Type 4942 is optimised for general, random-incidence measurements and for noise measurements in accordance with ANSI standards. Being prepolarized, it can be used with both DeltaTron® and classical preamplifiers.

USES
- Diffuse-field measurements
- In-cabin measurements

FEATURES
- Connects to DeltaTron input
- Sensitivity: 50 mV/Pa
- Frequency: 6.3 – 16000 Hz
- Dynamic Range: 14.6 – 146 dB
- Temperature: −40 to +150°C
  (−40 to +302°F)
- Polarization: 0 V

Use of Diffuse-field Microphones
Diffuse-field microphones, also called random-incidence microphones, are designed to have a flat response to signals arriving simultaneously from all directions. They should be used in all situations where the sound field is diffuse, including measurements in reverberation chambers and where several sources contribute to the sound pressure at the measurement position. Applications include indoor measurements, where the sound is reflected by walls, ceilings and objects in the room. Another important application area is in cabin measurements.

Manufacturing and Stability
The use of a press-fitted stainless steel diaphragm ensures superior long-term stability and mechanical robustness. In fact, Type 4942 will withstand the 1 m drop test specified in IEC 60068–2–32.

All Brüel & Kjær measuring microphones are assembled in a clean room. This ensures that the microphones maintain their inherent low noise and high stability, even when used in environments with a combination of high humidity and high temperature.

Polarization Voltage
Being prepolarized, Type 4942 is especially well-suited for battery operated equipment or for operation in humid environments.

Type 4942 can be used with DeltaTron as well classical type preamplifiers.

Individual Calibration Data
Each Type 4942 comes with an individual calibration chart including the open-circuit sensitivity, the frequency response in a diffuse field as well as the electrostatic actuator response.

An enclosed mini-CD contains the individual calibration data at 1/12-octave frequencies plus a wealth of technical information, such as the influence of different accessories, corrections in different sound fields and much more. Using the CD data and the REq-X feature of PULSE™, a real-time correction for different measurement situations, can increase measurement accuracy.
Specifications – ½” Prepolarized Diffuse-field Microphone Type 4942 (valid from serial number 2504591)

**ENVIRONMENTAL**
- Operating Temperature Range: -40 to +150°C (-40 to +302°F)
- Storage Temperature:
  - In Microphone Box: -30 to +70°C (-22 to +158°F)
  - With Mini-CD: 5 to 50°C (41 to 122°F)
- Temperature Coefficient (250 Hz): -0.006 dB/K (-10 to +50°C, 14 to 122°F)
- Pressure Coefficient: -0.010 dB/kPa, typical
- Operating Humidity Range: 0 to 100% RH (without condensation)
  - Influence of Humidity: < 0.1 dB in the absence of condensation
- Vibration Sensitivity (< 1000 Hz): 62.5 dB equivalent SPL for 1m/s² axial vibration
- Magnetic Field Sensitivity: 6 dB SPL for 80 A/m, 50 Hz field
- Estimated Long-term Stability:
  - > 1000 years/dB (dry air at 20°C (68°F))
  - > 2 hours/dB (dry air at 150°C (302°F))
  - > 40 years/dB (air at 20°C (68°F), 90% RH)
  - > 1 year/dB (air at 50°C (122°F), 90% RH)

**DIMENSIONS**
- Diameter with Grid: 13.2 mm (0.52”)
- Diameter without Grid: 12.7 mm (0.50”)
- Height with Grid: 18.2 mm (0.72”)
- Height without Grid: 16.3 mm (0.64”)

**Compliance with EMC Directive**

**Ordering Information**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4942-A-021</td>
<td>½” Diffuse-field Microphone, incl. Preamplifier Type 2671 with TEDS</td>
</tr>
<tr>
<td>4942-A-031</td>
<td>½” Diffuse-field Microphone, incl. Preamplifier Type 2699 with TEDS</td>
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<tr>
<td>4942-B-001</td>
<td>½” Diffuse-field Microphone, incl. Preamplifier Type 2669-B with TEDS</td>
</tr>
<tr>
<td>4942-C-001</td>
<td>½” Diffuse-field Microphone, incl. Preamplifier Type 2669-C with TEDS</td>
</tr>
<tr>
<td>4942-L-001</td>
<td>½” Diffuse-field Microphone, incl. Preamplifier Type 2669-L with TEDS</td>
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<tr>
<td>Type 2671</td>
<td>½” DeltaTron Microphone Preamplifier</td>
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<tr>
<td>Type 2669-B/L/C</td>
<td>Microphone Preamplifier</td>
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<tr>
<td>Type 4231</td>
<td>Sound Calibrator</td>
</tr>
<tr>
<td>Type 4228</td>
<td>Pistonphone</td>
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<tr>
<td>Type 4226</td>
<td>Multifunction Acoustic Calibrator</td>
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<tr>
<td>DP-0776</td>
<td>Calibration Adaptor for ½” Microphones</td>
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<tr>
<td>UA-0033</td>
<td>Electrostatic Actuator</td>
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<tr>
<td>UA-0237</td>
<td>Windscreen for ½” Microphones, 90 mm diameter</td>
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<tr>
<td>UA-0459</td>
<td>Windscreen for ½” Microphones, 65 mm diameter</td>
</tr>
<tr>
<td>BA 5105</td>
<td>The Microphone Handbook</td>
</tr>
</tbody>
</table>

**TEDS COMBINATIONS**

- Includes the following accessories:
  - BC 0224: Calibration Chart
  - BC 5002: Microphone Data CD

**OPTIONAL ACCESSORIES**

- Type 4231 Sound Calibrator

**Note:** All values are typical at 23°C (73.4°F), 101.3 kPa and 50% RH unless otherwise specified

Brüel & Kjaer reserves the right to change specifications and accessories without notice.

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**Specifications**

**IEC 61094–4 Type Designation:** WS 2D
**Polarization Voltage:** 0 V (prepolarized)
**Open-circuit Sensitivity (250 Hz)**: -26 ±1.5 dB re 1 V/Pa, 50 mV/Pa
**Random Incidence Response**: 10 Hz to 10 kHz: ± 1 dB
6.3 Hz to 16 kHz: ± 2 dB
**Lower Limiting Frequency (−3 dB)**: 2 to 4 Hz
**Pressure Equalization Vent:** Rear vented
**Diaphragm Resonance Frequency:** 14 kHz (90° phase shift)
**Capacitance (Polarized):** 14 pF at 250 Hz
**Equivalent Air Volume:** 46 mm³ (250 Hz)
**Cartridge Thermal Noise:** 14.6 dB(A), 15.3 dB(Lin)
**Upper Limit of Dynamic Range (3% Distortion):** >146 dB SPL
**Max. Sound Pressure Level:** 158 dB (peak)

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**Fig. 1** Typical random-incidence response of the microphone with protection grid. The low-frequency response is valid when the vent is exposed to the sound field