


## **TEST REPORT N° AC03-006/1 CONCERNING A BUILT WALL WITH AND WITHOUT LINING ON FRAME**

The accreditation by the COFRAC Laboratory Section attests to the technical competence of the laboratories only for the tests covered by the accreditation.

Scope of accreditation available on request.

This Test Report certifies only the characteristics of the object submitted for testing and does not prejudge the characteristics of similar products. So it does not constitute a product certification in the sense of Article L 115-27 of the Consumer Code and of the Law of June 3, 1994.

Only the tests identified by the symbol  are made under the cover of the accreditation

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It comprises ten pages.

**REQUESTED BY:           KdB ISOLATION**  
**2, avenue Lotz-Cossé**  
**Boîte Postale 47506**  
**44275 NANTES Cédex**

Our/Ref.: BR-1113887  
ES713-02-0290  
CC/EG

**SCOPE**

Determine the airborne sound insulation R of a built wall with and without lining on frame.

**REFERENCE TEXTS**

The measurements are carried out according to the standards NF EN ISO 140-1, NF EN 20140-2 and NF EN ISO 140-3 supplemented by the standard NF EN ISO 717/1 and by the appendix of the standard NF S 31-057 concerning the calculation of the overall indexes.

**SAMPLES SUBMITTED TO THE TESTS**

Date of reception in the laboratory : April 4<sup>th</sup> 2003  
Origin : KdB Isolation  
Installation : CSTB

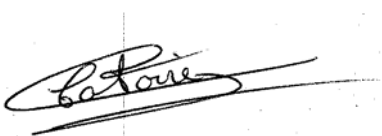
**SUMMARY LIST OF TESTS**

<b>TEST NO</b>	<b>Tested samples</b>
1	Wall in bricks 200 x 200 x 500 with a lining on frame (plaster board on wooden frame)
2	Wall in bricks 200 x 200 x 500
3	Wall in bricks 200 x 200 x 500 with a lining on frame (plaster board + AIRFLEX on wooden frame)
4	Wall in bricks 200 x 200 x 500

Made at Marne La Vallée, April 7th 2003

Responsible for the tests

The Head of the Acoustic and Lighting department



Corinne CATOIRE



Jacques ROLAND

## AIRBORNE SOUND INSULATION R OF A WALL WITH & WITHOUT LINING ON FRAME

Tests 1 et 2  
Date 06/02/03  
Station EPSILON  
AD13

**REQUESTER** KdB Isolation  
**MANUFACTURERS** CSTB (built wall)  
LAFARGE PLATRE (lining)  
**BUILT WALL** Wall in bricks 200 x 200 x 500 with a mortar coating on one face  
**LINING** BA 13 on wooden frame

