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JJG

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

JJG 965-2013

Replacing JJG 965-2001

**Verification Regulation of Optical Power Meter in
Telecommunication
(English Translation)**

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Introduction

JJF1002 "national verification procedures write rules", JJF1059.1 "Evaluation and Expression of Uncertainty in Measurement" Constitute support this protocol revision of the

basic family of specifications. The first release of alternative procedures JJG 965-2001.

Compared with JJG 965-2001, in addition to the constitution made in accordance with section JJF1002-2010 and format changes in addition, the main technical changes are as follows.

--- Verification by the power range (-50 ~ 0) dBm adjusted (-80 ~ 27) dBm. Corresponding meter with control, increasing the distributed feedback (DFB) laser light source and the optical amplifier requirements, while increasing the measuring light Power greater than 10dBm when test methods.

--- Optical power operating wavelength of 1310nm and 1550nm two original band changed to (600 ~ 1700) nm the wavelength range to meet the test requirements of calibration wavelengths.

--- Metering performance requirements are no longer hot zone component type or photoelectric-type power meter, uniform requirement.

--- Optics, optical power measurement range is no longer as a test project.

Test methods --- nonlinearity error, increasing the test carried out by reference power meter comparison method formula.

--- Increased Uncertainty Evaluation examples (Appendix C).

Communication with the power meter test procedures

1 Scope

The order applies to the wavelength range (600 ~ 1700) nm, power measurement range (-80 ~ 27) dBm through Credit power meter initial verification, subsequent verification and the use of checks.

Unit 2

Typically optical power in watts (W) series characterized by power units W is selected countries in the International System of Units with special names derived units. The differential decibels (dB) is a national non-selected SI units.

In addition to engineering practice of using the differential unit dB, also accustomed to absolute power decibels (dBW) series to represent the magnitude of the power.

These two units often appear in the same specification and displays the value of the power meter's. Watt units Power value (W) represented by (PW) can be converted into a power value in absolute power units decibels (PdBW). In terms of public Formula see Equation (1) and Equation (2).

$$PdBW = 10\lg PW1W$$

$$PdBm = 10\lg PmW1mW$$

3 Overview

Communication optical power meter is laying communication lines, equipment maintenance, research and used in the production of important equipment. main Output power and power stability, the optical transmission line is used to measure the average transmission power of the light emitting end machine; a light receiving end Sensitivity of the machine; a variety of insertion loss and attenuation amount of passive components.

Communication usually consists of three parts, detectors, signal processing and display system with an optical power meter. Due to the use of different Detectors, optical power meter is divided into the amount of hot type and photoelectric type. Calorimeter power meter detector is based on energy conversion and the principle of conservation of energy produced by the light absorber, thermoelectric conversion elements and DC calibration system components, the advantages of spectrum in response to small, but demanding environmental conditions, and the slow response power measurement, the measuring range is narrow. Optical power meter the probe is the use of semiconductor optoelectronic device fabrication, the advantage of strong adaptability to environmental conditions, wide measuring range, measuring the amount of speed, but the uncertainty infer hot type is large. Both types are available through the power meter or computer monitor Reading optical power.

4 metering performance requirements 4.1 optical power relative indication error Optical power relative indication error of $\leq 10\%$.

4.2 Nonlinear optical power correction factor $(-80 \sim 0)$ dBm. better than $\pm 2\%$;