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Before you leave the office

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- Documentation
- Suitable Equipment
- Calibration
- Equipment Checking
- Training
- Preparation

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Documentation

PCT Workshop 2019

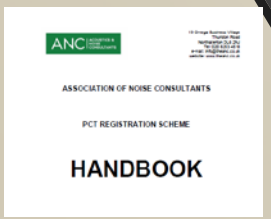
Documentation

Currently documentation for the scheme consists of:

Association Of Noise Consultants PCT Registration Scheme Handbook – Version 13.0, November 2018

Practice Guidance for sound insulation testing in dwellings (2018) – Version 1.1

Latest version of the Practice Guidance discussed by Iain this afternoon



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Relevant Standards

Which standard should measurements be made to?

BS EN ISO 140 Series

OR

BS EN ISO 16283

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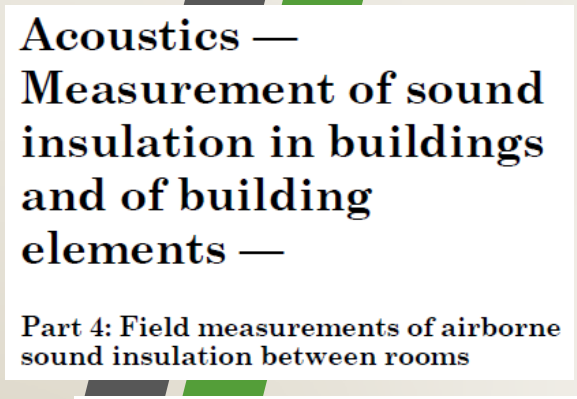

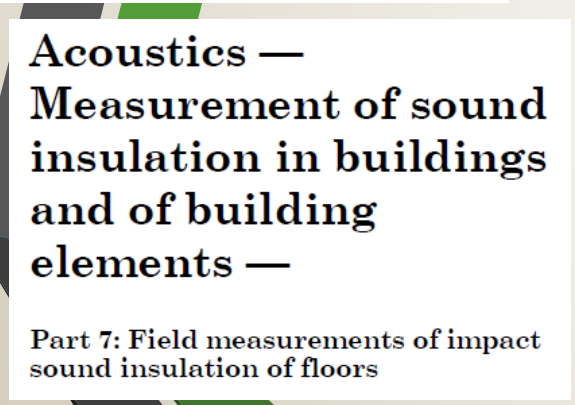

Relevant Standards

BS EN ISO 140 Series

NOT

BS EN ISO 16283

Approved Document E refers to dated versions of the standard and so ISO 140 (4 & 7) remain

However, BS EN ISO 16283:2014 Part 1 (and Part 2 for impact) should be used as guidance, replacing BS EN ISO 140-14:2004 for 'special situations in the field', which is also now withdrawn.

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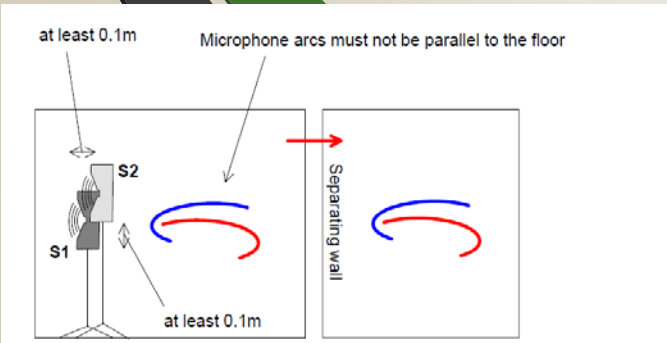
Relevant Standards

BS EN ISO 16283:2014 Parts 1&2 usefully permit the tester to remain in the test room and describe several manual scanning techniques, which the withdrawn ISO 140 Parts 4 and 7 do not.

BS EN ISO 16283:2014 Parts 1&2 also describe impulsive sound sources for reverberation time measurement, using reverse integration methods, according to BS EN ISO 3382-2:2008, which the withdrawn ISO 140 Parts 4 and 7 do not.



The blue and red arcs represent the microphone sweeps corresponding to S1 and S2

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Suitable Equipment

Suitable Equipment

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Sound Level Meter – class 0 or 1

Class 1 61260 for octave and fractional octave filters

On-site calibrators should comply with accuracy class 1

Sound Source – White/Pink Noise

Suitable signal chain

Loudspeaker/amplifier – Omni-directional or Cabinet

Tapping Machine

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Calibration

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What Needs to be Calibrated and When?

Sound Level Meters (inc. microphone & pre-amp)?

Calibrators?

Tapping Machines?

Sound Source?

Loudspeaker?

Loudspeaker Stand?

Tape Measure?

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What Needs to be Calibrated and When?

Sound Level Meters – two years (or if pre-amp/microphone changed)

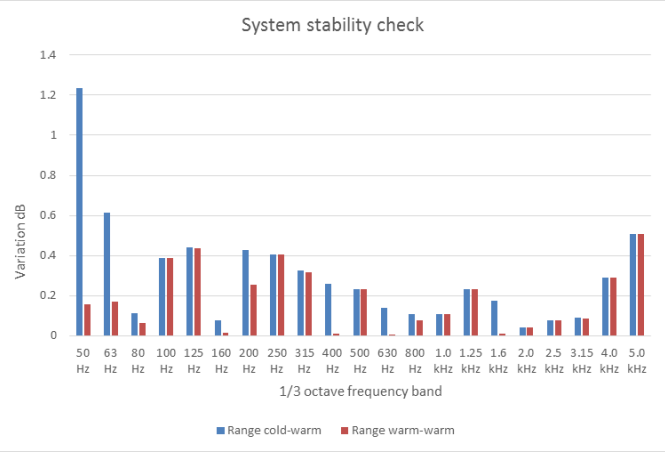
Calibrators – two years with annual cross check or every year

Tapping Machines – conformance check two years

Loudspeaker – none but…

Sound Source Stability Check as Appendix E in Practice Guidance… at least every two years

Loudspeaker Stand – verify minimum height with tape measure



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Calibrators

Calibrators to at least 'traceable' standards, by a competent laboratory at intervals not exceeding one year.

