

RF Microwave Meter

840046

Instruction Manual

RF Microwave Meter 840046

Copyright ©2009 by Sper Scientific

ALL RIGHTS RESERVED

Printed in the USA

The contents of this manual may not be reproduced or transmitted in any form or by any means electronic, mechanical, or other means that do not yet exist or may be developed, including photocopying, recording, or any information storage and retrieval system without the express permission from Sper Scientific.

SPER
SCIENTIFIC

Environmental Measurement Instruments

7720 E. Redfield Rd. Suite #7,
Scottsdale, AZ 85260
Tel: (480) 948-4448
Fax: (480) 967-8736
Web: www.sperscientific.com

TABLE OF CONTENTS

INTRODUCTION.	4
FEATURES	5
MATERIALS SUPPLIED.	6
KEYPAD.	7
MEASUREMENT PROCEDURES.	8
BATTERY REPLACEMENT.	16
MAINTENANCE.	16
OPTIONAL ACCESSORIES.	17
SPECIFICATIONS.	18
WARRANTY	20

INTRODUCTION

The Sper Scientific RF Microwave Meter (Model 840046) is designed for measuring and monitoring electromagnetic field value of the Radio Frequency. The meter is calibrated precisely on the frequency value 2.45 GHz (Microwave Oven).

It is capable of measuring the electromagnetic field radiation intensity that is produced from welding equipment, microwave oven leakage and other environmental safety concerns.

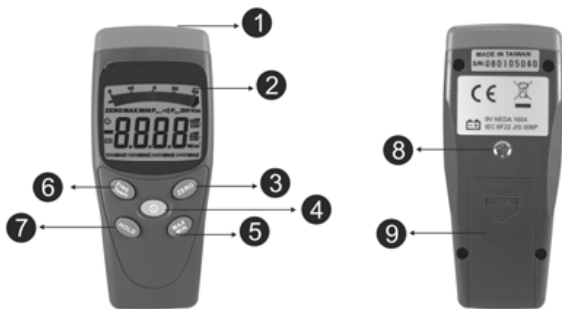
FEATURES

- Frequency selection of normal or microwave range
- Tripod mounting socket
- Maximum and minimum
- Hold function
- Auto-power-off
- Built-in alarm
- Zero offset adjustment
- Overload indicator
- Low battery indicator

MATERIALS SUPPLIED

- Meter
- 9 Volt Battery
- Instruction Manual
- Soft Carrying Case

KEYPAD



1. Sensor position
2. LCD
3. Zero button
4. Power on/off
5. Maximum/minimum button
6. Frequency range selection button
7. Data hold button
8. Tripod mounting socket
9. Battery cover

MEASUREMENT PROCEDURES

1. Press **POWER** to turn the meter **on**.
2. Press **FREQ. RANGE** to select microwave (2.45 GHz) or RF (50 MHz~3.5 GHz). When 2.45 GHz is selected, "2450 MHz" will appear on the lower right corner of the LCD. When normal range is selected, "2450 MHz" will disappear from the lower right corner of the display.
3. For general information on microwave oven leakage and instructions on preparing for microwave measurement, see page 14.
4. Position the top of the meter to measure the electromagnetic waves. Adjust the measurement angle or position until the highest reading is obtained.

MEASUREMENT PROCEDURES

Measurement Position

Figure 1 shows the correct measurement position of RF electromagnetic field strength.



Figure 1

Figure 2 shows the incorrect measurement positions of RF electromagnetic field strength.



Figure 2

MEASUREMENT PROCEDURES

Note...

Due to background environmental magnetic fields, this meter may display a reading value under 0.002 mW/cm^2 prior to measuring.

Maximum, Minimum and Hold

1. Press **MAX/MIN** to retain the maximum value. "MAX" will appear on the LCD. The meter will continue measuring, holding the maximum value on the LCD until exceeded.
2. Press **MAX/MIN** again to retain the minimum value. "MIN" will appear on the LCD. The meter will continue measuring, holding the minimum value on the LCD until exceeded.
3. Press **MAX/MIN** again to retain the maximum and minimum values simultaneously. "MAX MIN" will

MEASUREMENT PROCEDURES


flash on the LCD. The meter will continue measuring, holding the maximum and minimum values on the LCD until exceeded.

4. Press and hold **MAX/MIN** for more than one second to exit and return to Normal Mode.
5. Press **HOLD** to freeze the current value on the display. "DH" (Data Hold) will appear on the LCD. Press **HOLD** again to release the data hold.

