

Building Acoustics Measurements with 2255

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Who am I?



Thom King

- Product Manager - Handheld Solutions

Working for HBK
over the past 9 years

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Today's Session

- ▲ What is Building Acoustics?
- ▲ Equipment to use
- ▲ Using the Building Acoustics IOS app
 - Setup your project
 - Making Measurements
- ▲ Using the Building Acoustics Partner IOS app
 - Importing data
 - Checking results
 - Generating reports

What is Building Acoustics?

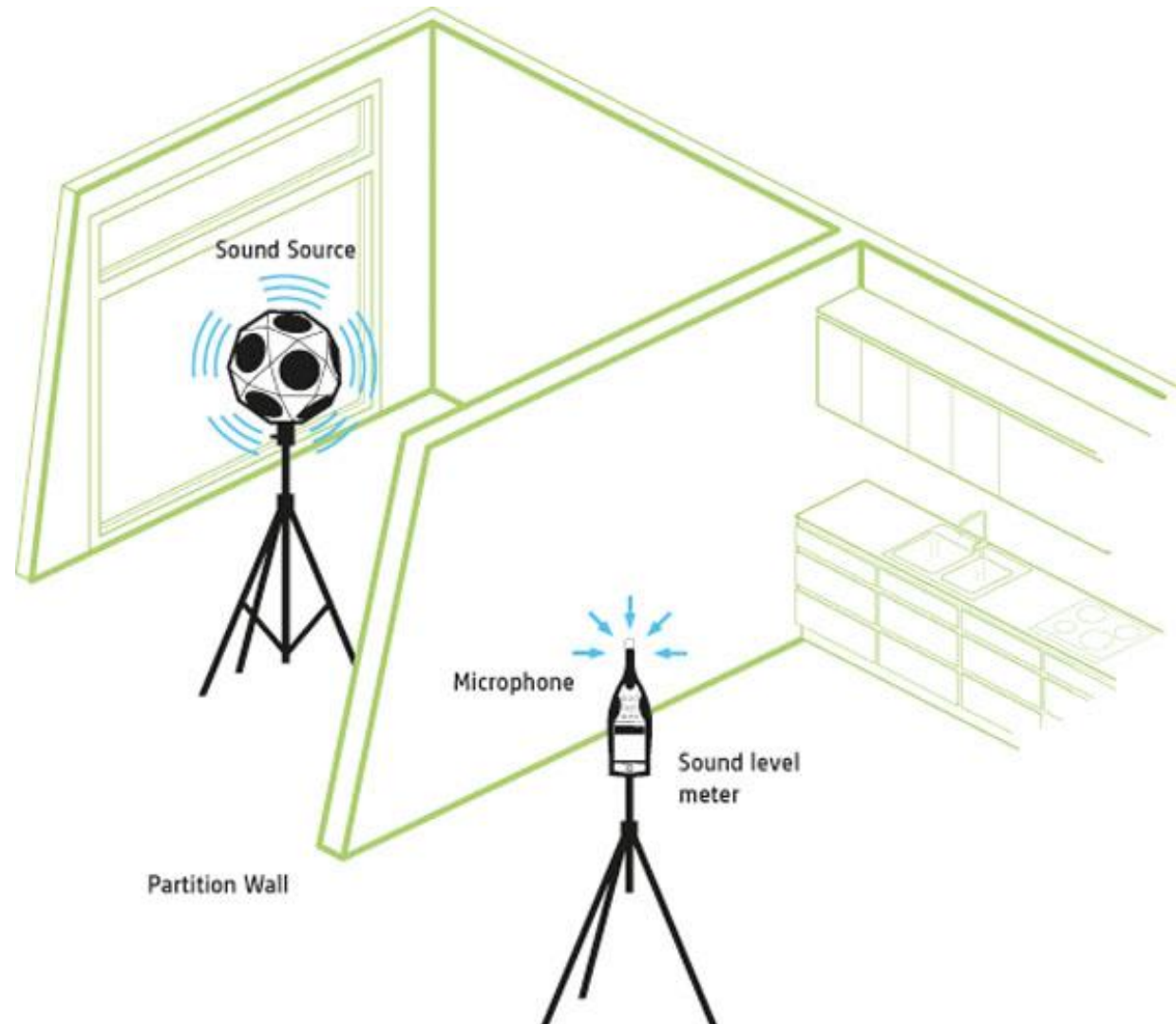
A method for testing Sound Insulation in buildings

