

Before you leave the office

Documentation Suitable Equipment Calibration Training Preparation

Documentation

Currently documentation for the scheme consists of:

Association Of Noise Consultants PCT
Registration Scheme Handbook – February 2016

Good Practice Guide - ANC Registration Scheme
For Precompletion Testing – Version 1.4.1

New version of the Good Practice Guide available today –
Iain Critchley to discuss later!

Documentation

Relevant Standards

Which standard should measurements be made to?

BS EN ISO 140 Series

OR

BS EN ISO 16283

Documentation

Relevant Standards

BS EN ISO 140 Series

NOT

BS EN ISO 16283

ADE 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field', which is also now withdrawn.

Documentation

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1&2 usefully permit the tester to remain in the test room and describe several manual scanning techniques, which the withdrawn ISO 140 Parts 4 and 7 do not.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for reverberation time measurement, using reverse integration methods, according to BS EN ISO 3382-2:2008, which the withdrawn ISO 140 Parts 4 and 7 do not.

Suitable Equipment

Sound Level Meter – Type 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
(BS EN ISO 140-4)

Tapping Machine

Is my calibration valid?

How frequent?

Where?

What needs to be checked?

What standards?

What Needs to be Calibrated and When?

- Sound Level Meters (inc. microphone & pre-amp)?
- Calibrators?
- Tapping Machines?
- Sound Source?
- Loudspeaker?
- Loudspeaker Stand?

What Needs to be Calibrated?

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

Calibrators – two years with annual check or every year

Tapping Machines – conformance check two years

Sound Source – none but...

Loudspeaker – none but...

Loudspeaker Stand – tape measure

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.

What is a Competent Laboratory?

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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.

Table 1 – 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 61672	
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 @ 1000 Hz.	
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 3382-2 with table of all frequencies checked.	
19	Statement of uncertainty	
20	Name and signature of engineer	

*these items are not currently mandatory but may become so in future.

Common Calibration Audit Issues

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

Double check to make sure they are correct

Check again...

No, really, check it again...

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 $\frac{1}{3}$ -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

Is my sound source stable?

wireless radio links

The same procedure should be used for both source and receiver room measurements.

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.

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.

Most important aspect is that output power must be similar in each frequency band

Training

Can you use the equipment

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

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

Are you up to date with methodology and standards

Can I use it?

It is OK to use hired equipment but please make sure you have had a trial run or are familiar with the equipment

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

Preparation

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?

Will the site be quiet?

Is there power/adequate lighting?

Do they know you're coming?

Do you know where it is?

Is there parking?

Have they paid.....

Preparation

Is the equipment working? Try before you leave

Do you have spares for possible problems, batteries, etc

Adequate stock of survey sheets, etc

Calibrate the meter and tapping machine before leaving the office

Repeat on site

Do you have a checklist...

Do they know I'm
coming?

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