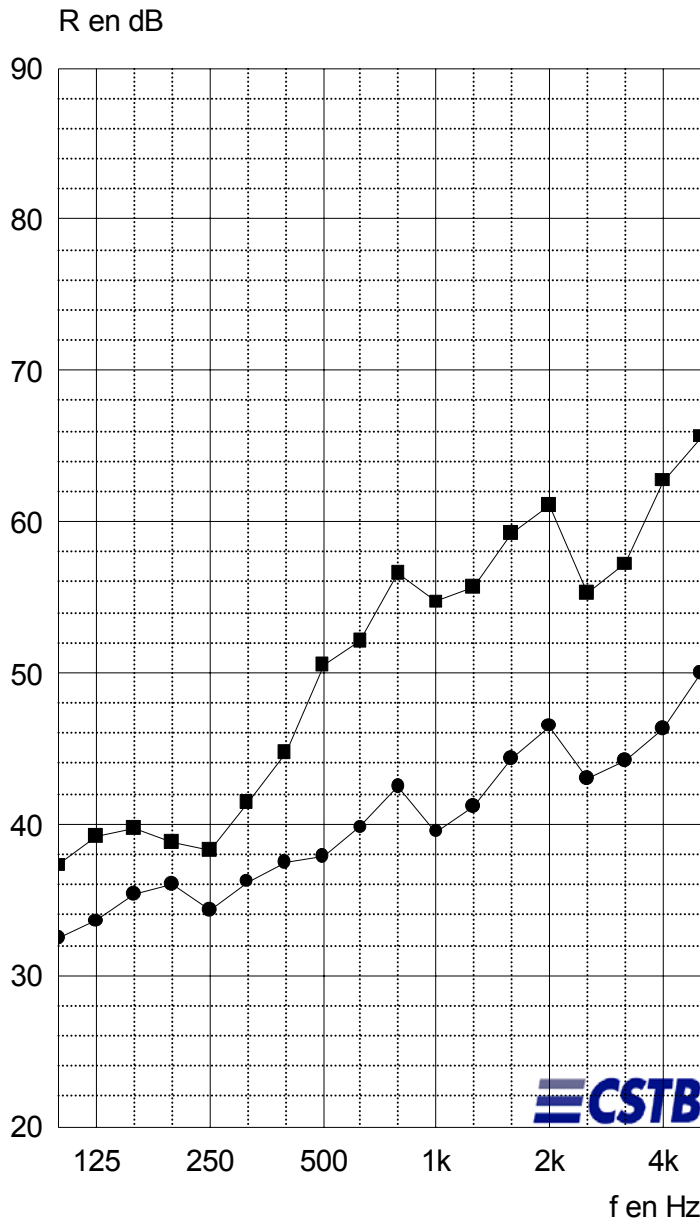
**MAIN CHARACTERISTICS**

Dimensions in mm : 4180 x 2470  
Total thickness in mm : 253  
Mass per unit of area in kg/m<sup>2</sup> : 238.2  
(without frame)

**MEASUREMENT CONDITIONS**

**Emission room:** Reception room:  
Temperature: 19.5 °C Temperature: 20 °C  
Relative humidity: 25 % Relative humidity: 40 %

**RESULTS** ■ Test: Built wall with lining on frame (BA 13)  
● Test: Built wall only



Code	■	●
f	R	R
100	37,3	32,5
125	39,2	33,6
160	39,7	35,4
200	38,8	36,0
250	38,3	34,3
315	41,4	36,2
400	44,7	37,5
500	50,5	37,9
630	52,1	39,8
800	56,6	42,5
1k	54,7	39,5
1,25k	55,7	41,2
1,6k	59,2	44,3
2k	61,1	46,5
2,5k	55,3	43,0
3,15k	57,2	44,2
4k	62,7	46,3
5k	65,6	50,0
Hz	dB	dB

(\*) : valeur corrigée. (+) : limite de poste.

■	$R_w(C;C_{tr}) = 52(-2;-5) \text{ dB}$ Pour information : $R_{max} = 51 \text{ dB(A)}$ $R_{min} = 46 \text{ dB(A)}$
●	$R_w(C;C_{tr}) = 42(-1;-3) \text{ dB}$ Pour information : $R_{max} = 42 \text{ dB(A)}$ $R_{min} = 39 \text{ dB(A)}$

## AIRBORNE SOUND INSULATION R OF A WALL WITH & WITHOUT LINING ON FRAME

Tests	1 et 2
Date	06/02/03
Station	EPSILON

<b>REQUESTER</b>	<b>KdB Isolation</b>
<b>MANUFACTURERS</b>	<b>CSTB (supporting wall) LAFARGE PLATRE (lining)</b>
<b>BUILT WALL</b>	<b>Wall in bricks 200 x 200 x 500 with a mortar coating on one face</b>
<b>LINING</b>	<b>BA 13 on wooden frame</b>

### MAIN CHARACTERISTICS

Dimensions in mm	: 4180 x 2470
Total thickness in mm	: 253
Mass per unit of area in kg/m <sup>2</sup> (without frame)	: 238.2

### DESCRIPTION (the dimensions are given in mm)

- \* built wall:
  - In bricks 200 x 200 x 500, with twelve horizontal alveoli.
  - Cement mortar coating thickness 15 on one face,
 Total mass per unit of area: 229,2 kg/m<sup>2</sup>.
  