Also Called Partition Testing

Required for dwellings



Types of Measurements

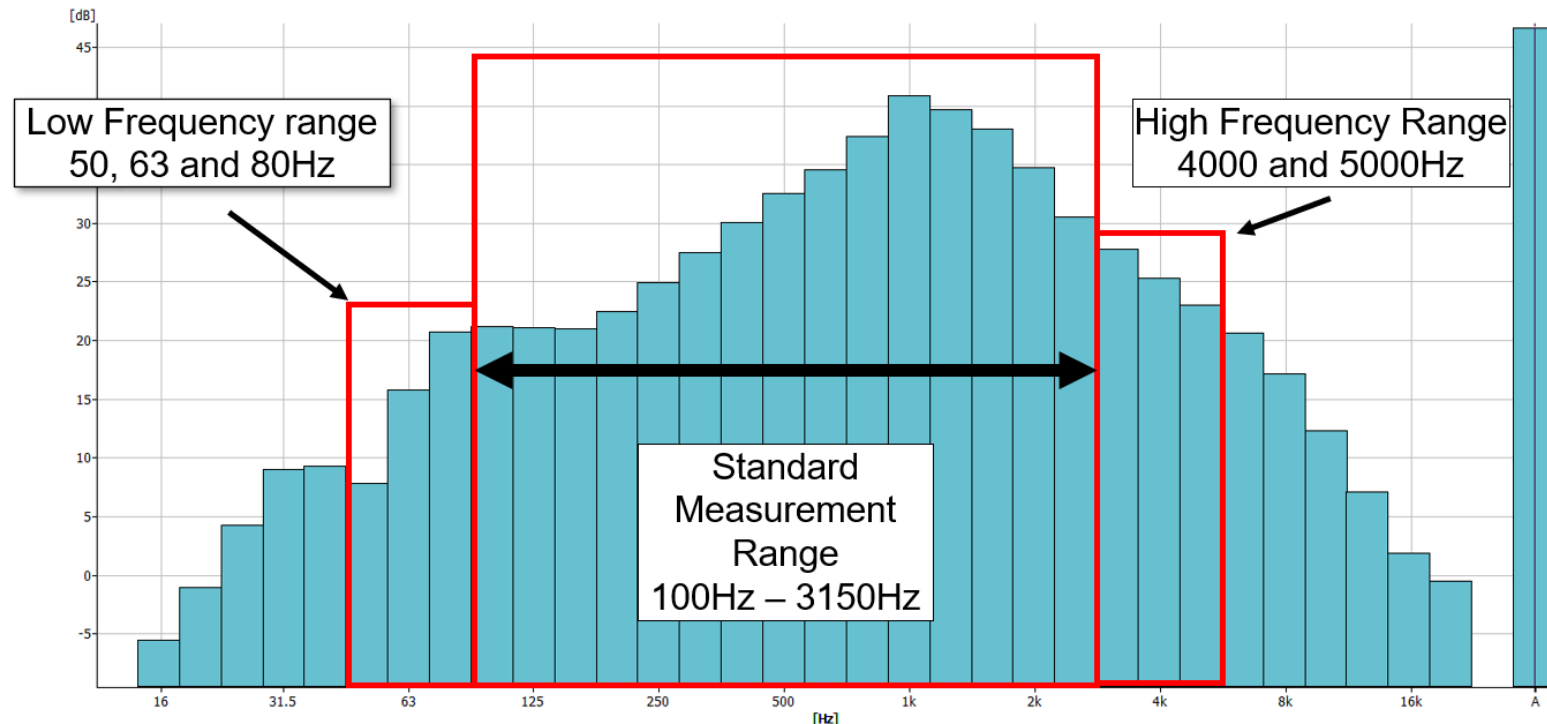


How Is The Test Completed?

