

# Technical Report



INVESTOR IN PEOPLE

*Report Number C/08/5L/20198/R01*

*Date 12 March 2009*

## *Project*

**The Laboratory Determination of  
Airborne Sound Transmission,  
of Four Doorsets**

## *Prepared for*

**Leods Contracts Ltd  
Unit 5, Broomfield Industrial Estate  
Folly Hall  
Huddersfield  
HD1 3PA**

***By*  
Allen Smalls**



0444

## **Sound Research Laboratories Limited**

*Consultants in Noise & Vibration*

Head Office & Laboratory: Holbrook House, Little Waldingfield  
Sudbury, Suffolk CO10 0TH

Telephone (01787) 247595 Fax (01787) 248420

e-mail: [srl@soundresearch.co.uk](mailto:srl@soundresearch.co.uk)

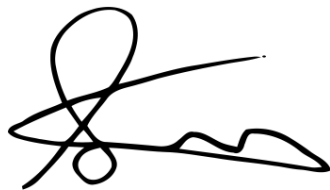
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## 1.0 Summary

Tests have been done in SRL's Laboratory at Holbrook House, Sudbury, Suffolk, to determine the sound reduction index of four doorsets in accordance with BS EN ISO 140-3:1995

From these measurements the required results have been derived and are presented in both tabular and graphic form in Data Sheets 1 to 9.

The results are given in 1/3rd octave bands over the frequency range 50 Hz to 10 kHz, which is beyond that required by the test standard. Measurements outside the standard frequency range are not UKAS accredited.



.....  
**Allen Smalls**  
Laboratory Manager  
Quality Manager



.....  
**Trevor Hickman**  
Executive Consultant  
Deputy Technical Manager

For and on behalf of  
Sound Research Laboratories Ltd



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## 2.0 Details of Measurements

### 2.1 Location

Sound Research Laboratories Ltd  
Holbrook House  
Little Waldingfield  
Sudbury  
Suffolk  
CO10 0TH

### 2.2 Test Dates

12 March 2009

### 2.3 Instrumentation and Apparatus Used

| Make                     | Description                                                                                                    | Type                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| E D I                    | Microphone Multiplexer<br>Microphone Power Supply Unit                                                         |                                               |
| Norwegian<br>Electronics | Real Time Analyser<br>Rotating Microphone Boom                                                                 | 830<br>231                                    |
| Brüel & Kjaer            | 12mm Condenser Microphones<br>Windshields<br>Pre Amplifiers<br>Microphone Calibrator<br>Omnipower Sound Source | 4166<br>UA0237<br>2639, 2669C<br>4231<br>4296 |
| Larson Davis             | 12mm Condenser Microphone                                                                                      | 2560                                          |
| SRL                      | Power Amplifiers                                                                                               |                                               |
| Celestion                | Loudspeakers                                                                                                   | 100w                                          |

|                |                              |          |
|----------------|------------------------------|----------|
| Douglas Curtis | Rotating Microphone Boom     |          |
| Thermo Hygro   | Temperature & Humidity Probe |          |
| TOA            | Graphic Equalizer            | E-1231   |
| QSC Audio      | Power Amplifier              | RMX 1450 |

## 2.4 References

|                      |                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------|
| BS EN ISO 140-3:1995 | Laboratory measurement of airborne sound insulation of building elements                     |
| BS EN ISO 717-1:1997 | Rating of sound insulation in buildings and of building elements. Airborne Sound Insulation. |

## 2.5 Personnel Present

|           |                     |
|-----------|---------------------|
| M Macleod | Leods Contracts Ltd |
|-----------|---------------------|

## 3.0 Description of Test

### 3.1 Description of Sample

Four doorsets tested, details as follows:

|                    |                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------|
| Acoustic doorset 1 | see drawing 1                                                                                     |
| Acoustic doorset 1 | with two vision panels measuring 142mmx767mm and 142mmx692mm - see drawing 2 (seals on drawing 1) |
| Acoustic doorset 2 | see drawing 3                                                                                     |
| Acoustic doorset 2 | with two vision panels measuring 135mmx760mm and 135mmx685mm - see drawing 4 (seals as drawing 3) |

See section 4.0 for individual test details

Sampling plan: Enough for test only

Sample condition: new

Details supplied by Leeds Contracts Ltd

Sample installed by Leeds Contracts Ltd

### 3.2 Sample Delivery date

11 March 2009

### 3.3 Test Procedures

The sample was mounted/located and tested in accordance with the relevant standard. The method and procedure is described in Appendix 1. The measurement uncertainty is given in Appendix 2.

## 4.0 Results

The results of the measurements and subsequent analysis are given in Data Sheets 1 to 9 and summarised below.

Results relate only to the items tested.

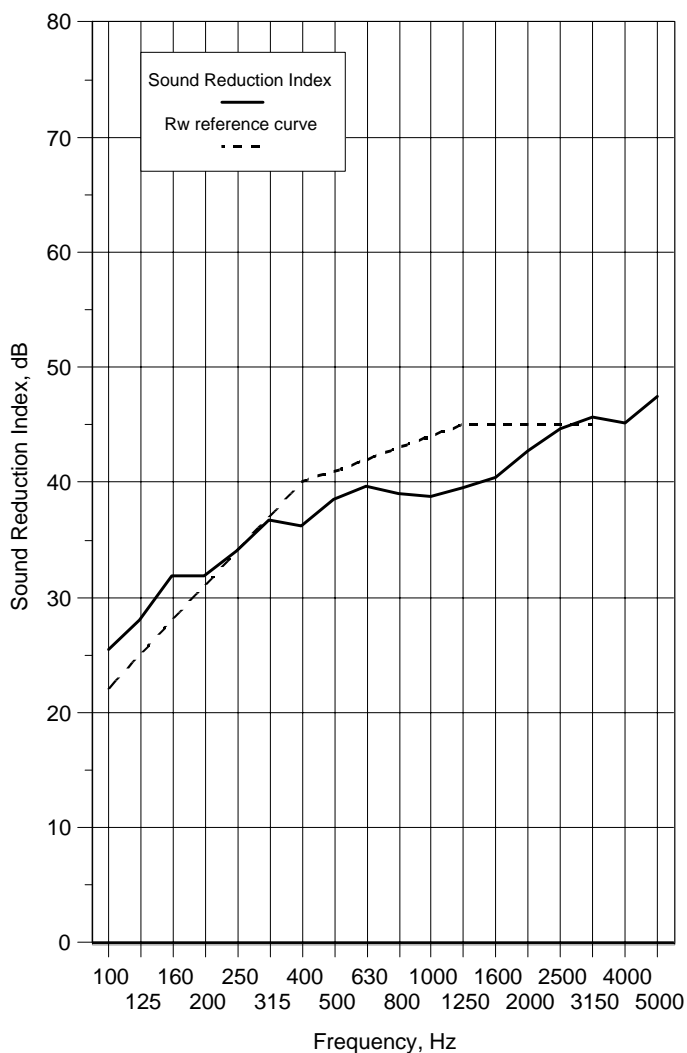
| SRL Test No. | Description in Brief                                  | R <sub>w</sub> (C;C <sub>tr</sub> ) |
|--------------|-------------------------------------------------------|-------------------------------------|
| 2            | Acoustic doorset 1                                    | 41 (-1;-4)                          |
| 3            | Acoustic doorset 1, fully caulked                     | 41 (-1;-3)                          |
| 4            | Acoustic doorset 1, with vision panels                | 40 (0;-3)                           |
| 5            | Acoustic doorset 1, with vision panels, fully caulked | 41 (-1;-3)                          |
| 6            | Acoustic doorset 2, with vision panels                | 34 (-1;-2)                          |
| 7            | Acoustic doorset 2, with vision panels, fully caulked | 35 (-1;-2)                          |
| 8            | As test 6 - seals adjusted                            | 35 (-1;-2)                          |
| 9            | Acoustic doorset 2                                    | 35 (-2;-3)                          |
| 10           | Acoustic doorset 2, fully caulked                     | 36 (-1;-3)                          |

