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LINEAR
DIFFUSERS

V4.4 PL-SMART-001

SMART SMARTCON

Acoustic Test Report

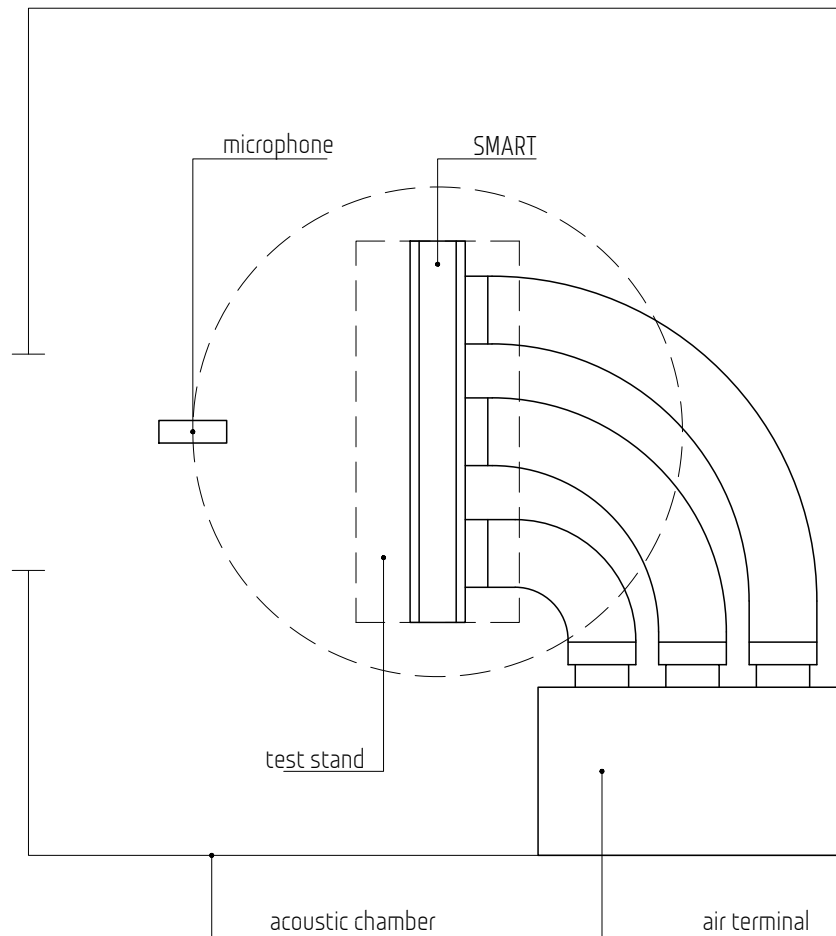
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Figure 1 - ACOUSTIC TEST RIG SCHEMATIC



The rig was designed in accordance with GOST 32112-2013, "Acoustics. Determination of noise characteristics of air distribution equipment. Precision methods for semi-anechoic rooms."

The rig consists of a semi-anechoic acoustic chamber and a ventilation system. The chamber walls and ceiling are lined with sound-absorbing material.

The diffuser sample with its plenum box is installed on a stand in the centre of the chamber and connected to the ventilation system using flexible ducts.

The ventilation system is connected to the acoustic chamber and equipped with airflow control and measurement systems.

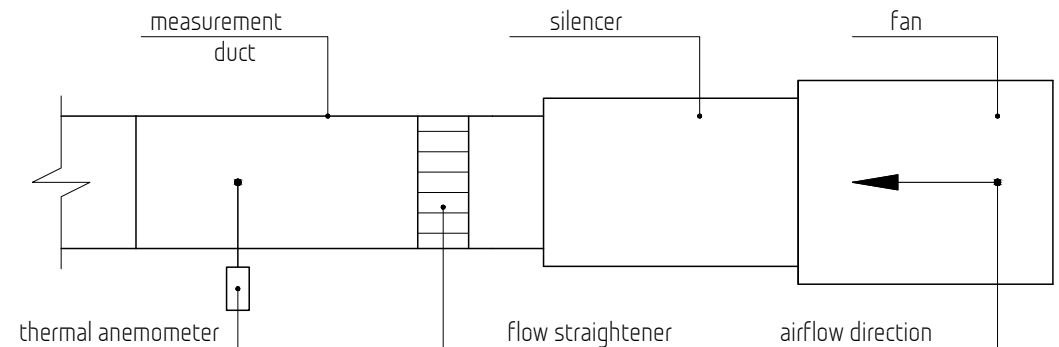




Figure 2 - GENERAL VIEW OF THE ACOUSTIC CHAMBER

Tests are performed on 1000 mm diffuser samples with BOX plenum boxes in the STD version (side connections). The difference in acoustic performance between a diffuser with an STD plenum box and one with an FRNT plenum box does not exceed $\pm 5\%$.

Before testing, the diffuser and BOX plenum box are installed on a stand in the centre of the acoustic chamber and connected to the ventilation system.

During testing, a series of experimental points is recorded to obtain the acoustic performance of the diffuser and plenum box. The rig is set to different specified airflow values. At each steady-state condition, the current airflow and the corresponding sound pressure level are measured simultaneously.

Measured parameters:

- q_v - airflow rate [m^3/h];
- L_{eqA} - A-weighted sound pressure level [dB(A)];
- L_{eq} - sound pressure level [dB];
- T_{meas} - air temperature [$^{\circ}C$];
- ϕ_{rel} - relative air humidity [%];
- B_{meas} - atmospheric pressure [Pa].

The test data are processed using the least-squares method to obtain an approximated characteristic curve. Sound power is calculated using the following equations:

$$L_{wA} = L_{pf} + 10 \log \left(\frac{S_k}{S_0} \right) + C_1 + C_2$$

$$C_1 = -10 \log \left[\frac{B_{meas}}{B_0} \times \sqrt{\frac{313.15}{273.15 + T_{meas}}} \right]$$

$$C_2 = -15 \log \left[\frac{B_{meas}}{B_0} \times \sqrt{\frac{296.15}{273.15 + T_{meas}}} \right]$$

Table 1 - LIST OF MEASURING INSTRUMENTS

No.	Measured parameter	Measuring instrument (QR code: FGIS "Arshin")
1	Air velocity	TTM-2-01 T thermal anemometer 
2	Sound pressure level	Oktava-111 sound level meter 

L_{wA} - A-weighted sound power level [dB(A)]; L_{pf} - mean sound pressure level on the measurement hemisphere [dB(A)]; S_k - measurement hemisphere area [m^2]; S_0 - reference area [m^2];
 C_1, C_2 - corrections for meteorological conditions [dB]; B_0 - atmospheric pressure at standard conditions [Pa].

ACOUSTIC TEST RESULTS FOR SMART 10-70

HORIZONTAL FLOW

Table 2.1 - MEASUREMENT RESULTS 10-40

	SMART 10					SMART 20					SMART 30					SMART 40				
Test no.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
q_v [m ³ /h]	41.2	57.3	71.2	90.9	126.6	80.3	110.0	182.0	202.8	214.0	113.0	220.6	276.0	316.8	357.8	150.9	218.0	279.5	440.8	505.4
L_{eq} [dB]	20.3	23.9	29.8	35.1	41.8	21.9	29.1	42.4	46.2	48.7	24.4	37.1	43.4	48.1	53.1	26.6	32.7	39.2	52.8	55.2

Table 2.2 - MEASUREMENT RESULTS 50-70

	SMART 50					SMART 60					SMART 70				
Test no.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
q_v [m ³ /h]	306.9	400.0	460.0	554.5	602.3	321.4	431.4	545.4	660.7	738.9	388.2	512.4	633.2	752.7	865
L_{eq} [dB]	35.9	41.6	46.3	50.3	54.1	35.5	41.4	46.1	50.2	53.1	36.4	41.8	46.4	50.4	53.6

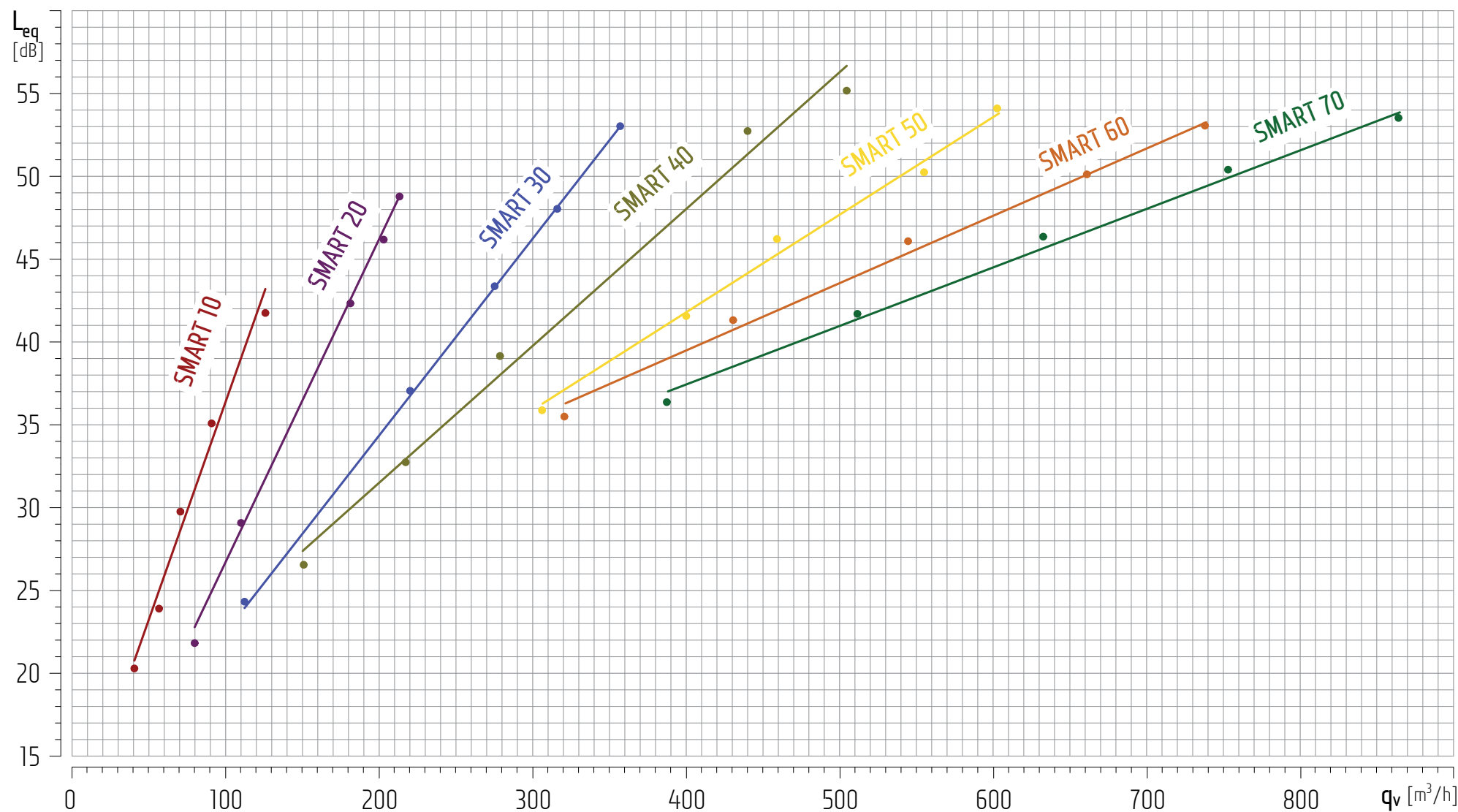
q_v - airflow rate [m³/h]; L_{eq} - sound pressure level [dB].

Note: This test report presents measured equivalent sound pressure levels without A-weighting.