- ▲ Involves 2 different types of measurement
 - Frequency Measurement (normally 1/3 octave)
 - Reverberation time (T20 or T30)
- ▲ Requires the use of additional equipment to complete the test

Frequency Measurements

- ▲ Average over a specified period
- ▲ normally 1/3 octave data
- ▲ The measurement criteria is set by the standard



As according to ISO 16283

Reverberation Tests

- ▲ Measures the time taken for a sound to decay by 60dB
- ▲ This is very hard to achieve!
- ▲ In practice either the T20 or T30 is measured
- ▲ Completed with either impulsive or interrupted noise tests

Impulse vs Interrupted

▲ Impulse Method

- ▲ SLM is placed in the environment
- ▲ An impulsive source is set off e.g.
 - Starter Pistol
 - Balloon Pop
 - Clapper
 - ~2 pieces of wood
- ▲ Measurement is made from the peak level



▲ Interrupted Method

- ▲ SLM is placed in the environment
- ▲ Noise source excitation of the space
- ▲ Noise source is cut off and measurement occurs from this point



Equipment to use

Primary Equipment

- Sound Level Meter
- Acoustics Calibrator
- Amplifier and Speaker
- Tapping Machine



Secondary Equipment

- Impulsive Source
- Tripods
- Tape Measure



Building Acoustics Partner

- ▲ Project Based Measurements
 - ▲ Multiple Standards Supported
 - ▲ Measurement Techniques Supported
 - ▲ All New Measurement Assistant
 - ▲ Review Results In App
-
- ▲ New PC software
 - Measurement Review
 - Data Evaluation And Adjustment
 - Report Generation
 - ▲ New Smart 2755 Amplifier
 - Wireless Connection from 2255



HBK 2755 Smart Amplifier

- ▲ High-power output
- ▲ Single- or dual-channel output
- ▲ Lightweight and highly portable for field use
- ▲ Powerful signal generator with preloaded signals
- ▲ Power compression compensation
- ▲ Wireless remote control with HBK 2255 Sound Level Meter or web app
- ▲ Can operate as a universal USB audio device