————— *End of Text* —————

## Data Sheet 1

|                        |                 |                               |            |
|------------------------|-----------------|-------------------------------|------------|
| <b>Test Number :</b>   | 2               | <b>Air temperature:</b>       | 11.7 °C    |
| <b>Client:</b>         | Leeds Contracts | <b>Air humidity:</b>          | 73 %       |
| <b>Test Date:</b>      | 12/03/2009      | <b>Receiving room volume:</b> | 300 m3     |
| <b>Sample height:</b>  | 2.095 m         | <b>Source room volume:</b>    | 115 m3     |
| <b>Sample width:</b>   | 1.005 m         | <b>Sample weight:</b>         | 49.8 kg/m2 |
| <b>Product</b>         | Acoustic door 1 |                               |            |
| <b>Identification:</b> |                 |                               |            |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 26.2                            | 23.0    |
| 63+                 | 26.0                            |         |
| 80+                 | 20.0                            |         |
| 100                 | 25.5                            | 27.7    |
| 125                 | 28.0                            |         |
| 160                 | 31.9                            |         |
| 200                 | 31.9                            | 33.8    |
| 250                 | 34.1                            |         |
| 315                 | 36.7                            |         |
| 400                 | 36.2                            | 37.9    |
| 500                 | 38.5                            |         |
| 630                 | 39.7                            |         |
| 800                 | 39.0                            | 39.1    |
| 1000                | 38.8                            |         |
| 1250                | 39.5                            |         |
| 1600                | 40.5                            | 42.3    |
| 2000                | 42.7                            |         |
| 2500                | 44.7                            |         |
| 3150                | 45.7                            | 46.0    |
| 4000                | 45.2                            |         |
| 5000                | 47.5                            |         |
| 6300+               | 50.0                            | 50.5    |
| 8000+               | 50.5                            |         |
| 10000+              | 51.1 *                          |         |
| Average<br>100-3150 | 37.1                            |         |



Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **41 (-1;-4)** dB

Notes : \* designates measurement corrected for background

# designates limit of measurement due to background

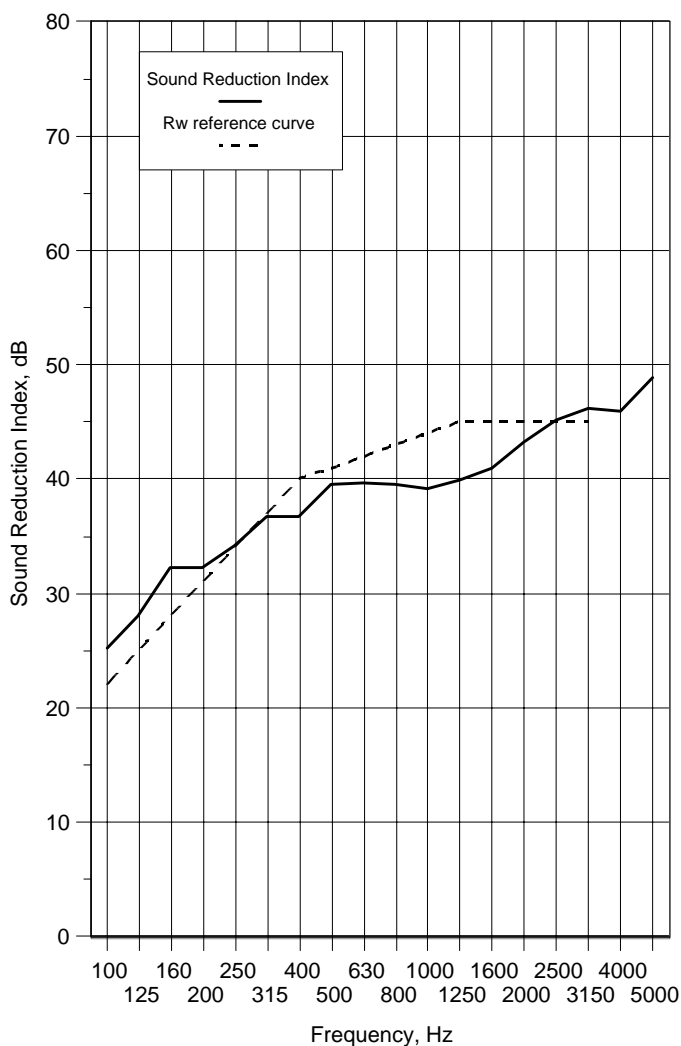
+ designates frequency beyond standard and not UKAS accredited

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## Data Sheet 2

|                                |                                 |                               |            |
|--------------------------------|---------------------------------|-------------------------------|------------|
| <b>Test Number :</b>           | 3                               | <b>Air temperature:</b>       | 11.7 °C    |
| <b>Client:</b>                 | Leods Contracts                 | <b>Air humidity:</b>          | 73 %       |
| <b>Test Date:</b>              | 12/03/2009                      | <b>Receiving room volume:</b> | 300 m3     |
| <b>Sample height:</b>          | 2.095 m                         | <b>Source room volume:</b>    | 115 m3     |
| <b>Sample width:</b>           | 1.005 m                         | <b>Sample weight:</b>         | 49.8 kg/m2 |
| <b>Product Identification:</b> | Acoustic door 1 - fully caulked |                               |            |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 25.2                            | 22.2    |
| 63+                 | 25.3                            |         |
| 80+                 | 19.1                            |         |
| 100                 | 25.3                            | 27.7    |
| 125                 | 28.0                            |         |
| 160                 | 32.3                            |         |
| 200                 | 32.3                            | 34.1    |
| 250                 | 34.2                            |         |
| 315                 | 36.7                            |         |
| 400                 | 36.8                            | 38.5    |
| 500                 | 39.5                            |         |
| 630                 | 39.7                            |         |
| 800                 | 39.6                            | 39.5    |
| 1000                | 39.2                            |         |
| 1250                | 39.9                            |         |
| 1600                | 40.9                            | 42.7    |
| 2000                | 43.2                            |         |
| 2500                | 45.2                            |         |
| 3150                | 46.2                            | 46.9    |
| 4000                | 46.0                            |         |
| 5000                | 48.9                            |         |
| 6300+               | 51.9                            | 52.4    |
| 8000+               | 52.6                            |         |
| 10000+              | 52.8 *                          |         |
| Average<br>100-3150 | 37.4                            |         |



Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **41 (-1;-3) dB**

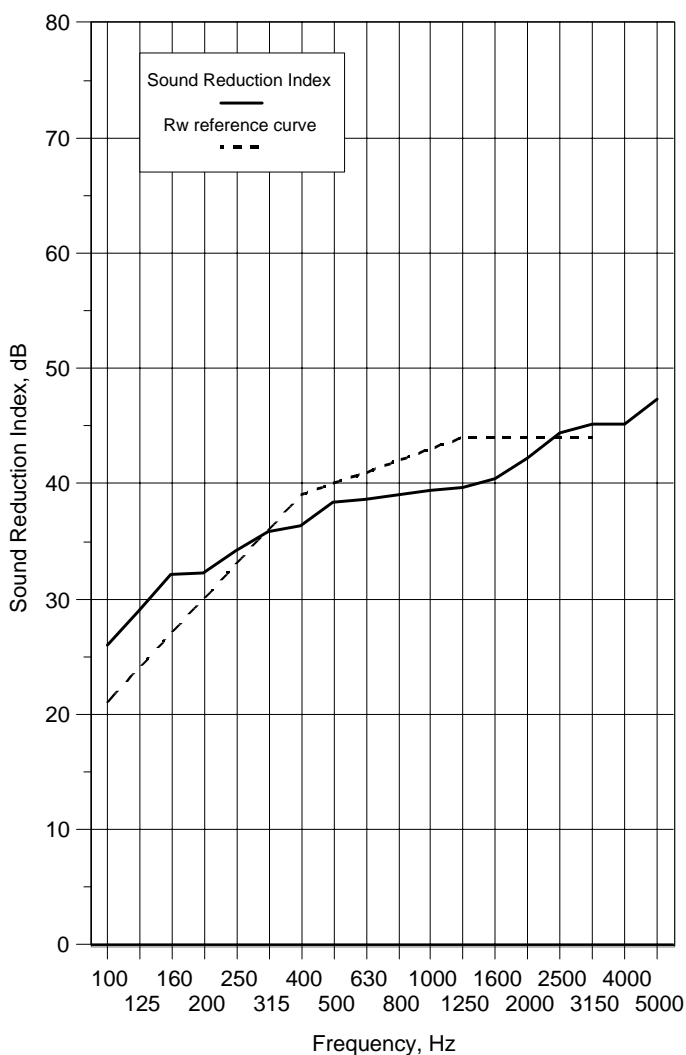
Notes : \* designates measurement corrected for background  
 # designates limit of measurement due to background  
 + designates frequency beyond standard and not UKAS accredited