Alternatively, calibrator 'in-house' against a known calibrator of the same type which has been calibrated by the competent laboratory within the previous twelve month period.

In that case the calibration interval between 'traceable' laboratory calibrations, for the calibrator, can be every two years.

The 'in-house' calibration checks must be formally recorded and the records supplied with the other instrument calibration certificates when requested as part of a company audit.

Test equipment cross check for ABC Acoustics Ltd					
Instruments	Sound level meter	Calibrator	Date of last calibration	Type of calibration	Certificate number
Kit 1	Meter A Ser.AAAA	Calibrator B Ser. BBBB	1/4/2015	Traceable	ABC 001
Kit 2	Meter C Ser.CCCC	Calibrator D Ser.DDDD	1/4/2015	Traceable	ABC 002
Reference cross-check					
	Calibrator B	Calibrator D	Drift	Temp (°C)	Date of cross check
Meter A	114	114	n/a	19	1/4/2015
Meter C	114	114	n/a	19	
Annual (intermediate) Cross Check					
Meter A	114	113.9	- 0.1 dB	19	31/3/2016
Meter C	114	114	0 dB	19	

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What is a Competent Laboratory?

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What is a Competent Laboratory?

The scheme does not require members to only use UKAS accredited laboratories

A valid certificate of calibration should be obtained from a calibration laboratory that demonstrates competence, measurement capability and traceability to National standards.

It is the Members' responsibility to satisfy themselves of this as the ANC does not provide an 'Approved List' of non-UKAS laboratories.

UKAS
UNITED KINGDOM ACCREDITATION SERVICE

Calibration

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Calibration certificates for sound level meters should include the following information:

No.	Item	Check
1	Name and address of calibration laboratory	
2	Accreditation No. (i.e. UKAS if applicable)	
3	Certificate number	
4	Customer name and address	
5	Date of calibration	
6	Instrument manufacturer, model number and serial number	
7	Microphone manufacturer, model, serial number	
8	Pre-amplifier manufacturer, model, serial number	
9	Calibrator manufacturer, model, serial number	
10	Any additional items included e.g. windshield, extension cable etc.	
11	Ambient temperature during tests	
12	Ambient pressure during tests	
13	Ambient relative humidity during tests	
14	Statement that tests are in accordance with BS7580 Part 1 or BS EN IEC 62672	
15	Full list of all tests undertaken and that they have 'passed'.	
16	Reference 'user' calibration level with supplied calibrator e.g. 113.8 dB @ 1 kHz.	
17*	Statement that 1/1 and 1/3 octave filters have been checked to BS EN IEC 60225 or 61260	
18*	Verification that the instrument can carry out RT measurements according to BS EN ISO 3382:2000 with table of all frequencies checked.	
19	Statement of uncertainty	
20	Name and signature of engineer	

*these items are not mandatory but may be considered best practice.

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Common Calibration Audit Issues

Make sure your list of equipment includes the calibration certificate number and date

Have microphones or preamps been replaced or swapped?


Double check to make sure they are correct


Check again…


No, really, check it again…

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Equipment Checking

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Is my sound source stable?

The measurement procedure depends on the source room signal being constant.

Check periodically under controlled conditions that the source level measured over two 30 second periods does not vary by more than 1 dB in any ⅓-octave band in the measured frequency range when neither microphone or loudspeaker are moved.

If the equipment is found not to comply, the test results which have been taken since the previous check will be thrown into doubt; therefore a suitable period should be chosen to minimise this risk

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Is my sound source stable?

wireless radio links

The same procedure should be used as above.

The tester should be satisfied that the system has the capability to handle the maximum signal that is transmitted, over the required frequency range and that it is stable.

Their use should be included in all assessments of source stability and estimates of uncertainty.

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Using two sound sources

If more than one sound source is used simultaneously, the output power of each source must be similar in each relevant frequency band.

The standard requires that sound sources must be 'similar' for the two loudspeaker method.

Taken to mean 'similar' type; e.g. cabinet or omni loudspeaker with similar noise source.

<u>Most important aspect is that output power must be similar in each frequency band</u>

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Can I use it?

It is OK to use hired equipment but please make sure you are familiar with the equipment and it meets the requirements of the scheme (see previous slides)

In-house witness checks should be carried out regularly to pass on best practice

For example, if specific meter settings are required for proprietary software to work, be sure there is a method for checking the settings

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Training

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Training

Can you use the equipment?

Are you sure you know all of the setup requirements for the meter to feed into the software?

Can you use the spreadsheet or software to carry out the calculations?

Are you up to date with methodology and standards?

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Preparation

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Have you been able to plan the rooms to be tested using drawings and calculate volumes?

Are you confident about the construction types and how many groups there are?

Are you aware of the Health & Safety Requirements of the site?

Is site aware of the requirements of the tests (rooms complete, façade complete, doors on, low noise & full access etc)?

Is there power/adequate lighting?

Do you know where the site is?

Do they know you're coming?

Is there parking?

Have they paid?

Is there an Examiner coming too??…

Preparation

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Is the equipment working? Try before you leave

Do you have spares for possible problems, batteries, cables etc?

Adequate stock of survey sheets, etc?

Do you have a checklist?...

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Questions?

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THANK YOU

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