

6.3 Sound Curves, Mode 0

Sound Power Level at Hub Height		
Conditions for Sound Power Level:	Measurement standard IEC 61400-11 ed. 3 Maximum turbulence at hub height: 30% Inflow angle (vertical): 0 ±2° Air density: 1.225 kg/m ³	
Wind speed at hub height [m/s]	Sound Power Level at Hub Height [dBA] Mode 0 (Blades with serrated trailing edge)	Sound Power Level at Hub Height [dBA] Mode 0-0S (Blades without serrated trailing edge)
3	91.3	94.1
4	91.8	94.6
5	94.1	96.9
6	96.9	99.7
7	100.0	102.8
8	102.7	105.5
9	104.0	106.8
10	104.1	106.9
11	104.9	107.7
12	104.9	107.7
13	104.9	107.7
14	104.9	107.7
15	104.9	107.7
16	104.9	107.7
17	104.9	107.7
18	104.9	107.7
19	104.9	107.7
20	104.9	107.7

Original Instruction: T05 0081-5059 VER 03

T05 0081-5059 Ver 03 - Approved- Exported from DMS: 2019-05-20 by NELAN

7.3 Sound Curves, Sound Optimized Mode SO0

Sound Power Level at Hub Height	
Conditions for Sound Power Level:	Measurement standard IEC 61400-11 ed. 3 Maximum turbulence at hub height: 30% Inflow angle (vertical): 0 ±2° Air density: 1.225 kg/m ³
Wind speed at hub height [m/s]	Sound Power Level at Hub Height [dBA] Sound Optimized ModeSO0 (Blades with serrated trailing edge)
3	91.3
4	91.8
5	94.1
6	96.9
7	100.0
8	102.6
9	103.7
10	103.9
11	104.0
12	104.0
13	104.0
14	104.0
15	104.0
16	104.0
17	104.0
18	104.0
19	104.0
20	104.0

Original Instruction: T05 0081-5059 VER 03

T05 0081-5059 Ver 03 - Approved- Exported from DMS: 2019-05-20 by NELAN

7.6 Sound Curves, Sound Optimized Mode SO2

Sound Power Level at Hub Height	
Conditions for Sound Power Level:	Measurement standard IEC 61400-11 ed. 3 Maximum turbulence at hub height: 30% Inflow angle (vertical): 0 ±2° Air density: 1.225 kg/m ³
Wind speed at hub height [m/s]	Sound Power Level at Hub Height [dBA] Sound Optimized Mode SO2 (Blades with serrated trailing edge)
3	91.3
4	91.5
5	93.9
6	96.9
7	99.7
8	102.0
9	102.0
10	102.0
11	102.0
12	102.0
13	102.0
14	102.0
15	102.0
16	102.0
17	102.0
18	102.0
19	102.0
20	102.0

Original Instruction: T05 0081-5059 VER 03

T05 0081-5059 Ver 03 - Approved- Exported from DMS: 2019-05-20 by NELAN

7.9 Sound Curves, Sound Optimized Mode SO3

Sound Power Level at Hub Height	
Conditions for Sound Power Level:	Measurement standard IEC 61400-11 ed. 3 Maximum turbulence at hub height: 30% Inflow angle (vertical): 0 ±2° Air density: 1.225 kg/m ³
Wind speed at hub height [m/s]	Sound Power Level at Hub Height [dBA] Sound Optimized Mode SO3 (Blades with serrated trailing edge)
3	91.3
4	91.5
5	93.9
6	96.9
7	99.7
8	101.0
9	101.0
10	101.0
11	101.0
12	101.0
13	101.0
14	101.0
15	101.0
16	101.0
17	101.0
18	101.0
19	101.0
20	101.0

Original Instruction: T05 0081-5059 VER 03

T05 0081-5059 Ver 03 - Approved- Exported from DMS: 2019-05-20 by NELAN

7.12 Sound Curves, Sound Optimized Mode SO4

Sound Power Level at Hub Height	
Conditions for Sound Power Level:	Measurement standard IEC 61400-11 ed. 3 Maximum turbulence at hub height: 30% Inflow angle (vertical): 0 ±2° Air density: 1.225 kg/m ³
Wind speed at hub height [m/s]	Sound Power Level at Hub Height [dBA] Sound Optimized Mode SO4 (Blades with serrated trailing edge)
3	91.3
4	91.5
5	93.9
6	96.9
7	99.5
8	100.0
9	100.0
10	100.0
11	100.0
12	100.0
13	100.0
14	100.0
15	100.0
16	100.0
17	100.0
18	100.0
19	100.0
20	100.0

