FIRE TEST REPORT EUI-20-B-000090

According to BS EN 1363-1:2012 and BS EN 1365-2:2014

Test	EUI-20-B-000090
Performed on	07 May 2020
Regarding	Fire test for loadbearing floor with downlighters Reference: James Jones 220mm Manufactured I-Joist Overall dimensions: 3000 x 4290 x 257 mm (w x l x th) Fire side: Gyproc Wallboard Type A 15 mm (th)
Sponsor	COLLINGWOOD LIGHTING Brooklands House Sywell Aerodrome NN6 0BT Sywell UNITED KINGDOM

UKAS TESTING
10169

1. SCOPE OF THIS TEST REPORT

Fire resistance test regarding loadbearing floor according to the general requirements of the standard EN 1363-1:2012, “Fire resistance tests. General requirements” and to the specific requirements of the standard EN 1365-2:2014 “Fire resistance tests for loadbearing elements. Floors and roofs”.

2. TEST LABORATORY

EFECTIS UK & IRELAND
Shore road
Jordanstown
BT37 0QB County Antrim
Northern Ireland

3. REFERENCE AND MANUFACTURER OF THE TESTED SPECIMEN

Reference: Loadbearing floor with downlighters
James Jones 220mm Manufactured I-Joist

Manufacturer: COLLINGWOOD LIGHTING
Brooklands House
Sywell Aerodrome
NN6 0BT
Sywell
UNITED KINGDOM

4. FURTHER INFORMATIONS FOR CE MARKING

(Chapter not covered under the UKAS's accreditation)

The tested sample has not been subject of a sampling.

The results presented in this test report apply only to the sample as received.

5. DESCRIPTION OF THE TESTED SPECIMEN

Technical data in this chapter and drawings shown in Appendix A concerning the sample and its composition have been supplied by the sponsor who attests their accuracy.

5.1. GENERAL

The tested element was a load bearing floor. The overall nominal dimension was 3000 x 4290 mm (w x h), thickness 257 mm. See Figure 1, Appendix A.

The sample frame was made of six engineered timber joists (JAMES JONES & SONS LTD), with overall dimension 47 x 220 x 4200 mm (w x d x L), spaced by timber blocks (JAMES JONES), placed at 55 mm from two timber rim boards JJ-Beam (JAMES JONES & SONS LTD) with overall dimension 45 x 220 x 2980 mm (w x d x L), used to close the frame width-wise.

The cavities between the rim boards and the timber blocks were filled with glass mineral wool insulation LR44 COMBI CUT (KNAUF INSULATION).

The exposed side of the specimen was composed of one layer of plasterboard reference Gyproc Wallboard Type A (GYPROC SAINT-GOBAIN),15 mm thick.

The unexposed side of the specimen was composed of a single layer of wood particle board reference CaberFloor P5 (NORBORD EUROPE LTD), 22 mm thick.

Additional electrical equipment was installed on the exposed side, as detailed below.

Note 1: The test specimen (dimensions, fire direction, supporting construction and assembly) was supplied by the sponsor to the Test Laboratory on his own initiative, in conformity with clause 12 of standard EN 1363-1:2012.

Overall dimensions of the specimen:

- Element: 3000 x 4290 mm (w x L)
- Exposed area: 3000 x 4000 mm (w x L).
- Overall thickness of the element: 257 mm

5.2. LIST OF THE COMPONENTS

According to the information supplied by the sponsor.