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## Data Sheet 3

|                                |                                     |                               |                        |
|--------------------------------|-------------------------------------|-------------------------------|------------------------|
| <b>Test Number :</b>           | 4                                   | <b>Air temperature:</b>       | 11.7 °C                |
| <b>Client:</b>                 | Leods Contracts                     | <b>Air humidity:</b>          | 73 %                   |
| <b>Test Date:</b>              | 12/03/2009                          | <b>Receiving room volume:</b> | 300 m <sup>3</sup>     |
| <b>Sample height:</b>          | 2.095 m                             | <b>Source room volume:</b>    | 115 m <sup>3</sup>     |
| <b>Sample width:</b>           | 1.005 m                             | <b>Sample weight:</b>         | 50.7 kg/m <sup>2</sup> |
| <b>Product Identification:</b> | Acoustic door 1, with vision panels |                               |                        |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 25.9                            | 23.3    |
| 63+                 | 26.1                            |         |
| 80+                 | 20.5                            |         |
| 100                 | 26.0                            | 28.4    |
| 125                 | 29.0                            |         |
| 160                 | 32.2                            |         |
| 200                 | 32.3                            | 33.9    |
| 250                 | 34.2                            |         |
| 315                 | 35.9                            |         |
| 400                 | 36.3                            | 37.7    |
| 500                 | 38.4                            |         |
| 630                 | 38.6                            |         |
| 800                 | 39.0                            | 39.3    |
| 1000                | 39.4                            |         |
| 1250                | 39.7                            |         |
| 1600                | 40.4                            | 42.1    |
| 2000                | 42.3                            |         |
| 2500                | 44.4                            |         |
| 3150                | 45.2                            | 45.8    |
| 4000                | 45.2                            |         |
| 5000                | 47.3                            |         |
| 6300+               | 49.4                            | 50.4    |
| 8000+               | 50.7                            |         |
| 10000+              | 51.2 *                          |         |
| Average<br>100-3150 | 37.1                            |         |



Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **40 ( 0;-3) dB**

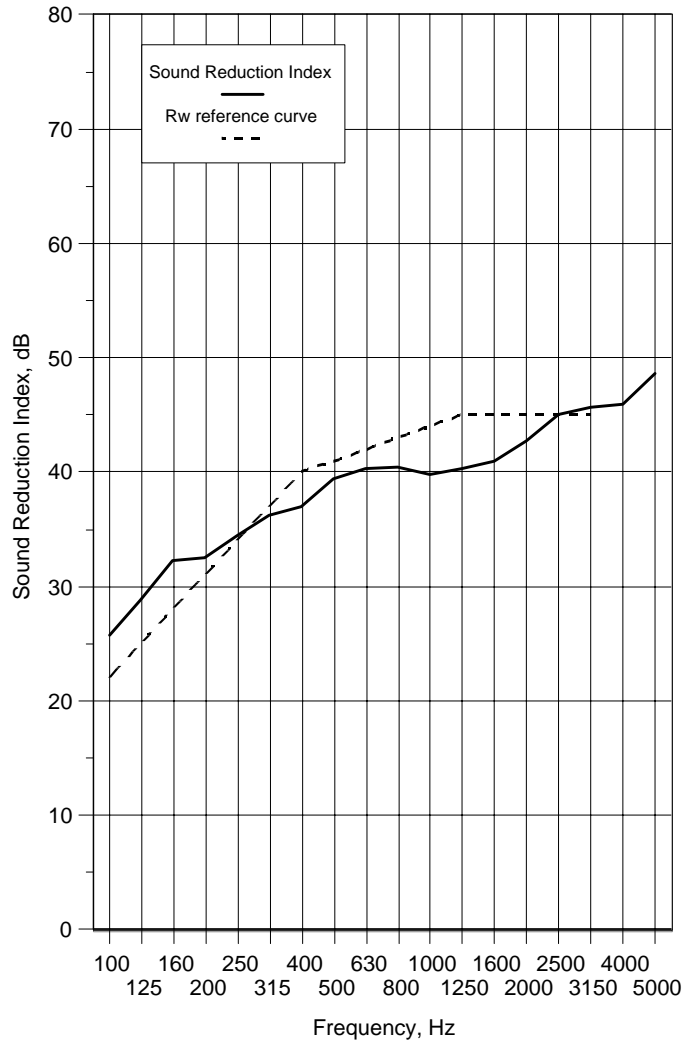
Notes : \* designates measurement corrected for background  
 # designates limit of measurement due to background  
 + designates frequency beyond standard and not UKAS accredited

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## Data Sheet 4

|                                |                                                    |                               |            |
|--------------------------------|----------------------------------------------------|-------------------------------|------------|
| <b>Test Number :</b>           | 5                                                  | <b>Air temperature:</b>       | 11.8 °C    |
| <b>Client:</b>                 | Leeds Contracts                                    | <b>Air humidity:</b>          | 74 %       |
| <b>Test Date:</b>              | 12/03/2009                                         | <b>Receiving room volume:</b> | 300 m3     |
| <b>Sample height:</b>          | 2.095 m                                            | <b>Source room volume:</b>    | 115 m3     |
| <b>Sample width:</b>           | 1.005 m                                            | <b>Sample weight:</b>         | 50.7 kg/m2 |
| <b>Product Identification:</b> | Acoustic door 1, with vision panels. Fully caulked |                               |            |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 26.4                            | 23.1    |
| 63+                 | 25.9                            |         |
| 80+                 | 20.0                            |         |
| 100                 | 25.8                            | 28.2    |
| 125                 | 28.8                            |         |
| 160                 | 32.3                            |         |
| 200                 | 32.5                            | 34.2    |
| 250                 | 34.5                            |         |
| 315                 | 36.2                            |         |
| 400                 | 37.0                            | 38.7    |
| 500                 | 39.4                            |         |
| 630                 | 40.3                            |         |
| 800                 | 40.4                            | 40.2    |
| 1000                | 39.8                            |         |
| 1250                | 40.3                            |         |
| 1600                | 41.0                            | 42.7    |
| 2000                | 42.8                            |         |
| 2500                | 45.1                            |         |
| 3150                | 45.7                            | 46.6    |
| 4000                | 45.9                            |         |
| 5000                | 48.6                            |         |
| 6300+               | 51.1                            | 51.9    |
| 8000+               | 52.3                            |         |
| 10000+              | 52.4 *                          |         |
| Average<br>100-3150 | 37.6                            |         |



Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **41 (-1;-3) dB**

Notes : \* designates measurement corrected for background

# designates limit of measurement due to background

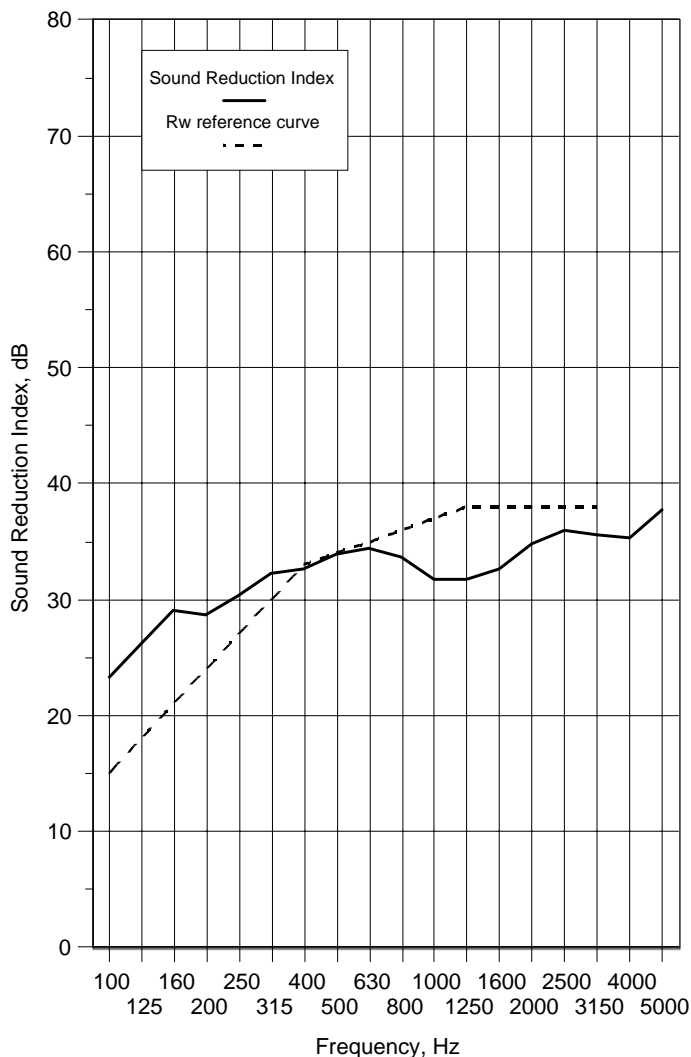
+ designates frequency beyond standard and not UKAS accredited

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## Data Sheet 5

|                                |                                      |                               |            |
|--------------------------------|--------------------------------------|-------------------------------|------------|
| <b>Test Number :</b>           | 6                                    | <b>Air temperature:</b>       | 11.8 °C    |
| <b>Client:</b>                 | Leeds Contracts                      | <b>Air humidity:</b>          | 74 %       |
| <b>Test Date:</b>              | 12/03/2009                           | <b>Receiving room volume:</b> | 300 m3     |
| <b>Sample height:</b>          | 2.095 m                              | <b>Source room volume:</b>    | 115 m3     |
| <b>Sample width:</b>           | 1.005 m                              | <b>Sample weight:</b>         | 31.3 kg/m2 |
| <b>Product Identification:</b> | Acoustic door 2, with vision panels. |                               |            |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 24.0                            | 20.7    |
| 63+                 | 24.3                            |         |
| 80+                 | 17.4                            |         |
| 100                 | 23.3                            | 25.5    |
| 125                 | 26.1                            |         |
| 160                 | 29.1                            |         |
| 200                 | 28.7                            | 30.2    |
| 250                 | 30.3                            |         |
| 315                 | 32.3                            |         |
| 400                 | 32.6                            | 33.6    |
| 500                 | 33.9                            |         |
| 630                 | 34.5                            |         |
| 800                 | 33.7                            | 32.3    |
| 1000                | 31.8                            |         |
| 1250                | 31.7                            |         |
| 1600                | 32.6                            | 34.2    |
| 2000                | 34.8                            |         |
| 2500                | 36.0                            |         |
| 3150                | 35.6                            | 36.1    |
| 4000                | 35.3                            |         |
| 5000                | 37.8                            |         |
| 6300+               | 40.9                            | 41.8    |
| 8000+               | 41.9                            |         |
| 10000+              | 42.7                            |         |
| Average<br>100-3150 | 31.7                            |         |



Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **34 (-1;-2)** dB

Notes : \* designates measurement corrected for background

# designates limit of measurement due to background

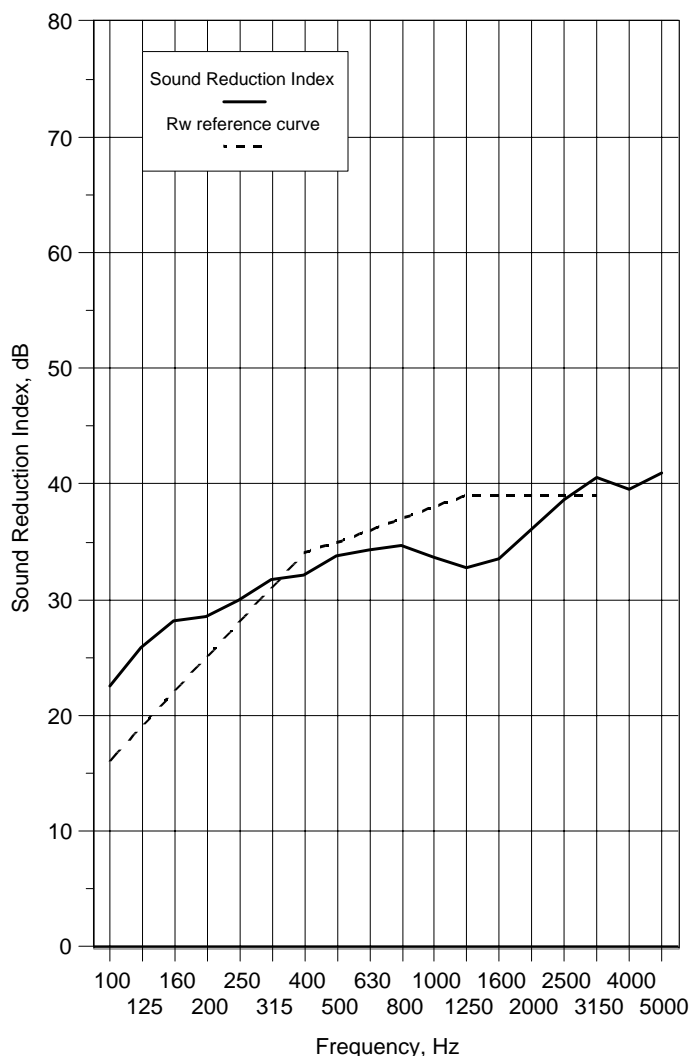
+ designates frequency beyond standard and not UKAS accredited

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## Data Sheet 6

|                                |                                                    |                               |            |
|--------------------------------|----------------------------------------------------|-------------------------------|------------|
| <b>Test Number :</b>           | 7                                                  | <b>Air temperature:</b>       | 11.8 °C    |
| <b>Client:</b>                 | Leods Contracts                                    | <b>Air humidity:</b>          | 74 %       |
| <b>Test Date:</b>              | 12/03/2009                                         | <b>Receiving room volume:</b> | 300 m3     |
| <b>Sample height:</b>          | 2.095 m                                            | <b>Source room volume:</b>    | 115 m3     |
| <b>Sample width:</b>           | 1.005 m                                            | <b>Sample weight:</b>         | 31.3 kg/m2 |
| <b>Product Identification:</b> | Acoustic door 2, with vision panels. Fully caulked |                               |            |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 23.0                            | 18.9    |
| 63+                 | 23.2                            |         |
| 80+                 | 15.4                            |         |
| 100                 | 22.6                            | 25.0    |
| 125                 | 25.9                            |         |
| 160                 | 28.2                            |         |
| 200                 | 28.6                            | 29.9    |
| 250                 | 30.0                            |         |
| 315                 | 31.8                            |         |
| 400                 | 32.1                            | 33.3    |
| 500                 | 33.8                            |         |
| 630                 | 34.3                            |         |
| 800                 | 34.7                            | 33.6    |
| 1000                | 33.7                            |         |
| 1250                | 32.8                            |         |
| 1600                | 33.6                            | 35.6    |
| 2000                | 36.1                            |         |
| 2500                | 38.6                            |         |
| 3150                | 40.6                            | 40.4    |
| 4000                | 39.6                            |         |
| 5000                | 41.0                            |         |
| 6300+               | 44.4                            | 45.9    |
| 8000+               | 45.9                            |         |
| 10000+              | 48.2 *                          |         |
| Average<br>100-3150 | 32.3                            |         |



Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **35 (-1;-2) dB**

Notes : \* designates measurement corrected for background

# designates limit of measurement due to background

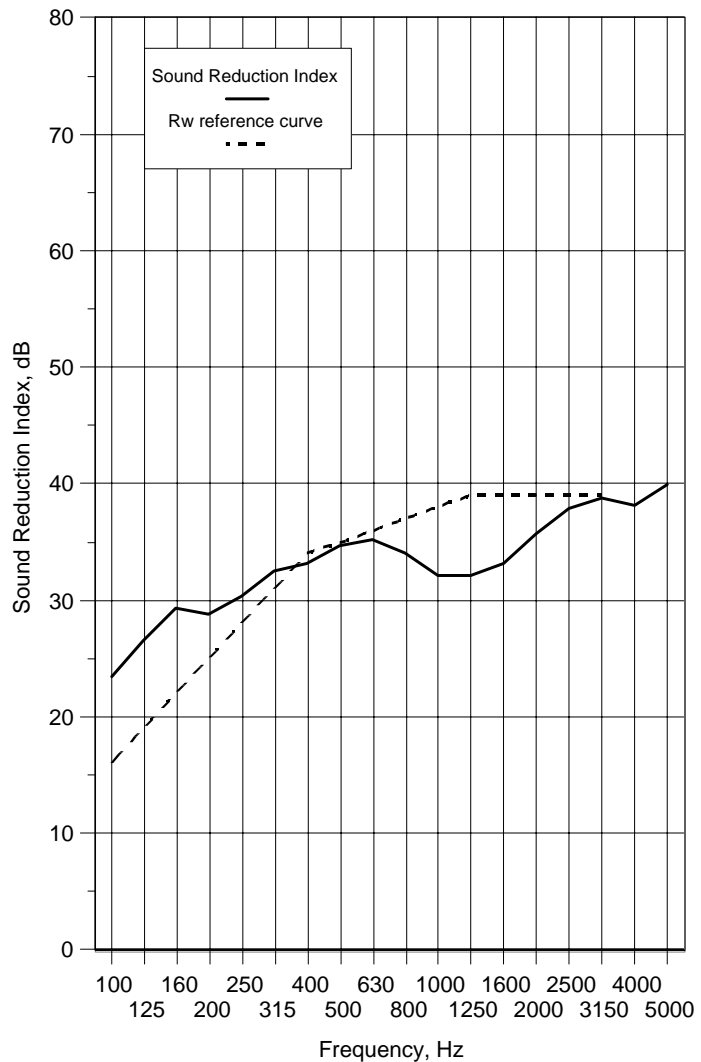
+ designates frequency beyond standard and not UKAS accredited

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## Data Sheet 7

|                                |                                                                 |                               |            |
|--------------------------------|-----------------------------------------------------------------|-------------------------------|------------|
| <b>Test Number :</b>           | 8                                                               | <b>Air temperature:</b>       | 11.8 °C    |
| <b>Client:</b>                 | Leods Contracts                                                 | <b>Air humidity:</b>          | 74 %       |
| <b>Test Date:</b>              | 12/03/2009                                                      | <b>Receiving room volume:</b> | 300 m3     |
| <b>Sample height:</b>          | 2.095 m                                                         | <b>Source room volume:</b>    | 115 m3     |
| <b>Sample width:</b>           | 1.005 m                                                         | <b>Sample weight:</b>         | 31.3 kg/m2 |
| <b>Product Identification:</b> | Acoustic door 2, with vision panels. As test 6 - seals adjusted |                               |            |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 24.4                            | 20.5    |
| 63+                 | 24.3                            |         |
| 80+                 | 17.1                            |         |
| 100                 | 23.4                            | 25.8    |
| 125                 | 26.5                            |         |
| 160                 | 29.3                            |         |
| 200                 | 28.8                            | 30.3    |
| 250                 | 30.4                            |         |
| 315                 | 32.5                            |         |
| 400                 | 33.2                            | 34.3    |
| 500                 | 34.7                            |         |
| 630                 | 35.2                            |         |
| 800                 | 34.1                            | 32.7    |
| 1000                | 32.1                            |         |
| 1250                | 32.1                            |         |
| 1600                | 33.1                            | 35.1    |
| 2000                | 35.7                            |         |
| 2500                | 37.9                            |         |
| 3150                | 38.8                            | 38.8    |
| 4000                | 38.1                            |         |
| 5000                | 39.9                            |         |
| 6300+               | 42.4                            | 43.9    |
| 8000+               | 44.0                            |         |
| 10000+              | 46.0 *                          |         |
| Average<br>100-3150 | 32.4                            |         |



Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **35 (-1;-2)** dB

Notes : \* designates measurement corrected for background

# designates limit of measurement due to background

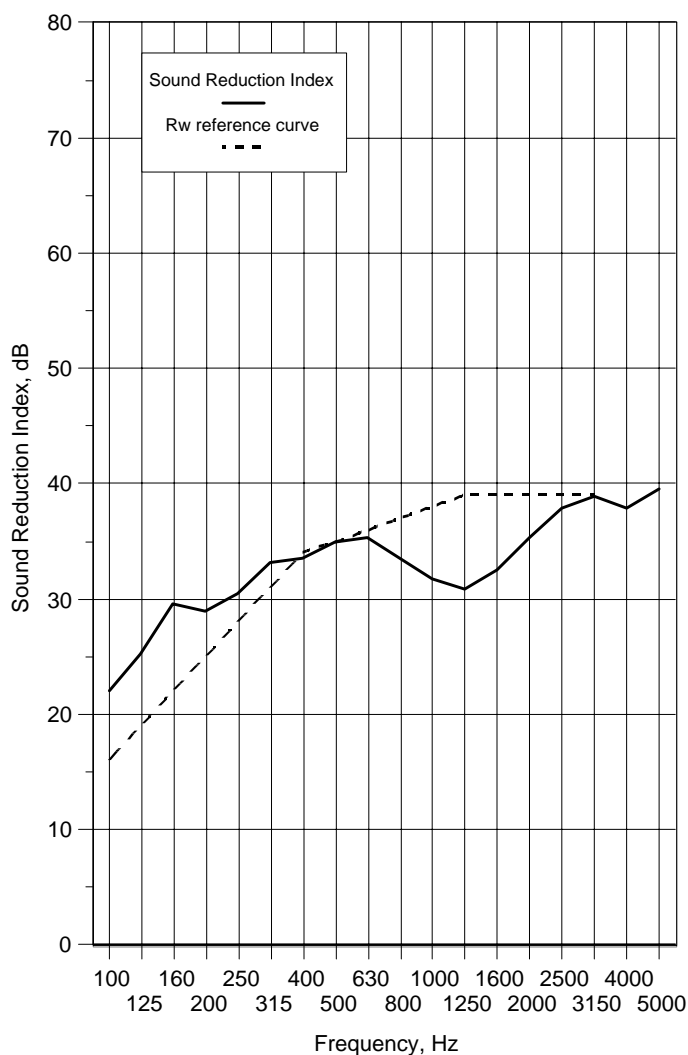
+ designates frequency beyond standard and not UKAS accredited

