



Zehnder EVO 3

Sound power measurements

always the best climate

Test methods and applicable standards

LST EN 13141-7:2021

Ventilation for buildings - Performance testing of components/products for residential ventilation - Part 7: Performance testing of ducted mechanical supply and exhaust ventilation units (including heat recovery):

7.4.2 Noise radiated through the casing of the unit:
 ISO 13347-1:2004 Industrial fans - Determination of fan sound power levels under standardized laboratory conditions - Part 1: General overview.
 ISO 13347-3:2004 Industrial fans - Determination of fan sound power levels under standardized laboratory conditions - Part 3: Enveloping surface methods.
 LST EN ISO 3744:2011 Acoustics. Determination of sound power levels and sound energy levels of noise sources using sound pressure. Engineering methods for an essentially free field over a reflecting plane.

7.4.3 Sound power level in duct connection of the unit:
 LST EN ISO 5136:2010 Acoustics. Determination of sound power radiated into a duct by fans and other air-moving devices. In-duct method.



Zehnder EVO 3 is a centralised mechanical ventilation unit with high-efficiency recovery unit (recovery of heat alone in HRV units, recovery of heat and humidity in ERV units) which expels stale air while simultaneously supplying fresh air to rooms. It can be installed in homes, offices and similar locations.

EVO 3 Sound power measurements undertaken in accordance with ISO 13347-1:2004 – Part1, ISO 13347-3:2004 - Part3, LST EN ISO 3744:2011 & LST EN ISO 5136:2010

	Test Point	1	2	3	4	5	6	7	8	9		
EVO 3	Ventilation (m ³ /h)	90	150		200		240		288	300		
	Pressure (Pa)	50	50	100	80	150	99	150	200	100		

Test specimen details, octave band data (L_w oct) weighted sound power (L_{WA}), and sound pressure (SPL) at 3 m (case radiated), can be seen for the Zehnder EVO MVHR units in the tables below

Working point 1: Ventilation 90 m³/h, pressure 50 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L_w , dB	50.7	44.3	37.3	25.8	12.1	-0.7	-3.1	51.8
	L_{WA} , dB(A)	33.9	34.7	33.3	25.2	13.2	0.3	-4.3	39.0
Supply	L_w , dB	64.4	55.8	52.8	44.6	34.3	26.6	17.9	65.3
	L_{WA} , dB(A)	46.7	47.5	49.1	44.2	35.5	27.6	17.6	53.3
Extract	L_w , dB	48.4	42.7	37.1	30.0	15.1	0.1	-2.5	49.7
	L_{WA} , dB(A)	32.1	33.0	33.5	29.4	16.2	1.1	-3.7	38.3
Exhaust	L_w , dB	60.9	53.8	50.0	40.9	33.1	24.9	17.6	62.0
	L_{WA} , dB(A)	43.5	45.4	46.3	40.5	34.2	25.9	17.2	50.6
Case Radiated	L_w , dB	39.5	36.0	32.5	31.4	26.1	26.1	28.7	42.5
	L_{WA} , dB(A)	23.3	27.4	29.2	31.4	27.3	27.1	27.6	36.6

Working point 2: Ventilation 150 m³/h, pressure 50 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L_w , dB	54.0	46.9	39.4	31.4	17.5	4.9	-1.1	55.0
	L_{WA} , dB(A)	37.4	37.5	35.7	30.8	18.6	6.0	-2.0	42.1
Supply	L_w , dB	67.4	57.6	54.0	49.5	38.6	33.2	26.5	68.1
	L_{WA} , dB(A)	49.7	49.3	50.2	49.1	39.8	34.1	26.1	55.8
Extract	L_w , dB	52.2	47.1	40.2	35.4	20.7	5.4	-0.9	53.6
	L_{WA} , dB(A)	36.3	37.3	36.9	34.8	21.7	6.5	-1.8	42.5
Exhaust	L_w , dB	64.2	57.6	53.4	48.1	40.4	33.9	28.3	65.5
	L_{WA} , dB(A)	47.0	49.1	49.9	47.6	41.6	34.8	27.9	54.9
Case Radiated	L_w , dB	45.0	39.8	35.6	37.4	29.7	27.0	28.7	47.2
	L_{WA} , dB(A)	28.8	31.1	32.4	37.4	30.9	27.9	27.5	40.7