- \* lining on frame:
  - Frame : wooden brackets section 40 x 20
  - Facing: a BA 13 PREGYPLAC STD (LAFARGE PLATRE) plasterboard thickness 12,5 and mass per unit of area 9,2 kg / m<sup>2</sup>

### INSTALLATION

#### **Built wall:**

The bricks are united with mortar cement, by successive horizontal courses and crossed joints, moved by a half-block of a row on the other one, according to the specifications of the DTU on 20-1.

The mortar coating is made according to prescriptions of the DTU 25-1.

#### **Lining on frame:**

The frame is constituted by six brackets screwed horizontally in the step of 600 on the face not coated of the wall, and of six others screwed on the first ones, arranging a blade of air of 40.

The plasterboard of facing are fixed in suburb to the frame: in the step of 300 in high and low parts and in the step of 600 laterally.

The treatment of joints between patches and plasterboards in the corners (5 mm around high part and laterally) is realized by a system coating with fast setting joint filler and strip with joint.

In low part, the joint about 10 mm is filled by some supple mastic.

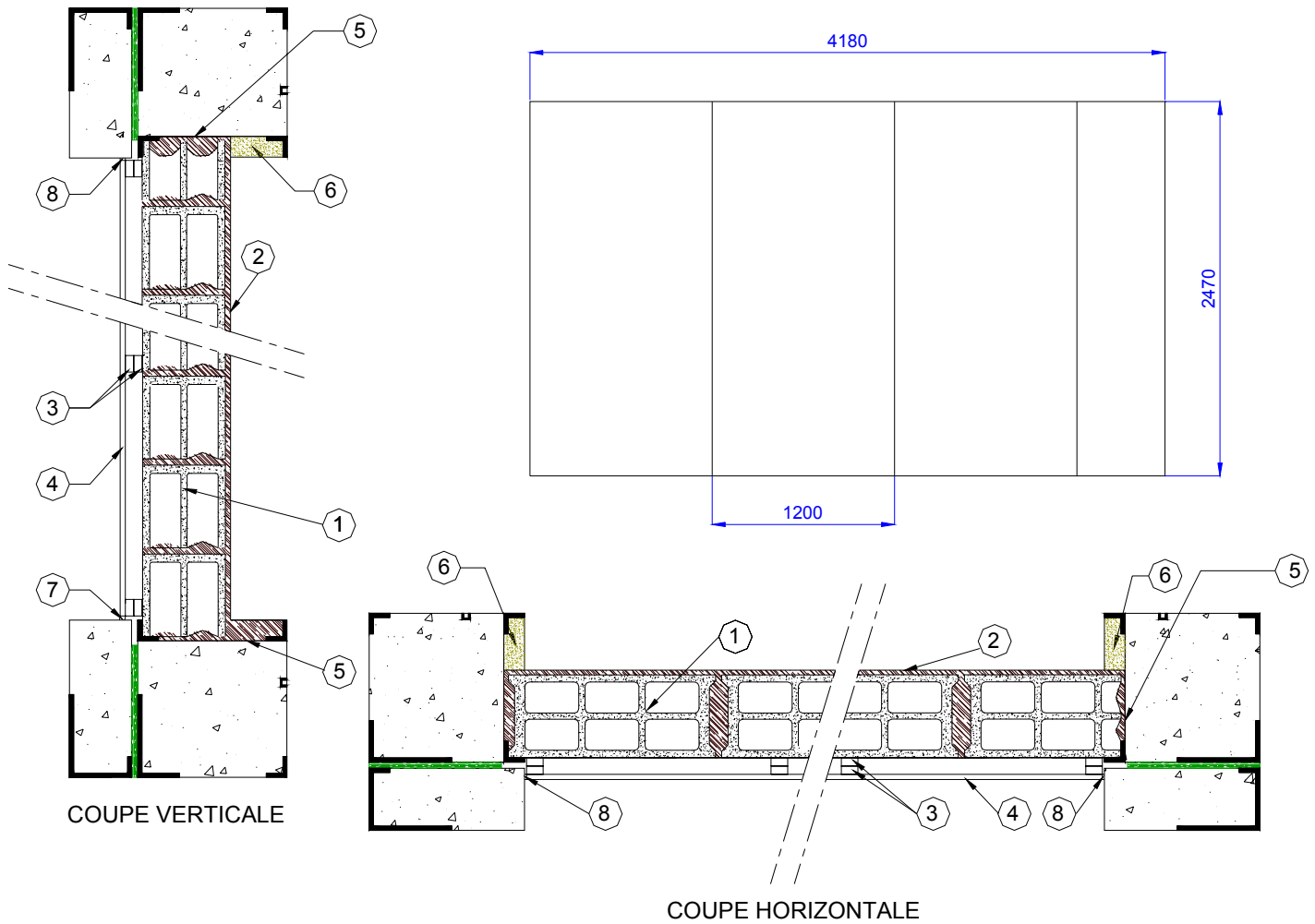
### NOTICE

The tests are realized one day after the application of the lining.

## AIRBORNE SOUND INSULATION R OF A WALL WITH & WITHOUT LINING ON FRAME

Tests 1 et 2  
