

## Echo Barrier Simple Field Demonstration Guide

The following is a guide that details how to demonstrate the field performance of Echo Barriers in a test situation, for example, demonstrating the attenuation to a potential client.

### Hardware and Test Area Requirements

1. A simple integrating sound level meter capable of measuring dB(A)Leq (LAeq)
2. A compact noise source e.g. small generator, jack-hammer (needs workpiece) or similar - or a loud-speaker and amplifier1.
3. 2m high open mesh metal fencing panels
4. Echo Barriers
5. An open space (e.g. carpark) with no roof and no hard, reflecting surfaces within 10m or so of the test area (to prevent sound reflections interfering with the results).

### Noise Measurements

All noise measurements should be carried out at a height of 1.5m. The sound level meter should be set to measure an “A” weighted Leq (LAeq), with each measurement averaged over a period of about 20 seconds. The meter must be reset between measurements.

It is also necessary to measure the background noise at each of the measurement locations before the noise source is turned on. This is to make sure that the background noise is low enough so that it does not contribute to the measured noise levels. The background noise should be 10dB below the lowest noise level that is measured with the barriers in place.

For example, if the source noise level at 10m is 80dB(A) without any barriers and the noise level with barriers is 65dB(A), then the background noise level at that measurement location (with the noise source off) should be less than 55dB(A).



## 1. Open Area Test

This demonstrates the effectiveness of Echo Barriers where there are no nearby walls or other reflecting surfaces. Arrange the barrier and noise measurement positions as shown in figures 1 and 2.

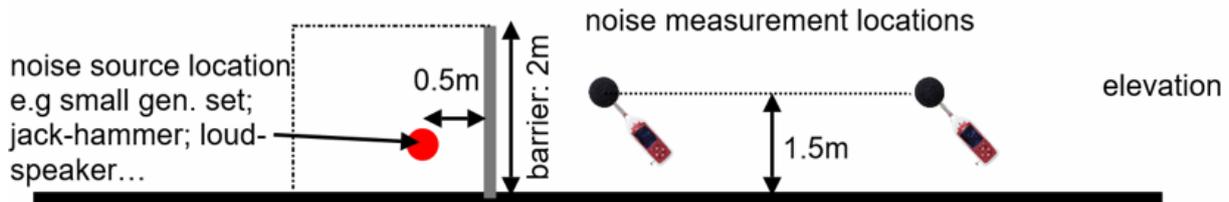
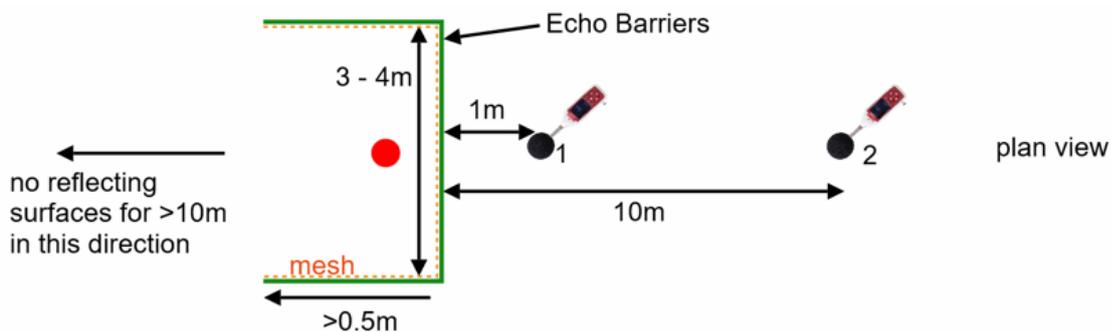


Figure 1: open area test layout: elevation

Assemble the open metal mesh fencing at the position shown and then measure the background noise at location 2. Turn the noise source on and measure the noise at locations 1 and 2, making a note in a table (see table 1 as an example).



**Test 1:** construct barrier with single or double layer of Echo Barrier, mesh facing noise source

Figure 2: open area test layout: plan view

Then construct the barrier by hanging the Echo Barriers on the open mesh fencing (mesh facing the noise source) and secure neatly with no gaps between the barriers or between barriers and the floor. If necessary, the test may also be carried out without the 0.5m barrier returns.

Turn on the noise source and measure the noise at locations 1 and 2, filling-in the table as below. Then turn off the noise source and repeat the background noise measurement to check that it is still 10dB lower than the screened noise with the source on.

If required, the test can be repeated with a double layer of Echo Barrier. Simply fit a second set of barriers on the installation kit hooks over the first set, making sure that they are off-set to overlap the joints by 50%.



Table 1: open area example

Test type	Barrier type	Location 1 (LAeq)	Location 2 (LAeq)
Open area			
Background noise	No barrier		55dB
Unscreened source noise	No barrier	95dB	85dB
	Echo Barrier single	80dB	70dB
	Echo Barrier double	76dB	66dB
Background noise	No barrier		54dB

<sup>1</sup>**Technical note: using a loud-speaker and amplifier:** the noise tests can also be carried out using a loudspeaker and amplifier fed by a sound file of a typical noise source. The ideal requirement is for a sound system than can generate an average noise level (LAeq) from the sound file of c 95dB(A) at 1m. A 30-50watt amplifier with a suitable high efficiency loud-speaker should be sufficient. Suitable sound files are available from Echo Barrier (breaker and rock drill) that can be played into the amplifier on a loop from a mobile phone, tablet or mp3 player.



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