Diffuser noise is generally assessed using the A-weighted sound power levels provided in the catalogues.

ACOUSTIC TEST RESULTS FOR SMART 10-70 HORIZONTAL FLOW

Figure 3 - SOUND PRESSURE LEVEL VERSUS AIRFLOW



q_v - airflow rate [m³/h]; L_{eq} - sound pressure level [dB].

Table 2.3 - MEASUREMENT RESULTS 10-40

	SMART 10					SMART 20					SMART 30					SMART 40				
Test no.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
q_v [m ³ /h]	57.6	73.6	91.3	109.3	129.0	106.8	147.1	185.7	210.2	257.4	161.4	213.3	271.1	330.8	359.2	219.4	284.4	370.0	450.0	500.0
L_{eq} [dB]	20.8	24.7	30.5	35.3	39.1	22.8	30.5	35.8	40.1	46.8	23.8	28.6	35.3	41.2	45.4	26.3	31.7	38.6	44.7	47.5

Table 2.4 - MEASUREMENT RESULTS 50-70

	SMART 50					SMART 60					SMART 70				
Test no.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
q_v [m ³ /h]	354.4	458.0	544.2	637.8	714.2	321.2	440.2	550.0	657.6	774.2	377.3	506.3	629.6	758.3	888.0
L_{eq} [dB]	35.0	39.7	43.1	47.0	50.5	30.6	37.5	41.0	46.1	50.0	31.0	35.2	39.9	44.2	48.3

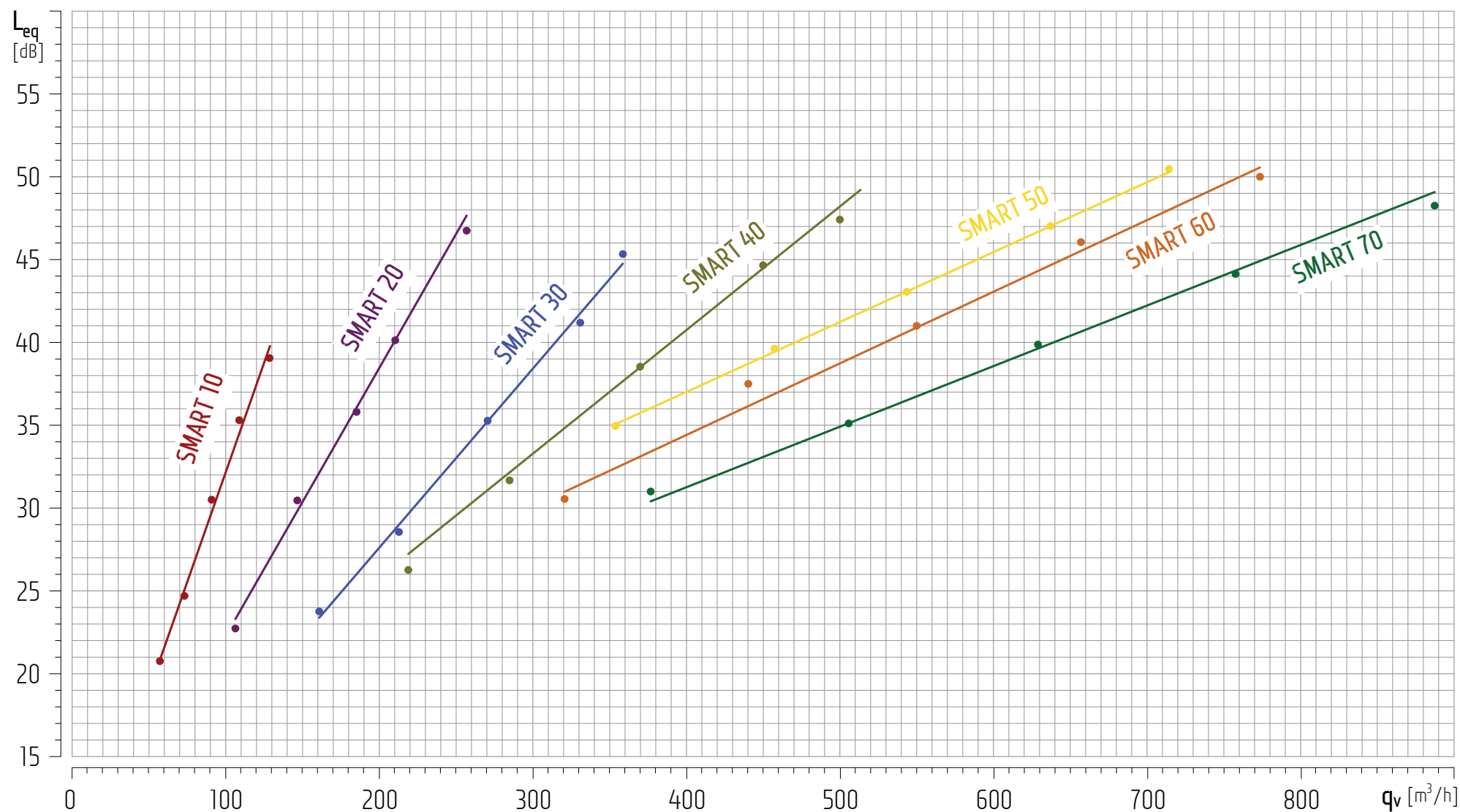
q_v - airflow rate [m³/h]; L_{eq} - sound pressure level [dB].

Note: This test report presents measured equivalent sound pressure levels without A-weighting.

Diffuser noise is generally assessed using the A-weighted sound power levels provided in the catalogues.

ACOUSTIC TEST RESULTS FOR SMART 10-70 VERTICAL FLOW

Figure 4 - SOUND PRESSURE LEVEL VERSUS AIRFLOW



q_v - airflow rate [m³/h]; L_{eq} - sound pressure level [dB].

Table 3 - NOISE SPECTRA FOR DIFFUSERS SMART 10, 20, 30, 40

	q_v [m³/h]	background [dB]									noise [dB]								
		f [Hz]								L_{eq} [dB]	f [Hz]								L_{eq} [dB]
		63	125	250	500	1000	2000	4000	8000		63	125	250	500	1000	2000	4000	8000	
SMART 10	41.2	22.2	13.8	4.4	4.6	6.4	8.6	10.4	11.6	23.7	17.3	9.8	4.8	4.8	5.5	8.2	10.5	12.2	20.3
	57.3	21.7	13.8	4.6	3.7	4.4	7.9	10.5	11.5	23.3	18.1	18.3	18.5	5.5	5.6	8.2	10.5	12.2	23.9
	71.2	21.6	15.3	6.5	5.1	4.2	7.6	10.4	11.5	23.4	19.5	23.8	27.5	13.5	6.0	8.2	10.5	12.2	29.8
	90.9	21.9	18.3	10.2	8.6	5.5	7.7	10.3	11.5	24.4	21.1	27.2	33.7	22.5	10.4	9.2	10.5	12.2	35.1
	107.4	22.7	21.5	14.2	12.9	7.6	8.1	10.3	11.7	26.1	23.2	29.7	37.8	27.9	16.7	13.7	10.7	12.2	39.0
	126.6	23.9	25.1	18.7	17.7	10.4	8.9	10.4	11.8	28.7	25.1	32.5	40.4	32.2	22.6	20.8	12.6	12.2	41.8
	151.3	26.2	29.9	24.8	24.3	15.0	10.7	10.7	12.0	33.1	27.2	35.5	43.3	36.6	28.9	28.8	19.1	12.3	45.0
SMART 20	80.5	21.6	15.0	6.1	4.7	4.2	7.6	10.4	11.5	23.4	17.1	15.9	13.3	4.8	5.7	8.2	10.5	12.3	21.9
	110	21.9	18.3	10.2	8.6	5.5	7.7	10.3	11.5	24.4	21.1	25.1	24.9	12.6	6.2	8.2	10.5	12.3	29.1
	147.1	23.4	23.9	17.1	16.0	9.4	8.6	10.3	11.8	27.8	24.8	32.6	34.4	23.7	13.3	9.6	10.6	12.3	37.1
	182	25.9	29.3	24.0	23.5	14.4	10.5	10.6	12.0	32.5	28.7	37.1	39.9	30.6	22.7	17.1	11.2	12.3	42.4
	202.8	28.6	33.6	29.6	29.4	19.2	13.0	11.2	12.1	37.0	31.3	39.7	44.4	34.7	29.0	25.2	15.0	12.3	46.2
	214	30.3	35.8	32.4	32.4	22.2	15.0	11.8	12.2	39.3	32.8	40.9	47.2	37.2	32.2	30.0	19.1	12.5	48.7
	250.4	33.0	38.4	35.6	35.4	28.0	21.2	14.5	12.2	42.2	35.0	43.4	52.2	41.5	37.0	37.6	27.0	14.8	53.4
SMART 30	113	23.6	12.9	4.3	3.3	4.8	8.1	11.1	12.2	24.6	22.6	15.6	12.2	4.8	5.6	8.2	10.4	11.4	24.4
	162.4	22.6	15.7	10.1	6.6	5.4	6.9	9.0	10.8	24.2	24.0	21.7	25.2	16.8	7.6	8.3	10.4	11.4	29.1
	220.6	23.5	19.8	16.9	11.4	7.9	7.6	8.4	10.1	26.1	27.0	30.9	23.7	29.1	22.7	14.2	10.6	11.4	37.1
	276	26.3	24.4	23.5	16.8	12.0	10.3	9.7	10.3	30.1	31.6	37.3	39.3	35.8	33.2	28.4	15.9	11.6	43.4
	316.8	29.6	28.5	28.8	21.5	16.1	13.7	11.8	11.0	34.1	35.2	40.8	44.0	39.7	39.1	38.0	25.6	14.3	48.1
	357.8	33.8	33.4	34.6	27.3	21.5	18.6	15.5	12.6	39.2	38.9	44.5	49.2	43.0	42.9	46.3	34.9	23.1	53.1
SMART 40	150.9	22.8	14.5	7.8	5.2	5.0	7.1	9.6	11.3	24.1	25.1	16.3	17.1	8.0	5.9	8.2	10.4	11.5	26.6
	218.0	22.9	18.4	14.6	9.7	6.9	7.1	8.4	10.3	25.2	26.6	24.3	29.2	24.1	14.5	9.3	10.5	11.5	32.7
	279.5	25.2	22.8	21.3	14.9	10.5	9.2	9.1	10.1	28.6	30.2	31.4	35.3	32.3	28.3	19.9	11.2	11.5	39.2
	343.3	29.6	28.5	28.8	21.5	16.1	13.7	11.8	11.0	34.1	35.3	38.3	41.2	38.4	37.7	34.0	20.3	12.9	45.9
	440.8	35.9	35.9	37.4	30.1	24.3	21.4	17.6	13.7	41.7	41.3	44.7	47.8	43.5	44.3	45.5	34.3	23.7	52.8
	505.4	38.6	39.0	40.8	33.7	28.0	25.1	20.7	15.4	44.9	43.4	46.9	50.3	45.4	46.5	48.2	40.2	29.1	55.2

q_v - airflow rate [m³/h]; L_{eq} - sound pressure level [dB]; f - octave-band centre frequency [Hz].