Date 06/02/03  
Station EPSILON

<b>REQUESTER</b>	<b>KdB Isolation</b>
<b>MANUFACTURERS</b>	<b>CSTB (supporting wall) LAFARGE PLATRE (lining)</b>
<b>BUILT WALL</b>	<b>Wall in bricks 200 x 200 x 500 with a mortar coating on one face</b>
<b>LINING</b>	<b>BA 13 on wooden frame</b>



- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>1 Bricks with horizontal alveoli (dimensions : 500x200x200)</li> <li>2 Mortar coating thickness 15</li> <li>3 Wooden brackets 40x20</li> <li>4 Plaster board thickness 12.5 MS = 9.2 kg/m<sup>2</sup></li> </ul> | <ul style="list-style-type: none"> <li>5 Mortar</li> <li>6 Plaster</li> <li>7 Supple mastic seal</li> <li>8 Coating with fast grip + paper strip</li> </ul> |
|---|---|

## AIRBORNE SOUND INSULATION R OF A WALL WITH & WITHOUT LINING ON FRAME

Tests 2, 3 et 4  
Date 07/02/03  
Station EPSILON  
AD13

**REQUESTER** KdB Isolation  
**MANUFACTURERS** CSTB (supporting wall)  
 LAFARGE PLATRE + KdB (lining)  
**BUILT WALL** Wall in bricks 200 x 200 x 500 with a mortar coating on one face  
**LINING** AIRFLEX + BA 13 on wooden frame

**MAIN CHARACTERISTICS**

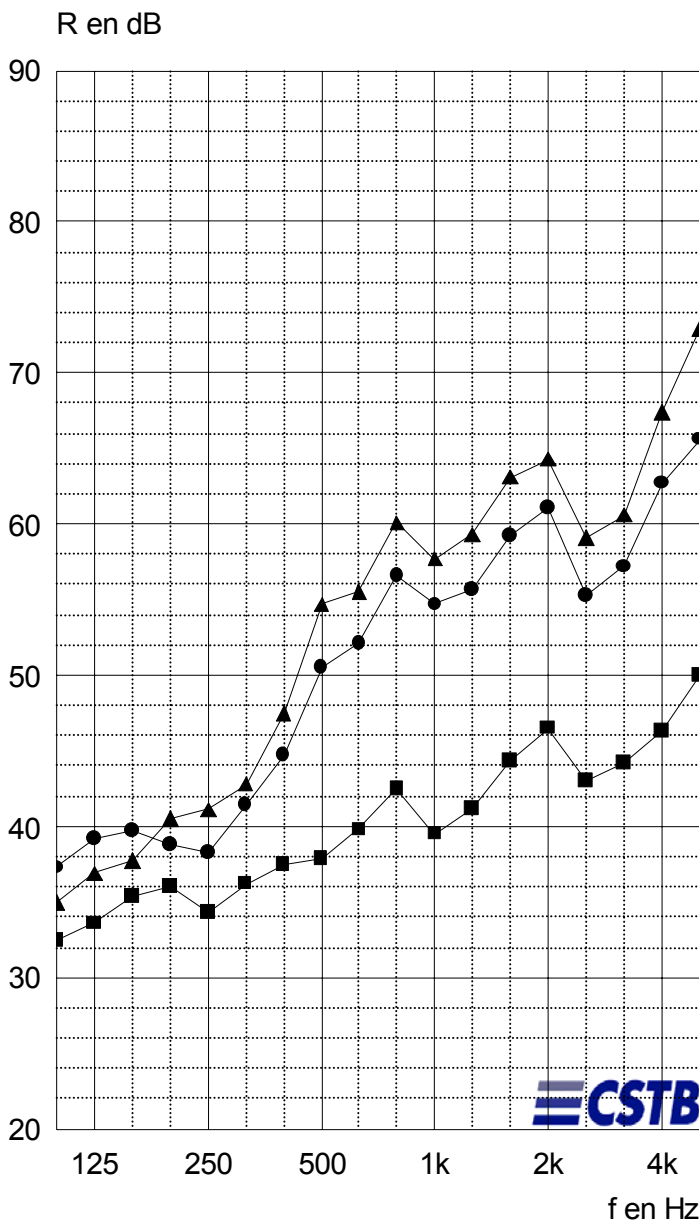
Dimensions in mm : 4180 x 2470  
 Total thickness in mm : 253  
 Mass per unit of area in kg/m<sup>2</sup> : 238.8  
 (without frame)