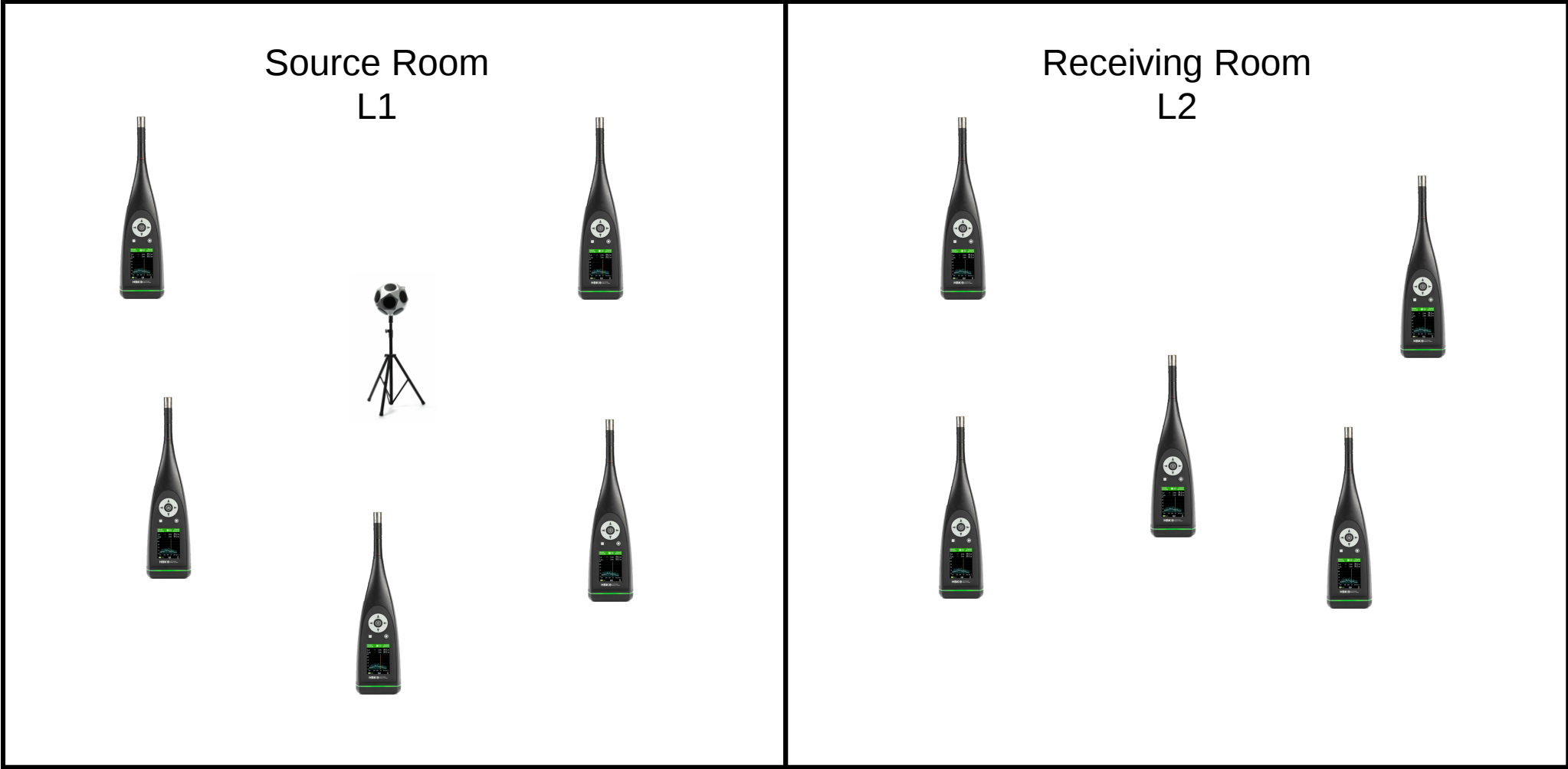
Measurements to perform

Measurement Positions

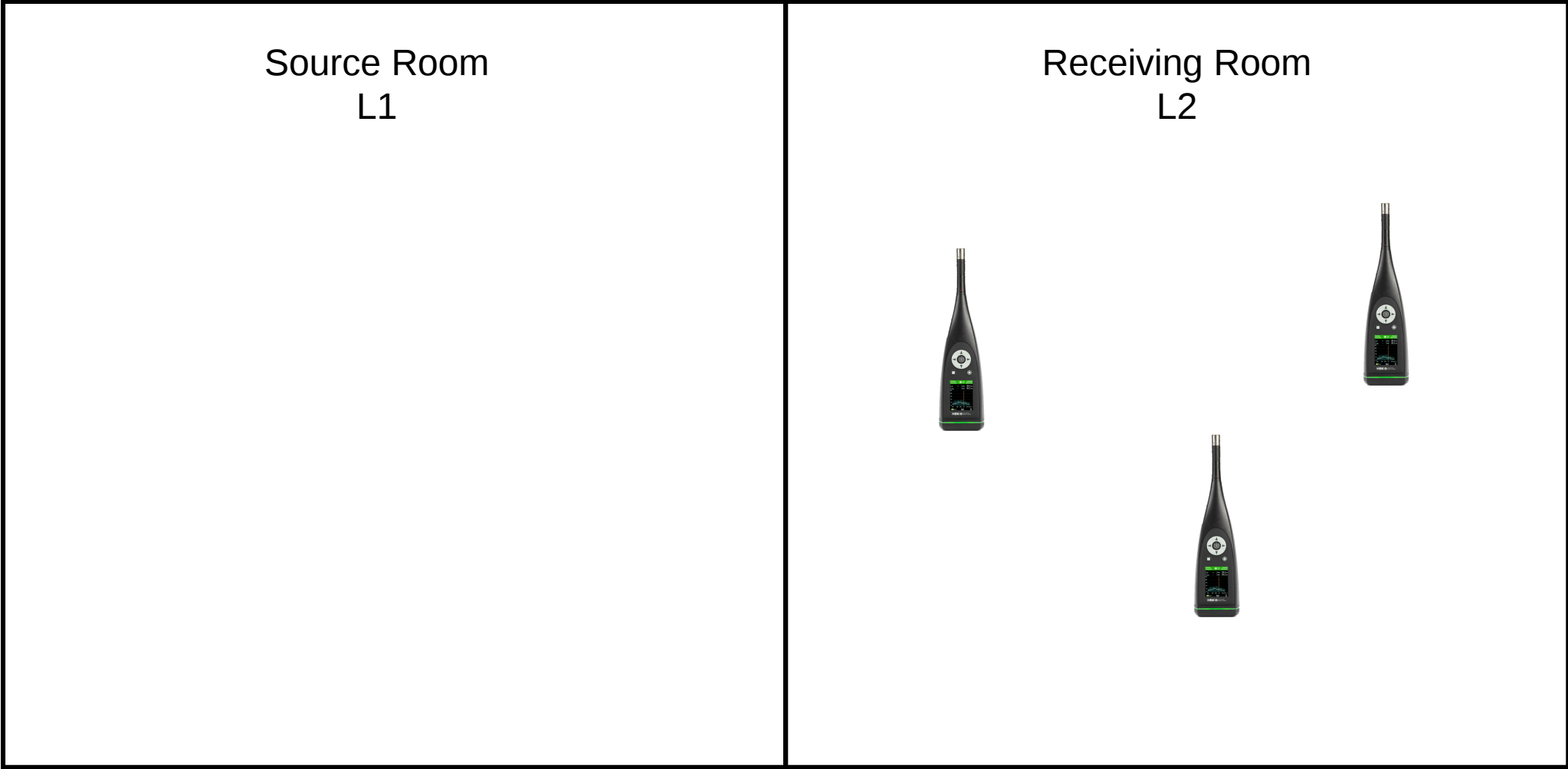
- ▲ L1 – Source Room Measurements
- ▲ L2 – Receiving Room Measurements
- ▲ B2 – Background Noise Measurements
- ▲ T2 – Reverberation Time Measurement

Building Acoustics Partner (IOS)

