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

GB/T 34509.1-2017

**In-orbit field radiometric calibration for optical remote sensors
on land observation satellites - Part 1: Visible and near infrared**

陆地观测卫星光学遥感器在轨场地辐射定标方法 第1部分：可见光近红外

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Foreword

GB/T 34509 "terrestrial observation satellite optical remote sensor calibration orbit radiation

method" is divided into three parts.

--- Part 1. Visible light near infrared;

--- Part 2. Thermal infrared;

--- Part 3. Medium wave infrared. This section GB/T 34509 Part 1. This section drafted in accordance with GB/T 1.1-2009 given rules. This part of the National Aerospace Technology and Application Standardization Technical Committee (SAC/TC425) centralized. This part of the drafting unit. China Resources Satellite Application Center, 21st Century Space Technology Co., Ltd., China Aerospace Standard Institute of Chemical Technology, Beijing Space Vehicle Design Department. The main drafters of this section. Fu Qiao Yan, Wang Aichun, Han Qijin, Qin Jingfang, Yan Ming, Zhou Huizhen, Wu Fei, Xu Cuiping, He Wei. Terrestrial Observing Satellite Optical Remote Sensing Radiation on orbit Calibration method Part 1. Visible near infrared

1 Scope

Part 1 of China's national standard for calibrating the visible and near infrared sensors of land observation satellites against measurements made on the ground. It specifies the general requirements, the data acquisition, the technical process and calculation method, and the uncertainty analysis. A satellite radiometer is calibrated before launch in a laboratory, and then it changes: the launch shakes it, the optics darken under ultraviolet and radiation, the detectors age, and the calibration lamps carried on board age too. Without correction the instrument slowly drifts, and a drift is indistinguishable from a change in the thing being observed - which for a mission measuring vegetation, water or urban growth over decades is fatal. Field calibration fixes it from outside: a large, flat, uniform and stable site is measured from the ground at the moment of overpass, the atmosphere between is characterised, and what the satellite should have seen is computed and compared with what it did see.

GB/T 34509 provisions of this part of the terrestrial observing satellite visible near-infrared remote sensing sensor in the orbit radiation calibration of the general requirements, Data acquisition, technical process and calculation method, uncertainty analysis and so on. This section applies to terrestrial observation satellite visible near-infrared remote sensor calibration of radiation at the track site (hereinafter referred to as the orbital radiation Standard), other satellites of the same type of remote sensor can refer to use.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 2900.65 Electrotechnical terminology lighting

GB/T 3102.6 Light and the amount and unit of electromagnetic radiation

GB/T 14950 Photogrammetry and remote sensing terms

GB/T 32453 Satellite Earth observation data classification rules

3 Terms and definitions

GB/T 2900.65, GB/T 3102.6, GB/T 14950 and GB/T 32453 as defined by the following terms and definitions apply to this file.

3.1 Radiometer calibration site Surface optical properties, atmospheric optical properties, meteorological conditions, topography and other conditions for satellite remote sensing orbit radiation calibration of natural or Artificial site.

3.2 Radiation calibration in orbitfield radiometriccalibration When the satellite passes the radiation calibration field, the measured optical radiation characteristics of the site are used to calculate the atmospheric radiation transmission and establish The relationship between the satellite remote sensing observations and the entrance pupil radiance brightness of the quantitative relationship between the process.