

JJF

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

JJF 1107-2003

**Calibration Specification of Infrared Thermometers for
Measurement of Human Temperature
(English Translation)**

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1 Scope

This Specification is applicable to calibration of infrared thermometers for measurement of human temperature and infrared quick screening instruments for measurement of human body surface temperature.

2 Normative references

JJF 1001-1998, General Terms in Metrology and Their Definitions

JJF 1007-1987, Temperature Metrological Terms and Their Definitions

JJF 1059-1999, Evaluation and Expression of Uncertainty in Measurement

GB/T 19146-2003, General requirements for infrared devices for instant screening of human skin temperature

EN 12470-5.2003 (E) Clinical thermometers - Part 5.Performance of infrared ear thermometers (with maximum device)

ASTM E 1965-98, Standard Specification for Infrared Thermometers for

Intermittent Determination of Patient Temperature

When using this regulations, the existing valid editions of above quoted standards shall be used.

3.1.1 Calibration mode (direct measurement mode)

The display mode for infrared thermometer measurement or calibration. Display the temperature without any correction, that is, the measurement result of the blackbody temperature.

3.1.2 Estimation mode

The display mode for infrared thermometer measurement. Display the estimated temperature after the correction of environmental temperature changes, emissivity, measured body position and other factors.

4 Overview

The infrared thermometer for measuring human body temperature is an instrument for measuring human body temperature by radiation exchange between the probe and the measured object. It includes infrared thermometer designed to measure human body temperature and infrared screening instrument.

5.1 Display temperature range

In any display mode, the display temperature range of the infrared thermometer shall cover the range specified in Table 1.

5.3 Environmental conditions

The allowable operating environment range for infrared thermometer to meet the laboratory error requirements specified in 5.2 shall cover the provisions in

Table 1.

5.4.1 Resolution

The display resolution shall meet the requirements of Table 1.

5.4.2 Display mode

5.6.4 Infrared thermometer user manual shall include but not limited to the following.

6.1 Environmental conditions

The temperature and humidity of the calibration laboratory environment shall meet the requirements of 18°C~28°C, (30~70)% RH and the operating environment conditions of the calibration equipment.

6.2.1 Blackbody radiation source

The temperature range of the blackbody radiation source shall meet the calibration requirements of the thermometer to be calibrated.

6.2.2 Electrical measuring instruments that measure the analog output of
calibrated thermometer (if required).

7.1.1 Appearance inspection

The infrared thermometer and infrared screening instrument shall be in good conditions. Each function is normal and the probe shall be clean. If it uses battery power supply, when the battery power is insufficient, there shall be a low voltage prompt function.

7.1.3 Warning temperature measurement error

The infrared screening instrument looks for the warning temperature value near the preset warning temperature point to determine the warning temperature measurement error.

7.2 Calibration methods

See Table 3 for calibration methods.

7.2.1.1 Repeat the measurement of the blackbody temperature at the set

blackbody temperature specified in Table 3. It can only select part of the blackbody set temperature in Table 3 or select the blackbody set temperature according to user requirements.

7.2.1.6 For laboratory error determination, measure and record the corrected

infrared thermometers $t_{i,j}$ and blackbody temperature t_{BBi} (if blackbody is traceable to the radiation temperature, it shall be converted to the radiation temperature) at the nominal set temperature t_{si} of each black body. Determine laboratory error for each measurement. The laboratory error $e_{i,j}$ is defined as.

Where, t_{BBi} is the blackbody temperature; $t_{i,j}$ is the j th temperature reading when the calibrated thermometer measures the blackbody temperature t_{BBi} in the calibration mode; j indicates the order of readings.

7.2.2.1 Preheat the infrared screening instrument according to the time
specified in the user manual.

8 Expression of calibration results

Calibration results shall be reflected on the calibration certificate or calibration report.

9 Recalibration interval

The recommended interval for recalibration is 1 year. It shall be appropriately shortened when it is used frequently.

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