

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

JJF 1111-2003

Replacing JJG 437-1989

**Calibration Specification for Modulation Meters
(English Translation)**

Issued on: November 24, 2003

Implemented on: February 24, 2004

Issued by: The General Administration of Quality Supervision, Inspection and Quarantine issued, This specification was approved by the General Administration of Quality Supervision, Inspection and Quarantine on November 24, 2003, and

Table of Contents

1	Scope (1)
2	Citations (1)
3	Overview (1)
4	Measurement characteristics (1)
4.1	FM frequency offset measurement (1)
4.2	Adjustment amplitude measurement (2)
4.3	Phase shift phase shift measurement (2)
4.4	Residual frequency modulation (2)
4.5	Remaining amplitude modulation (2)
4.6	Remaining phase modulation (2)
4.7	AM suppression during FM measurement (2)
4.8	Frequency modulation suppression during amplitude modulation measurement (2)
4.9	Amplitude modulation suppression during phase modulation measurement (2)
4.10	Demodulation output distortion during FM measurement (2)
4.11	Demodulation output distortion during amplitude modulation measurement (3)
4.12	Demodulation output distortion during phase modulation measurement (3)
5	Calibration conditions (3)
5.1	Environmental conditions (3)
5.2	Standards and other equipment for calibration (3)
6	Calibration items and calibration methods (4)
6.1	Appearance and normality check (4)
6.2	Calibration of FM frequency offset measurement (4)
6.3	Calibration of amplitude measurement (5)
6.4	Calibration of phase shift phase shift measurement (5)
6.5	Measurement of residual frequency modulation (6)
6.6	Measurement of residual amplitude modulation (7)
6.7	Measurement of residual phase modulation (7)
6.8	Measurement of amplitude modulation suppression during frequency modulation measurement (7)
6.9	Measurement of frequency modulation suppression during amplitude modulation measurement (8)
6.10	Calibration of amplitude modulation suppression during phase modulation measurement (8)

6.11 Measurement of Demodulation Output Distortion during FM Measurement	(9)
6.12 Measurement of Demodulation Output Distortion during AM Measurement	(9)
6.13 Measurement of Demodulation Output Distortion during Phase Modulation Measurement	(9)
7 Expression of calibration results	(9)
8 Re-study interval	(10)
Appendix A Calibration Record Format	(11)
Appendix B Example of Uncertainty Analysis of Measurement Results of Major Projects	(18)

8 Re-study interval (10)

Appendix A Calibration Record Format (11)

Appendix B Example of Uncertainty Analysis of Measurement Results of Major Projects (18)

Modulation gauge calibration specification

1 Scope

This calibration specification applies to the calibration of a modulation meter.

2 Citations

JJF 1059-1999 "Measurement and Expression of Measurement Uncertainty".

3 Overview

The modulation meter is used to measure the modulation parameters of the RF modulated signal. Modulation parameters include the most FM signal Large frequency offset (referred to as frequency offset), modulation depth of amplitude modulation signal (referred to as amplitude modulation) and maximum phase of phase modulation signal Offset (referred to as phase shift) and modulation distortion. The common modulation measuring instrument consists of five parts. high frequency amplification and decay Subtraction, local oscillator and mixing, IF amplification, detection (frequency discrimination, envelope detection, etc.) and display, as shown in Figure 1. Due to inspection the wave method is different, and the measurement results are different. There are three types of peaks, RMS and average. Sinusoidal modulation when the peak value is twice the effective value, the effective value is the average value of $\pi/2$.

Times. Commonly used detection method is peak value, measurement result Also expressed as a peak. In residual frequency (or amplitude modulation, or phase modulation) measurements, rms detection and rms are typically used.

Said.

figure 1

4 Measurement characteristics

4.1 FM frequency offset measurement Carrier frequency range. (0.15~1300)MHz

Modulation frequency range. (0.02~200) kHz Frequency offset measurement range.

(0.1~400) kHz Frequency offset measurement tolerance limit. $\pm 3\%$