Original Instruction: T05 0081-5059 VER 03

T05 0081-5059 Ver 03 - Approved- Exported from DMS: 2019-05-20 by NELAN

7.15 Sound Curves, Sound Optimized Mode SO5

Sound Power Level at Hub Height	
Conditions for Sound Power Level:	Measurement standard IEC 61400-11 ed. 3 Maximum turbulence at hub height: 30% Inflow angle (vertical): 0 ±2° Air density: 1.225 kg/m ³
Wind speed at hub height [m/s]	Sound Power Level at Hub Height [dBA] Sound Optimized Mode SO5 (Blades with serrated trailing edge)
3	91.3
4	91.5
5	93.9
6	96.9
7	98.7
8	99.0
9	99.0
10	99.0
11	99.0
12	99.0
13	99.0
14	99.0
15	99.0
16	99.0
17	99.0
18	99.0
19	99.0
20	99.0

Original Instruction: T05 0081-5059 VER 03

T05 0081-5059 Ver 03 - Approved- Exported from DMS: 2019-05-20 by NELAN

7.18 Sound Curves, Sound Optimized Mode SO6

Sound Power Level at Hub Height	
Conditions for Sound Power Level:	Measurement standard IEC 61400-11 ed. 3 Maximum turbulence at hub height: 30% Inflow angle (vertical): 0 ±2° Air density: 1.225 kg/m ³
Wind speed at hub height [m/s]	Sound Power Level at Hub Height [dBA] Sound Optimized Mode SO6 (Blades with serrated trailing edge)
3	91.3
4	91.5
5	93.9
6	96.9
7	97.8
8	98.0
9	98.0
10	98.0
11	98.0
12	98.0
13	98.0
14	98.0
15	98.0
16	98.0
17	98.0
18	98.0
19	98.0
20	98.0