ACOUSTIC TEST RESULTS FOR SMART 50-70

HORIZONTAL FLOW

Table 4 - NOISE SPECTRA FOR DIFFUSERS SMART 50, 60, 70

	q_v [m³/h]	background [dB]									noise [dB]								
		f [Hz]								L_{eq} [dB]	f [Hz]								L_{eq} [dB]
		63	125	250	500	1000	2000	4000	8000		63	125	250	500	1000	2000	4000	8000	
SMART 50	191.1	22.6	15.7	10.1	6.6	5.4	6.9	9.0	10.8	24.2	19.7	14.0	15.2	5.5	5.8	8.2	10.5	12.1	22.9
	271.2	23.8	20.6	18.0	12.2	8.5	7.9	8.5	10.1	26.7	25.3	24.2	26.1	22.8	15.5	9.1	10.6	12.1	31.0
	306.9	25.8	23.6	22.4	15.9	11.2	9.7	9.4	10.2	29.4	30.0	29.2	30.3	28.3	24.8	14.4	10.7	12.1	35.9
	357.1	28.9	27.6	27.7	20.6	15.2	12.9	11.3	10.8	33.3	35.3	35.2	35.3	32.4	33.7	24.9	14.1	12.2	41.6
	443.6	32.4	31.8	32.7	25.4	19.7	16.9	14.2	12.0	37.5	40.0	39.6	39.3	34.9	39.9	32.5	21.9	13.0	46.3
	554.5	35.9	35.9	37.4	30.1	24.3	21.4	17.6	13.7	41.7	43.2	44.0	42.9	37.6	44.4	38.3	29.7	17.1	50.3
	644.6	39.3	39.8	41.6	34.6	28.9	26.0	21.5	15.9	45.6	45.7	47.8	46.0	40.2	47.4	43.1	35.9	23.5	53.5
SMART 60	222.2	22.9	18.4	14.6	9.7	6.9	7.1	8.4	10.3	25.2	21.0	17.7	19.2	10.4	6.2	8.2	10.5	12.2	25.0
	321.4	26.9	25.2	24.6	17.7	12.8	10.9	10.0	10.4	30.9	30.5	29.2	29.7	26.9	22.1	12.7	10.6	12.1	35.5
	431.4	30.9	30.1	30.8	23.4	17.8	15.2	12.9	11.5	35.8	35.9	35.3	35.0	31.7	31.7	23.1	13.1	12.2	41.4
	545.4	35.2	35.1	36.5	29.2	23.4	20.4	16.9	13.3	40.9	40.0	40.7	39.4	34.9	37.9	31.1	20.4	13.3	46.1
	660.7	39.3	39.8	41.6	34.6	28.9	26.0	21.5	15.9	45.6	42.9	44.9	43.6	38.1	42.5	37.8	28.5	18.2	50.2
	738.9	42.4	43.4	45.4	38.7	33.3	30.6	25.6	18.6	49.3	44.9	48.4	46.5	40.6	45.0	41.8	34.1	24.0	53.1
	394.6	28.9	27.6	27.7	20.6	15.2	12.9	11.3	10.8	33.3	33.2	32.2	32.3	29.5	27.4	18.1	11.2	12.2	38.4
SMART 70	252.1	23.2	19.1	15.8	10.5	7.4	7.3	8.4	10.2	25.6	24.9	19.7	20.3	12.0	6.6	8.2	10.4	11.9	27.5
	388.2	27.6	26.0	25.6	18.7	13.6	11.5	10.4	10.5	31.7	32.1	29.7	29.8	27.8	23.4	13.4	10.7	12.0	36.4
	512.4	31.7	30.9	31.8	24.4	18.8	16.0	13.5	11.7	36.7	36.7	35.5	34.9	32.0	32.4	24.0	13.7	12.0	41.8
	633.2	35.9	35.9	37.4	30.1	24.3	21.4	17.6	13.7	41.7	40.4	40.9	39.4	35.3	38.1	32.5	21.2	13.6	46.4
	752.7	39.9	40.5	42.4	35.5	29.8	27.0	22.3	16.4	46.4	43.0	45.5	43.2	38.4	42.1	39.1	29.5	19.4	50.4
	865	43.6	44.8	46.7	40.2	34.9	32.4	27.2	19.7	50.6	45.1	49.2	46.6	41.4	44.8	42.8	35.5	26.0	53.6
	342.2	25.8	23.6	22.4	15.9	11.2	9.7	9.4	10.2	29.4	28.7	26.4	26.5	23.8	16.4	9.4	10.4	11.7	32.9
	460.5	29.6	28.5	28.8	21.5	16.1	13.7	11.8	11.0	34.1	34.5	32.6	32.5	30.1	28.2	18.6	11.4	11.7	39.1

q_v - airflow rate [m³/h]; L_{eq} - sound pressure level [dB]; f - octave-band centre frequency [Hz].

Table 5 - NOISE SPECTRA FOR DIFFUSERS SMART 10, 20, 30, 40

	q_v [m³/h]	background [dB]									noise [dB]								
		f [Hz]								L_{eq} [dB]	f [Hz]								L_{eq} [dB]
		63	125	250	500	1000	2000	4000	8000		63	125	250	500	1000	2000	4000	8000	
SMART 10	40.9	22.3	14.1	4.6	5.0	6.8	8.7	10.4	11.6	23.8	17.3	9.3	4.8	4.8	5.6	8.2	10.5	12.2	20.2
	57.6	21.8	13.7	4.5	3.6	4.6	8.0	10.5	11.5	23.3	17.7	11.4	7.9	4.8	5.6	8.2	10.5	12.2	20.8
	73.6	21.6	15.0	6.1	4.7	4.2	7.6	10.4	11.5	23.4	19.0	16.9	20.8	6.4	5.7	8.3	10.5	12.3	24.7
	91.3	21.8	17.3	9.0	7.4	5.0	7.6	10.4	11.5	24.0	20.6	22.4	28.9	14.6	6.1	8.2	10.5	12.3	30.5
	109.3	22.4	20.4	12.8	11.4	6.8	7.9	10.3	11.6	25.5	22.9	27.2	34.0	21.4	9.1	8.6	10.5	12.3	35.3
	129	23.4	23.9	17.1	16.0	9.4	8.6	10.3	11.8	27.8	24.5	29.9	38.0	26.9	14.9	10.9	10.6	12.2	39.1
	148.9	25.0	27.5	21.7	21.0	12.6	9.7	10.5	11.9	30.8	26.3	32.6	41.1	31.2	20.7	16.2	11.1	12.2	42.2
SMART 20	73.8	21.6	14.2	5.1	4.0	4.2	7.8	10.4	11.5	23.2	16.2	12.3	4.8	4.8	5.7	8.2	10.5	12.3	20.1
	106.8	21.8	17.3	9.0	7.4	5.0	7.6	10.4	11.5	24.0	17.5	17.9	14.8	5.0	5.6	8.2	10.5	12.3	22.8
	147.1	23.2	23.3	16.4	15.2	8.9	8.5	10.3	11.7	27.3	23.6	25.2	26.9	15.1	6.8	8.3	10.5	12.3	30.5
	185.7	25.6	28.7	23.3	22.7	13.8	10.2	10.6	11.9	31.9	27.5	30.6	32.7	23.2	12.6	8.9	10.5	12.3	35.8
	220.2	28.3	33.1	29.0	28.8	18.6	12.6	11.1	12.1	36.4	30.7	34.9	37.0	28.5	19.5	12.6	10.7	12.3	40.1
	224.6	30.9	36.6	33.3	33.3	23.3	15.9	12.2	12.2	40.1	33.0	38.4	40.7	32.5	25.2	19.0	12.0	12.3	43.6
	257.4	32.7	38.3	35.5	35.4	27.2	20.0	13.9	12.2	42.1	34.8	41.4	44.2	35.6	29.8	24.8	15.4	12.3	46.8
SMART 30	105.6	24.0	12.4	3.2	2.7	4.9	8.5	11.7	12.2	25.0	22.6	16.3	5.5	4.8	5.7	8.2	10.4	11.4	24.2
	161.4	22.6	15.1	8.9	5.9	5.1	7.0	9.3	11.1	24.1	24.0	16.0	13.9	5.7	5.6	8.2	10.5	11.4	23.8
	213.3	22.9	18.4	14.6	9.7	6.9	7.1	8.4	10.3	25.2	27.0	20.1	24.6	16.4	7.6	8.2	10.5	11.5	28.6
	271.1	25.2	22.8	21.3	14.9	10.5	9.2	9.1	10.1	28.6	31.6	26.7	31.9	26.6	17.0	10.2	10.5	11.4	35.3
	330.8	28.9	27.6	27.7	20.6	15.2	12.9	11.3	10.8	33.3	35.2	33.8	37.1	33.1	26.9	19.5	12.0	11.5	41.2
	359.2	32.4	31.8	32.7	25.4	19.7	16.9	14.2	12.0	37.5	38.9	39.0	41.0	36.8	32.7	27.2	17.5	11.6	45.4
SMART 40	151	23.0	13.9	6.6	4.5	4.8	7.4	10.1	11.6	24.2	24.6	13.6	5.9	4.8	5.7	8.2	10.4	11.5	25.5
	219.4	22.7	17.7	13.5	8.9	6.5	6.9	8.5	10.4	24.8	24.2	16.8	18.4	10.3	6.0	8.2	10.4	11.4	26.3
	284.4	24.7	22.1	20.2	14.0	9.8	8.7	8.9	10.1	27.9	26.8	22.8	27.7	22.4	12.0	8.6	10.4	11.5	31.7
	351.8	28.9	27.6	27.7	20.6	15.2	12.9	11.3	10.8	33.3	32.5	30.0	34.5	31.3	23.7	15.5	11.0	11.4	38.6
	429.6	34.5	34.2	35.6	28.2	22.4	19.5	16.2	13.0	40.0	38.7	37.0	39.6	37.2	33.2	27.5	18.2	11.9	44.7
	514	37.3	37.5	39.1	31.9	26.2	23.2	19.1	14.5	43.3	41.3	40.0	42.3	39.5	36.6	32.2	23.4	13.0	47.5

q_v - airflow rate [m³/h]; L_{eq} - sound pressure level [dB]; f - octave-band centre frequency [Hz].

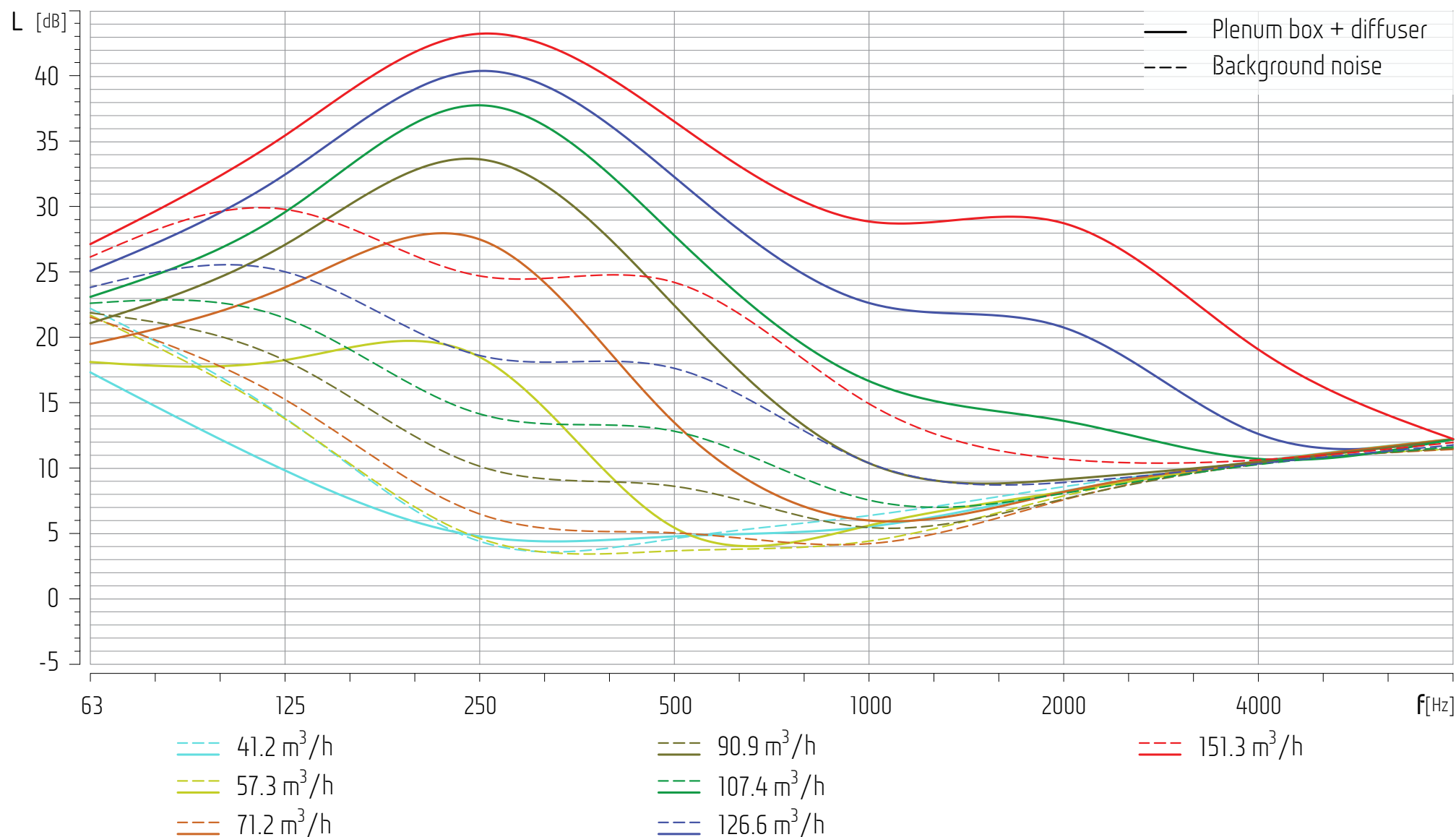
Table 6 - NOISE SPECTRA FOR DIFFUSERS SMART 50, 60, 70