v 1.6

## Data Sheet 8

|                        |                 |                               |            |
|------------------------|-----------------|-------------------------------|------------|
| <b>Test Number :</b>   | 9               | <b>Air temperature:</b>       | 11.8 °C    |
| <b>Client:</b>         | Leeds Contracts | <b>Air humidity:</b>          | 74 %       |
| <b>Test Date:</b>      | 12/03/2009      | <b>Receiving room volume:</b> | 300 m3     |
| <b>Sample height:</b>  | 2.095 m         | <b>Source room volume:</b>    | 115 m3     |
| <b>Sample width:</b>   | 1.005 m         | <b>Sample weight:</b>         | 32.7 kg/m2 |
| <b>Product</b>         | Acoustic door 2 |                               |            |
| <b>Identification:</b> |                 |                               |            |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 22.1                            | 19.1    |
| 63+                 | 23.0                            |         |
| 80+                 | 15.8                            |         |
| 100                 | 22.0                            | 24.6    |
| 125                 | 25.3                            |         |
| 160                 | 29.6                            |         |
| 200                 | 29.0                            | 30.6    |
| 250                 | 30.5                            |         |
| 315                 | 33.2                            |         |
| 400                 | 33.6                            | 34.5    |
| 500                 | 34.9                            |         |
| 630                 | 35.3                            |         |
| 800                 | 33.5                            | 31.9    |
| 1000                | 31.7                            |         |
| 1250                | 30.9                            |         |
| 1600                | 32.5                            | 34.7    |
| 2000                | 35.3                            |         |
| 2500                | 37.9                            |         |
| 3150                | 38.9                            | 38.7    |
| 4000                | 37.9                            |         |
| 5000                | 39.5                            |         |
| 6300+               | 42.1                            | 43.6    |
| 8000+               | 43.5                            |         |
| 10000+              | 46.1 *                          |         |
| Average<br>100-3150 | 32.1                            |         |



Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **35 (-2;-3) dB**

Notes : \* designates measurement corrected for background

# designates limit of measurement due to background

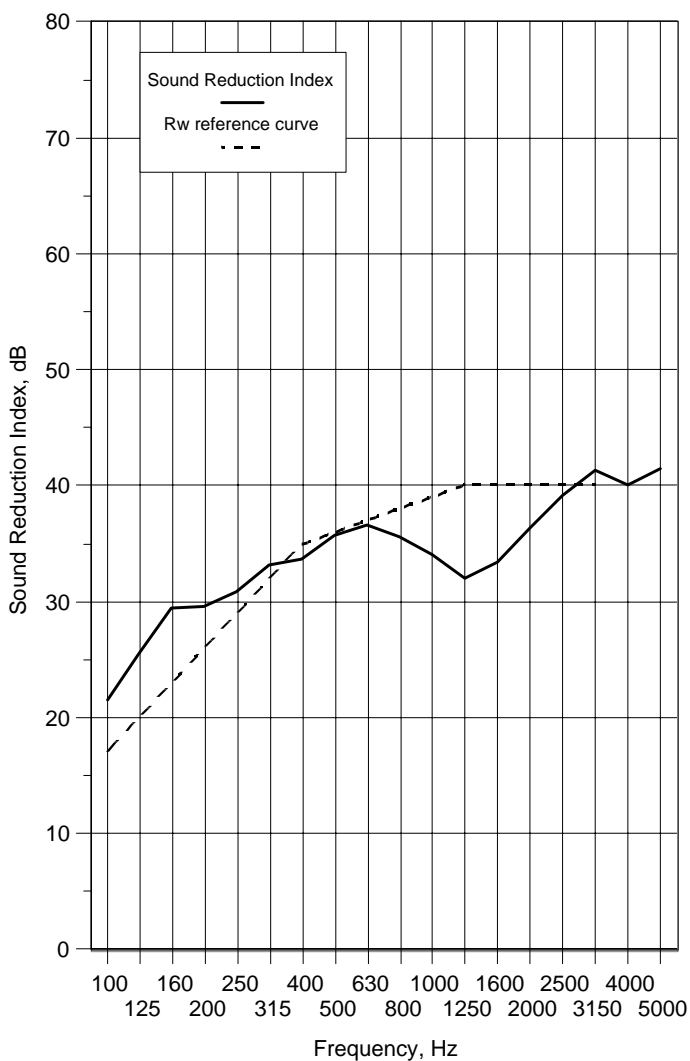
+ designates frequency beyond standard and not UKAS accredited

v1.6

## Data Sheet 9

|                                |                                |                               |            |
|--------------------------------|--------------------------------|-------------------------------|------------|
| <b>Test Number :</b>           | 10                             | <b>Air temperature:</b>       | 11.8 °C    |
| <b>Client:</b>                 | Leeds Contracts                | <b>Air humidity:</b>          | 74 %       |
| <b>Test Date:</b>              | 12/03/2009                     | <b>Receiving room volume:</b> | 300 m3     |
| <b>Sample height:</b>          | 2.095 m                        | <b>Source room volume:</b>    | 115 m3     |
| <b>Sample width:</b>           | 1.005 m                        | <b>Sample weight:</b>         | 32.7 kg/m2 |
| <b>Product Identification:</b> | Acoustic door 2. Fully caulked |                               |            |

| Freq<br>f<br>Hz     | Sound<br>Reduction<br>Index, dB |         |
|---------------------|---------------------------------|---------|
|                     | 1/3 Oct                         | 1/1 Oct |
| 50+                 | 20.9                            | 17.9    |
| 63+                 | 21.4                            |         |
| 80+                 | 14.8                            |         |
| 100                 | 21.5                            | 24.3    |
| 125                 | 25.5                            |         |
| 160                 | 29.4                            |         |
| 200                 | 29.6                            | 31.0    |
| 250                 | 30.9                            |         |
| 315                 | 33.2                            |         |
| 400                 | 33.7                            | 35.2    |
| 500                 | 35.7                            |         |
| 630                 | 36.6                            |         |
| 800                 | 35.6                            | 33.7    |
| 1000                | 34.1                            |         |
| 1250                | 32.0                            |         |
| 1600                | 33.4                            | 35.7    |
| 2000                | 36.3                            |         |
| 2500                | 39.2                            |         |
| 3150                | 41.4                            | 40.9    |
| 4000                | 40.0                            |         |
| 5000                | 41.5                            |         |
| 6300+               | 45.6                            | 47.0    |
| 8000+               | 46.9                            |         |
| 10000+              | 49.2 *                          |         |
| Average<br>100-3150 | 33.0                            |         |



