

INSTRUCTION MANUAL

CAT. 72083-00 Microwave Leakage Detector



Electron Microscopy Sciences
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INTRODUCTION

The Microwave Leakage Detector measures hazardous microwave oven leakage. With use, microwave oven door seals may wear enabling hazardous microwaves to leak out. This item features maximum and minimum hold, an audible alarm, and a zero adjustment to eliminate background EMF. The display also indicated overload and low battery. Also provided is a soft carrying case and standard 9V battery, which provides about 100 hours of use.

FEATURES

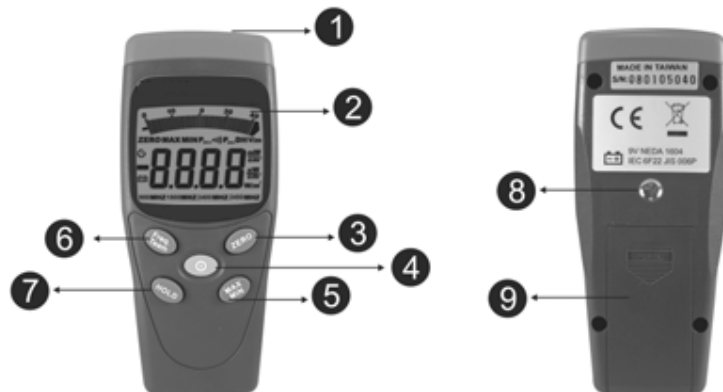
- Frequency selection of normal or microwave range
- Tripod mounting socket
- Maximum and minimum
- Hold function
- Auto-power-off
- Built-in alarm
- Zero offset adjustment
- Overload indicator
- Low battery indicator

MATERIALS SUPPLIED

- Meter
- 9V battery
- Soft carrying case

KEYPAD

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



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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 MHz). 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. Position the top of the meter to measure the electromagnetic waves. Adjust the measurement angle or position until the highest reading is obtained.

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

PLEASE NOTE

Due to background environmental magnetic fields, this meter may display a reading value under 0.0002 mW/cm² 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.

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2. Press MAX/MIN again to retain the minimum value. "MIN" will appear on the LCD. The meter will continue 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 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.
2. To disable the auto power-off function, 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. The "⏻" symbol 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.


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.

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MICROWAVE OVEN LEAKAGE

With time, microwave leakage around door seals, hinges and metal fittings will occur. 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.

1. Because microwave ovens should not be operating while empty, fill a microwave safe container with 275ml 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, 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.

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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

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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.

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