Name	*Reference*	*Characteristics*	*Material*	*Supplier*
Sample frame	JJI-Joists A+ 220	Flange section 47 x 45 mm (w x h), Web thickness 9 mm Overall length 4200 mm	Flanges: Solid timber; Web: OSB	JAMES JONES & SONS LTD
	JJ-Beam	Section 45 x 220 mm (w x h)	Glue laminated timber (GLULAM)	
	Void Filler	18 x 100 x 143 mm (w x l x h)	Plywood	
Exposed side	Gyproc Wallboard Type A	2400 x 1800 x 15 (w x L x th) Surface mass: 9.8 kg/m^2 λ_d= 0.19 W/mK R_d=0.08 m^2.K/W	Plasterboard	GYPROC SAINT-GOBAIN
Unexposed side	CaberFloor P5	2400 x 600 x 22 mm (w x L x th); Density: 660 ± 30 kg/m^3; Reaction to Fire: D (according to BS EN 13501-1); λ_d=0.14 W/m.K; Tongue and Groove Edges	Wood particle board	NORBORD EUROPE LTD
Insulation used in the cavity between the rim board and the timber blocks	LR44 COMBI CUT	1140 (2 x 570) x 8050 x 150 mm (w x L x th) Reaction to Fire: A1 (according to BS EN 13501-1); λ_d=0.044 W/m.K; R_d=3.40 m^2.K/W	Glass mineral wool	KNAUF INSULATION
Nail used on the timber frame and on the floor deck	SC-3 Clout Nail	65 x 3.75 mm (L x Ø)	Galvanised Steel	JOHN GEORGE
Nail used to fix void filler to JJI-Joist	GCN25LB Clout Nail	40 x 2.65 mm (L x Ø)	Galvanised Steel	TIMCO
Screw used to fix the plasterboard to frame	DWSP42	3.5 x 42 mm (Ø x L); Drywall screws, with fine thread	Black phosphate coated steel	EVOLTUTION
Wood glue used on the unexposed side	Lumberjack 5 Minute PU Wood Adhesive	Brown, 750g bottle	Adhesive	EVERBUILD
Jointing filler	Gyp Finisher	White colour	Plaster of Paris	GYPROC SAINT-GOBAIN

Jointing tape (exposed side)	EuroScrim	48 mm x 90 m (w x L)	Fibre glass	EVERBUILD
Intumesced sealant	ASF Acrylic	Tested to EN 1366-3 (up to 4 hours fire resistance)	Intumescent acrylic sealant	PROTECTA
Downlighters All downlighters and bezels listed below are manufactured by COLLINGWOOD LIGHTING.				
Downlighters	***Reference / Commercial designation***	***Details***		
	DLT4564000 / H2 LITE 400 CSP	Overall dimension 85 x 51 mm (Ø x d); 30, 60 and 90 minute fire-rated; Installed on a 64 mm cutout.		
	DLT4566000 / H2 LITE 500 CSP	Overall dimension 85 x 52 mm (Ø x d); 30, 60 and 90 minute fire-rated; Installed on a 64 mm cutout.		
	DLE4795540 / H2 PRO 700	Overall dimension 85 x 50 mm (Ø x d); 30, 60 and 90 minute fire-rated; Installed on a 64 mm cutout.		
	DLE4353840 / H4 PRO 550	Adjustable, overall dimension 85 x 51 mm (Ø x d); 30, 60 and 90 minute fire-rated; Installed on a 69 mm cutout.		
Bezels	RB359WH / H2 PRO BEZEL	Overall diameter 90 mm; Cast bezel; Finishing: white plastic		
	RB442MW / H4 PRO BEZEL	Overall diameter 90 mm; Cast bezel; Finishing: white plastic		

w = Width --- h = Height --- L = Length --- Th = Thickness --- d = Depth --- Ø = Diameter

5.3. DETAILED DESCRIPTION OF THE SPECIMEN

The drawings in the Appendix A have been supplied by the Sponsor, checked by the test laboratory EFECTIS, and are in conformity with the tested specimen.

5.3.1. Test specimen

5.3.1.1. Sample frame

The sample frame was made of six joists reference JJI-Joists A+ 220 (JAMES JONES & SONS LTD), two rim boards and ten timber blocks made of glue laminated timber reference JJ-Beam (JAMES JONES & SONS LTD), with an overall size of 2980 x 4340 x 257 mm (w x L x h).

Each joist had an overall sectional dimension of 47 x 220 mm (w x h), with 4200 mm length. The joists were made of solid timber top and bottom flange, with sectional dimension of 47 x 45 mm (w x h) and an OSB (Oriented Strand Board) web, 9 mm thick. Each flange had a sectional dimension of 72 x 47 mm (w x h). The different components of the joists arrived pre-assembled.