Original Instruction: T05 0081-5059 VER 03

T05 0081-5059 Ver 03 - Approved- Exported from DMS: 2019-05-20 by NELAN

3. Results

3.1 Results V150 5.6 MW, Mode 0

Frequency	Hub height wind speeds [m/s]																	
	3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s	13 m/s	14 m/s	15 m/s	16 m/s	17 m/s	18 m/s	19 m/s	20 m/s
6.3 Hz	18.8	17.8	20.0	22.8	26.0	28.4	28.4	28.5	30.1	32.4	33.1	33.2	33.1	32.5	32.0	31.1	30.2	28.3
8 Hz	25.4	24.6	26.8	29.6	32.7	35.2	35.3	35.4	36.9	39.0	39.6	39.7	39.5	39.0	38.4	37.7	36.7	35.0
10 Hz	31.3	30.6	32.7	35.6	38.7	41.2	41.4	41.5	42.9	44.8	45.3	45.4	45.2	44.7	44.2	43.4	42.6	40.9
12.5 Hz	36.8	36.2	38.4	41.2	44.3	46.8	47.2	47.2	48.6	50.3	50.8	50.8	50.6	50.1	49.6	48.9	48.1	46.5
16 Hz	42.5	42.1	44.3	47.1	50.2	52.7	53.1	53.2	54.5	56.0	56.4	56.4	56.2	55.7	55.3	54.6	53.8	52.4
20 Hz	47.3	47.0	49.2	52.0	55.2	57.7	58.2	58.3	59.5	60.9	61.2	61.1	61.0	60.5	60.0	59.4	58.7	57.3
25 Hz	51.8	51.7	53.9	56.7	59.8	62.3	62.9	63.0	64.2	65.4	65.7	65.6	65.4	65.0	64.5	64.0	63.3	62.0
31.5 Hz	56.2	56.1	58.3	61.1	64.2	66.8	67.5	67.6	68.7	69.7	69.9	69.9	69.7	69.3	68.9	68.3	67.7	66.5
40 Hz	60.3	60.4	62.6	65.4	68.5	71.1	71.8	71.9	73.0	73.9	74.0	73.9	73.8	73.4	73.0	72.5	71.9	70.8
50 Hz	63.8	64.0	66.2	69.0	72.1	74.7	75.5	75.6	76.7	77.4	77.5	77.4	77.3	76.9	76.5	76.1	75.5	74.5
63 Hz	67.2	67.4	69.6	72.4	75.5	78.1	79.0	79.1	80.1	80.7	80.8	80.7	80.5	80.2	79.9	79.4	79.0	78.1
80 Hz	70.3	70.5	72.8	75.6	78.7	81.3	82.3	82.4	83.3	83.8	83.9	83.7	83.6	83.3	83.0	82.6	82.2	81.4
100 Hz	72.8	73.2	75.4	78.2	81.3	83.9	85.0	85.1	86.0	86.4	86.4	86.3	86.1	85.8	85.6	85.2	84.8	84.1
125 Hz	75.0	75.4	77.7	80.5	83.6	86.2	87.3	87.4	88.3	88.6	88.6	88.5	88.3	88.1	87.8	87.5	87.2	86.6
160 Hz	77.1	77.6	79.8	82.6	85.7	88.4	89.5	89.6	90.5	90.7	90.7	90.6	90.4	90.2	90.0	89.8	89.5	89.0
200 Hz	78.7	79.2	81.4	84.2	87.3	90.0	91.2	91.3	92.1	92.3	92.2	92.1	92.0	91.8	91.6	91.4	91.2	90.8
250 Hz	79.9	80.4	82.7	85.5	88.6	91.3	92.5	92.6	93.4	93.5	93.5	93.4	93.3	93.1	93.0	92.8	92.6	92.3
315 Hz	80.9	81.4	83.7	86.5	89.6	92.3	93.5	93.6	94.5	94.5	94.4	94.3	94.3	94.1	94.0	93.9	93.8	93.5
400 Hz	81.5	82.1	84.3	87.1	90.2	92.9	94.2	94.3	95.1	95.1	95.0	95.0	94.9	94.9	94.8	94.7	94.6	94.5
500 Hz	81.8	82.3	84.6	87.4	90.5	93.2	94.5	94.6	95.4	95.4	95.3	95.3	95.3	95.2	95.2	95.2	95.1	95.0
630 Hz	81.7	82.2	84.5	87.3	90.4	93.1	94.5	94.6	95.4	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3
800 Hz	81.3	81.8	84.1	86.9	90.0	92.7	94.1	94.2	94.9	94.9	94.9	94.9	94.9	95.0	95.0	95.1	95.1	95.2
1 kHz	80.5	81.0	83.3	86.2	89.3	92.0	93.4	93.5	94.2	94.1	94.2	94.2	94.3	94.4	94.4	94.5	94.6	94.8
1.25 kHz	79.5	79.9	82.3	85.1	88.2	90.9	92.3	92.4	93.2	93.1	93.1	93.2	93.3	93.5	93.6	93.7	93.9	94.1
1.6 kHz	77.9	78.4	80.7	83.5	86.6	89.4	90.7	90.8	91.6	91.6	91.6	91.8	91.9	92.1	92.3	92.5	92.7	93.0
2 kHz	76.2	76.6	78.9	81.8	84.9	87.6	89.0	89.1	89.9	89.9	90.0	90.2	90.3	90.6	90.8	91.0	91.2	91.6
2.5 kHz	74.2	74.5	76.8	79.7	82.8	85.6	86.9	87.0	87.8	87.8	88.0	88.2	88.4	88.7	89.0	89.2	89.5	90.0
3.15 kHz	71.7	72.0	74.3	77.2	80.3	83.1	84.4	84.5	85.3	85.4	85.6	85.9	86.1	86.5	86.8	87.1	87.4	88.0
4 kHz	68.9	69.0	71.4	74.2	77.4	80.1	81.5	81.6	82.3	82.5	82.8	83.1	83.4	83.8	84.1	84.5	84.9	85.5
5 kHz	65.8	65.9	68.3	71.1	74.3	77.1	78.3	78.4	79.3	79.5	79.8	80.2	80.5	81.0	81.4	81.8	82.2	82.9
6.3 kHz	62.4	62.4	64.7	67.6	70.8	73.5	74.8	74.9	75.7	76.0	76.4	76.9	77.2	77.8	78.2	78.7	79.1	79.9
8 kHz	58.4	58.3	60.7	63.6	66.8	69.5	70.7	70.8	71.7	72.1	72.6	73.1	73.5	74.1	74.6	75.1	75.6	76.5
10 kHz	54.4	54.2	56.6	59.5	62.7	65.4	66.6	66.7	67.6	68.1	68.6	69.2	69.6	70.4	70.9	71.4	72.0	72.9
A-wgt	91.3	91.8	94.1	96.9	100.0	102.7	104.0	104.1	104.9	104.9	104.9	104.9	104.9	104.9	104.9	104.9	104.9	104.9

Table 1: V150-Mode 0, expected 1/3 octave band performance, (Blades with serrated trailing edges)