

### 12.2.3 V90-2.0 MW Sound Power Level at Hub Height

#### V90-2.0 MW Sound Power Level at Hub Height, Noise Mode 0

| V90-2.0 MW Sound Power Level at Hub Height, Noise Mode 0 |  |       |       |       |
|--|--|-------|-------|-------|
| <b>Conditions for Sound Power Level:</b>                 | <b>Measurement standard IEC 61400-11 ed. 2 2002</b><br><b>Wind shear: 0.16</b><br><b>Maximum turbulence at 10 metre height: 16%</b><br><b>Inflow angle (vertical): 0 ±2°</b><br><b>Air density: 1.225 kg/m<sup>3</sup></b> |       |       |       |
| Hub Height   | 80 m   | 95 m  | 105 m | 125 m |
| L <sub>WA</sub> @ 3 m/s (10 m above ground) [dBA]        | 92.6   | 92.8  | 92.9  | 93.0  |
| Wind speed at hub height [m/s]                           | 4.2  | 4.3   | 4.4   | 4.5   |
| L <sub>WA</sub> @ 4 m/s (10 m above ground) [dBA]        | 95.6   | 96.1  | 96.4  | 96.9  |
| Wind speed at hub height [m/s]                           | 5.6  | 5.7   | 5.8   | 6.0   |
| L <sub>WA</sub> @ 5 m/s (10 m above ground) [dBA]        | 99.8   | 100.3 | 100.6 | 101.2 |
| Wind speed at hub height [m/s]                           | 7.0  | 7.2   | 7.3   | 7.5   |
| L <sub>WA</sub> @ 6 m/s (10 m above ground) [dBA]        | 102.8  | 103.0 | 103.1 | 103.3 |
| Wind speed at hub height [m/s]                           | 8.4  | 8.6   | 8.7   | 9.0   |
| L <sub>WA</sub> @ 7 m/s (10 m above ground) [dBA]        | 103.7  | 103.8 | 103.8 | 103.8 |
| Wind speed at hub height [m/s]                           | 9.8  | 10.0  | 10.2  | 10.5  |
| L <sub>WA</sub> @ 8 m/s (10 m above ground) [dBA]        | 104.0  | 104.0 | 104.0 | 104.0 |
| Wind speed at hub height [m/s]                           | 11.2   | 11.5  | 11.7  | 12.0  |
| L <sub>WA</sub> @ 9 m/s (10 m above ground) [dBA]        | 104.0  | 104.0 | 104.0 | 104.0 |
| Wind speed at hub height [m/s]                           | 12.6   | 12.9  | 13.1  | 13.5  |
| L <sub>WA</sub> @ 10 m/s (10 m above ground) [dBA]       | 104.0  | 104.0 | 104.0 | 104.0 |
| Wind speed at hub height [m/s]                           | 13.9   | 14.3  | 14.6  | 15.0  |
| L <sub>WA</sub> @ 11 m/s (10 m above ground) [dBA]       | 104.0  | 104.0 | 104.0 | 104.0 |
| Wind speed at hub height [m/s]                           | 15.3   | 15.8  | 16.0  | 16.5  |
| L <sub>WA</sub> @ 12 m/s (10 m above ground) [dBA]       | 104.0  | 104.0 | 104.0 | 104.0 |
| Wind speed at hub height [m/s]                           | 16.7   | 17.2  | 17.5  | 18.0  |
| L <sub>WA</sub> @ 13 m/s (10 m above ground) [dBA]       | 104.0  | 104.0 | 104.0 | 104.0 |
| Wind speed at hub height [m/s]                           | 18.1   | 18.6  | 18.9  | 19.5  |

Table 12-21: V90-2.0 MW sound power level at hub height, noise mode 0.