Working point 3: Ventilation 150 m³/h, pressure 100 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L _w , dB	58.2	50.8	43.4	34.4	21.4	9.6	2.3	59.1
	L _{WA} , dB(A)	41.2	41.3	39.6	34.0	22.5	10.6	1.8	45.9
Supply	L _w , dB	71.5	62.0	58.6	53.0	43.1	38.4	32.3	72.2
	L _{WA} , dB(A)	53.8	53.7	54.8	52.8	44.2	39.4	31.9	60.0
Extract	L _w , dB	56.0	50.9	43.8	39.0	24.3	10.2	2.7	57.4
	L _{WA} , dB(A)	39.7	41.1	40.3	38.5	25.4	11.2	2.1	46.0
Exhaust	L _w , dB	68.7	61.6	57.1	52.1	44.5	38.7	33.9	69.8
	L _{WA} , dB(A)	51.3	53.1	53.5	51.7	45.6	39.6	33.5	58.8
Case Radiated	L _w , dB	47.7	43.9	39.6	41.3	34.2	28.6	29.1	50.4
	L _{WA} , dB(A)	31.5	35.2	36.4	41.3	35.4	29.6	27.9	44.4

Working point 4: Ventilation 200 m³/h, pressure 80 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L _w , dB	59.7	53.4	44.9	37.2	25.7	13.1	4.9	60.7
	L _{WA} , dB(A)	42.9	43.9	41.1	37.0	26.8	14.2	4.5	47.9
Supply	L _w , dB	72.4	63.1	59.0	54.5	44.8	40.9	35.4	73.1
	L _{WA} , dB(A)	54.8	54.7	55.3	54.3	46.0	41.8	35.0	61.0
Extract	L _w , dB	57.2	53.3	45.0	41.0	26.7	12.8	5.0	58.9
	L _{WA} , dB(A)	41.1	43.5	41.5	40.4	27.8	13.8	4.5	47.8
Exhaust	L _w , dB	69.5	63.4	58.5	54.3	46.8	41.6	37.2	70.9
	L _{WA} , dB(A)	52.2	54.9	54.8	53.9	48.0	42.5	36.8	60.5
Case Radiated	L _w , dB	48.9	45.8	40.7	43.3	36.6	30.1	29.5	51.9
	L _{WA} , dB(A)	32.7	37.1	37.4	43.3	37.8	31.1	28.4	46.2

Working point 5: Ventilation 200 m³/h, pressure 150 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L _w , dB	63.3	55.8	47.8	38.7	27.7	16.5	9.0	64.1
	L _{WA} , dB(A)	46.3	46.4	44.0	38.4	28.8	17.5	8.6	50.7
Supply	L _w , dB	76.9	66.3	62.6	57.1	48.5	45.0	40.3	77.5
	L _{WA} , dB(A)	59.2	58.0	58.9	57.0	49.6	45.9	39.8	64.6
Extract	L _w , dB	60.7	56.1	48.1	43.2	29.5	16.7	9.8	62.2
	L _{WA} , dB(A)	44.4	46.3	44.5	42.7	30.6	17.7	9.4	50.7
Exhaust	L _w , dB	74.1	66.5	61.6	57.0	50.0	45.4	41.7	75.1
	L _{WA} , dB(A)	56.7	58.1	57.8	56.6	51.1	46.3	41.2	63.7
Case Radiated	L _w , dB	53.0	48.7	43.9	45.7	39.7	33.4	30.8	55.4
	L _{WA} , dB(A)	36.8	40.0	40.6	45.7	40.9	34.3	29.7	49.0

Working point 6: Ventilation 240 m³/h, pressure 99 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L _w , dB	62.3	56.7	48.5	40.3	32.3	19.8	10.5	63.5
	L _{WA} , dB(A)	45.5	47.3	44.6	40.1	33.3	21.0	10.1	51.2
Supply	L _w , dB	74.8	66.7	62.2	57.0	48.6	45.2	40.7	75.7
	L _{WA} , dB(A)	57.3	58.3	58.5	56.9	49.8	46.1	40.3	64.1
Extract	L _w , dB	59.7	56.5	48.3	43.6	30.5	17.5	9.9	61.7
	L _{WA} , dB(A)	43.6	46.8	44.7	43.1	31.6	18.6	9.5	50.9
Exhaust	L _w , dB	73.0	67.1	62.0	57.6	50.8	46.2	42.5	74.4
	L _{WA} , dB(A)	55.8	58.7	58.3	57.2	51.9	47.1	42.0	64.1
Case Radiated	L _w , dB	51.2	49.2	43.9	46.0	40.2	33.6	30.9	54.7
	L _{WA} , dB(A)	35.0	40.5	40.6	46.0	41.4	34.6	29.8	49.2