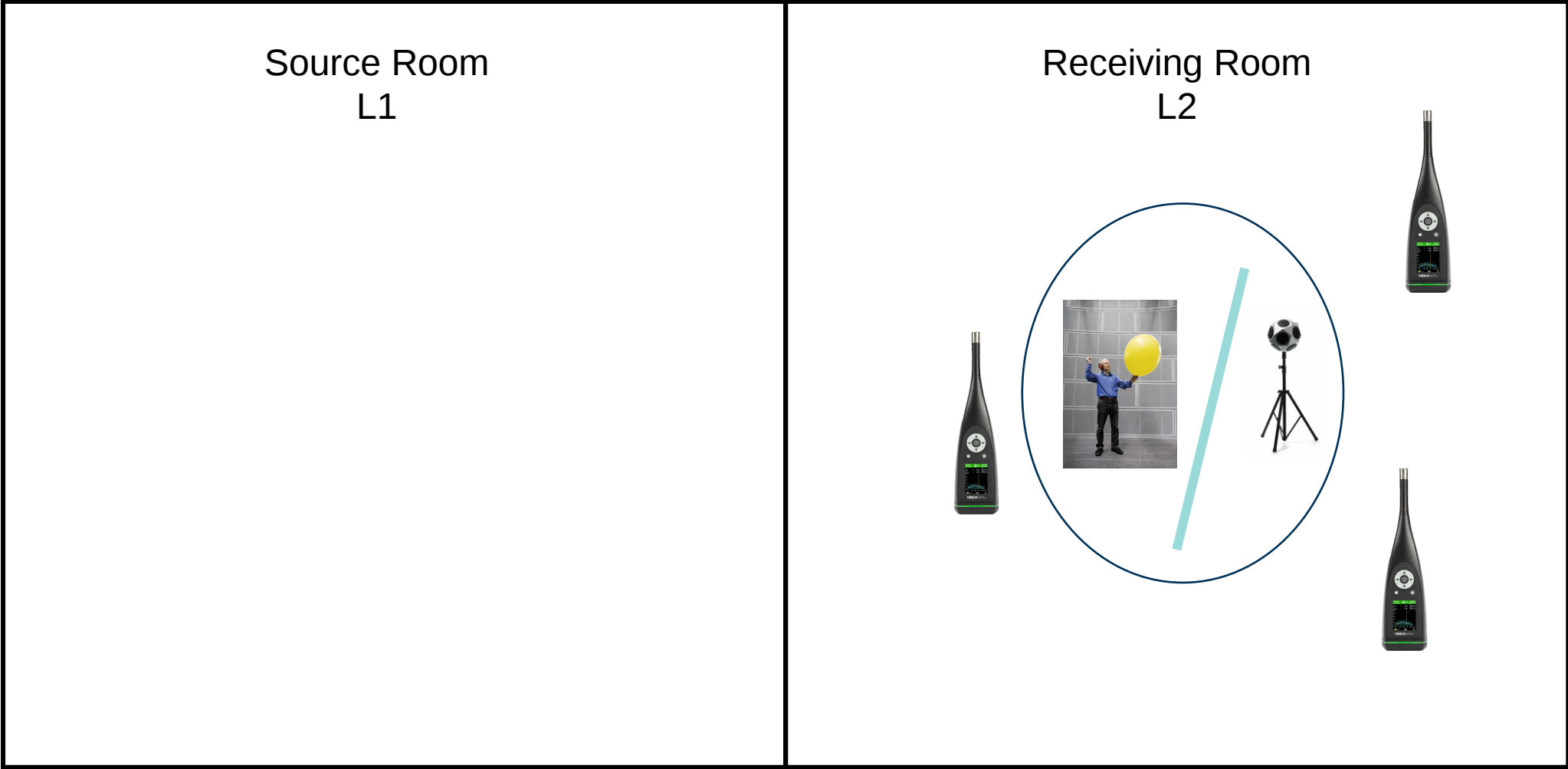
L1 and L2 Measurements



Background Measurements (B2)



Reverberation Time Measurements (T2)