**V90-2.0 MW Sound Power Level at Hub Height, Noise Mode 1**

| <b>V90-2.0 MW Sound Power Level at Hub Height, Noise Mode 1</b> |   |             |              |              |
|---|---|-------------|--------------|--------------|
| <b>Conditions for Sound Power Level:</b>                        | <b>Measurement standard IEC 61400-11 ed. 2 2002</b> |             |              |              |
|   | <b>Wind shear: 0.16</b>                             |             |              |              |
|   | <b>Maximum turbulence at 10 metre height: 16%</b>   |             |              |              |
|   | <b>Inflow angle (vertical): 0 ±2°</b>               |             |              |              |
|   | <b>Air density: 1.225 kg/m<sup>3</sup></b>          |             |              |              |
| <b>Hub Height</b>   | <b>80 m</b>   | <b>95 m</b> | <b>105 m</b> | <b>125 m</b> |
| L <sub>WA</sub> @ 3 m/s (10 m above ground) [dBA]               | 92.6  | 92.8        | 92.9         | 93.0         |
| Wind speed at hub height [m/s]                                  | 4.2   | 4.3         | 4.4          | 4.5          |
| L <sub>WA</sub> @ 4 m/s (10 m above ground) [dBA]               | 95.6  | 96.1        | 96.4         | 96.9         |
| Wind speed at hub height [m/s]                                  | 5.6   | 5.7         | 5.8          | 6.0          |
| L <sub>WA</sub> @ 5 m/s (10 m above ground) [dBA]               | 99.8  | 100.3       | 100.6        | 101.1        |
| Wind speed at hub height [m/s]                                  | 7.0   | 7.2         | 7.3          | 7.5          |
| L <sub>WA</sub> @ 6 m/s (10 m above ground) [dBA]               | 102.7   | 102.9       | 103.0        | 103.0        |
| Wind speed at hub height [m/s]                                  | 8.4   | 8.6         | 8.7          | 9.0          |
| L <sub>WA</sub> @ 7 m/s (10 m above ground) [dBA]               | 103.0   | 103.0       | 103.0        | 103.0        |
| Wind speed at hub height [m/s]                                  | 9.8   | 10.0        | 10.2         | 10.5         |
| L <sub>WA</sub> @ 8 m/s (10 m above ground) [dBA]               | 103.0   | 103.0       | 103.0        | 103.0        |
| Wind speed at hub height [m/s]                                  | 11.2  | 11.5        | 11.7         | 12.0         |
| L <sub>WA</sub> @ 9 m/s (10 m above ground) [dBA]               | 103.0   | 103.0       | 103.0        | 103.0        |
| Wind speed at hub height [m/s]                                  | 12.6  | 12.9        | 13.1         | 13.5         |
| L <sub>WA</sub> @ 10 m/s (10 m above ground) [dBA]              | 103.0   | 103.0       | 103.0        | 103.0        |
| Wind speed at hub height [m/s]                                  | 13.9  | 14.3        | 14.6         | 15.0         |
| L <sub>WA</sub> @ 11 m/s (10 m above ground) [dBA]              | 103.0   | 103.0       | 103.0        | 103.0        |
| Wind speed at hub height [m/s]                                  | 15.3  | 15.8        | 16.0         | 16.5         |
| L <sub>WA</sub> @ 12 m/s (10 m above ground) [dBA]              | 103.0   | 103.0       | 103.0        | 103.0        |
| Wind speed at hub height [m/s]                                  | 16.7  | 17.2        | 17.5         | 18.0         |
| L <sub>WA</sub> @ 13 m/s (10 m above ground) [dBA]              | 103.0   | 103.0       | 103.0        | 103.0        |
| Wind speed at hub height [m/s]                                  | 18.1  | 18.6        | 18.9         | 19.5         |

Table 12-22: V90-2.0 MW noise mode 1, sound power level at hub height.

**V90-2.0 MW Sound Power Level at Hub Height, Noise Mode 2**

| <b>V90-2.0 MW Sound Power Level at Hub Height, Noise Mode 2</b> |   |             |              |              |
|---|---|-------------|--------------|--------------|
| <b>Conditions for Sound Power Level:</b>                        | <b>Measurement standard IEC 61400-11 ed. 2 2002</b> |             |              |              |
|   | <b>Wind shear: 0.16</b>                             |             |              |              |
|   | <b>Maximum turbulence at 10 metre height: 16%</b>   |             |              |              |
|   | <b>Inflow angle (vertical): 0 ±2°</b>               |             |              |              |
|   | <b>Air density: 1.225 kg/m<sup>3</sup></b>          |             |              |              |
| <b>Hub Height</b>   | <b>80 m</b>   | <b>95 m</b> | <b>105 m</b> | <b>125 m</b> |
| L <sub>WA</sub> @ 3 m/s (10 m above ground) [dBA]               | 92.6  | 92.8        | 92.9         | 93.0         |
| Wind speed at hub height [m/s]                                  | 4.2   | 4.3         | 4.4          | 4.5          |
| L <sub>WA</sub> @ 4 m/s (10 m above ground) [dBA]               | 95.6  | 96.1        | 96.4         | 96.9         |
| Wind speed at hub height [m/s]                                  | 5.6   | 5.7         | 5.8          | 6.0          |
| L <sub>WA</sub> @ 5 m/s (10 m above ground) [dBA]               | 99.8  | 100.1       | 100.2        | 100.5        |
| Wind speed at hub height [m/s]                                  | 7.0   | 7.2         | 7.3          | 7.5          |
| L <sub>WA</sub> @ 6 m/s (10 m above ground) [dBA]               | 101.0   | 101.0       | 101.0        | 101.0        |
| Wind speed at hub height [m/s]                                  | 8.4   | 8.6         | 8.7          | 9.0          |
| L <sub>WA</sub> @ 7 m/s (10 m above ground) [dBA]               | 101.0   | 101.0       | 101.0        | 101.0        |
| Wind speed at hub height [m/s]                                  | 9.8   | 10.0        | 10.2         | 10.5         |
| L <sub>WA</sub> @ 8 m/s (10 m above ground) [dBA]               | 101.0   | 101.0       | 101.0        | 101.0        |
| Wind speed at hub height [m/s]                                  | 11.2  | 11.5        | 11.7         | 12.0         |
| L <sub>WA</sub> @ 9 m/s (10 m above ground) [dBA]               | 101.0   | 101.0       | 101.0        | 101.0        |
| Wind speed at hub height [m/s]                                  | 12.6  | 12.9        | 13.1         | 13.5         |
| L <sub>WA</sub> @ 10 m/s (10 m above ground) [dBA]              | 101.0   | 101.0       | 101.0        | 101.0        |
| Wind speed at hub height [m/s]                                  | 13.9  | 14.3        | 14.6         | 15.0         |
| L <sub>WA</sub> @ 11 m/s (10 m above ground) [dBA]              | 101.0   | 101.0       | 101.0        | 101.0        |
| Wind speed at hub height [m/s]                                  | 15.3  | 15.8        | 16.0         | 16.5         |
| L <sub>WA</sub> @ 12 m/s (10 m above ground) [dBA]              | 101.0   | 101.0       | 101.0        | 101.0        |
| Wind speed at hub height [m/s]                                  | 16.7  | 17.2        | 17.5         | 18.0         |
| L <sub>WA</sub> @ 13 m/s (10 m above ground) [dBA]              | 101.0   | 101.0       | 101.0        | 101.0        |
| Wind speed at hub height [m/s]                                  | 18.1  | 18.6        | 18.9         | 19.5         |