Working point 7: Ventilation 240 m³/h, pressure 150 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L _w , dB	64.9	58.1	49.8	41.2	33.0	21.0	12.3	65.9
	L _{WA} , dB(A)	48.1	48.7	45.9	41.0	34.1	22.1	12.0	52.9
Supply	L _w , dB	78.1	68.3	63.9	58.7	50.7	47.4	43.3	78.7
	L _{WA} , dB(A)	60.5	59.9	60.2	58.6	51.9	48.3	42.8	66.1
Extract	L _w , dB	62.6	58.2	49.8	44.8	31.9	19.4	12.7	64.2
	L _{WA} , dB(A)	46.4	48.5	46.1	44.3	33.0	20.4	12.3	52.7
Exhaust	L _w , dB	75.0	68.5	63.7	59.1	52.5	48.2	44.8	76.3
	L _{WA} , dB(A)	57.7	60.2	59.9	58.7	53.7	49.1	44.4	65.7
Case Radiated	L _w , dB	53.8	50.6	45.4	47.6	42.0	35.9	32.2	56.7
	L _{WA} , dB(A)	37.6	41.9	42.2	47.6	43.2	36.8	31.0	50.9

Working point 8: Ventilation 288 m³/h, pressure 200 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L _w , dB	67.6	62.1	53.8	45.0	38.6	25.8	17.1	68.9
	L _{WA} , dB(A)	51.1	52.7	49.9	44.9	39.7	26.9	16.7	56.6
Supply	L _w , dB	80.2	72.3	67.4	62.1	55.6	51.6	48.3	81.1
	L _{WA} , dB(A)	63.2	63.9	63.6	62.0	56.7	52.5	47.9	69.6
Extract	L _w , dB	65.0	62.0	53.4	48.0	36.2	24.0	17.9	67.0
	L _{WA} , dB(A)	49.0	52.3	49.7	47.5	37.3	25.0	17.5	56.1
Exhaust	L _w , dB	77.7	72.2	67.2	62.1	57.3	52.8	50.1	79.2
	L _{WA} , dB(A)	60.8	64.0	63.5	61.8	58.5	53.7	49.6	69.3
Case Radiated	L _w , dB	57.8	54.6	49.2	51.0	46.6	40.3	36.2	60.6
	L _{WA} , dB(A)	41.6	45.9	45.9	51.0	47.8	41.3	35.0	54.7

Working point 9: Ventilation 300 m³/h, pressure 100 Pa

Test type	Octave band centre frequency Hz (dB)								
	Sound Power	125	250	500	1000	2000	4000	8000	Total
Fresh air	L_w , dB	65.2	60.2	53.3	44.7	39.0	26.0	15.3	66.6
	L_{WA} , dB(A)	48.6	51.1	49.4	44.5	40.1	27.1	14.9	55.2
Supply	L_w , dB	75.2	70.2	66.4	60.0	52.5	49.2	45.4	76.9
	L_{WA} , dB(A)	58.1	62.0	62.5	60.0	53.7	50.1	45.0	67.3
Extract	L_w , dB	63.5	60.1	52.9	46.8	34.9	23.1	15.4	65.4
	L_{WA} , dB(A)	47.1	50.6	49.2	46.3	36.0	24.1	15.0	54.7
Exhaust	L_w , dB	74.9	70.5	65.7	60.9	55.0	50.7	47.5	76.8
	L_{WA} , dB(A)	57.8	62.3	61.9	60.6	56.2	51.6	47.1	67.5
Case Radiated	L_w , dB	53.6	52.6	47.9	49.4	44.2	38.0	33.6	57.7
	L_{WA} , dB(A)	37.4	43.9	44.7	49.4	45.4	39.0	32.5	52.8