The JJ-Beam rim boards had sectional dimension of 45 x 220 mm (w x h), with 2980 mm length and were fixed to the joists using galvanised steel clout nails reference SC-3 (JOHN GEORGE), with 65 x 3.75 mm (L x Ø), using two nails on the top flange and one on the bottom flange. See Photograph 2, Appendix D for the detail of the nail placement.

The timber blocks made of reference JJ-Beam (JAMES JONES & SONS LTD). were placed between the joists, using galvanised steel clout nails reference SC-3 (JOHN GEORGE), with 65 x 3.75 mm (L x Ø), using one nail on the top flange and one on the bottom flange.

The gaps between the web of the JJI-Joist and the timber blocks were filled with Void Filler (JAMES JONES & SONS LTD), 18 x 100 x 143 mm (w x l x h). The Void Fillers were made of plywood and were fixed to the web of the joist using galvanised steel clout nails reference GCN25LB (TIMCO), 40 x 2.65 mm (L x Ø), using one nail on top and one nail on the bottom of the filler. See Photograph 3, Appendix D for the detail of the filler.

The cavities between the rim boards and the timber blocks were filled with glass mineral wool insulation reference LR44 COMBI CUT (KNAUF INSULATION), Reaction to Fire: A1 (according to BS EN 13501-1); λ_d=0.044 W/m.K; R_d=3.40 m^2.K/W

For the layout of the frame elements see Figures 1 and 2, Appendix A and Photographs 1 to 3, Appendix D.

5.3.1.2. Unexposed side

The unexposed side was made of one layer of wood particle board reference CaberFloor P5 (NORBORD EUROPE LTD), 22 mm thick, with tongue and groove edges, density 600 ± 30 kg/m^3, λ_d=0.14 W/m.K and Reaction to Fire Class D (according to BS EN 1351-1).

A layer of wood glue reference Lumberjack 5 Minute PU Wood Adhesive (EVERBUILD) was applied to the tongue and groove joints of the wood particle boards and between the joists and the wood particle boards. The CaberFloor P5 layer was fixed to the joists using galvanised steel clout nails reference SC-3 (JOHN GEROGE), with 65 x 3.75 mm (L x Ø), evenly spaced at 300 mm on the perimeter and at 600 mm on the field of the boards.

See Figure 3, Appendix A and Photographs 4 to 6, Appendix D for the layout of the CaberFloor P5 boards.

5.3.1.3. Cavity insulation

No insulation was used in the cavities between the joists.

5.3.1.4. Exposed side

The exposed side of the sample was made of a single layer of plasterboard reference Gyproc Wallboard Type A (GYPROC SAINT-GOBAIN), 2400 x 1800 x 15 mm (w x L x th), with a surface mass of 9.8 kg/m^2, λ_d= 0.19 W/mK, R_d=0.08 m^2.K/W.

The plasterboard layer was fixed to the sample frame using drywall screws reference DWSP42 (EVOLUTION), 3.5 x 42 mm (Ø x L); evenly spaced at 150 mm along the joist.

See Figure 4, Appendix A and Photograph 7, Appendix D for the layout of the Gyproc Wallboard Type A boards.

5.3.1.5. Additional equipment

Electrical equipment was installed on the exposed side of the sample, replicating real-life application. See 5.2 – List of Components for the description of the equipment used, Figure 5, Appendix A and Photograph 7, Appendix D for the plot of the equipment. All the additional equipment installed on the exposed side of the sample was manufactured by COLLINGWOOD LIGHTING.

5.3.1.6. Finishing

The joints between the boards of Gyproc Wallboard Type A were finished using a jointing filler compound reference Gyp Finisher (GYPROC SAINT-GOBAIN) applied over a layer of fibre glass jointing tape reference EuroScrim (EVERBUILD), 48 mm wide.

The heads of the screws used to fix the boards of Gyproc Wallboard Type A were covered with a layer of using a jointing filler compound reference Gyp Finisher (GYPROC SAINT-GOBAIN).

