



DAP-PL-2465.10

**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:** 2007-08-27 and -28      **Test report No.** M68 276/8 of 2007-11-30

**Test object:**

Name:	Ventilation angle	Manufacturer:	Hilti
Type:	MVA-L 100 up to 550	Year of construction:	2007
Product No.:	39841 and 39848	State:	new

**Technical data:**

Side length:	100 up to 550 mm	Material:	DC01/DD11
Width:	30 mm	Elastic element MVI-B:	EPDM 55±5 Shore A
Height:	1.5 mm	Fixing holes:	10

**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: 20°C, relative humidity: 60 %

**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: Test 1 without preload, Test 2 with 400 N preload

**Test result:** Ventilation angle MVA-L 100 up to 550 with elastic element MVI-B

- The effectiveness of structure-borne sound insulation of the ventilation angle MVA-L 100 up to 550 starts at different frequencies: ventilation angle MVA-L 100 up to 550 „without“ elastic element MVI-B: 125 Hz or 31 Hz, ventilation angle MVA-L 100 up to 550 „with“ elastic element MVI-B: 50 or 31 Hz.
- Compared with the ventilation angle MVA-L 100 and MVA-L 550 „without“ elastic element MVI-B, the ventilation angle MVA-L 100 and MVA-L 550 „with“ elastic element MVI-B achieves an improvement which, depending on the static preload, is between 10 up to 19 dB fastened with threaded rods and fastened directly to the ceilings.
- For an increase of the static preload to 400 N the structure-borne sound insulating effect of the ventilation angle MVA-L 100 and MVA-L 550 „with“ elastic element MVI-B decreases by 3 up to 4 dB fastened with threaded rods and by 4 up to 6 dB fastened directly to the ceilings.
- If the ventilation angles MVA-L 100 and MVA-L 550 „with“ elastic element MVI-B are 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:

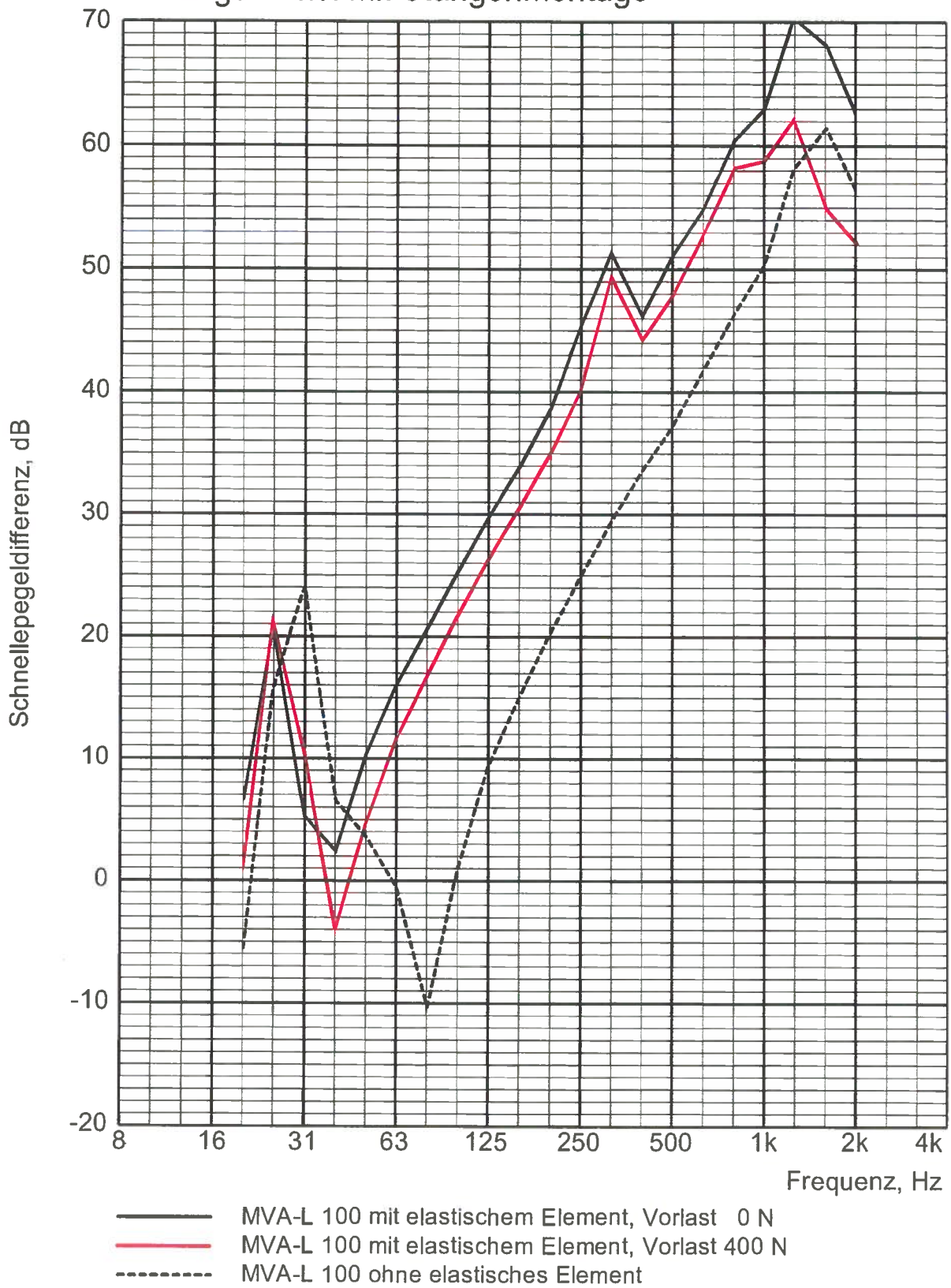
## **Anhang**

**Abb. 1 bis 4**

**Ergebnisse der Schwingungsmessungen  
Terzspektren der Schnellepegeldifferenzen**

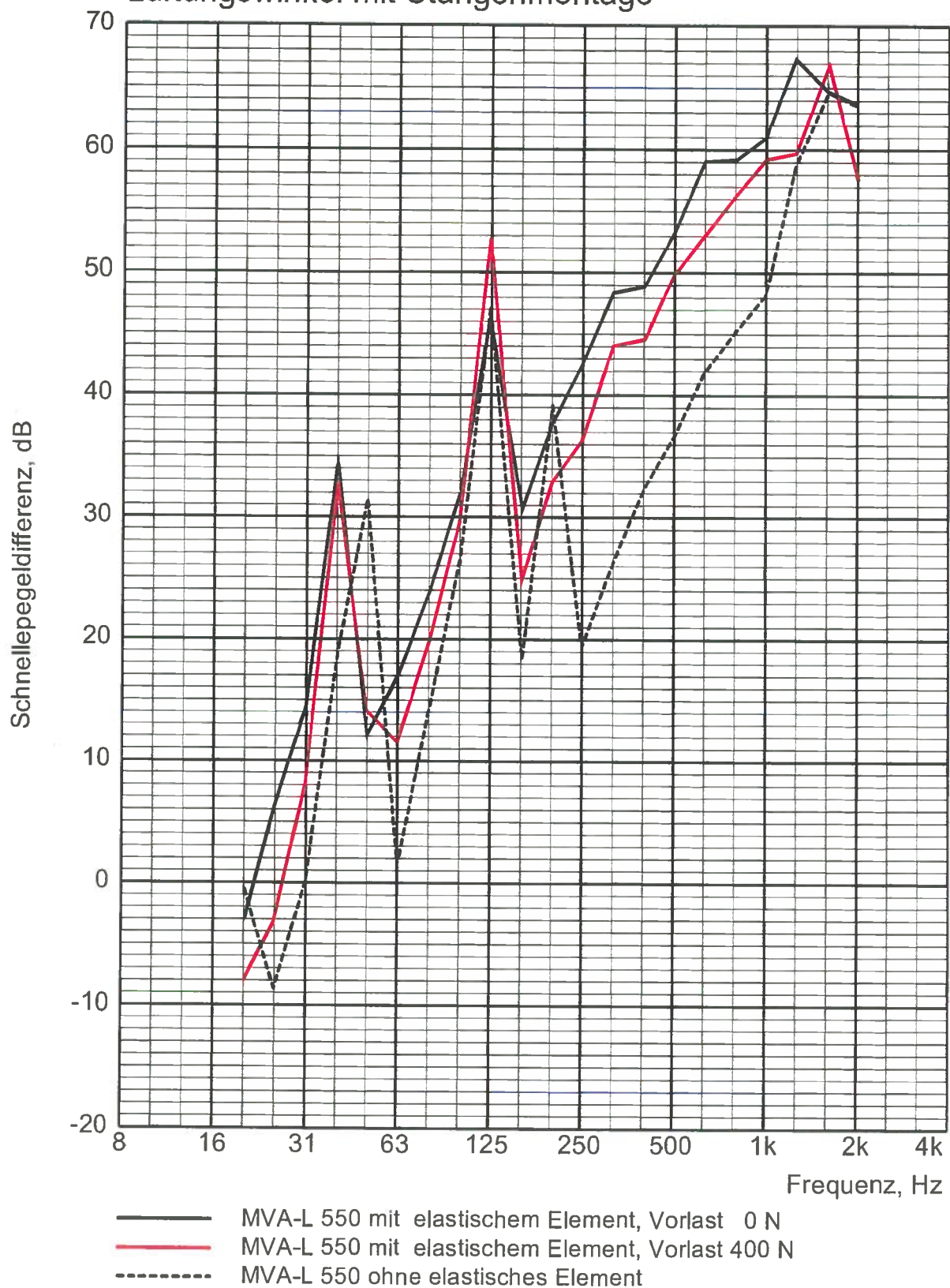
# Ermittlung der Körperschalldämmung nach dem Tonpilzverfahren und der DIN EN ISO 10846-4