Auto Power Off

1. To save battery life, the meter will automatically turn **off** after 30 minutes of inactivity. To disable this function:

MEASUREMENT PROCEDURES

2. Press **POWER** to turn the meter **off**. Press and hold **MAX/MIN** while simultaneously pressing **POWER** to turn the meter **on**. Auto-power-off is now disabled.
3. To restore auto-power-off: Press **POWER** to turn the meter **off** and then press **POWER** again to turn the meter back **on**.  will appear on the LCD to indicate that auto-power-off is enabled.

Alarm

The meter features a built-in alarm that will sound when the measurement exceeds 1 mW/cm^2 . The alarm will stop sounding when the measurement falls under 1 mW/cm^2 . This threshold value cannot be changed.

MEASUREMENT PROCEDURES

Zero Offset Adjustment


If the meter shows a measurement other than 0 due to background EMF, zero adjusting will eliminate this electromagnetic interference.

Press **ZERO** to adjust and obtain a 0 measurement. “ZERO” will appear on the LCD.

Overload Indicator

When the reading exceeds 4 mW/cm^2 , “OL” will appear on the LCD to indicate overload.

Low Battery Indicator

The  symbol will appear on the LCD to indicate a low battery. Replace the battery (see page 16).

MEASUREMENT PROCEDURES

Microwave Oven Leakage

With time, microwave leakage around door seals, hinges and metal fittings is not uncommon. Therefore, it is important that all microwave ovens be periodically checked to ensure that no damage or malfunction has occurred.

Microwaves may easily pass through porcelain, glass, ceramics and most plastics. Highly potent microwave energy generated by microwave ovens is also capable of penetrating living tissue to a depth of approximately 1.18" (30 mm).

Do NOT stand or look directly into any area where microwave leakage may be present.

Remove any rotating plates, etc. before testing.

MEASUREMENT PROCEDURES

1. Because microwave ovens should not be operated while empty, fill a microwave safe container with 275 ml of water and place it in the center of the oven during testing.
2. Start the microwave at maximum power.
3. Follow the measurement procedures on page 8, concentrating measurements on door seams, window seals, welds and rivets.

BATTERY REPLACEMENT

1. Press **POWER** to turn the meter **off**.
2. Remove the battery cover on the back of the meter.
3. Remove the old battery and replace with 1 new 9V battery, ensuring correct polarity.
4. Replace the battery cover.

MAINTENANCE

Use a soft, dry cloth to clean the meter. Do NOT use a wet cloth, solvents, water or any liquid to clean the meter.

OPTIONAL ACCESSORIES

- 840090 Water Resistant Instrument Pouch
- 840092 Bench-Top Tripod
- 840093 Field Tripod
- 850000 Rubber Boot

SPECIFICATIONS

Accuracy	± 2 dB at 2.45 GHz ± 50 MHz
Resolution	0.001 mW/cm ²
Display	3 3/4 digits LCD; maximum reading 3999 (4 mW/cm ²)
RF Power Density	0.003 ~ 2.700 mW/cm ²
RF Frequency	50 MHz ~ 3.5 GHz
Microwave Frequency	2450 MHz
Axis	Single
Sample Rate	2.5 times per second
Operating Temperature & Humidity	5°C ~ 40°C <80% RH

SPECIFICATIONS

Storage Temperature & Humidity	-10°C ~ 60°C <70% RH
Operating Altitude	≤ 2000 M
Operating Environment	Indoor use; pollution degree 2*
Battery	9V NEDA 1604, IEC 6F22 or JIS 006P
Battery Life	Approximately 100 hours
Dimensions	5 ¼" x 2 ¼" X 1 ¼" (130 x 56 x 38 mm)
Weight	6 oz (170 g)

*Pollution degree is a classification of the amount of dry pollution and condensation present in an environment. This classification affects clearance distances required for product safety. Office and laboratory areas are considered pollution degree 2 environments.

WARRANTY

Sper Scientific warrants this product against defects in materials and workmanship for a period of **five (5) years** from the date of purchase, and agrees to repair or replace any defective unit without charge. If your model has since been discontinued, an equivalent Sper Scientific product will be substituted if available. This warranty does not cover probes, batteries, battery leakage, or damage resulting from accident, tampering, misuse, or abuse of the product. Opening the meter to expose its electronics will void the warranty.

To obtain warranty service, ship the unit postage prepaid to:

SPER SCIENTIFIC LTD
7720 E Redfield Rd, Suite 7
Scottsdale, AZ 85260

The defective unit must be accompanied by a description of the problem and your return address. Register your product online at www.sperscientific.com, or return your warranty card within 10 days of purchase.

Revised 11/14/2012

