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

YY/T 1896-2023

**Method for defining the wavelength range of spectral radiation
therapy equipment**

光谱辐射治疗设备波长范围界定方法

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents" Drafting. Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed by the National Medical Products Administration. This document is under the jurisdiction of the Physical Therapy Equipment Sub-Technical Committee of the National Medical Electrical Standardization Technical Committee (SAC/TC10/SC4). This document was drafted by: China Institute of Food and Drug Control, Tianjin Medical Device Quality Supervision and Inspection Center. The main drafters of this document. Rong Shankui, Yang Jiangang, Li Jiage, Meng Xiangfeng, Liu Yanzhen, Zhang Yanli, and Ren Haiping. Method for defining wavelength range of spectral radiation therapy equipment

1 Scope

YY/T 1896 specifies how the wavelength range of spectral radiation therapy equipment is defined and measured. Devices that treat with light, from phototherapy lamps to infrared and visible-light therapy units, make claims about the band they emit, and those claims determine both the clinical effect and the hazard: the wrong end of the spectrum means either no therapeutic action or an unintended thermal or photochemical dose. This document fixes how the boundaries of the emitted band are determined so that a manufacturer's stated wavelength range means the same thing from one product to the next and can be checked. It is a measurement standard rather than a product standard, which makes it the reference the product-specific documents lean on. For a Chinese registration of any light-based therapy device, this is how the spectral claim is substantiated.

This document specifies the method for defining the wavelength range of spectral radiation therapy equipment (hereinafter referred to as "phototherapy equipment"). This document is

suitable for clinical use of incoherent light including visible light, infrared light, ultraviolet light and other wavelengths from 180nm to 3000nm. Treatment equipment.

2 Normative reference documents

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 RMS spectrum width Under standard working conditions, the spectrum is approximated by the Gaussian function $I(\lambda) = I_0 \exp\left[-\frac{(\lambda - \lambda_0)^2}{2\Delta\lambda^2}\right]$. If $\Delta\lambda_{\text{rms}}$ is the RMS spectrum width value, then $\Delta\lambda_{\text{rms}} = \Delta\lambda$ in the formula.

---Light source wavelength; λ_0

---Central wavelength; λ

---spectral intensity at wavelength λ .

Note. The RMS spectrum width is equivalent to the weighted average spectrum width, which can more accurately reflect the spectral characteristics.

3.2 -3dB spectral width Under standard operating conditions, the wavelength interval between two points of the spectral line where the amplitude of the peak wavelength of the main longitudinal mode drops by half, where $-3\text{dB} = 10\lg(1/2)$.

3.3 -20dB spectral width Under standard operating conditions, the amplitude of the peak wavelength of the main longitudinal mode drops by 20dB by the wavelength interval between two points of the spectral line, where $-20\text{dB} = 10\lg(1/100)$.

3.4 The relative intensity of the spectrum is the wavelength range between the two wavelength points with the largest distance corresponding to a specific ratio of its peak.