Table 12-23: V90-2.0 MW sound power level at hub height, noise mode 2.

**V90-2.0 MW Sound Power Level at Hub Height, Noise Mode 3**

| <b>V90-2.0 MW Sound Power Level at Hub Height, Noise Mode 3</b> |   |             |              |              |
|---|---|-------------|--------------|--------------|
| <b>Conditions for Sound Power Level:</b>                        | <b>Measurement standard IEC 61400-11 ed. 2 2002</b> |             |              |              |
|   | <b>Wind shear: 0.16</b>                             |             |              |              |
|   | <b>Maximum turbulence at 10 metre height: 16%</b>   |             |              |              |
|   | <b>Inflow angle (vertical): 0 ±2°</b>               |             |              |              |
|   | <b>Air density: 1.225 kg/m<sup>3</sup></b>          |             |              |              |
| <b>Hub Height</b>   | <b>80 m</b>   | <b>95 m</b> | <b>105 m</b> | <b>125 m</b> |
| LwA @ 3 m/s (10 m above ground) [dBA]                           | 92.5  | 92.5        | 92.6         | 92.7         |
| Wind speed at hub height [m/s]                                  | 4.2   | 4.3         | 4.4          | 4.5          |
| LwA @ 4 m/s (10 m above ground) [dBA]                           | 94.6  | 95.0        | 95.3         | 95.7         |
| Wind speed at hub height [m/s]                                  | 5.6   | 5.7         | 5.8          | 6.0          |
| LwA @ 5 m/s (10 m above ground) [dBA]                           | 98.8  | 99.3        | 99.6         | 100.1        |
| Wind speed at hub height [m/s]                                  | 7.0   | 7.2         | 7.3          | 7.5          |
| LwA @ 6 m/s (10 m above ground) [dBA]                           | 101.8   | 102.0       | 102.1        | 102.3        |
| Wind speed at hub height [m/s]                                  | 8.4   | 8.6         | 8.7          | 9.0          |
| LwA @ 7 m/s (10 m above ground) [dBA]                           | 103.5   | 103.8       | 103.8        | 103.8        |
| Wind speed at hub height [m/s]                                  | 9.8   | 10.0        | 10.2         | 10.5         |
| LwA @ 8 m/s (10 m above ground) [dBA]                           | 103.6   | 104.0       | 104.0        | 104.0        |
| Wind speed at hub height [m/s]                                  | 11.2  | 11.5        | 11.7         | 12.0         |
| LwA @ 9 m/s (10 m above ground) [dBA]                           | 104.0   | 104.0       | 104.0        | 104.0        |
| Wind speed at hub height [m/s]                                  | 12.6  | 12.9        | 13.1         | 13.5         |
| LwA @ 10 m/s (10 m above ground) [dBA]                          | 104.0   | 104.0       | 104.0        | 104.0        |
| Wind speed at hub height [m/s]                                  | 13.9  | 14.3        | 14.6         | 15.0         |
| LwA @ 11 m/s (10 m above ground) [dBA]                          | 104.0   | 104.0       | 104.0        | 104.0        |
| Wind speed at hub height [m/s]                                  | 15.3  | 15.8        | 16.0         | 16.5         |
| LwA @ 12 m/s (10 m above ground) [dBA]                          | 104.0   | 104.0       | 104.0        | 104.0        |
| Wind speed at hub height [m/s]                                  | 16.7  | 17.2        | 17.5         | 18.0         |
| LwA @ 13 m/s (10 m above ground) [dBA]                          | 104.0   | 104.0       | 104.0        | 104.0        |
| Wind speed at hub height [m/s]                                  | 18.1  | 18.6        | 18.9         | 19.5         |

Table 12-24: V90-2.0 MW sound power level at hub height, noise mode 3.