



#### TEST B

For ovens labelled IEC 705 (manufactured since 1990)

- 1 Proceed as for test A, but with water at  $10^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .
- 2 After multiplying the average temperature rise by 70, multiply again by 1.15. The resulting figure is the power output in watts IEC 705.

#### Example B

- 1 Starting temperatures in  $^{\circ}\text{C}$   $8.8 + 11.0 = 9.9$  average.
- 2 Final temperatures in  $^{\circ}\text{C}$   $19 + 20 = 19.5$  average.
- 3 The difference figure  $19.5 - 9.9 = 9.6 \times 70 \times 1.15 = 772.8$  watts IEC 705

IEC wattage cannot be found by manipulating J.I.S wattage.

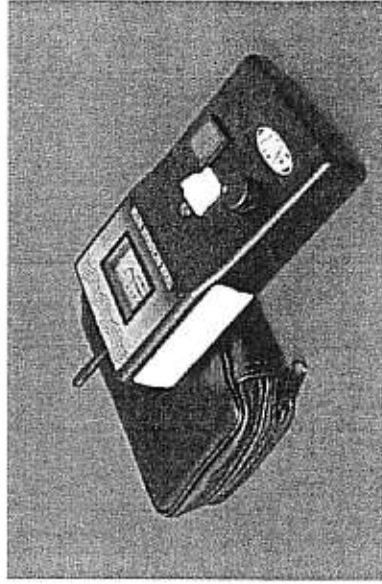
#### RESULTS WILL BE INACCURATE UNLESS THE FOLLOWING POINTS ARE OBSERVED

- 1 Mains voltage should be within 2% of nominal value when tests are carried out.
- 2 Water must be stirred each time temperature is measured.
- 3 Temperatures should be measured to the nearest tenth of a degree.
- 4 Ovens designed to have trays must have them in place during output tests.
- 5 An accurate instrument must be used for timing, not the oven timer.

Where temperature rise figures are much in excess of  $10^{\circ}\text{C}$  it is best to use the manufacturers power output formulae for individual models.

#### MAINTENANCE

- 1 This microwave leakage monitor is essentially maintenance free. Care should be taken to avoid mechanical or thermal shock.
- 2 With the exception of the battery and spacer this microwave leakage detector contains no field replaceable parts. It must be returned for repair should it cease to function satisfactorily.
- 3 Annual calibration is recommended to ensure the instrument retains its accuracy.



# Instruction Book

## TM308/TM318

### MICROWAVE LEAKAGE MONITOR



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## INTRODUCTION

The TM308/TM318 Microwave Leakage Monitor is a single range, RF power measurement instrument designed to operate in the 2.45GHz range. It's primary function is the detection of the RF microwave leakage from heating equipment such as commercial and domestic microwave ovens, and industrial equipment etc.

## SPECIFICATIONS ELECTRICAL

Power Source	9 Volt PP3 Battery
Operating Frequency	2.45GHz
Calibration Accuracy	± 1dB
Step - Input Response Time	1-2 Seconds
RF Power Range	0-10mW/cm <sup>2</sup>
Sensor - Source Spacing	5cm
Indication of Operation	Flashing LED
Analogue Display Showing Cardinal Points	1,2,3,4,5, 10

## PHYSICAL

Length (including probe)	185mm
Depth (greatest)	40mm
Width	80mm
Weight (including battery)	185grms

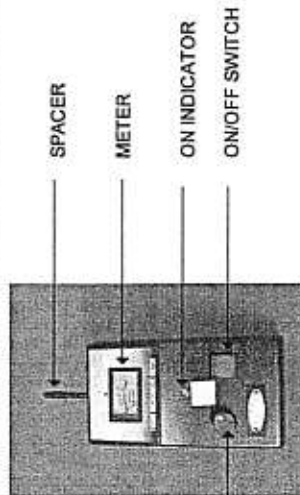
## EQUIPMENT SUPPLIED

- 1 x TM308 OR TM318 Microwave Leakage Monitor
- 2 x 500ml Plastic beakers
- 1 x Spirit Thermometer
- 1 x PP3 Battery
- 1 x Carrying Case (320mm x 290mm x 115mm) complete with moulded foam inserts for TM308 or vinyl pouch for TM318

## LIFE TIME GUARANTEE

Initial guarantee is given for one year and is extended by a further year after each annual calibration.

## OPERATION



- 1 Place in the oven a plastic beaker containing 275cc ± 15cc of water.
- 2 Set oven to full power and switch on.
- 3 Direct the instrument away from any radiation source and depress the on/off switch. At this point the LED will flash to indicate the monitor is working.
- 4 Keeping the on/off switch depressed, zero the meter using the zero adjust control.
- 5 After zeroing the meter, the monitor should be directed at areas of suspected radiation, moving the monitor over these areas at a rate of no more than 5cm/sec. Areas around door seals, hinges, door seams, window, welds and rivets should be given particular attention.
- 6 Whilst moving the monitor over the oven the meter must be observed for any indication of RF emission leakage and with the spacer in position the level shown on the meter noted.
- 7 Leakage must not exceed 5mW/cm at a distance of 5cm (the distance given by the instrument spacer) from the source. However many manufacturers now stipulate much lower levels of emission from their ovens and you should consult the relevant data sheets for details.
- 8 After measurements have been completed, release the button to turn off the monitor.

## ABBREVIATED POWER OUTPUT MEASUREMENT FOR FIELD SERVICE ENGINEERS

### IMPORTANT

Use the test appropriate to each oven

### EQUIPMENT REQUIRED

- 2 x 500ml Plastic Beakers
- 1 x Accurate Thermometer
- 1 x Flat Stirrer

### TEST A

For J.I.S rated ovens (those manufactured up until 1990)

- 1 Fill each beaker with 500ml of water at 20°C ± 5°C.
- 2 Check precise temperatures and note as starting temperatures.
- 3 Place the containers in the centre of the cooking area. Set the oven to full power and switch on, allowing the oven to operate for precisely 1 minute (after allowing 2 seconds for the magnetron to warm up).
- 4 Remove the beakers from the oven and immediately stir the water in each beaker, within 30 seconds of removing the beakers from the oven measure the water temperature again and note as final temperatures.
- 5 Average the two starting temperature readings.
- 6 Average the two final temperature readings.
- 7 Subtract average starting temperature from average final temperature to give average temperature rise.
- 8 Multiply average temperature rise by 70. The resulting figure is the power output in watts J.I.S.

### Example A

- 1 Starting temperatures in °C 19.3 + 19.9 = 19.6 average.
- 2 Final temperatures in °C 27.1 + 30.5 = 28.8 average.
- 3 The difference figure 28.8 - 19.6 = 9.2 x 70 = 644 watts J.I.S

Please note that a 0.5° inaccuracy will cause a final error of 35 watts.