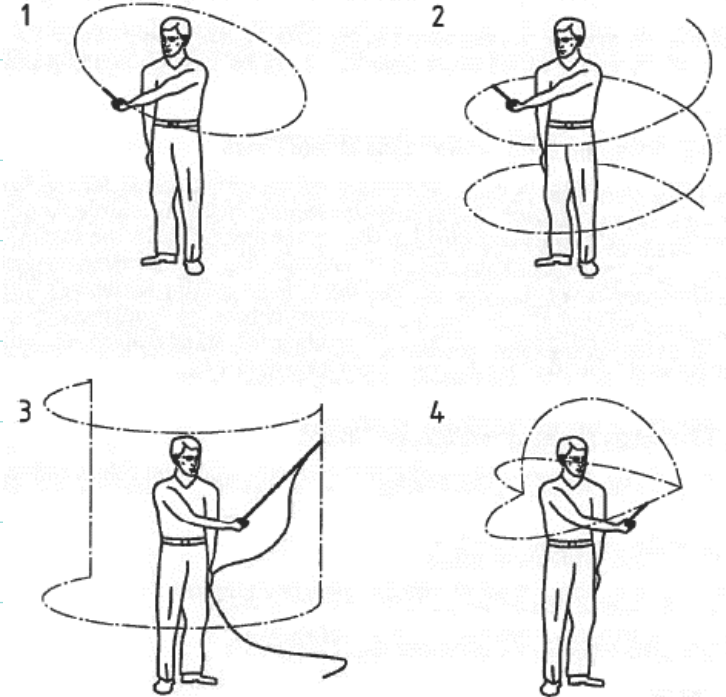
Measurement Techniques

Fixed Microphone Position

Manually Held Microphone

Mechanized Continuously Moving Microphone

Manually-Scanned Microphone



Setup and Measurements

- Creating Projects
- Selecting Standards
- Measurement Methods
- Measurement Assistant
- Results on Screen
- Export to the new PC software
- Report Generator



Final Calculation

- ▲ The 4 component measurements are brought together and a calculation is performed to provide a result
- ▲ Depending on the standard, different results are required
- ▲ Examples include
 - R – Sound Reduction Index
 - Dw – Onsite Sound Insulation
 - DnTw - Onsite Sound Insulation normalised for reverberation
 - DnTw + Ctr – as above with a low frequency correction

Rating according to ISO 717-1

$$D_{nT,w}(C;C_{tr}) = 59 \text{ (-2; -6) dB}$$

$C_{50-3150} = \text{N/A dB}; C_{50-5000} = \text{N/A dB}; C_{100-5000} = \text{N/A dB};$

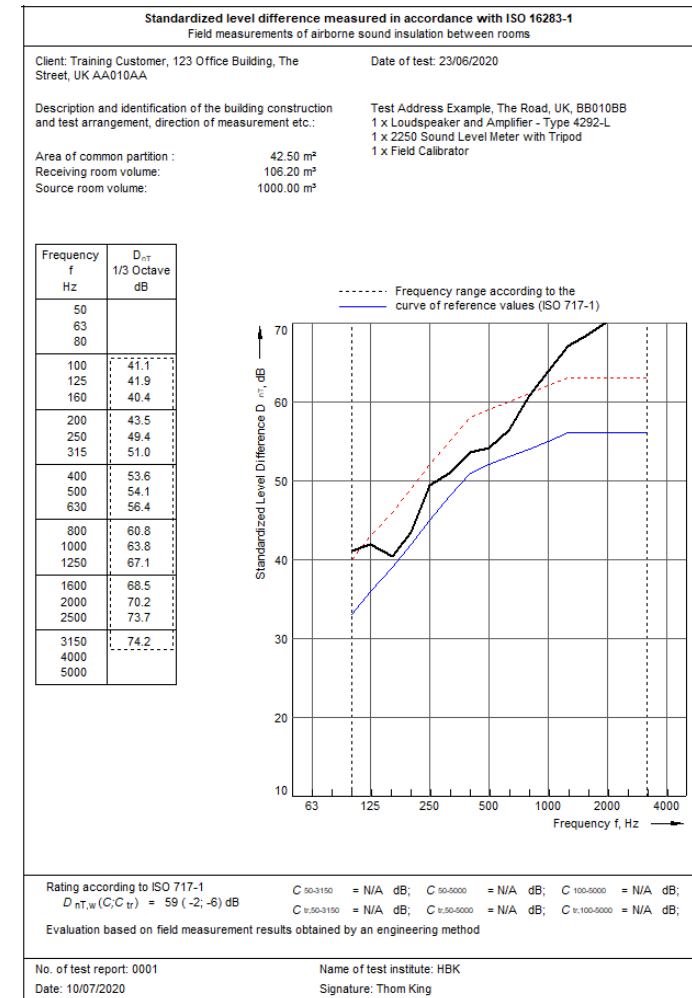
$C_{tr,50-3150} = \text{N/A dB}; C_{tr,50-5000} = \text{N/A dB}; C_{tr,100-5000} = \text{N/A dB};$

Evaluation based on field measurement results obtained by an engineering method

Report

Includes:

- Standard
- Client Name and Address
- Date of test
- Description of test
- Room volume and partition dimensions
- Results
- Test conductor



Building Acoustics Partner PC

Thank you

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