

CS18 FF

Calibration System Free Field



True
Free Field Calibration

Application

- **Secondary calibration** of measuring microphones, sound level meters and other acoustic sensors according to **IEC 61094-8** and **IEC 61672**
- **Periodic single qualification** according to **IEC 61672-3**
- **Calibration of calibrators** according to **IEC 60942**
- **Acoustical measurements** like:
 - Measurement of directivity characteristic
 - Determination of diffuse-field sensitivity
 - Measurement of acoustic emission of small objects
- **Calibration** of constructively mechanically **non-standard microphones**, e.g. external microphone units, optionally in axial and radial direction of measurement

Range of Use

- **Certified calibration laboratories**
- **Measuring instrument verification** in research and industry, for example civil engineering, aviation and automotive engineering
- **Quality assurance** in manufacturing of microphones and sound level meters

Features

- Reference standards **traceable** to Physikalisch Technische **Bundesanstalt (PTB)** Braunschweig by the SPEKTRA Calibration Laboratory D-K-15183-01-00 (DAkkS-calibration certificate)
- True **free-field calibration** in acoustically dead (anechoic) chamber
- **Calibration** of any measuring microphone (condenser, electrets, electro-dynamic etc.) with any construction with / without protection grid
- **Supply** of a defined free-field sound pressure level for the calibration of sound level meters
- **Calibration** of acoustic calibrators
- **Upgradable** to other calibration systems, e.g. CS18 FF / SPL or CS18 FF / SPL-VLF

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Components:

- Vibration control system **SRS-35** by SPEKTRA
- Power amplifier **PA 14-80** by SPEKTRA
- **Reference standards**
 - ½" condenser microphone cartridge class **LS2P** with ½" VIC (Voltage Insert Calibration) preamplifier
 - Sound acoustic calibrator class **LS**, (94 dB / 1,000 Hz and 114 dB / 1,000 Hz)
- **Working standards**
 - ½" condenser microphone cartridge class **WS2F** with preamplifier
- Adapters and accessories
- Standard-PC
- Dedicated transportable **acoustically dead (anechoic) chamber** by SPEKTRA, completely lined with wedge-shaped absorbers, with loudspeaker, for alternately holding the reference standard and test object, with small window for reading off the indications of compact sound level meters without electrical output channel

Specification of CS18 FF with reference standard microphones listed above

for environmental conditions: temperature 23°C (± 2°C) and relative humidity 30 % ... 75 %

Anechoic Chamber	Outside Dimensions	2.00 m x 2.00 m x 2.40 m	
	Inside Dimensions	1.25 m x 1.25 m x 1.65 m	
Type of the Sound Field		Free field of plane progressive waves	
Calibration Method		Comparison with reference standard, substitution method	
Sound Pressure Level		84 dB; (adjustable in the range of 74 dB ... 94 dB,	
Frequency Range and Expanded Uncertainty ¹⁾	Measuring Microphones with Different Diameter Measuring Chains with Separate Microphones	125 Hz ... < 250 Hz	0.35 dB
		250 Hz ... 8,000 Hz	0.30 dB
		> 8,000 Hz ... 10,000 Hz	0.40 dB
		> 10,000 Hz ... 20,000 Hz	0.45 dB
Sound Pressure Level		94 dB; (adjustable in the range of 74 dB ... 94 dB,	
Frequency Range and Expanded Uncertainty ¹⁾	Sound Level Meters with Microphone Mounted Directly to the Body of the Sound Level Meter	125 Hz ... < 250 Hz	0.5 dB
		250 Hz ... 8,000 Hz	0.4 dB
		> 8,000 Hz ... 10,000 Hz	0.5 dB
		> 10,000 Hz ... 20,000 Hz	0.6 dB

Weitere Möglichkeiten der messtechnischen Bewertung

Electrical Tests		Supply of electrical input signal for the electrical tests according to IEC 61672-3, ED1	
Input Signal and Expanded Uncertainty ¹⁾	Sound Level Meters, Measuring Systems	4 kHz tone burst (0.25 ms ... 1 s)	0.2 dB
		C-weighted peak level	0.2 dB
		Level linearity, Frequency weighting, overload indication	0.2 dB

¹⁾ Determined according to GUM (ISO Guide to the expression of uncertainty in measurement, 1995) with k = 2 (coverage factor)