A layer of acrylic intumescent sealant reference ASF Acrylic (PROTECTA) was applied between the edge of the perimeter of the exposed side and the furnace walls.

On the unexposed side, the gaps between the sample and the testing frame were filled by packing stone mineral wool.

5.4. VERIFICATION

The tested element was collected as described in chapter 5 of this report.

6. TEST ASSEMBLY

6.1. DEFINITION OF THE TESTED SPECIMEN

The choice and the definition of this test specimen were carried out by the sponsor

6.2. ASSEMBLY OF THE TESTED SPECIMEN

6.2.1. Supporting construction

The tested specimen has been assembled within a reinforced concrete frame supplied by EFECTIS.

- Drying duration: more than 28 days.
- Thickness of the frame: 284.5 mm.
- Opening in the frame: 3000 x 4000 mm (w x L).

6.2.2. Staff

The testing frame was supplied and installed on the furnace by the staff of the test laboratory.

The construction of the sample was done by the staff of the sponsor.

7. TEST METHOD

7.1. PRELIMINARY CONDITIONING

In conformity with the requirements stated in § 1, the weight stability of the test specimen was (estimated to be) reached on the day of the test.

7.2. THERMAL PROGRAM

The temperature rise inside the furnace above the ambient temperature has been controlled according to the **standard thermal program** represented by the following function:

$$T = 345 \log_{10}(8t + 1) + 20$$

where :

t = *Time (min)*
T = *Furnace temperature at time t (°C)*

7.3. FIRE SIDE

The fire side of the specimen consisted of one layer of plasterboard reference Gyproc Wallboard Type A (GYPROC SAINT-GOBAIN), thickness 15 mm.

7.4. SUPPORTING CONDITIONS AND LOAD APPLIED TO THE SAMPLE

7.4.1. Supporting conditions

The supporting conditions of the floor complied with BS EN 1365-2:2014.
The specimen was supported on the frame of the furnace by a restrained support.

7.4.2. Loading conditions

The load was defined according to the Sponsor specification.
The load was applied in conformity with BS EN 1363-1:2012.
The maximum allowed deflection at mid-span and maximal allowed rate of deflection were calculated according to BS EN 1363-1:2012.

- Span between supporting lines: 4000mm
- Load applied: 1.1 kN/m^2 (see Figure 2, Appendix B)
- Distance between the loading: 1000mm centres to centres
- Limiting deflection at mid-span: 165.3 mm
- Limiting rate of deflection: 7.35 mm/min

8. MEASUREMENTS DURING THE FIRE TEST AND TEST RESULTS

The locations of the sensors are shown on Figure 1, Appendix B.
The readings are recorded on the charts mentioned hereafter.

8.1. TEMPERATURE MEASUREMENTS

8.1.1. Ambient temperature in the laboratory

The ambient temperature was measured according to the requirements of the standard BS EN 1363-1:2012.

See Chart 1, Appendix C for the measurements recorded during the test.

8.1.2. Ambient temperature in the furnace

It was measured in conformity with the general requirements from the standard BS EN 1363-1:2012 and specific requirements of the standard 1365-2:2014, using 8 plate thermocouples with their metal face towards the bottom of the furnace.

See Chart 2, Appendix C for the measurements recorded during the test.

8.1.3. Temperatures of the specimen

The temperatures were measured by 21 thermocouples according to the requirements of the standard BS EN 1363-1:2012 and located according to the standard BS EN 1365-2:2014. For the plot of the instrumentation See Figure 2, Appendix B, Charts 5 , 6A and 6B, Appendix C and Table 1, Appendix E.

External Thermocouples - Location	*Markings*	*Appendix*
On the centre of the quadrant	1, 2, 4, 5	B
On the geometric centre of the sample	3	
At mid-span, 150 mm from the edge of the sample	6, 7	
On a joint across the width of the sample	8, 9	
On a joint across the span of the sample	11, 13	
At two intercepting joints	10, 12	
On the unexposed side of the sample above downlighter DLE47955XX	14, 15	
On the unexposed side of the sample above downlighter DLT4566000	16, 17	
On the unexposed side of the sample above downlighter DLE435XXXX	18, 19	
On the unexposed side of the sample above downlighter DLT4564000	20, 21	

8.2. PRESSURE MEASUREMENTS

In conformity with the requirements of the standard EN 1363-1:2012, the pressure inside the furnace was continuously controlled throughout the whole test.