	q_v [m³/h]	background [dB]									noise [dB]								
		f [Hz]								L_{eq} [dB]	f [Hz]								L_{eq} [dB]
		63	125	250	500	1000	2000	4000	8000		63	125	250	500	1000	2000	4000	8000	
SMART 50	187	22.6	15.1	8.9	5.9	5.1	7.0	9.3	11.1	24.1	18.3	9.7	4.8	4.8	5.7	8.2	10.5	12.2	20.8
	267.1	23.5	19.8	16.9	11.4	7.9	7.6	8.4	10.1	26.1	21.5	18.0	18.5	7.8	6.0	8.2	10.5	12.2	25.0
	354.4	28.2	26.8	26.7	19.6	14.4	12.2	10.9	10.6	32.5	30.7	28.3	29.9	23.7	17.3	9.9	10.6	12.2	35.0
	458	31.7	30.9	31.8	24.4	18.8	16.0	13.5	11.7	36.7	35.7	32.9	33.8	29.0	25.0	15.8	11.0	12.2	39.7
	544.2	34.5	34.2	35.6	28.2	22.4	19.5	16.2	13.0	40.0	39.1	36.4	37.0	32.3	30.3	21.6	12.4	12.2	43.1
	637.8	37.9	38.2	40.0	32.8	27.1	24.2	19.9	15.0	44.1	43.0	40.5	40.5	35.5	35.4	28.4	16.9	12.6	47.0
SMART 60	222.3	22.7	17.7	13.5	8.9	6.5	6.9	8.5	10.4	24.8	26.2	16.0	11.2	4.8	5.7	8.2	10.5	12.2	27.7
	321.2	26.3	24.4	23.5	16.8	12.0	10.3	9.7	10.3	30.1	26.1	24.6	25.4	17.2	11.7	8.5	10.5	12.2	30.6
	440.2	30.9	30.1	30.8	23.4	17.8	15.2	12.9	11.5	35.8	32.5	31.4	32.5	26.2	23.7	14.2	10.8	12.2	37.5
	540.2	34.5	34.2	35.6	28.2	22.4	19.5	16.2	13.0	40.0	36.4	35.6	36.4	30.5	29.8	21.2	12.3	12.2	41.6
	657.6	38.6	39.0	40.8	33.7	28.0	25.1	20.7	15.4	44.9	41.1	40.1	40.2	34.4	35.4	28.7	17.7	12.7	46.1
	774.2	42.4	43.4	45.4	38.7	33.3	30.6	25.6	18.6	49.3	44.6	43.7	43.8	37.5	39.4	34.5	23.9	14.8	49.7
SMART 70	387.7	28.2	26.8	26.7	19.6	14.4	12.2	10.9	10.6	32.5	28.6	27.6	28.7	21.4	16.9	9.7	10.6	12.2	33.6
	253.6	22.7	17.7	13.5	8.9	6.5	6.9	8.5	10.4	24.8	24.8	14.2	7.5	4.8	5.6	8.2	10.5	12.2	25.7
	366.9	25.8	23.6	22.4	15.9	11.2	9.7	9.4	10.2	29.4	26.7	22.7	21.2	12.0	7.0	8.2	10.5	12.3	29.3
	377.3	26.9	25.2	24.6	17.7	12.8	10.9	10.0	10.4	30.9	28.2	24.4	23.7	15.8	9.0	8.3	10.5	11.9	31.0
	506.3	30.9	30.1	30.8	23.4	17.8	15.2	12.9	11.5	35.8	30.9	29.3	29.2	24.0	18.1	10.4	10.5	12.2	35.2
	629.6	35.2	35.1	36.5	29.2	23.4	20.4	16.9	13.3	40.9	35.3	34.1	33.8	29.6	26.7	18.2	10.9	11.9	39.9
	758.3	39.3	39.8	41.6	34.6	28.9	26.0	21.5	15.9	45.6	39.7	38.1	37.6	33.4	32.7	26.1	15.2	13.2	44.2
	888	43.6	44.8	46.7	40.2	34.9	32.4	27.2	19.7	50.6	43.8	42.1	41.5	36.6	37.9	33.3	20.8	13.0	48.3

q_v - airflow rate [m³/h]; L_{eq} - sound pressure level [dB]; f - octave-band centre frequency [Hz].

ACOUSTIC TEST RESULTS FOR SMART 10 HORIZONTAL FLOW

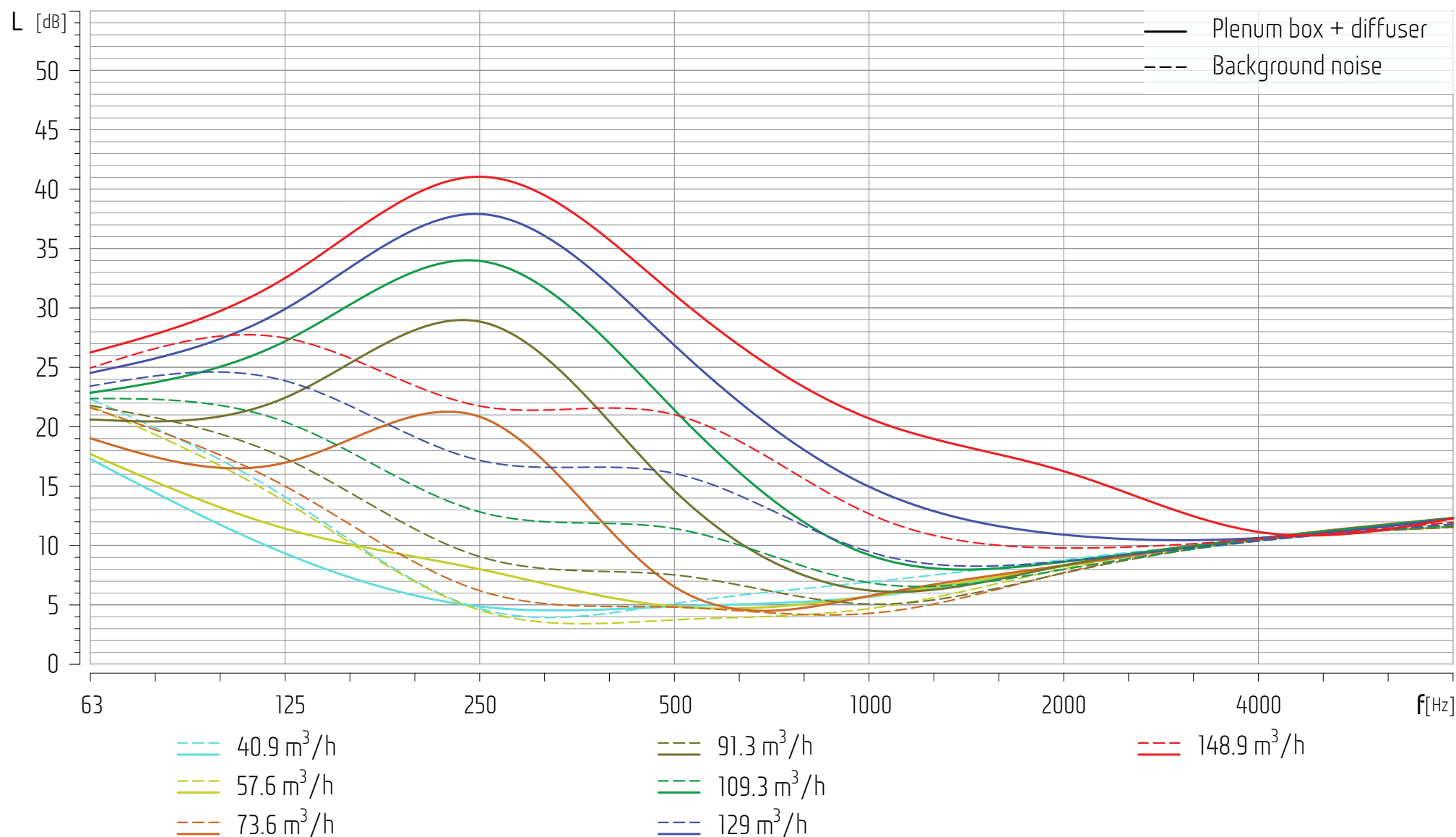
Figure 5 - NOISE SPECTRA FOR SMART 10 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

