

# DIN EN ISO 3095:2014-07 (E)

## Acoustics - Railway applications - Measurement of noise emitted by railbound vehicles (ISO 3095:2013)

---

<b>Contents</b>		<b>Page</b>
Foreword .....		4
Introduction .....		5
<b>1</b>	<b>Scope .....</b>	<b>6</b>
<b>2</b>	<b>Normative references .....</b>	<b>6</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>7</b>
<b>4</b>	<b>Instrumentation and calibration .....</b>	<b>10</b>
<b>4.1</b>	<b>Instrumentation .....</b>	<b>10</b>
<b>4.2</b>	<b>Calibration .....</b>	<b>10</b>
<b>5</b>	<b>Stationary test .....</b>	<b>10</b>
<b>5.1</b>	<b>General .....</b>	<b>10</b>
<b>5.2</b>	<b>Environmental conditions .....</b>	<b>10</b>
<b>5.3</b>	<b>Track conditions .....</b>	<b>11</b>
<b>5.4</b>	<b>Vehicle conditions .....</b>	<b>11</b>
<b>5.5</b>	<b>Measurement positions .....</b>	<b>12</b>
<b>5.6</b>	<b>Measured quantities .....</b>	<b>13</b>
<b>5.7</b>	<b>Test procedure .....</b>	<b>13</b>
<b>5.8</b>	<b>Data processing .....</b>	<b>14</b>
<b>6</b>	<b>Constant speed test .....</b>	<b>15</b>
<b>6.1</b>	<b>Environmental conditions .....</b>	<b>15</b>
<b>6.2</b>	<b>Track conditions .....</b>	<b>16</b>
<b>6.3</b>	<b>Vehicle conditions .....</b>	<b>18</b>
<b>6.4</b>	<b>Measurement positions .....</b>	<b>21</b>
<b>6.5</b>	<b>Measured quantities .....</b>	<b>22</b>
<b>6.6</b>	<b>Test procedure .....</b>	<b>22</b>
<b>6.7</b>	<b>Data processing .....</b>	<b>25</b>
<b>7</b>	<b>Acceleration test from standstill .....</b>	<b>26</b>
<b>7.1</b>	<b>General .....</b>	<b>26</b>
<b>7.2</b>	<b>Environmental conditions .....</b>	<b>26</b>
<b>7.3</b>	<b>Track conditions .....</b>	<b>27</b>
<b>7.4</b>	<b>Vehicle conditions .....</b>	<b>27</b>
<b>7.5</b>	<b>Maximum level method .....</b>	<b>28</b>
<b>7.6</b>	<b>Averaged level method .....</b>	<b>30</b>
<b>8</b>	<b>Braking test .....</b>	<b>31</b>
<b>8.1</b>	<b>Environmental conditions .....</b>	<b>31</b>
<b>8.2</b>	<b>Track conditions .....</b>	<b>32</b>
<b>8.3</b>	<b>Vehicle conditions .....</b>	<b>32</b>
<b>8.4</b>	<b>Measurement positions .....</b>	<b>32</b>
<b>8.5</b>	<b>Measurement quantity .....</b>	<b>33</b>
<b>8.6</b>	<b>Test procedure .....</b>	<b>33</b>
<b>8.7</b>	<b>Data processing .....</b>	<b>33</b>
<b>9</b>	<b>Quality of the measurements .....</b>	<b>34</b>

9.1	Deviations from the requirements .....	34
9.2	Measurement tolerances .....	34
9.3	Measurement spread .....	34
9.4	Measurement uncertainties .....	34
10	Test report .....	34
Annex A (normative) Method to characterize the impulsive character of the noise .....		36
Annex B (normative) Tests at constant speed -- Special cases .....		37
Annex C (normative) Method to assess acceptable small deviations from acoustic rail roughness requirements .....		42
Annex D (informative) Guidance for light rail vehicles measurement .....		44
Annex E (informative) Comparability of test situations in terms of acoustic rail roughness .....		48
Annex F (informative) Additional measurements .....		51
Annex G (informative) Quantification of measurement uncertainties according to ISO/IEC Guide 98-3:2008 [8] .....		52
Bibliography .....		57