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PEOPLE'S REPUBLIC OF CHINA

JJF 1758-2019

Calibration Specification for Low Frequency Phase Shifters and Phase Generators

低频移相器及相位发生器校准规范低频移相器及相位发生器校准规范

(English Translation)

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7 Recalibration time interval (6)

Appendix A Original Record Format (7)

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Appendix C Examples of Uncertainty Evaluation of Calibration Results of Main Items (11)

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Introduction

This specification is based on JJF 1071-2010 "Rules for Compiling National Measurement and Calibration Specifications" and JJF 1059.1-2012 Compilation of "Measurement Uncertainty Evaluation and Representation".

This specification is a revision of JJG530-88 "Regulations for Verification of Low Frequency Phase Shifters (Trial)" as follows.

--- The name of the original regulation was "Verification Regulation of Low Frequency Phase Shifter (Trial)", which is now revised to "Low Frequency Phase Shifter and Phase Calibration Specification of Bit Generator ";

--- Added the calibration of the phase generator, the calibration items include output frequency, output sine wave amplitude, output positive Sine wave total harmonic distortion and output phase shift;

--- The frequency range is extended from 50Hz ~ 50kHz to 1Hz ~ 100kHz.

Previous releases of this specification.

--- JJG530-1988.

Calibration specification for low frequency phase shifter and phase generator

1 Scope

This specification applies to the calibration of low-frequency phase shifters and phase generators with frequencies in the range of 1 Hz to 100 kHz.

2 Overview

The low-frequency phase shifter makes the output signal have a certain phase difference with respect to the input signal through the phase-shift network.

As a dual-channel signal generator, the phase generator can simultaneously output two channels of the same frequency with precisely adjustable phase difference Signal, and the output amplitude of each channel can be adjusted independently.

Low-frequency phase shifters and phase generators are mainly used in automatic control systems, radio navigation ranging and positioning systems, and it can be used as a phase standard to calibrate phase measurement equipment such as frequency response analyzers and low-frequency phase meters.

3 Measurement characteristics

3.1 Output frequency Frequency range. 1Hz ~ 100kHz;

Maximum allowable error. ± 1 x 10-4.

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3.2 Output sine wave amplitude Amplitude range. 50mV ~ 10V;

Maximum allowable error. ± (0.5% ~ 2%) (10Hz ~ 100kHz).

3.3 Total harmonic distortion of output sine wave Range. 0.01% ~ 0.3%.

3.4 Output phase shift Frequency range. 1Hz ~ 100kHz;

Phase shift range. 0 ° ~ 360 °;

Maximum allowable error. ± (0.02 ° ~ 0.2 °) (low-frequency phase shifter);

± (0.01 ° ~ 0.5 °) (phase generator).

Note: The above technical indicators are not used to determine eligibility, only for reference.

4 Calibration conditions

4.1 Environmental conditions

a) Ambient temperature. 23 °C ± 5 °C;

b) Relative humidity. <=80%;

c) Power requirements. voltage (220V ± 11V), frequency (50Hz ± 1Hz);

d) Others. There are no mechanical vibrations and electromagnetic interference that affect the normal operation of the instrument.

4.2 Measurement standards and other equipment

4.2.1 General counter

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