ACOUSTIC TEST RESULTS FOR SMART 10 VERTICAL FLOW

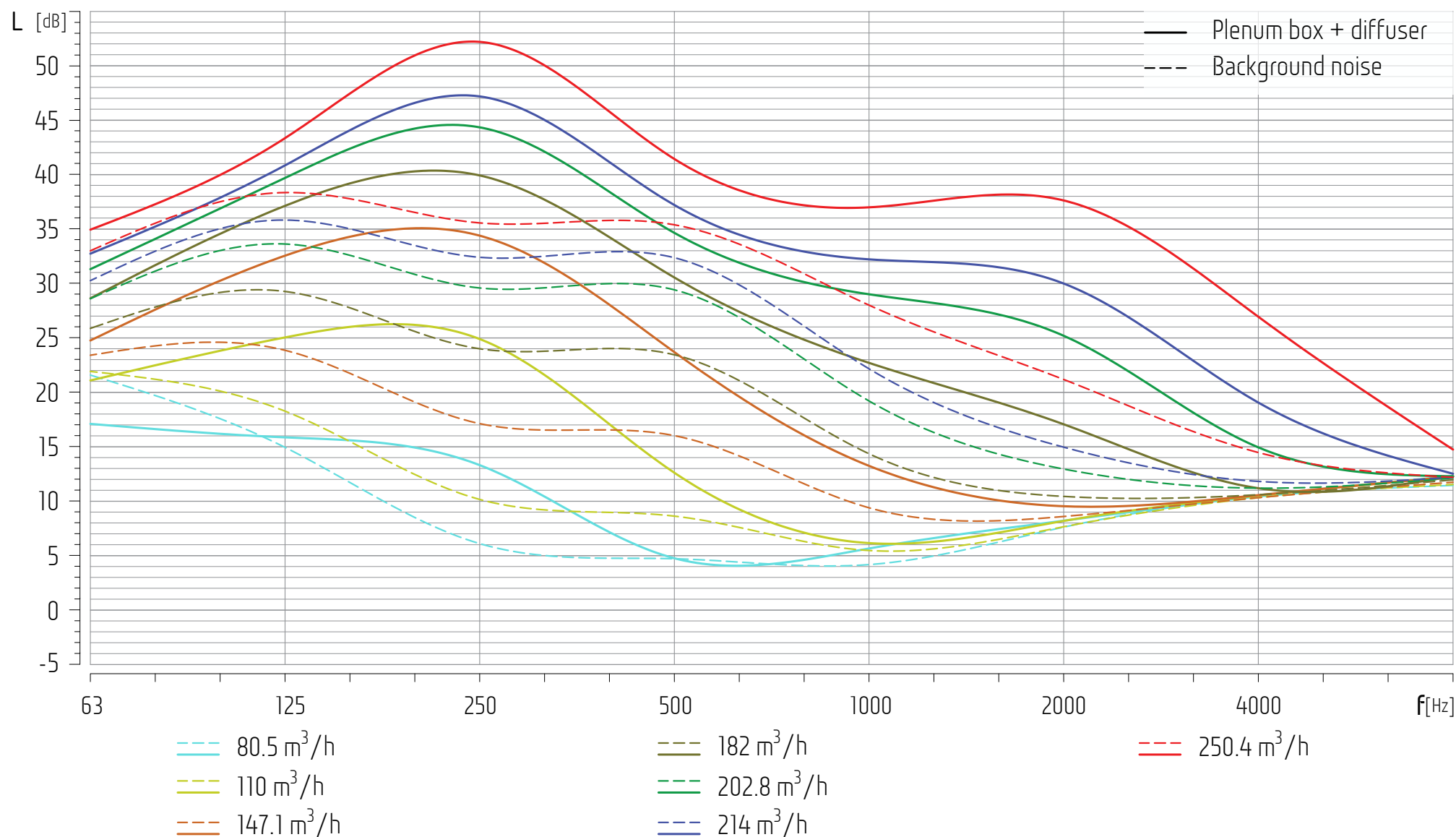
Figure 6 - NOISE SPECTRA FOR SMART 10 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

ACOUSTIC TEST RESULTS FOR SMART 20 HORIZONTAL FLOW

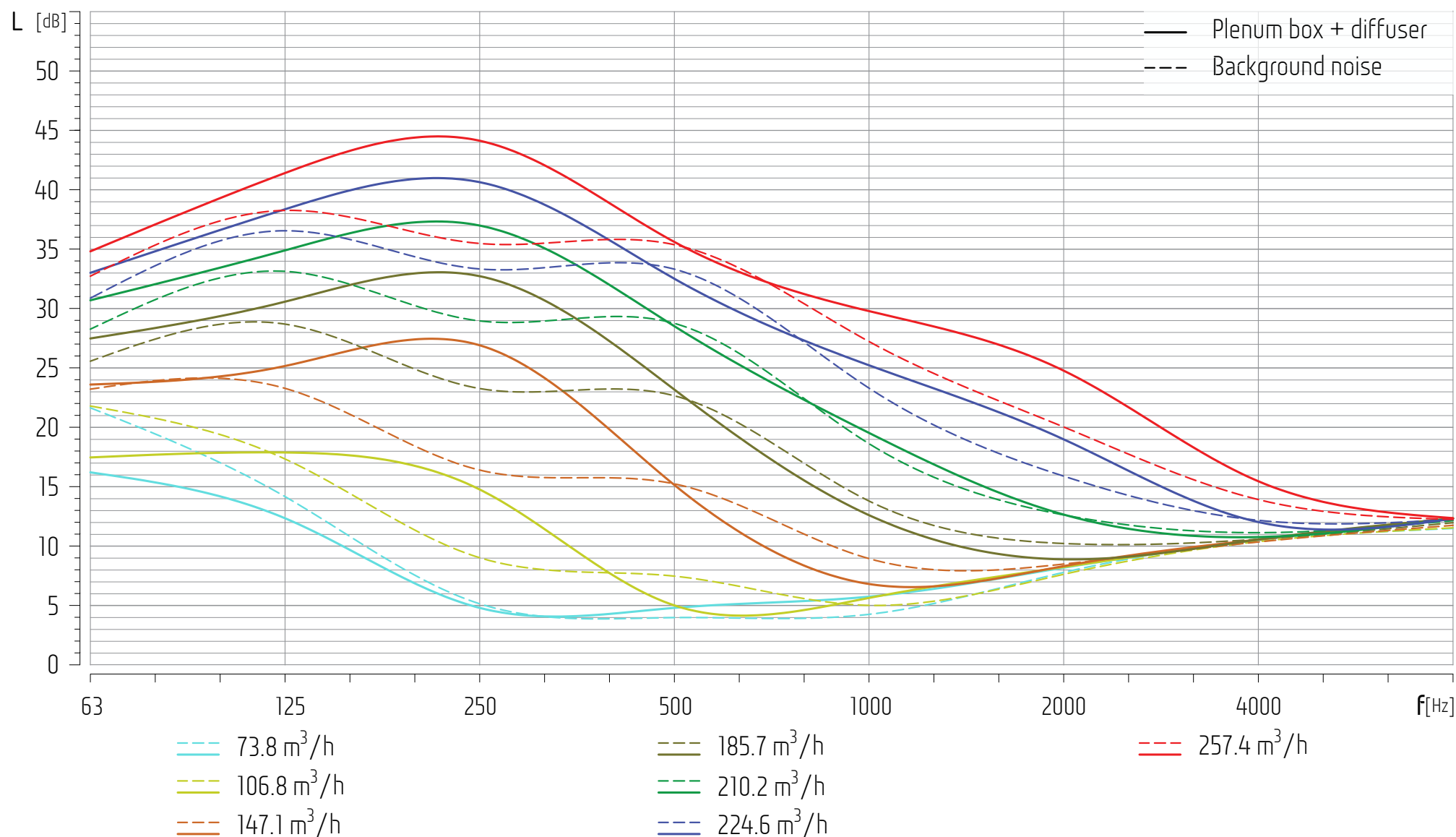
Figure 7 - NOISE SPECTRA FOR SMART 20 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

ACOUSTIC TEST RESULTS FOR SMART 20 VERTICAL FLOW

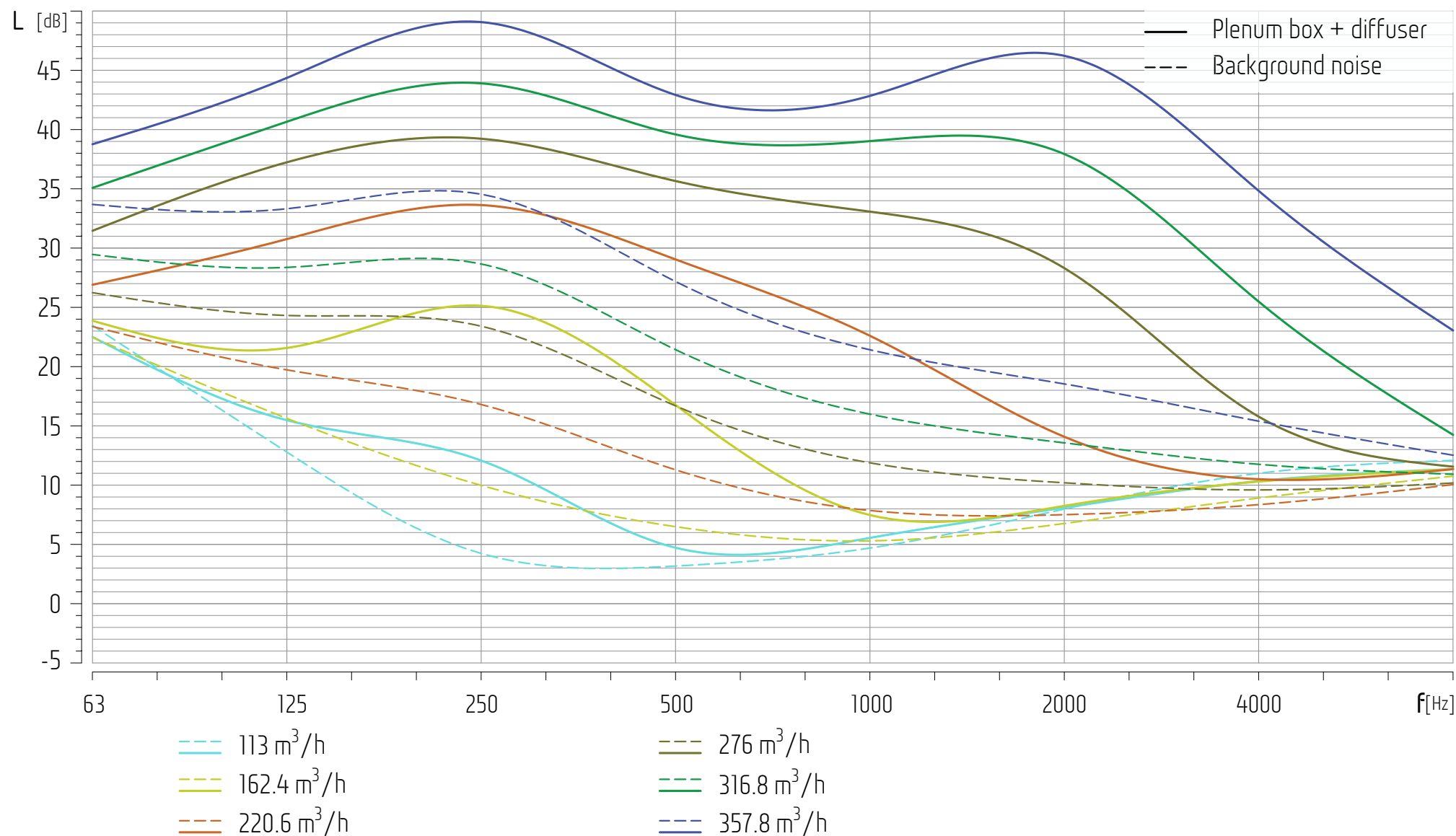
Figure 8 - NOISE SPECTRA FOR SMART 20 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

