INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY

Contamination Control Division
Recommended Practice 024.1

IEST-RP-CC024.1

Measuring and Reporting Vibration in Microelectronics Facilities

INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY
1827 Walden Office Square, Suite 400 |
Schaumburg, IL 60173 USA
Phone: (847) 981-0100 • Fax: (847) 981-4130

E-mail: iest@iest.org • Web: www.iest.org

This Recommended Practice is published by the INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY to advance the technical and engineering sciences. Its use is entirely voluntary, and determination of its applicability and suitability for any particular use is solely the responsibility of the user.

This Recommended Practice was prepared by and is under the jurisdiction of Working Group 024 of the IEST Contamination Control Division.

Sixth printing, July 2017

ISBN 978-1-877862-24-3

PROPOSAL FOR IMPROVEMENT: The Working Groups of the INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY are continually working on improvements to their Recommended Practices and Reference Documents. Suggestions from those who use these documents are welcome. If you have a suggestion regarding this document, please use the online Proposal for Improvement form found on the IEST website at www.iest.org/proposal/form.html.

INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY
1827 Walden Office Square, Suite 400 | Schaumburg, IL 60173 USA
Phone: (847) 981-0100 • Fax: (847) 981-4130
E-mail: iest@iest.org • Web: www.iest.org

Measuring and Reporting Vibration in Microelectronics Facilities
IEST-RP-CC024.1

CONTENTS

INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY
Contamination Control Division
Recommended Practice 024.1

Measuring and Reporting Vibration in Microelectronics Facilities IEST-RP-CC024.1

1 SCOPE AND LIMITATIONS

1.1 Scope

Equipment used in the manufacture, measurement, and inspection of integrated circuits is sensitive to vibration and sound. It is therefore necessary to establish levels of vibration sensitivity for them and to ensure that vibrations occurring in the facility or at the site at which they are located are below those levels.

Such equipment will be referred to as process tools in this Recommended Practice (RP).

This RP is intended to provide guidance for use in the microelectronics industry. However, it may also be applicable in pharmaceutical and biological research, metrology laboratories, and other contexts in which vibration control is important.

This RP provides guidelines for conducting vibration measurements and reporting vibration data, specifically for:

a) Selecting suitable instrumentation and hardware for use in vibration measurements.

b) Establishing sensitive process tool vibration thresholds.

c) Conducting vibration measurements on sites and in facilities.

d) Reporting results of vibration measurements in a uniform and consistent format.

1.2 Limitations

This Recommended Practice focuses on vibration. Although control of acoustical disturbances is equally important, it is not the subject of this RP. However, ANSI documents *S1.1, S1.4, S1.11,* and *S1.13* (see section 2) are available for those seeking guidance in measuring acoustical noise.

2 REFERENCES

ANSI-S1.1: Acoustical Terminology, Including Mechanical Shock and Vibration. American National Standards Institute.

ANSI-S1.4: Specification for Sound Level Meters. American National Standards Institute.

ANSI-S1.11: Specification for Octave-Band and Fractional-Band Analog and Digital Filters. American National Standards Institute.

ANSI-S1.13: Methods for the Measurement of Sound Pressure Levels. American National Standards Institute.

Bendat, J.S., and A.G. Piersol: *Random Data: Analysis and Measurement Procedures.* 2nd ed., Wiley-Interscience, New York: 1986.

Biggs, J.M.: *Introduction to Structural Dynamics*. McGraw-Hill, New York: 1964.

Ewins, D.J.: *Modal Testing: Theory and Practice.* Research Studies Press, Letchworth, England: 1984.