**MEASUREMENT CONDITIONS**

**Emission room:** Temperature: 20 °C  
 Relative humidity: 31 %  
**Reception room:** Temperature: 21 °C  
 Relative humidity: 38 %

**RESULTS**

- Test : Built wall
- Test : Built wall with lining on frame (BA 13)
- ▲ Test : Built wall with lining on frame (BA 13 +AIRFLEX)



Code	■	●	▲
f	R	R	R
100	32,5	37,3	35,0
125	33,6	39,2	36,9
160	35,4	39,7	37,7
200	36,0	38,8	40,5
250	34,3	38,3	41,1
315	36,2	41,4	42,8
400	37,5	44,7	47,5
500	37,9	50,5	54,7
630	39,8	52,1	55,5
800	42,5	56,6	60,1
1k	39,5	54,7	57,7
1,25k	41,2	55,7	59,3
1,6k	44,3	59,2	63,1
2k	46,5	61,1	64,3
2,5k	43,0	55,3	59,1
3,15k	44,2	57,2	60,6
4k	46,3	62,7	67,4
5k	50,0	65,6	72,9
Hz	dB	dB	dB

(\*) : valeur corrigée. (+) : limite de poste.

■	$R_w(C;C_{tr}) = 42(-1;-3) \text{ dB}$ Pour information : $R_{max} = 42 \text{ dB(A)}$ $R_{min} = 39 \text{ dB(A)}$
●	$R_w(C;C_{tr}) = 52(-2;-5) \text{ dB}$ Pour information : $R_{max} = 51 \text{ dB(A)}$ $R_{min} = 46 \text{ dB(A)}$
▲	$R_w(C;C_{tr}) = 54(-2;-6) \text{ dB}$ Pour information : $R_{max} = 53 \text{ dB(A)}$ $R_{min} = 48 \text{ dB(A)}$



## AIRBORNE SOUND INSULATION R OF A WALL WITH & WITHOUT LINING ON FRAME

<b>Tests</b>	<b>2, 3 et 4</b>
<b>Date</b>	<b>07/02/03</b>
<b>Station</b>	<b>EPSILON</b>

<b>REQUESTER</b>	<b>KdB Isolation</b>
<b>MANUFACTURERS</b>	<b>CSTB (supporting wall) LAFARGE PLATRE + KdB (lining)</b>
<b>BUILT WALL</b>	<b>wall in bricks 200 x 200 x 500 with a mortar coating on one face</b>
<b>LINING</b>	<b>AIRFLEX + BA 13 on wooden frame</b>

### MAIN CHARACTERISTICS

Dimensions in mm	: 4180 x 2470
Total thickness in mm	: 253
Mass per unit of area in kg/m <sup>2</sup>	: 238.8 (without frame)

### DESCRIPTION (the dimensions are given in mm)

- \* built wall:
  - In bricks 200 x 200 x 500, with twelve horizontal alveoli.
  - Cement mortar coating thickness 15 on one face,
 Total mass per unit of area: 229,2 kg/m<sup>2</sup>.
  