ACOUSTIC TEST RESULTS FOR SMART 30 HORIZONTAL FLOW

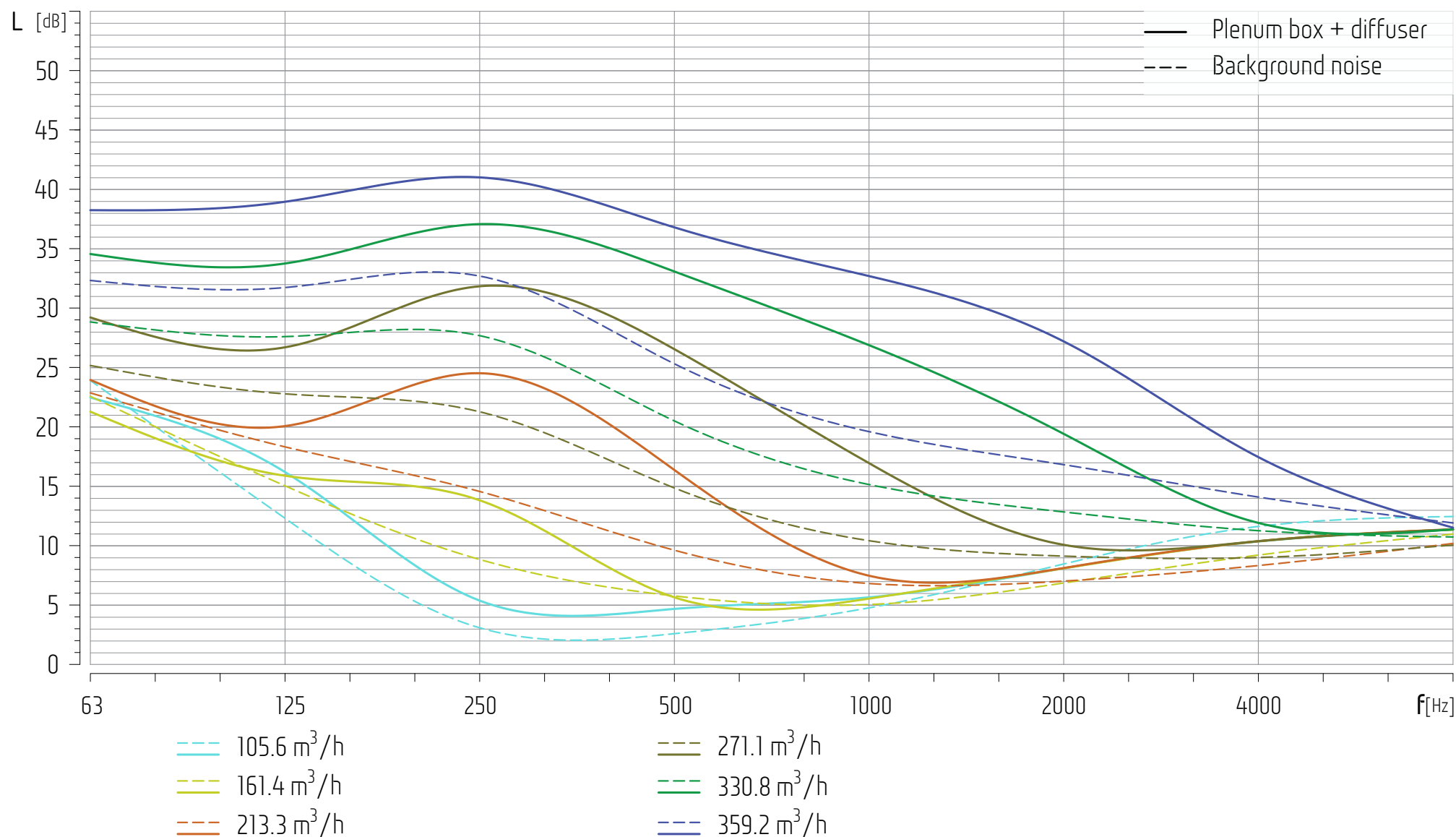
Figure 9 - NOISE SPECTRA FOR SMART 30 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

ACOUSTIC TEST RESULTS FOR SMART 30 VERTICAL FLOW

Figure 10 - NOISE SPECTRA FOR SMART 30 DIFFUSER

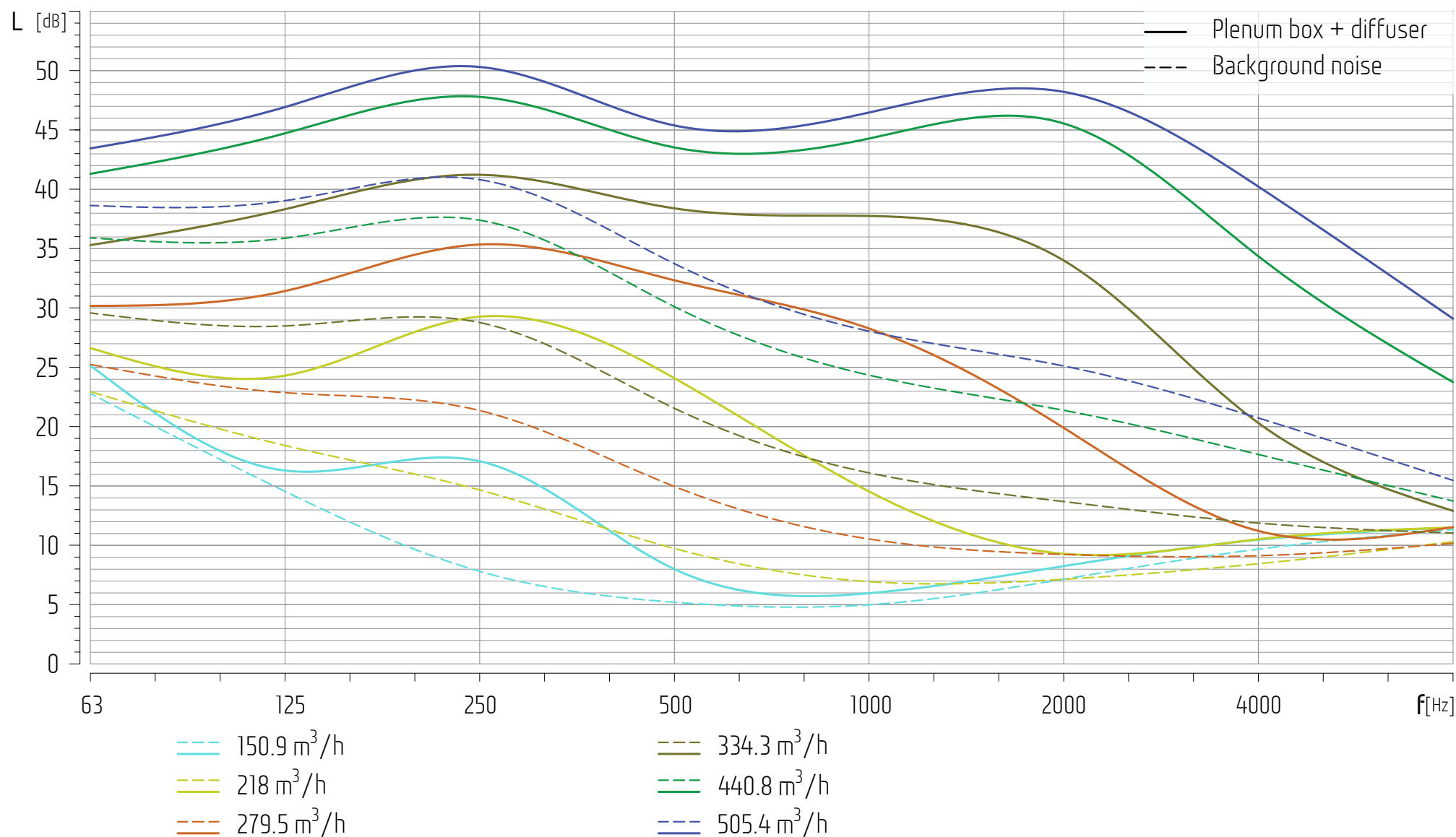


L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

ACOUSTIC TEST RESULTS FOR SMART 40

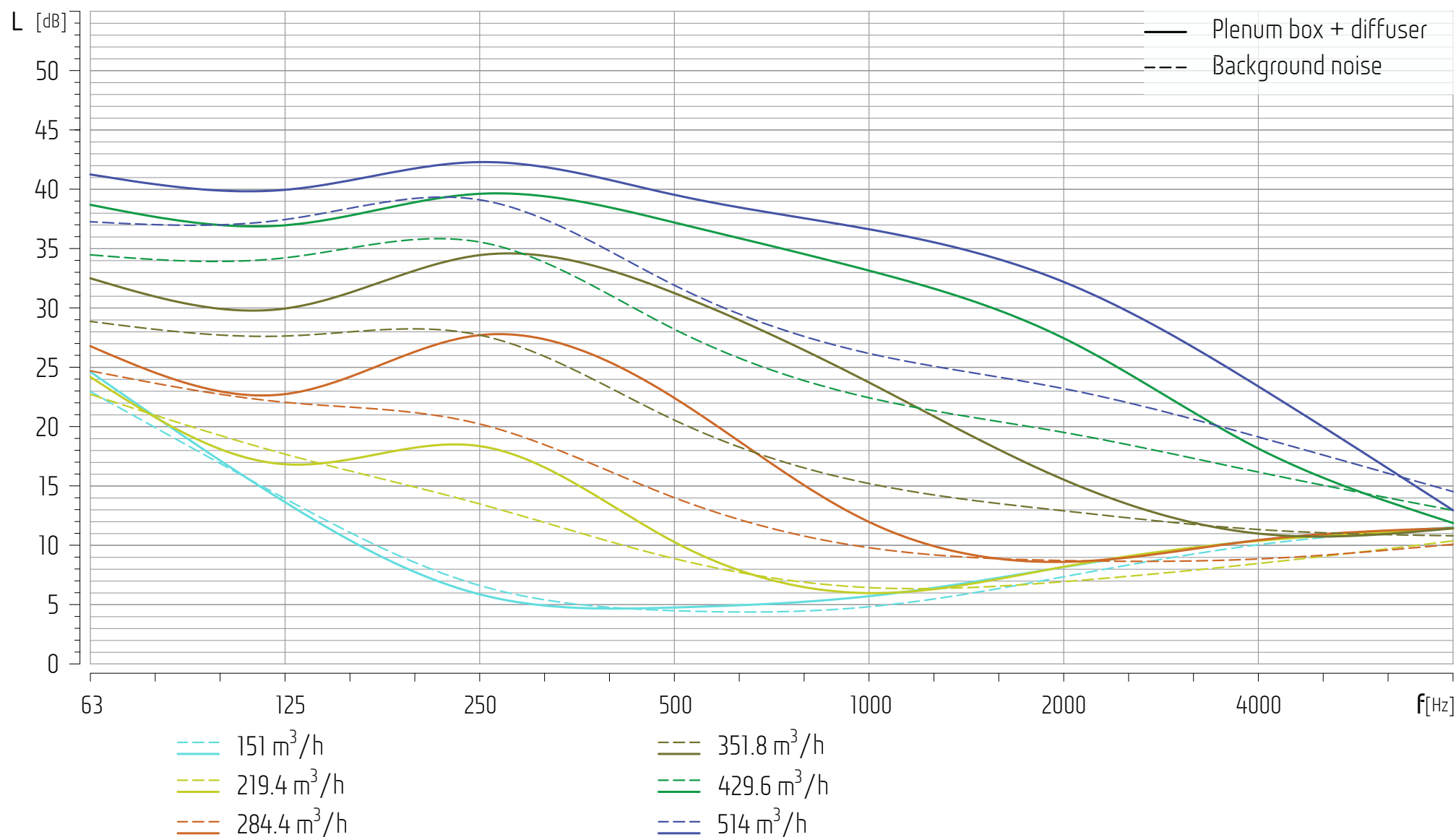
HORIZONTAL FLOW

Figure 11 - NOISE SPECTRA FOR SMART 40 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

