

# DIN EN ISO 11202:2023-02 (E)

Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections (ISO 11202:2010 + Amd.1:2020) (includes Amendment :2021)

---

<b>Contents</b>		<b>Page</b>
Foreword .....		5
<b>A1</b> European foreword to Amendment A1 <b>A1</b> .....		6
<b>A1</b> Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered <b>A1</b> .....		7
<b>A1</b> Foreword to Amendment 1 <b>A1</b> .....		8
Introduction .....		9
1 Scope .....		10
1.1 General .....		10
1.2 Types of noise and noise sources .....		10
1.3 Test environment .....		10
1.4 Work station and other specified positions .....		11
2 Normative references .....		11
3 Terms and definitions .....		12
4 Instrumentation .....		17
4.1 General .....		17
4.2 Calibration .....		17
5 Procedures to determine the local environmental correction, $K_{3A}$ .....		17
5.1 General .....		17
5.2 Identifiable dominant source .....		17
5.3 Dominant source not identifiable .....		18
5.4 Selection of method to be used .....		18
6 Test environment .....		18
6.1 General .....		18
6.2 Criterion for the adequacy of the test environment .....		18
6.3 Enclosed work station positions .....		18
6.4 Criteria for background noise .....		19
6.4.1 General .....		19
6.4.2 Corrections for background noise .....		19
6.5 Ambient conditions during measurements .....		20
7 Measured quantities .....		20
8 Quantities to be determined .....		20
9 Mounting and operation of source under test .....		21
9.1 General .....		21
9.2 Location of source .....		21
9.3 Mounting of source .....		22
9.3.1 General .....		22
9.3.2 Hand-held machines .....		22
9.3.3 Base-mounted and wall-mounted machines .....		22
9.4 Auxiliary equipment .....		22
9.5 Operation of source during test .....		23

10	Microphone positions .....	23
10.1	General .....	23
10.2	Microphone position(s) for a seated operator.....	24
10.3	Microphone position(s) for a standing, stationary operator.....	24
10.4	Microphone position(s) for an operator moving along a specified path.....	24
10.5	Microphone positions for bystanders and for unattended machines .....	24
11	Measurements .....	25
11.1	Measurement time interval .....	25
11.1.1	General .....	25
11.1.2	Steady noise.....	25
11.1.3	Non-steady noise.....	25
11.1.4	Measurements in frequency bands .....	25
11.1.5	Summarization of sub-measurement time intervals.....	26
11.2	Measurement procedure .....	26
11.2.1	General .....	26
11.2.2	Repetition of measurements .....	26
11.2.3	Procedure for impulsive noise.....	26
12	Measurement uncertainty .....	27
12.1	Methodology .....	27
12.2	Determination of $\sigma_{omc}$ .....	27
12.3	Determination of $\sigma_{R0}$ .....	28
12.3.1	General .....	28
12.3.2	Round robin test .....	28
12.3.3	Modelling approach for $\sigma_{R0}$ .....	29
12.4	Typical upper bound values of $\sigma_{R0}$ .....	29
12.5	Total standard deviation, $\sigma_{tot}$ and expanded uncertainty, $U$ .....	29
13	Information to be recorded .....	30
13.1	General .....	30
13.2	Source under test.....	30
13.3	Test conditions .....	30
13.4	Acoustic environment.....	31
13.5	Instrumentation.....	31
13.6	Location of work station(s).....	31
13.7	Noise data .....	31
14	Test report .....	32
Annex A	(normative) Environmental correction for a work station — Determination of the local environmental correction, $K_3$ .....	33
A.1	Local environmental correction for a localized and well-defined sound-radiating area of the machine surface .....	33
A.1.1	General .....	33
A.1.2	Determination of the local environmental correction, $K_3$ .....	33
A.1.3	Grade of accuracy .....	34
A.2	Local environmental correction with approximate determination of the apparent work station directivity index .....	35
A.2.1	General .....	35
A.2.2	Approximate determination of the apparent work station directivity index .....	35
A.2.3	Determination of the environmental correction, $K_2$ .....	35
A.2.4	Determination of the local environmental correction, $K_3$ .....	36
A.2.5	Grade of accuracy .....	37

<b>Annex B (normative) Criteria for background noise for measurements in frequency bands.....</b>	<b>39</b>
<b>B.1 Absolute criteria for background noise .....</b>	<b>39</b>
<b>B.2 Relative criteria for frequency band measurements .....</b>	<b>39</b>
<b>B.3 Relative criteria for A-weighted level determined from frequency band levels .....</b>	<b>39</b>
<b>B.4 Failure to meet relevant criteria .....</b>	<b>39</b>
<b>Annex C (informative) Guidance on the development of information on measurement uncertainty .....</b>	<b>41</b>
<b>C.1 General.....</b>	<b>41</b>
<b>C.2 Considerations on the total standard deviation, <math>\sigma_{\text{tot}}</math>.....</b>	<b>41</b>
<b>C.3 Considerations on <math>\sigma_{\text{omc}}</math>.....</b>	<b>41</b>
<b>C.4 Considerations on <math>\sigma_{R0}</math>.....</b>	<b>43</b>
<b>C.4.1 General.....</b>	<b>43</b>
<b>C.4.2 <math>\square_{A1}</math> Contributions to the uncertainty, <math>\sigma_{R0}</math>, when the estimate of the local environmental correction, <math>K_3</math>, is based on a localized and well-defined sound-radiating area of the machine surface <math>\square_{A1}</math> .....</b>	<b>43</b>
<b>C.4.3 <math>\square_{A1}</math> Contributions to the uncertainty, <math>\sigma_{R0}</math>, when the estimate of the local environmental correction, <math>K_3</math>, is based on an approximate determination of the apparent work station directivity index <math>\square_{A1}</math> .....</b>	<b>46</b>
<b>C.5 Combined standard uncertainty.....</b>	<b>48</b>
<b>C.6 Measurement uncertainty based on reproducibility data .....</b>	<b>48</b>
<b>Annex D (informative) Principles of the methodology .....</b>	<b>49</b>
<b>Annex E (informative) Example of a test table .....</b>	<b>50</b>
<b>Bibliography.....</b>	<b>51</b>