Lüftungswinkel mit Stangenmontage



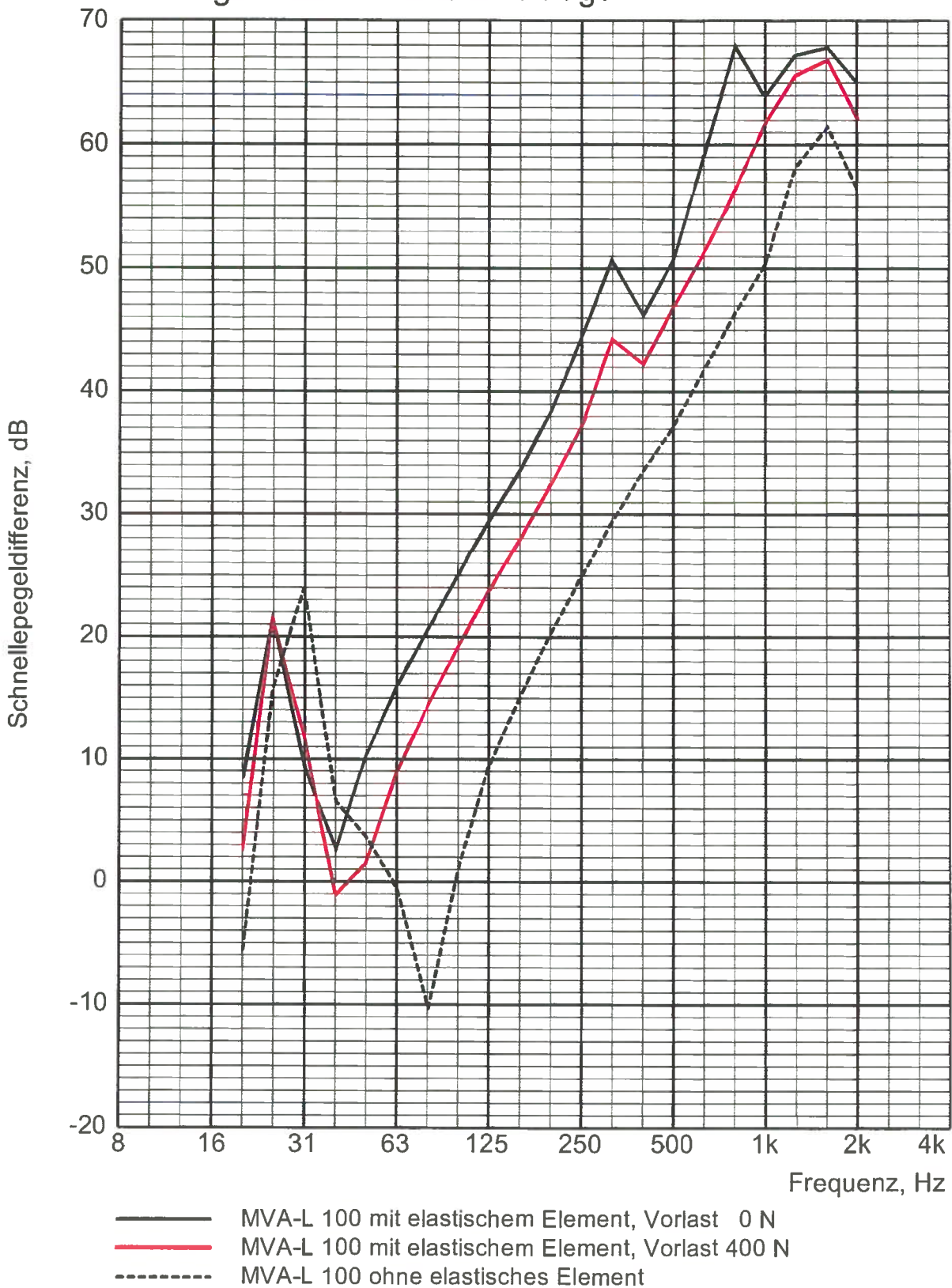
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## Lüftungswinkel mit Stangenmontage



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

Lüftungswinkel mit Direktmontage



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

## Lüftungswinkel mit Direktmontage