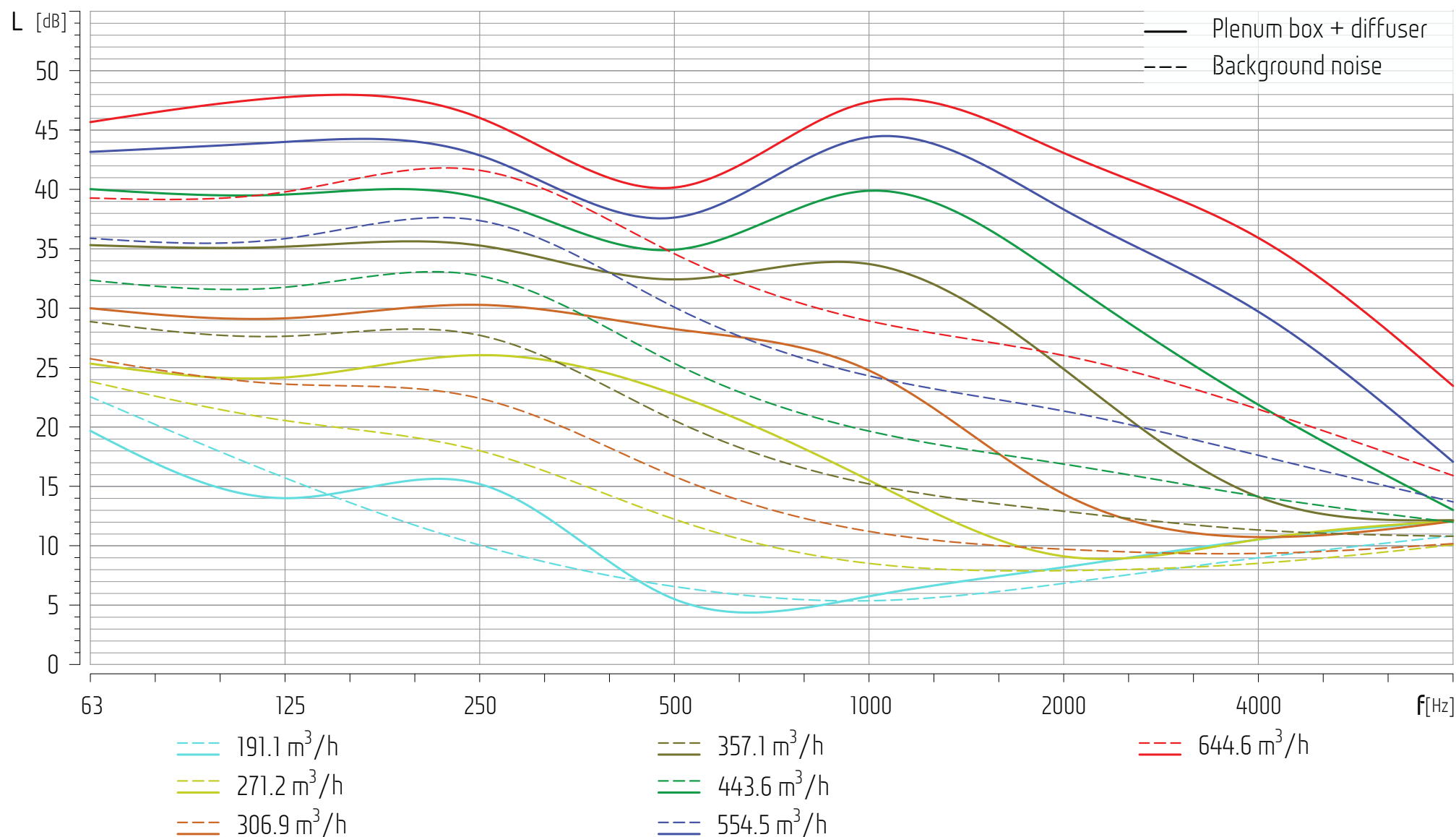
Figure 12 - NOISE SPECTRA FOR SMART 40 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

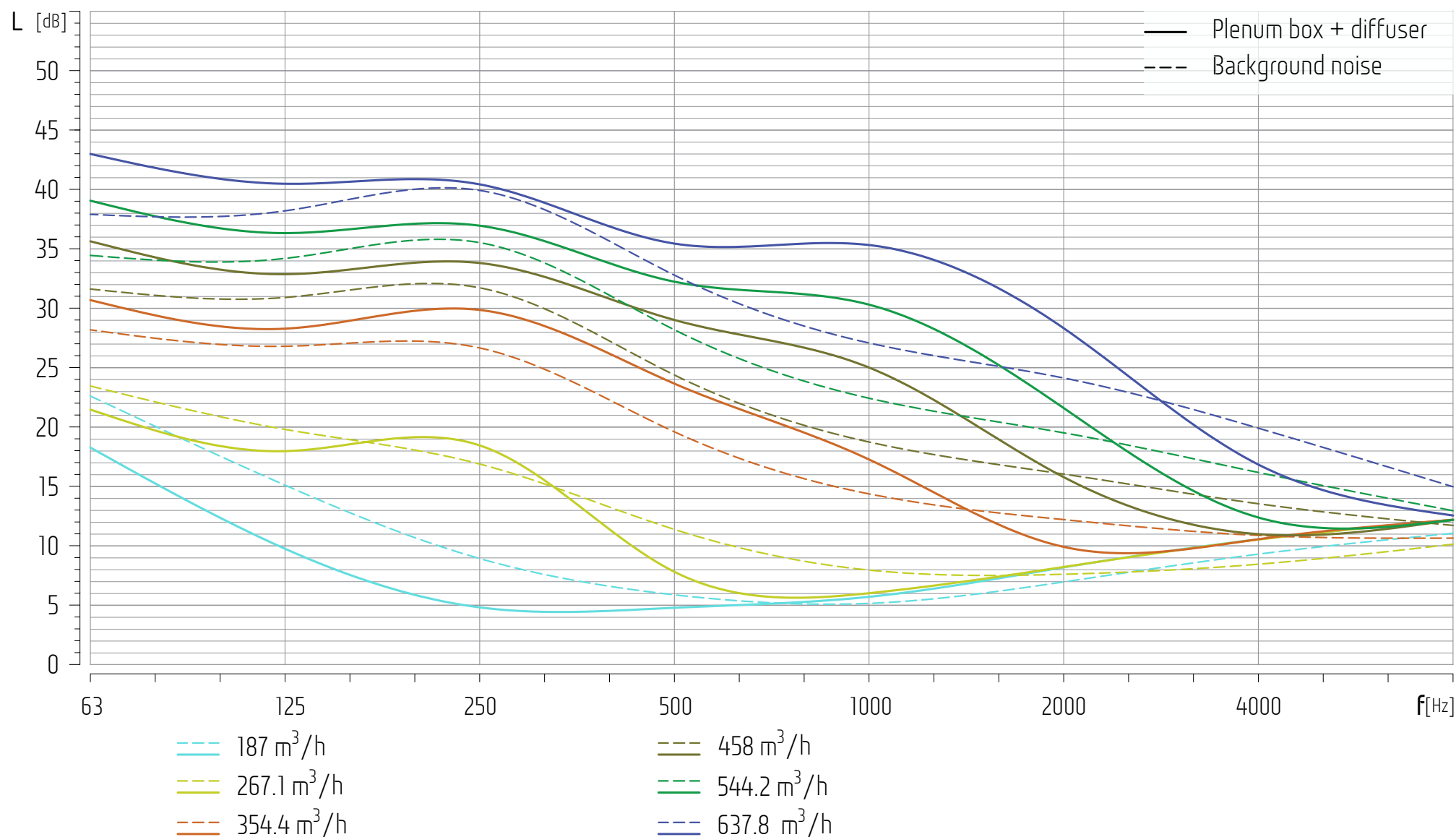
ACOUSTIC TEST RESULTS FOR SMART 50 HORIZONTAL FLOW

Figure 13 - NOISE SPECTRA FOR SMART 50 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

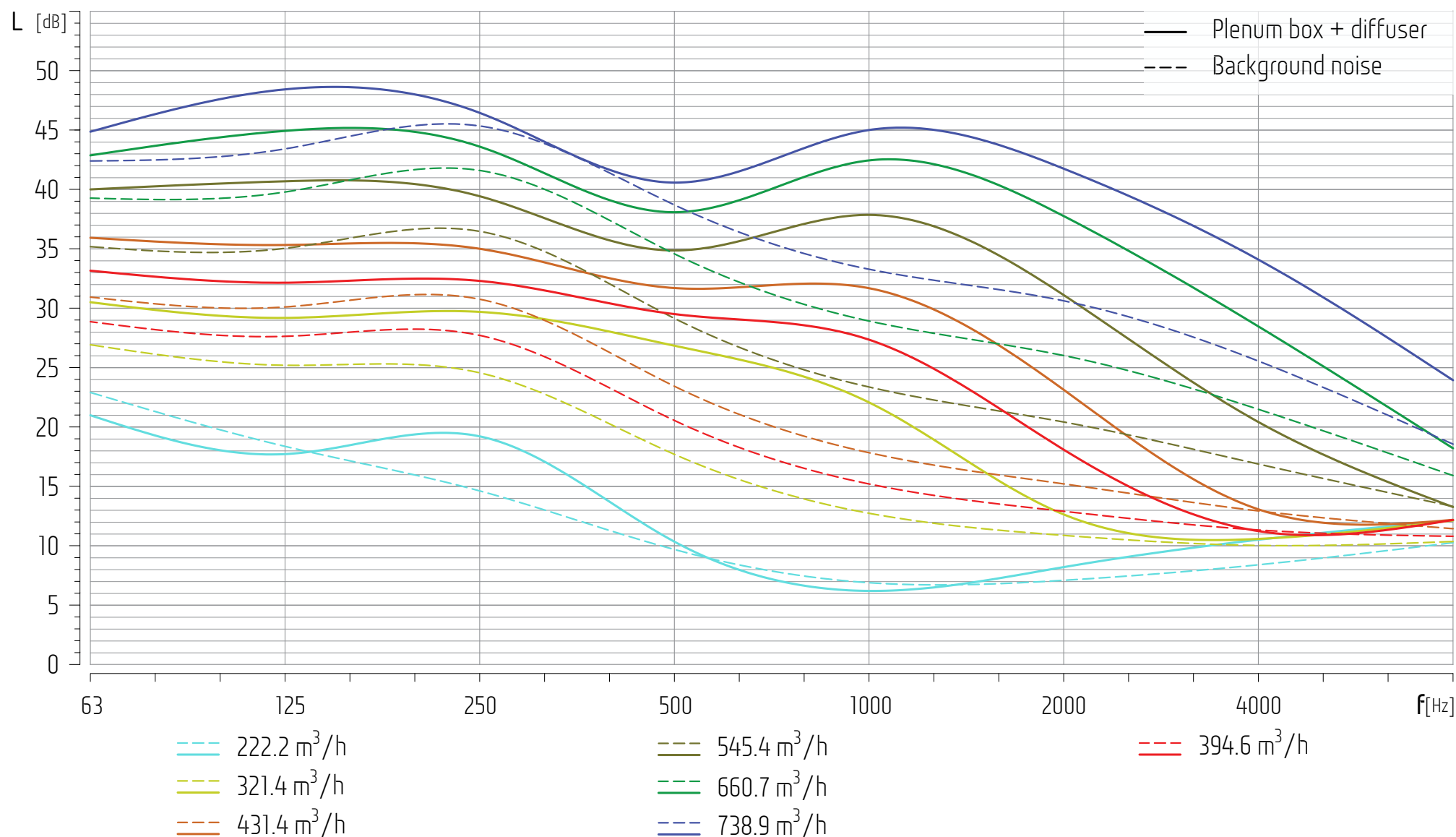
Figure 14 - NOISE SPECTRA FOR SMART 50 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