- \* lining on frame:
  - Frame: wooden brackets section 40 x 20
  - Insulating:
    - Ref. AIRFLEX
    - Constitution: fireproofed polyethylene foam of thickness 3 hot welded between two fireproofed polyethylene films in air bubbles of thickness 150 µm, themselves covered with a film aluminium of thickness 30 µm.
    - Total thickness: 10
    - Mass per unit of area: 615 g/m<sup>2</sup>
    - Presentation: Rollers of width 1200
  - Facing: a BA 13 PREGYPLAC STD (LAFARGE PLATRE) plasterboard, thickness 12,5 and mass per unit of area 9,2 kg / m<sup>2</sup>

### INSTALLATION

#### **Built wall:**

The bricks are united with mortar cement, by successive horizontal courses and crossed joints, moved by a half-block of a row on the other one, according to the specifications of the DTU on 20-1.

The mortar coating is made according to prescriptions of the DTU 25-1.

#### **Lining on frame:**

The frame is constituted by six brackets screwed horizontally in the step of 600 on the face not coated with the wall support.

The insulating, cut in strips, is fastened on these.

The covering of the connection of strips is made by an adhesive.

Six other brackets are screwed on the first ones, through the insulating.

The plasterboard of facing is fixed in suburb to the frame: in the step of 300 in high and low parts and in the step of 600 laterally.

The treatment of joints between plasterboard and in the corners (5 mm around high part and laterally) is realized by a system coating with fast setting joint filler and strip with joint.

In low part, the joint about 10 mm is filled by some supple mastic.

