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JJG

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

JJG 1070-2011

**Verification Regulation of Standard Hydrophones in the
Frequency Range 0.5 MHz to 5 MHz (Two-transducer
Reciprocity Method)
(English Translation)**

Issued on: July 4, 2011

Implemented on: October 4, 2011

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

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0.5 MHzto5MHz (Two-transducerReciprocityMethod)

Issued on. 2011-07-04 2011-10-04 implementation the State Administration of Quality Supervision, Inspection and Quarantine released 0.5MHz ~ 5MHz standard hydrophone (B transducer reciprocity method) test procedures the regulations by the State Administration of Quality Supervision, Inspection and Quarantine approved on July 4, 2011, and from from October 4, 2011 into effect.

Focal point. the National Committee of the acoustic measurement technology Drafted by. China Shipbuilding Industry Corporation seventh fifteen Institute China Institute of Metrology the measurement procedure commissioned the National Technical Committee is

responsible for interpreting acoustics the drafters of the regulations.

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5 Metering performance requirements (2)

5.1

of the work (2)

7.5 Test cycle (7)

Appendix A calculation of the effective radius of the transducer (8)

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Appendix C calculated correction factor k (10)

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Measurement Uncertainty Appendix E Examples (14) 0.5MHz ~ 5MHz standard hydrophone (two transducer reciprocity method) test procedures the procedure using the national standard GB/T 15611-1995 "high frequency acoustic hydrophone calibration" in the two transducers Reciprocity law.

1 Scope

This procedure is applied at a frequency standard hydrophone within 0.5MHz ~ 5MHz range used for initial verification, Verification and subsequent use of the check.

2 Citations

The regulations cited in the following documents.

JJF1001-1998 common measurement terms and definitions JJF1034-2005 acoustic measurement terminology and definitions GB/T 3102.7-1993 Quantities and units of acoustics GB/T 3223-1994 Acoustics underwater acoustic transducer free-field calibration method GB/T 3947-1996 Acoustics Terminology GB/T 15611-1995 high frequency acoustic hydrophone calibration IEC 62127-2:2007 ultrasound - Hydrophones - Part II. up to 40MHz frequency ultrasound field school Associate (Ultrasonics-Hydrophones-Part 2. Calibrationforultrasonicfieldsupto40MHz) when using this procedure, it should pay attention to using the currently valid version of the documents cited.

3 terminology and units of measurement this procedure uses JJF1001-1998, JJF1034-2005, GB/T 3947-1996 and the related terms definition.

This procedure uses quantities and units GB/T 3102.7-1993 prescribed.

NOTE: If no special instructions, this procedure all the voltage, current, sound pressure values refer to valid values.

3.1 from Easy calibration self-reciprocitycalibration Using only reciprocal transducer and a reflector made free-field reciprocity calibration.

NOTE: Self-calibration is generally easy to apply to the high-frequency hydrophones.

3.2 two transducers reciprocity calibration two-transducerreciprocitycalibration by the auxiliary transducer generates and easily via self calibration value be known sound field hydrophone calibration methods.

3.3 Apparent send current response apparenttransmittingcurrentresponse Assuming perfect plane wave measurement conditions, the plane wave received by the sound pressure applied to the input terminal of the current ratio.

Symbols. $S \cdot 1$

Unit. $\text{Pa} \cdot \text{m/A}$

3.4 apparent free field [voltage] sensitivity apparentfree-field [voltage] sensitivity Under the assumption that the ideal plane wave measurement conditions, the open circuit voltage output of the hydrophone and hydrophone introduced in free field Than the sound pressure at the position of the acoustic center of its existence before.