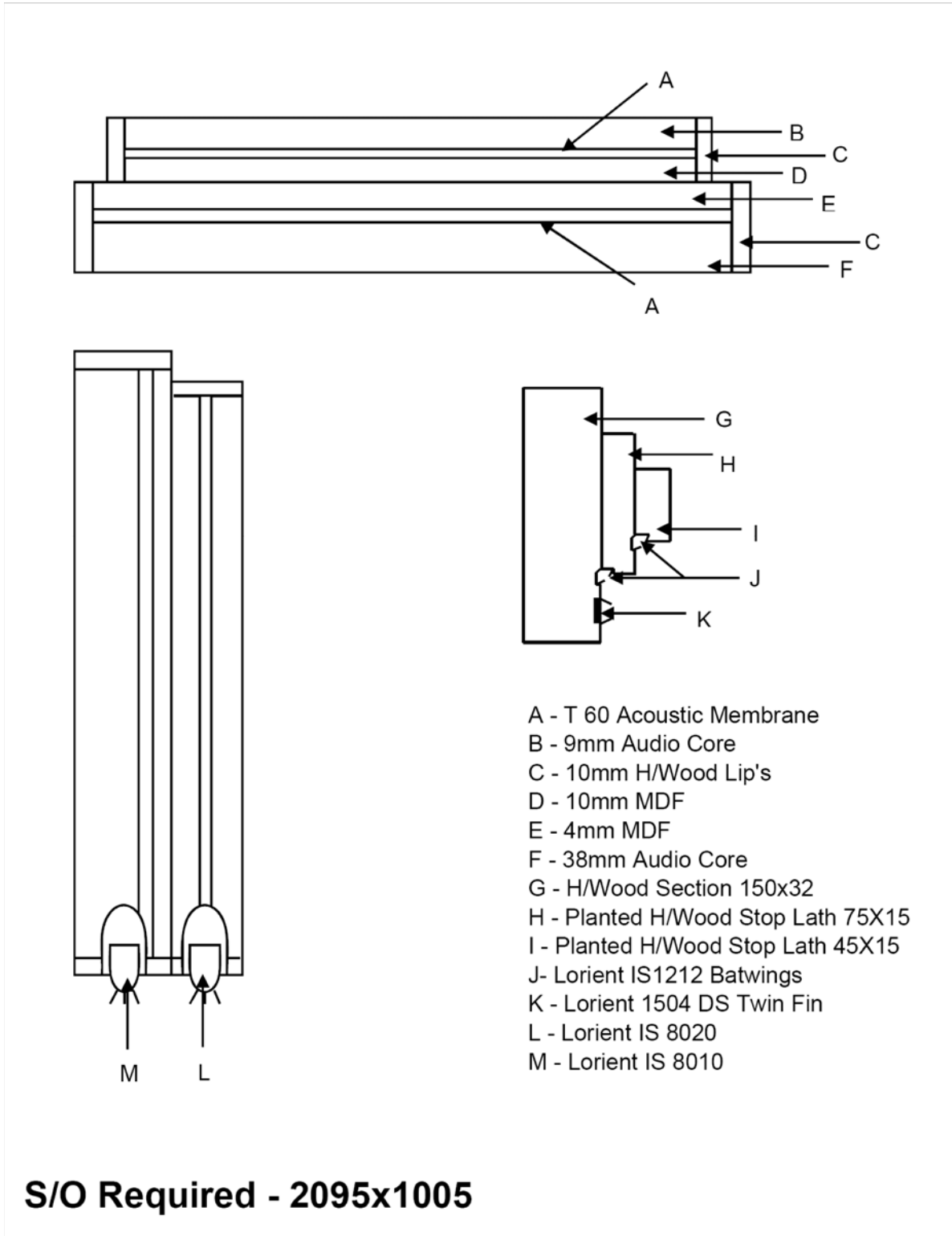
Rating according to BS EN ISO 717-1:1997

Rw(C;Ctr)= **36 (-1;-3) dB**

Notes : \* designates measurement corrected for background  
 # designates limit of measurement due to background  
 + designates frequency beyond standard and not UKAS accredited

v1.6

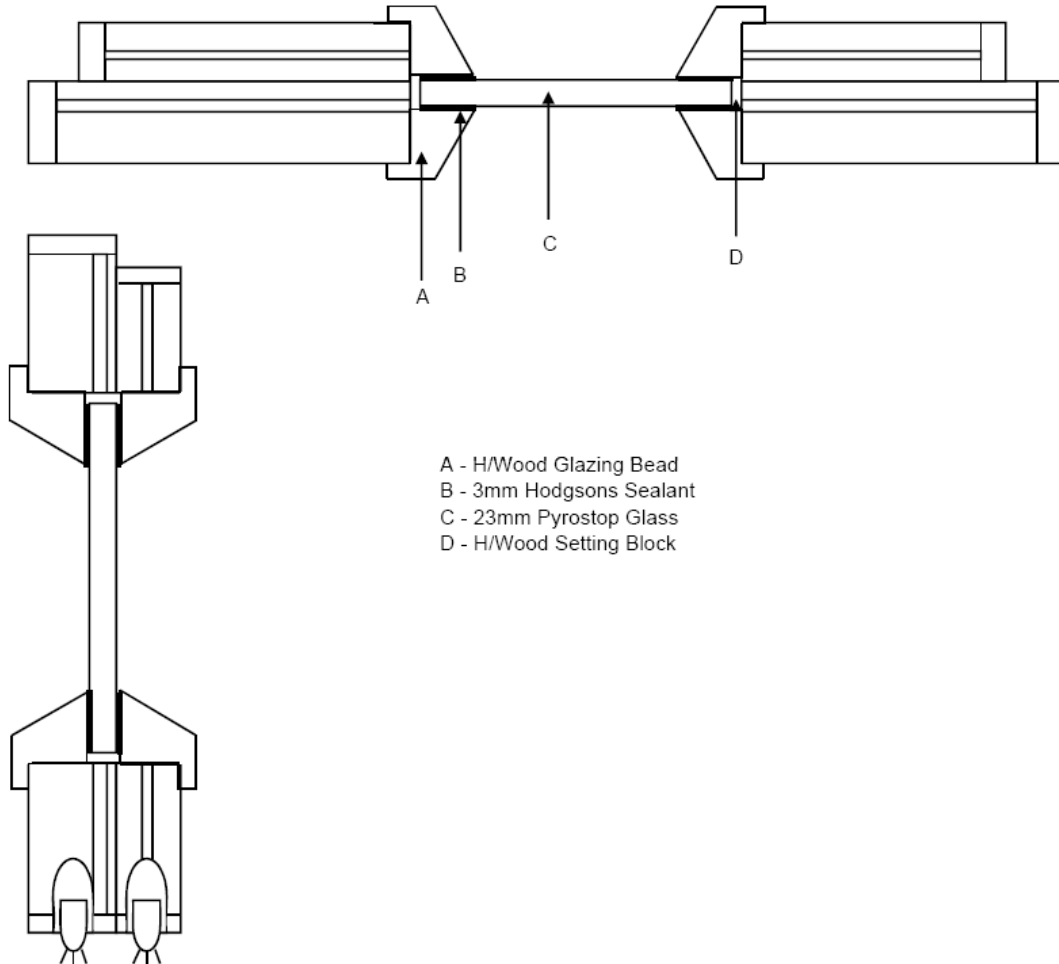
## Drawing 1



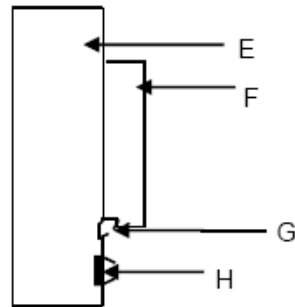
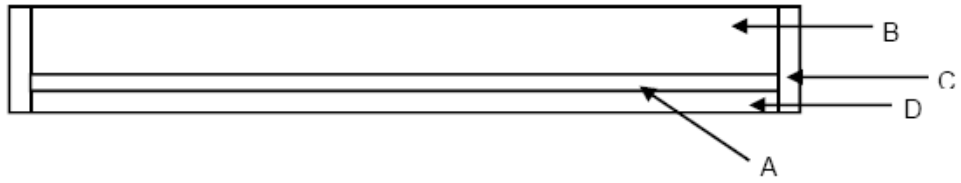
- A - T 60 Acoustic Membrane
- B - 9mm Audio Core
- C - 10mm H/Wood Lip's
- D - 10mm MDF
- E - 4mm MDF
- F - 38mm Audio Core
- G - H/Wood Section 150x32
- H - Planted H/Wood Stop Lath 75X15
- I - Planted H/Wood Stop Lath 45X15
- J - Lorient IS1212 Batwings
- K - Lorient 1504 DS Twin Fin
- L - Lorient IS 8020
- M - Lorient IS 8010

