

ICS 17.200
CCS A 54

JJF

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

JJF 1552-2015

**Calibration Specification for Blackbody Radiation Sources of
Radiation Thermometry from -10? to 200?
(English Translation)**

Issued on: December 7, 2015

Implemented on: March 7, 2016

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Introduction (II)	
1 Scope (1)	
2 References (1)	
3 Terminology (1)	
4 Overview (1)	
4.1 Use (1)	
4.2 Principles and Structures (1)	
4.3 Characteristics of blackbody radiation source (2)	
5 Metrological characteristics (2)	
5.1 Brightness temperature (2)	
5.2 Temperature stability (2)	
5.3 Temperature uniformity (2)	
5.4 Insulation resistance (2)	
6 Calibration conditions (2)	
6.1 Environmental conditions (2)	
6.2 Standards and auxiliary equipment (2)	
7 Calibration items and calibration methods (3)	
7.1 Calibration items (3)	
7.2 Calibration method (3)	
8 Calibration results (7)	
9 Re-school time interval (7)	
Appendix A Blackbody Radiation Source Brightness Temperature Calibration Model (8)	
Appendix B Blackbody Radiation Source Brightness Temperature Calibration Uncertainty Evaluation Example (10)	
Appendix C Calibration Report Inside Page Reference Format (14)	

9 Re-school time interval (7)

Appendix A Blackbody Radiation Source Brightness Temperature Calibration Model (8)	
Appendix B Blackbody Radiation Source Brightness Temperature Calibration Uncertainty Evaluation Example (10)	
Appendix C Calibration Report Inside Page Reference Format (14)	

Introduction

This specification is based on JJF 1071-2010 "National Metrological Calibration Rules".

Blackbody radiation source as a standard radiation source, widely used in the field of radiation temperature measurement, is to study the radiation theory, Standard and calibration radiation thermometer, infrared thermal imager and other radiation thermometer necessary equipment.

This specification uses a direct contrast measurement of brightness temperature to calibrate the effective brightness of the blackbody radiation source.

This specification is the first release.

Standard for Calibration of Radiation Temperature for Rare Earth with $-10\text{ }^{\circ}\text{C} \sim 200\text{ }^{\circ}\text{C}$ for Radiation Temperature Measurement

1 Scope

This specification applies to radiation temperature measurement of blackbody radiation source in the $-10\text{ }^{\circ}\text{C} \sim 200\text{ }^{\circ}\text{C}$ range of effective brightness temperature calibration.

2 reference file

Terminology and definitions of temperature metrology nouns JJF 1007-2007 for dated references, only the dated edition applies to this specification; references that are not dated , The latest version (including all modifications) applies to this specification.

3 terminology

3.1 [absolute] bold [absolute] blackbody Ideal radiation radiators that can absorb all the incident radiation in any direction, wavelength and polarization state.

[JJF 1007-2007, 5.9] 3.2 [cavity] blackbody radiation source [cavity] blackbodyradiationsource Used to calibrate or calibrate a radiation thermometer with a well-controlled temperature and a definite emissivity and heat radiation characteristics.

Near the black body of the concave device.

[ASTME2847-2013, 3.1.2] 3.3 [normal spectrum] emissivity [normalspectral] emissivity the ratio of the normal spectral radiance of the object to the brightness of the blackbody at the same temperature.

3.4 [effective] emissivity [effective] emissivity the ratio of the effective spectral radiance of the blackbody radiation source to the brightness of the blackbody at the same temperature.

3.5 [effective] brightness temperature [effective] radiancetemperature 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.

4 Overview

4.1 Use

Blackbody radiation source for calibration of radiation thermometer, infrared thermal imager and other radiation temperature measurement equipment.

4.2 Principle and structure the heat radiation in the isothermal closed cavity is blackbody. The blackbody radiation source is an isothermal cavity with small holes, which radiates Characteristic approximation is absolutely bold.

The blackbody radiation source is a source of heat that is known and stable to work.

Blackbody radiation source is usually composed of blackbody cavity, temperature measurement and control system. The cavity is usually a cylindrical cone Type, double cone type, cylindrical or spherical type.

When the blackbody radiation source is used below the dew point temperature, there should be measures to ensure that the inner surface of the cavity is free of condensation and frost.