MÜLLER-BBM
Accredited Test Laboratory
according to ISO/IEC 17025

Deutscher
Akkreditierungs
Rat
DAR

DAP-PL-2465.10

Address of the testing facility:
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Test certificate

for the determination of the structure-borne sound insulation of elastic mounting elements according to the dual resonator method by means of the methods stated in DIN EN ISO 10846-4

Type of test:	Measurement of vibration transmission factors in the form of velocity level differences of elastic mounting elements
Client:	Hilti Aktiengesellschaft Feldkircherstrasse 100 9494 Schaan Liechtenstein
Date of the test:	2007-05-30 and -31 **Test report No.** M68 276/10 of 2007-11-30

Test object:

Name:	Ventilation angle	Manufacturer:	Hilti
Type:	MVA-L 60	Year of construction:	2007
Product No.:	38745	State:	new

Technical data:

Side length:	60 mm	Material:	DC01/DD11
Width:	30 mm	Elastic element MVI-B:	EPDM 55± 5 Shore A
Height:	1.5 mm	Fixing holes:	6

Test method: **Dual resonator method by means of the methods stated in DIN EN ISO 10846-4**
"Laboratory measurement of the vibro-acoustic transfer properties of resilient elements", February 2004
Fixing and coupling of accelerometers according to DIN ISO 5348 "Mechanical mounting of accelerometers".
Vibration excitation signal: sine sweep signal
Frequency range: 20 Hz up to 2000 Hz

Calibration: According to DIN EN ISO 16063-21 within the scope of Müller-BBM's quality management system
Environmental conditions: Temperature: 21°C, relative humidity: 55 %

Test set-up:
Test object: Installation according to practical use, fixing at exciting mass and isolating mass so that a good contact is guaranteed. Coupling of the vibration exciter via a tappet

Vibration-exciting equipment:	Brüel & Kjaer 4801	Exciting mass:	30 kg
Vibration initiation:	axial	Isolating mass:	30 kg

Static preload: Fastened with threaded rods 400 N, 630 N and 860 N.

Test results: Ventilation angle MVA-L 60 with elastic element MVI-B

- The effectiveness of structure-borne sound insulation starts at:
  ventilation angle "without" elastic element: 100 Hz, "with" elastic element MVI-B: 31 Hz.
- Compared with the ventilation angle MVA-L 60 "without" elastic element MVI-B, the ventilation angle MVA-L 60 "with" elastic elements MVI-B achieves an improvement, which is between 14 to 20 dB depending on the static preload.
- For an increase of the static preload of up to 840 N, the structure-borne sound insulating effect of the ventilation angle MVA-L 60 with MVI-B decreases by up to 6 dB.
- For the ventilation mounting elements MVA-L 100, MVA-Z, MV-SI, MVA-S, MVA-MS, which are installed with the elastic element MVI-B, a similar structure-borne sound insulation can be expected as for the tested ventilation angle MVA-L 60 with the elastic element MVI-B.
- If the ventilation angle MVA-L 60 „with" elastic element MVI-B is used in a professional way, an improvement of structure-borne sound insulation as defined in DIN 4109, „Sound insulation in buildings" of November 1989 can be achieved.

Place and date: Planegg near Munich, 2007-11-30
Test carried out by: Dr. M. Schmidt

Signature:

Anhang

Ergebnisse der Schwingungsmessungen
Terzspektren der Schnellepegeldifferenzen

Ermittlung der Körperschalldämmung nach dem Tonpilzverfahren und der DIN EN ISO 10846-4

Lüftungsmontageelement mit Stangenmontage

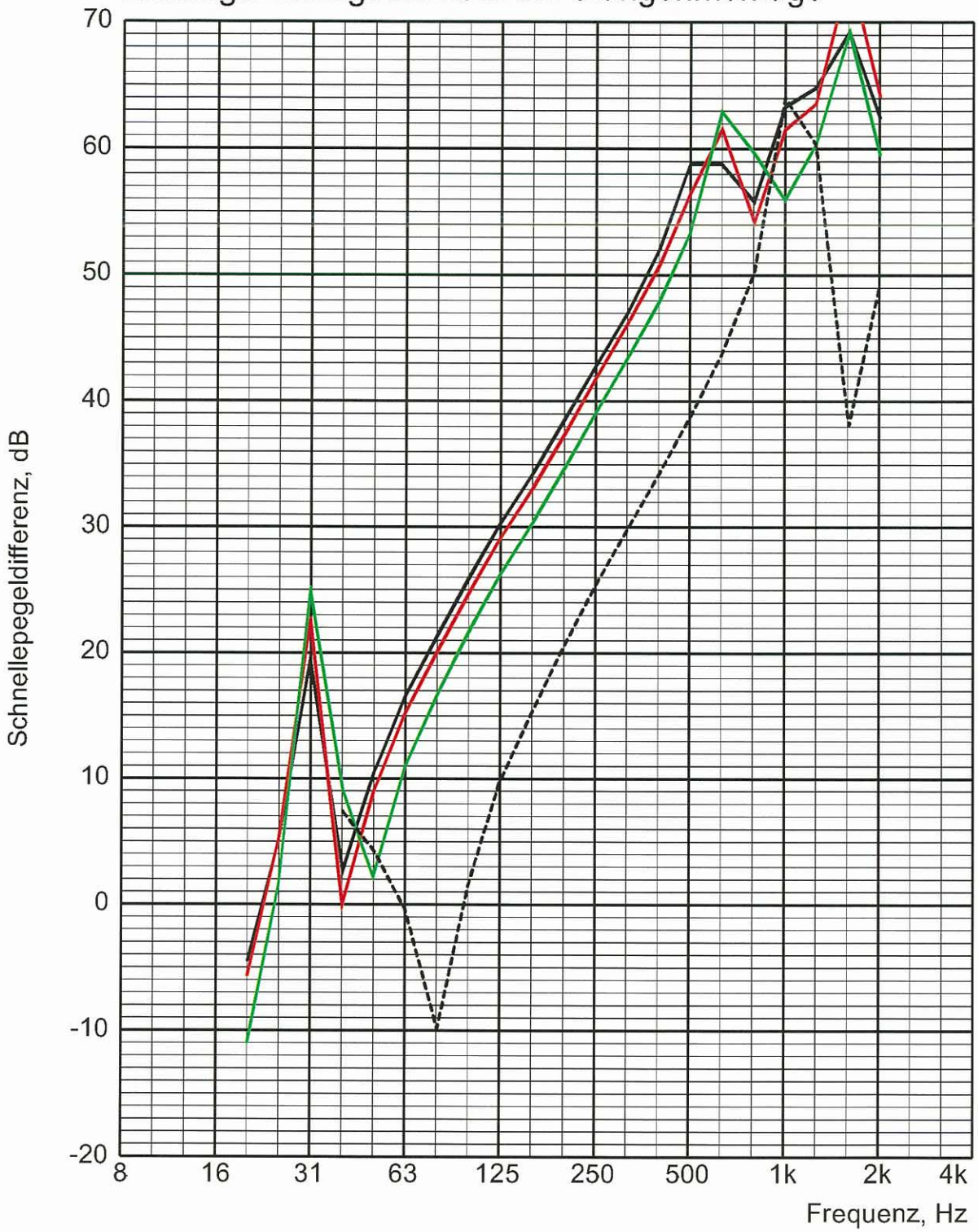

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Abbildung 1