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JJG

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

JJG 856-2015

Replacing JJG 856-1994; JJG 415-2001; JJG 67-2003

**Verification Regulation of Radiation Thermometers
(English Translation)**

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Introduction

This procedure refers to IEC/T S62492-1-2008 "Industrial process control devices Radiation thermometers Part 1.

Radiation technical data "(Industrialprocesscontroldevices-Radiationthermometers-Part 1. Technicaldataforradiationthermometers), ASTM E2847-2013 "Wide band infrared Thermometer calibration and accuracy test standard operating method "(StandardPractisesforCalibrationand AccuracyVerificationofWidebandInfraredThermometers), ASTM E1256-2011a " Standard test method (single band) "(StandardTestMethods for RadiationThermometers (SingleWavebandType)) and OIML D24 (1996) "Total Radial Pyrometer" (TotalRadiationPyrometers). The terms refer to IEC/T S62492-1 and ASTM E2847 the quasi-mode is based primarily on the requirements of IEC/T S62492-1, "Instrument Uncertainty", and ASTM E2847 method.

This procedure replaces JJG 856-1994 "Radiation thermometer for operation below 500 °C", JJG 415-2001 " Role of radiation thermometer "and JJG 67-2003" working with the whole radiation thermometer "test procedures. With JJG 856-1994, JJG 415-2001 and JJG 67-2003 compared to the main technical changes are as follows.

--- apply to the work of the full range of radiation thermometer test, the measurement standards, test methods proposed a unified Claim;

- the addition of new terms, the re-definition of some of the terms, the revision of the definition of some existing terms (3.1);

- the combination of a blackbody radiation source or its reference thermometer as a metrological standard, allowing the use of a surface radiation source, Increase the infrared wavelength brightness temperature traceability method, provides a different technical indicators of the black body radiation source of the applicable conditions of use (7.1);
- Identify the method of determining the distance (Appendix A) and the aiming method of the radiation detector (Appendix B);
- Data processing increases the emissivity correction (7.3) requirements, using the application for all temperature ranges and spectra the scope is not limited to the correction method of shortwave high temperature measurement (Appendix C);
- Increased radiation source size effect correction method and radiation source size effect temperature indication difference test method (Appendix E);
- an example of the verification data processing (Appendix G) has been added;
- for the main metrological standard form and the type of radiation detector to be tested, provided for the expansion of the metrological standard Uncertainty analysis, assessment methods and examples of quasi and full temperature zones (Appendix J).

Prerequisites of this Code Release.

- JJG 856-1994 "Radiation thermometer for operation below 500 °C";
- JJG 415-86 "Working Radiation Thermometer" and JJG 415-2001 "Working Radiation Thermometer";
- JJG 67-85 "Working Radiation Sensors" and JJG 67-2003 "Working Radiometer for Work".

Work with radiation thermometer verification procedures

1 Scope

This procedure applies to the first test of the working radiation thermometer within the temperature range (-50 to 3000) ° C Follow-up test. The work of this program with a radiation thermometer refers to the emissivity setpoint can be set to 1 single-band radiation temperature and the emissivity ratio can be set to 1 colorimetric thermometer, excluding infrared ear thermometer, infrared thermometer and contact radiation thermometer.

2 reference file

Standard Terminology and Definitions for JJF1001-2011 Terminology and definitions of temperature metrology nouns JJF1007-2007 Industrial process controlgear - Radiometer - Part 1. Radiation thermometer (IEC/T S62492-1..2008);

Of the technical data (Industrialprocesscontroldevices-Radiationthermometers-Part 1.

Technicaldataforradiationthermometers) Standard Practice for Calibrating and Accuracy

Testing of Wide - Band Infrared Thermometers for ASTM E2847-2013

(Standard Practice for Calibration and Accuracy Verification of Wideband Infrared Thermometers for dated references, dated only the version applies to this rule. Whichever is not dated, The latest version (including all amendments) applies to this procedure.

3 terms and units of measurement 3.1 terminology the following terms and other terms defined in JJF1001-2011 and JJF1007-2007 apply to this Code.

3.1.1 [effective] spectral brightness temperature [effective] spectral radiance temperature at a given wavelength, the luminance of the spectral radiation is equal to that of the blackbody of the effective spectral radiation temperature.

Note:

1 indicates the effective spectral brightness temperature, the wavelength should be stated.

2 can be referred to as spectral brightness temperature or brightness temperature when it is not confusing.

3 The actual measured amount of single-band radiation thermometer can be regarded as the effective spectral brightness temperature at its effective wavelength.

4 definition of the classic brightness temperature. heat radiator and blackbody in the same wavelength of spectral radiation equal brightness, said the black body temperature the temperature of the heat radiator at the wavelength of the wavelength. In practical applications, the thermometer in a finite spectral range of measurement results, also known as for the brightness temperature [JJF1007-2007, 5.20]. In the case of environmental radiation can be ignored, the effective spectral brightness temperature that is the classic brightness temperature.

3.1.2 [effective] brightness temperature [effective] radiance temperature the temperature of the blackbody in the given wavelength range, the radiation intensity is equal to the effective radiation brightness of the measured heat radiator.