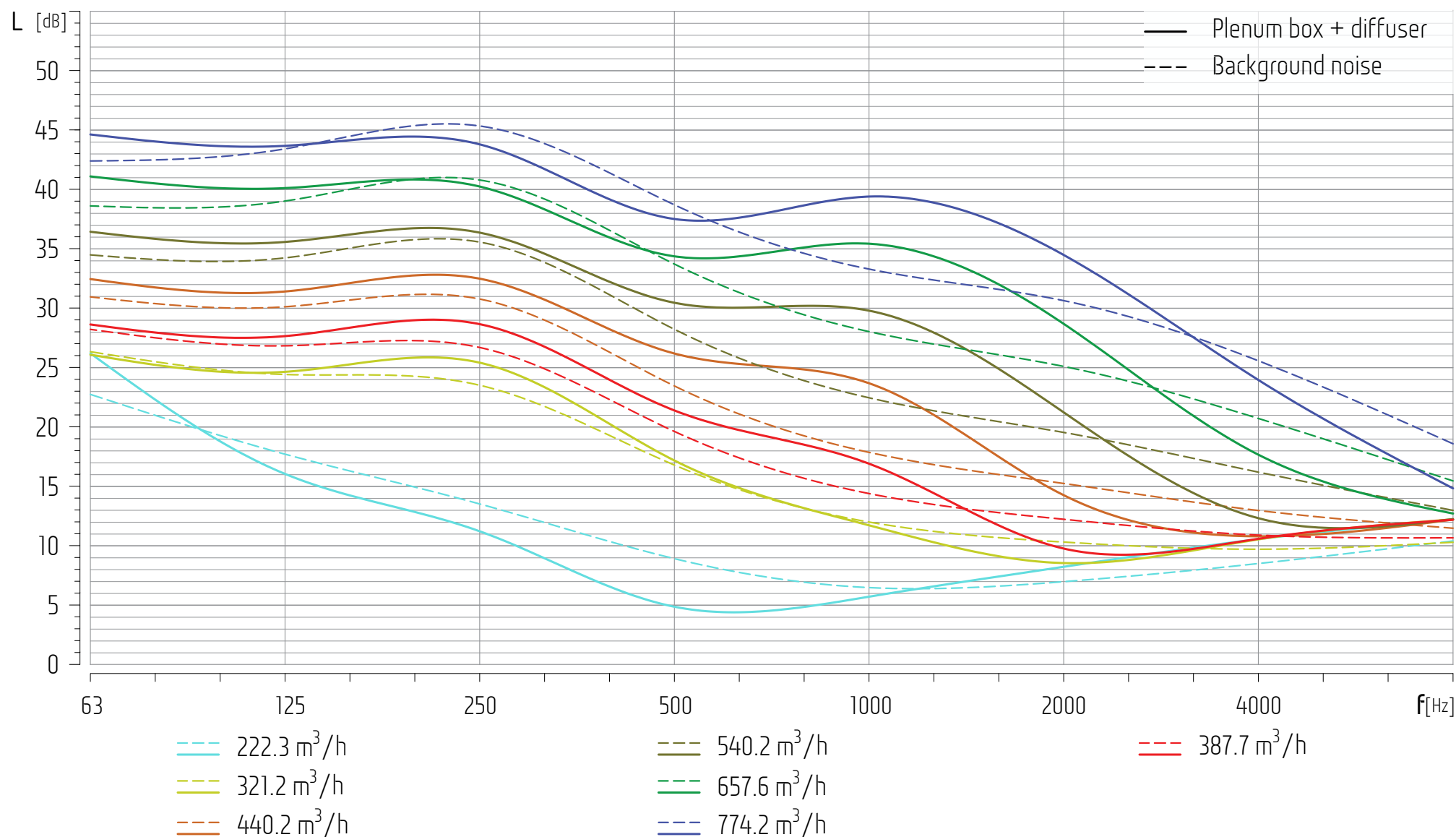
ACOUSTIC TEST RESULTS FOR SMART 60 HORIZONTAL FLOW

Figure 15 - NOISE SPECTRA FOR SMART 60 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

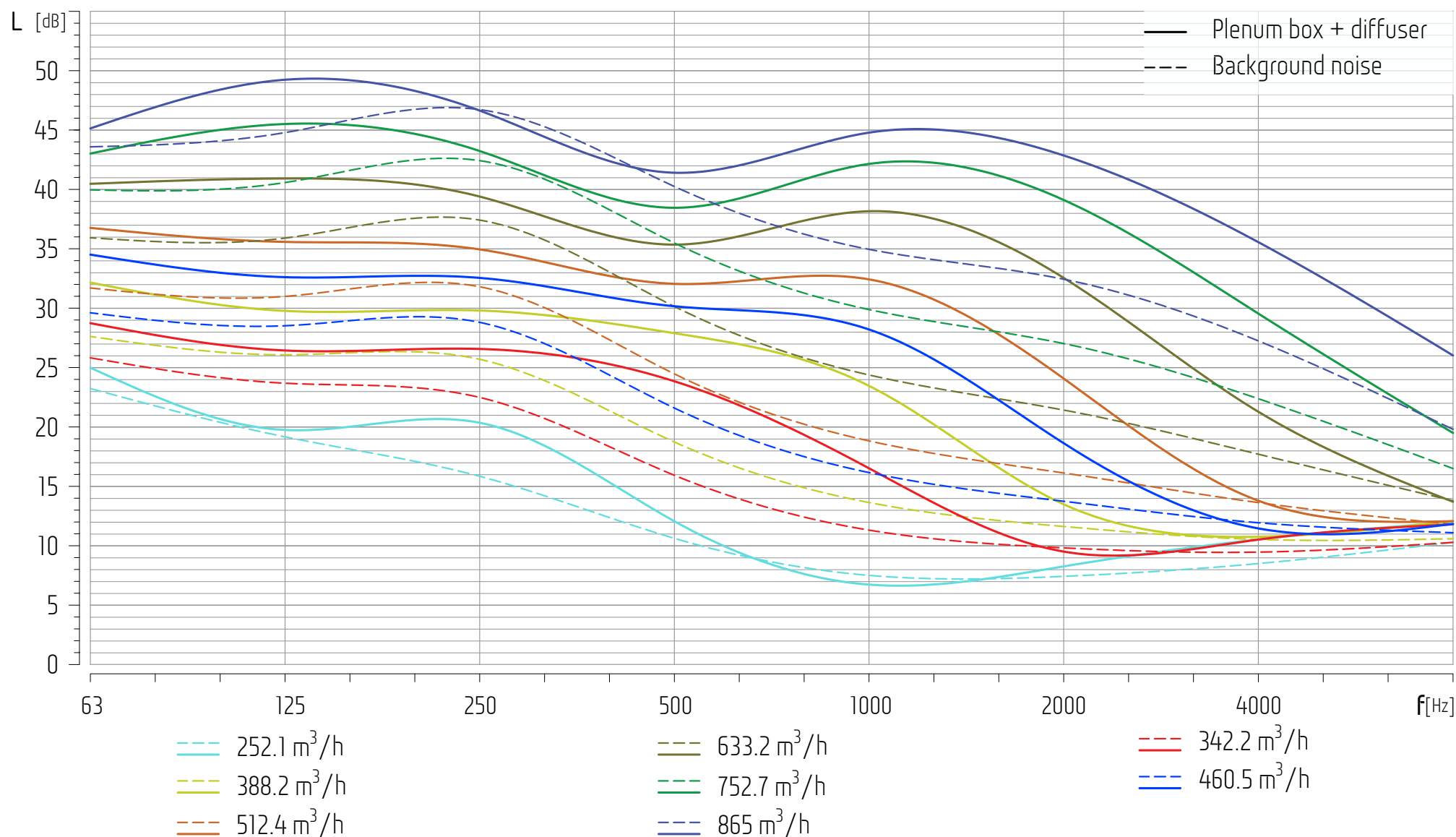
Figure 16 - NOISE SPECTRA FOR SMART 60 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

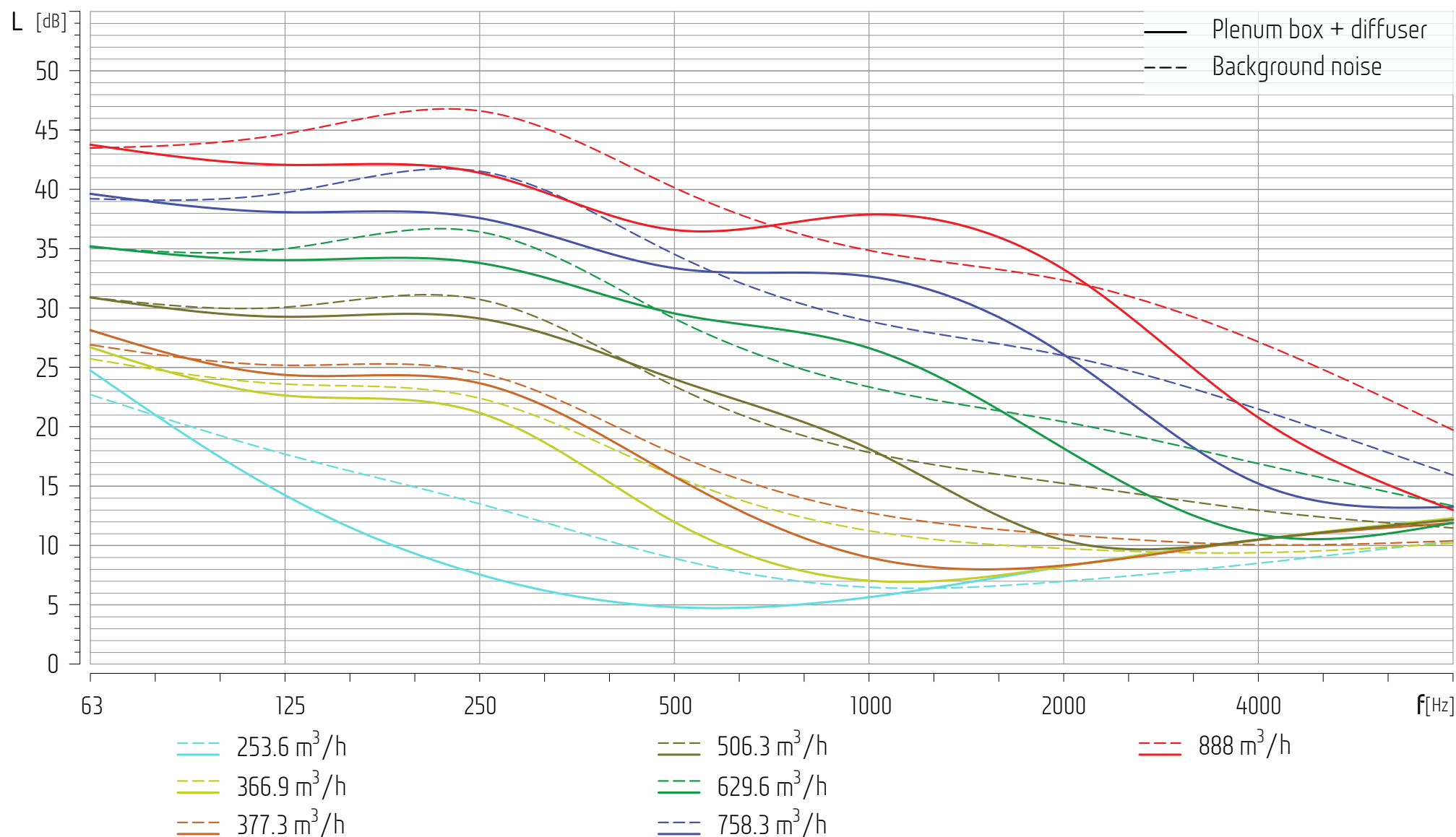
ACOUSTIC TEST RESULTS FOR SMART 70 HORIZONTAL FLOW

Figure 17 - NOISE SPECTRA FOR SMART 70 DIFFUSER

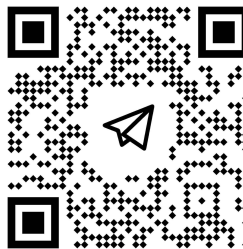
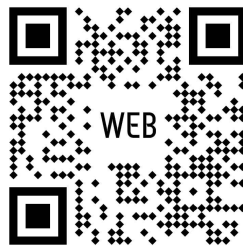


L - sound pressure level [dB]; f - octave-band centre frequency [Hz].

Figure 18 - NOISE SPECTRA FOR SMART 70 DIFFUSER



L - sound pressure level [dB]; f - octave-band centre frequency [Hz].



invisiline

INVISIBLE
LINEAR
DIFFUSERS