST

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 ± .1ppm.  
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Guilidine Standard Resistor Model 9330/10K s/n 62623, 62624 with an Expanded Uncertainty of ± .320ppm.  
Test Certificate GCS15794, GCS15795. Calibration Due Dates: 4-Jan-2017.

Other

Hewlett Packard 8 Digit Multi-Meter Model 3458A s/n 2823A02816. Agilent Technologies  
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88

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