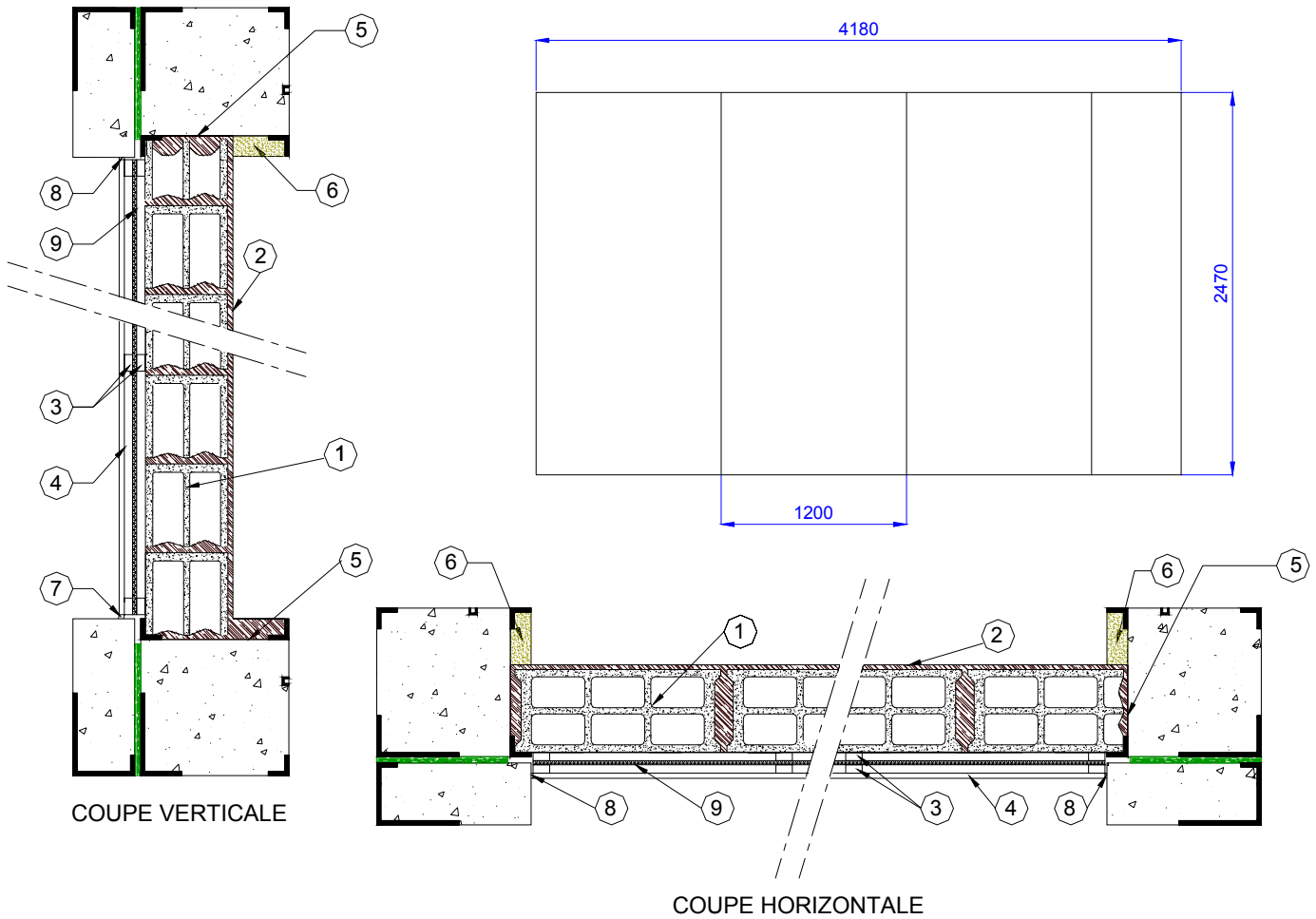
### NOTICE

The tests are realized one day after the application of the lining

## AIRBORNE SOUND INSULATION R OF A WALL WITH & WITHOUT LINING ON FRAME

Tests 2, 3 et 4  
Date 07/02/03  
Station EPSILON

<b>REQUESTER</b>	<b>KdB Isolation</b>
<b>MANUFACTURERS</b>	<b>CSTB (supporting wall) LAFARGE PLATRE + KdB (lining)</b>
<b>BUILT WALL</b>	<b>Wall in bricks 200 x 200 x 500 with a mortar coating on one face</b>
<b>LINING</b>	<b>AIRFLEX + BA 13 on wooden frame</b>



- |   |   |
|---|---|
| 1 Bricks with horizontal alveoli (dimensions : 500x200x200) | 5 Mortar  |
| 2 Mortar coating thickness 15                               | 6 Plaster   |
| 3 Wooden brackets 40x20                                     | 7 Supple mastic seal                                    |
| 4 Plaster board thickness 12.5 MS = 9.2 kg/m <sup>2</sup>   | 8 Coating with fast grip + paper strip                  |
|   | 9 AIRFLEX insulating thickness 10 – 615g/m <sup>2</sup> |



