

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

JJG 840-2015

Replacing JJG 840-1993

Function Generators (English Translation)

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Introduction

This procedure is a revised version of the JJG 840-1993 function signal generator verification procedure. The amendments are as follows.

The original procedure name is "function signal generator", now changed to "function generator".

The original program "output amplitude of the test", with the oscilloscope to measure the amplitude, the function generator output amplitude technical indicators More than 1% is no longer applicable, revised directly with a digital voltmeter to detect the effective amplitude of the waveform amplitude; by the waveform coefficient Calculate the peak and peak values of the measured waveform amplitude.

The original program with a voltmeter and oscilloscope test "sine wave amplitude flatness", no longer meet the frequency up to several hundred trillion Hertz, frequency response indicators up to 1% of the function generator, revised directly with a power meter or measurement receiver test is the amplitude of the sine wave amplitude.

Distortion parameters. to retain the original program "sine wave total distortion coefficient of the test", revised after the increase in harmonic distortion Number, and as a selected item.

The original procedure "triangular wave linear test", the matching load connection complex, general formula, easy to operate, repair After the replacement with 50ohm matching load; the formula was refined, and in Appendix D gives the least squares fitting Formula and measurement program reference flow.

Since most of the function generator technical specifications do not give the technical indicators of the modulation function and only given the modulation model or the relevant function of the parameters, so the procedures for the modulation function only for the normal check.

The currently produced function generator does not require the attenuator specification, and the revised procedure has canceled this parameter.

The previous release of this order is.

--- JJG 840-1993.

Function generator verification procedure

1 Scope

This procedure applies to the first verification of the function generator at frequencies below 250 MHz, subsequent verification and use Check in.

2 Overview

Function generator is a direct digital synthesis (DDS) generated sine wave, square wave, triangular wave, pulse wave and tune (AM), FM (FM), phase modulation (PM), frequency shift keying (FSK), group pulse (BURST), sweep (SWEEP) and other time function waveform instruments, widely used in radio frequency measurement parameters.

3 Measurement performance requirements

3.1 Frequency

Frequency range. 0.1Hz ~ 250MHz Frequency accuracy. $5 \times 10^{-3} \sim 1 \times 10^{-8}$ 3.2 range DC voltage amplitude. $\pm 20V$ DC voltage amplitude error. $\pm 0.1\% \sim \pm 10\%$ AC voltage amplitude. 5mV ~ 55V (peak and peak) (high impedance load 1kHz) 5mV ~ 10V (peak and peak) (50ohm load 1kHz) AC voltage amplitude error. $\pm 0.5\% \sim \pm 10\%$ Sine wave amplitude flatness. 100mV ~ 10V (peak and peak) (1kHz ~ 250MHz);

$\pm 0.1dB \sim \pm 1dB$

3.3 Distortion

Total harmonic distortion. 0.02% to 1.0% (frequency range 20Hz ~ 20kHz, peak-to-peak voltage 1V) Harmonic distortion. -70dBc ~ -25dBc (frequency range 0.1Hz ~ 250MHz, peak-to-peak voltage 1V Time)

3.4 Triangular wave/oblique linearity Triangular wave/oblique linearity. 0.1% to 0.5% (1V peak to peak, 1kHz) 3.5 square wave/pulse characteristics Rise time. 1ns ~ 10 μ s (5V peak and peak) Overshoot. 1% to 20% Air ratio. 5% to 95% Air ratio accuracy. better than 2%