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**Calibration Specification for Photodetector Bandwidth
Measuring Instruments
(English Translation)**

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Introduction

JJF 1071-2010 "Rules for the preparation of national metrological calibration specifications", JJF 1001-2011 "General measurement terms and Definition ", JJF 1059.1-2012" measurement uncertainty assessment and representation "together constitute the calibration standard development work of the basic series of norms.

This specification is the first release.

Standard for Calibration of Bandwidth Tester for Photodetector

1 Scope

This specification applies to the calibration of the frequency response bandwidth parameters in the photodetector bandwidth tester or bandwidth measurement device.

2 terms and units of measurement 2.1 frequency response when a signal of constant amplitude and frequency change is input to the electronic instrument system, the relative output of the measuring system response. This specification refers specifically to the ratio of the response current or voltage of the high speed photodetector to the input optical power.

Note: usually according to the measured photodetector response to the microwave power and the measured output impedance of the measured response voltage, and then calculate the frequency Sound curve. At present, the output impedance of most high-speed photodetectors is 50ohm, so the frequency can be calculated directly according to the microwave power ring. Ie the frequency response is calculated by the formula (1).

$$R_f = -10 \lg$$

P_{ef}

P_{of}

Where.

R_f --- relative frequency response, dB;

P_{ef} --- modulation frequency f for the device response to electrical power, mW;

P_{of} --- device when the modulation frequency f of the incident optical power, mW.

2.2 frequency response bandwidth in the high-speed photodetector frequency response curve, the frequency response decreased by 3dB when the corresponding frequency value, the unit Expressed in Hz.

3 Overview

Photoelectric detector bandwidth tester is used to measure photoelectric detector, photoelectric receiver, optical transceiver module and other photoelectric the device for the bandwidth parameters of the device. The measurement method is optical modulation

scanning method, using the microwave source output sine sweep signal to modulate the direct current of the light source, thereby obtaining a modulated optical signal which is passed through the photodetector for the microwave signal, measure the power of the microwave signal, get the frequency response curve, read the frequency response decreased by 3dB the corresponding modulation frequency can be measured photodetector frequency response bandwidth. Schematic diagram shown in Figure 1.

Figure 1 photoelectric detector bandwidth tester schematic diagram