## APPENDIX 1 – APPARATUS

## STATION EPSILON

Emission room: EPSILON 3

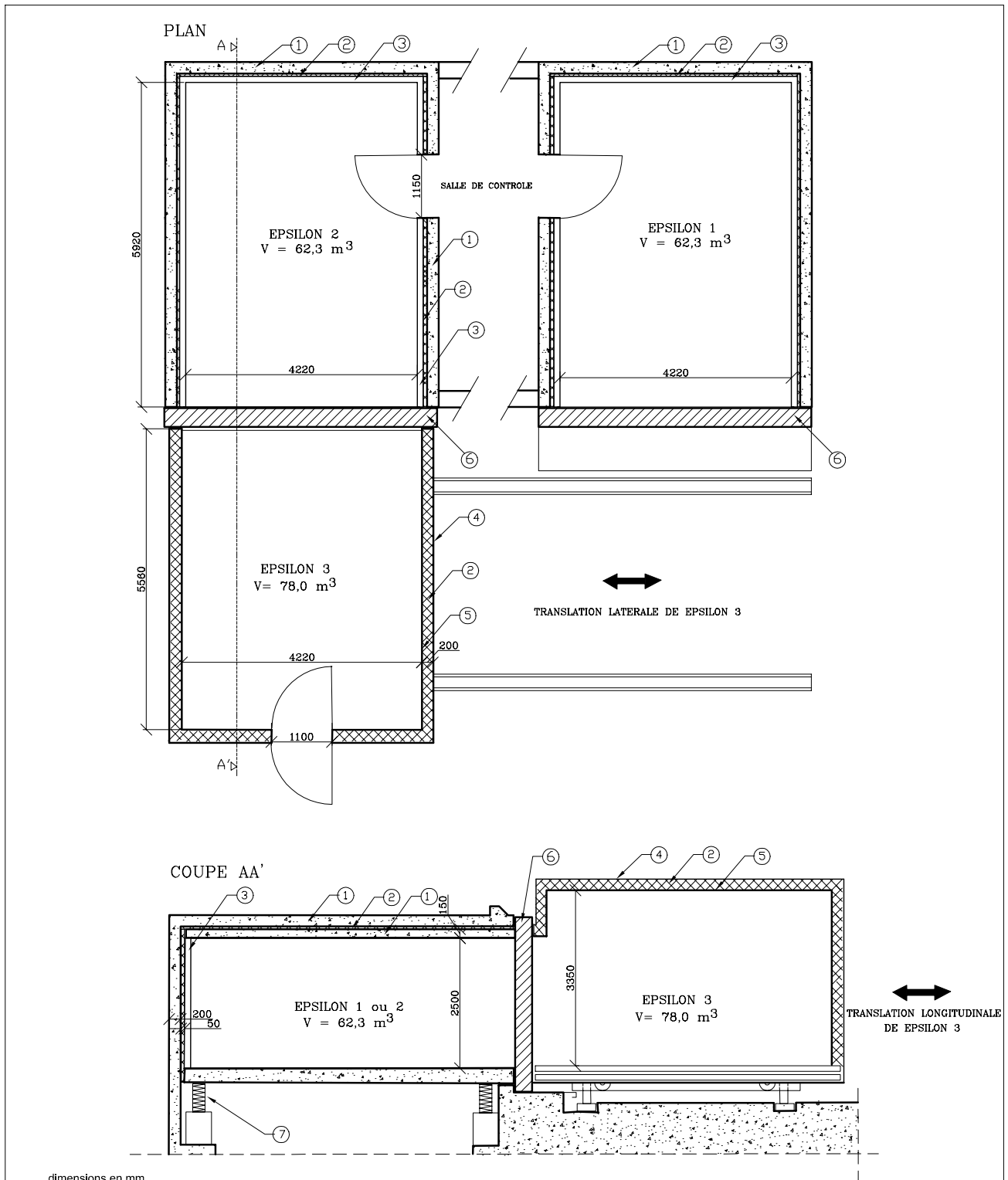
DÉSIGNATION	MARQUE	TYPE	N° CSTB
Microphone system	Bruël & Kjær	Microphone 4190	ACOU 01 004
	Bruël & Kjær	Preamplifier 2669	
Rotating arm	Bruël & Kjær	3923	ACOU 94 2
Amplifier	LAB GRUPPEN	LAB1000	ACOU 97 45
Speaker	CSTB-PHL AUDIO	Cube	ACOU 97 37
Speaker	CSTB-PHL AUDIO	Cube	ACOU 97 39

Reception room: EPSILON 1

DÉSIGNATION	MARQUE	TYPE	N° CSTB
Microphone system	Bruël & Kjær	Microphone 4190	ACOU 01 010
	Bruël & Kjær	Preamplifier 2669	
Rotating arm	Bruël & Kjær	3923	ACOU 80 10
Amplifier	CARVER	PM600	ACOU 91 16
Speaker	CSTB-ELECTRO VOICE	Pyramid	ACOU 97 50

Control room

DESIGNATION	BRAND	TYPE	CSTB No
Real Time Analyser	Bruël & Kjær	2144	ACOU 96 7
Micro computer	DELL	OPTIPLEX GX 270	
Calibrator	Bruël & Kjær	4231	ACOU 95 6

**APPENDIX 2 – DRAWING OF THE TEST STATION**
**STATION EPSILON**


dimensions en mm

7	Boîte à ressort	échelle:	1/100
6	Surface de l'ouverture S=10,5 m <sup>2</sup>		
5	Tôle acier 6mm	<b>POSTE EPSILON</b>	
4	Tôle acier 2mm		
3	Bloc de béton plein e=100 mm		
2	Laine minérale	<b>ACOUSTIQUE</b>	
1	Béton e=200 mm		
REP	DESIGNATION		

**END OF REPORT**