**S/O Required - 2095x1005**

## Drawing 2



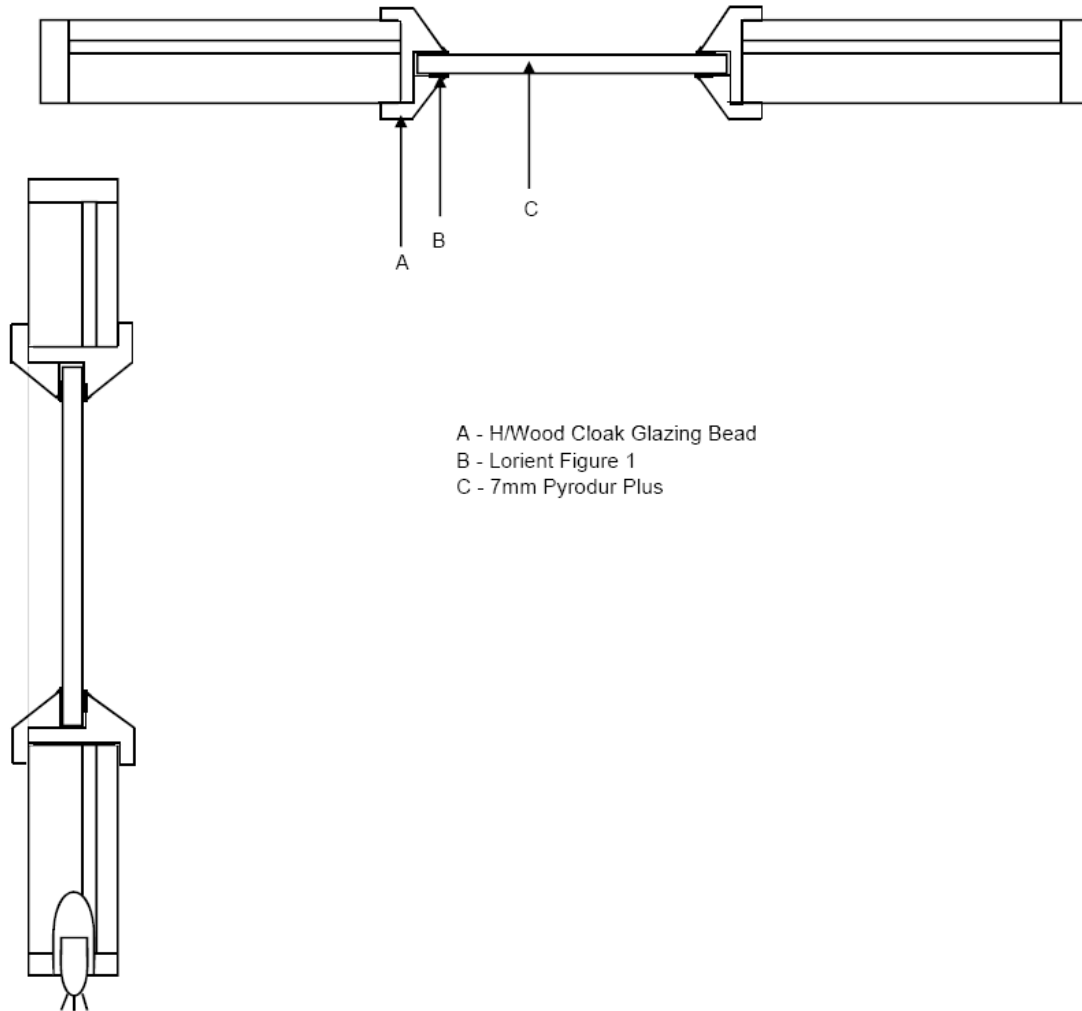
**Drawing 3**



- A - T 60 Acoustic Membrane
- B - 38mm Halspan Core
- C - 10mm H/Wood Lip's
- D - 4mm MDF
- E - H/Wood Section 150x32
- F - Planted H/Wood Stop Lath 75X15
- G - Lorient IS1212 Batwings
- H - Lorient 1504 DS Twin Fin
- I - Lorient IS 8010

**S/O Required - 2095x1005**

## Drawing 4



- A - H/Wood Cloak Glazing Bead
- B - Lorient Figure 1
- C - 7mm Pyrodur Plus

## Appendix 1

### Test Procedure

#### Measurement of Sound Transmission in accordance with BS EN ISO 140-3 : 1995 - TP15

In the laboratory, airborne sound transmission is determined from the difference in sound pressure levels measured across a test sample installed between two reverberant rooms. The difference in measured sound pressure levels is corrected for the amount of absorption in the receiving room. The test is done under conditions which restrict the transmission of sound by paths other than directly through the sample. The source sound field is randomly incident on the sample.

The test sample is located and sealed in an aperture within the brick dividing wall between the two rectangular reverberant (i.e. acoustically "live") room, both of which are constructed from 215mm brick with reinforced concrete floors and roofs. The brick wall has dimensions of 4.8m wide x 3.1m high and 550mm nominal thickness and forms the whole of the common area between the two rooms.

One of the rooms is used as the receiving room and has a volume of 300 cubic metres. It is isolated from the surrounding structure and the adjoining room by the use of resilient mountings and seals ensuring good acoustic isolation. The adjoining source room has a volume of 115 cubic metres.

Broad band noise is produced in the source room from an electronic generator, power amplifier and loudspeaker. The resulting sound pressure levels in both rooms are sampled using a microphone mounted on an oscillating boom and connected to a real time analyser. The signal is filtered into one third octave band widths, integrated and averaged. The value obtained at each frequency is known as the average sound pressure level for either the source or the receiving room. The change in level across the test sample is termed the sound pressure level difference, i.e.

$$D = L_1 - L_2$$

where

D is the equivalent Sound Pressure level difference in dB

L<sub>1</sub> is the equivalent Sound Pressure level in the source room in dB

L<sub>2</sub> is the equivalent Sound Pressure level in the receiving room in dB

The Sound Reduction Index (R) also known by the American terminology Sound Transmission Loss, is defined as the number of decibels by which sound energy

randomly incident on the test sample, is reduced in transmitting through it and is given by the formula:

$$R = D + 10 \log_{10} \frac{S}{A} \dots \dots \text{in decibels}$$

where

S is the area of the sample

A is the total absorption in the receiving room

***both dimensions being in consistent units***

The Sound Reduction Index is an expression of the laboratory sound transmission performance of a particular element or construction. It is a function of the mass, thickness, sealing method of mounting etc. and is independent of the overall area of the sample.

However, when an example of this construction is installed on site, the sound insulation obtained will depend upon its surface area, as well as the absorption in the receiving room. The larger the area the greater the sound energy transmitted. Also, the overall sound insulation is affected by the sound transmission through other building elements, some of which may have an inferior performance to the sample tested. In practice, therefore, the potential sound reduction index of a construction is not fully realised on site. Furthermore, the sound reduction index of a particular sample of that construction can only be measured accurately in a laboratory, because only under such controlled conditions can the sound transmission path be limited to the sample under test.

$R_w$ , C and  $C_{tr}$  have been calculated in accordance with the relevant section of BS EN ISO 717-1 :1997 from the results of laboratory tests carried out in accordance with BS EN ISO 140-3 : 1995.

## Appendix 2

### Measurement Uncertainty BS EN ISO 140-3:1995 - TP15

The following values of uncertainty are based on a standard uncertainty multiplied by a coverage factor of  $k = 2$ , which provides a level of confidence of approximately 95%.

| Frequency, Hz | Uncertainty, $\pm$ dB |
|---------------|-----------------------|
| 100           | 2.6                   |
| 125           | 2.4                   |
| 160           | 2.1                   |
| 200           | 2.1                   |
| 250           | 1.5                   |
| 315           | 1.5                   |
| 400           | 1.2                   |
| 500           | 1.2                   |
| 800           | 1.0                   |
| 1000          | 1.0                   |
| 1250          | 1.0                   |
| 1600          | 1.0                   |
| 2000          | 1.0                   |
| 2500          | 1.0                   |
| 3150          | 1.0                   |