Taking into account the dimensions of the floor and the location of the pressure sensor, the prescribed value was established at 16.6 Pa.

See Chart 3, Appendix C for the measurements recorded during the test.

8.3. DEFLECTION MEASUREMENTS

In conformity with the requirements of the standard BS EN 1363-1:2012, the deflection of the sample was measured and recorded mid-span, near the edge and on the centre of the sample.
The deflection was measured using calibrated wire type displacement gauges and recorded via a data acquisition system.

See Figure 1, Appendix B for the plot of the instrumentation and
Chart and 8, Appendix C for the measurements obtained during the test.

9. OBSERVATIONS

9.1. BEFORE THE TEST

- Ambient temperature inside the laboratory : 13 °C.
- Specimen temperature before the test : 13 °C.

9.2. DURING THE TEST

Time (min)	*Specimen*	*Observations*
00	**ES/NES**	**Start of the test**
03	NES	Smoke being released between the sample frame and the CaberFloor P5 layer
05	ES	Flames visible from DLE4353840 and DLT4564000 downlights
08	NES	Light smoke from T&G decking joints
10	ES	Scrim tape falling off. Flames from downlights no longer visible.
13	NES	Smoke from side of T&G joint near TC4
16	ES	Flames visible from DLT4566000 downlights
17	ES	Plasterboard beginning to warp around joints
20	NES	NSC
22	ES	Gaps on plasterboard joints increasing. Flames visible from most downlights except DLT456600
28	ES	Plasterboard gaps increasing but all boards still in place. Flames still visible from downlights. Cracking sounds heard
32	NES	Cracking sounds louder and more frequent. Deflection in the middle of the sample visible
	ES	Flames visible from plasterboard joints
36	ES	NSC
38	**ES/NES**	**Rate of deflection reached in the middle of the sample - Loss of load-bearing capacity**
38	**ES/NES**	**Test stopped**

ES/NES = Exposed/non-exposed side --- NSC = No Significant Change --- TC = Thermocouple

9.3. AFTER THE TEST AND COOL DOWN

See Photographs 10 and 11, Appendix D.

10. FIRE RESISTANCE CRITERIA

In conformity with the standards mentioned in chapter 1, the times during which the specimen meets the fire resistance criteria may be regarded as follows:

10.1. FIRE INTEGRITY

10.1.1. Cotton wool pad

Duration: **THIRTY-EIGHT MINUTES (38 min)**
Cause of limitation: Loss of load-bearing capacity.

10.1.2. Gap gauges

Duration: **THIRTY-EIGHT MINUTES (38 min)**
Cause of limitation: Loss of load-bearing capacity.

10.1.3. Sustained flaming

Duration: **THIRTY-EIGHT MINUTES (38 min)**
Cause of limitation: Loss of load-bearing capacity.

10.2. THERMAL INSULATION

10.2.1. Thermal insulation

Duration: **THIRTY-EIGHT MINUTES (38 min)**
Cause of limitation: Loss of load-bearing capacity.

10.3. LOAD-BEARING CAPACITY

10.3.1. Maximum deflection

Duration: **THIRTY-EIGHT MINUTES (38 min)**
Cause of limitation: Loss of load-bearing capacity.

10.3.2. Rate of deflection

Duration: **THIRTY-EIGHT MINUTES (38 min)**
Cause of limitation: Maximal rate of deflection reached in the centre of the sample.

11. FIELD OF DIRECT APPLICATION OF THE TEST RESULTS

The direct application field of the test results is limited to the determination of the permissible modifications of the test specimen following a successful fire resistance test. These modifications may be automatically introduced without the sponsor having to apply for any additional assessment, calculation or agreement.

Note: When extended prescriptions concerning the dimensions of the element are considered, lower dimensions than the actual dimensions may be used for some elements of the test specimen in order to maximize the extrapolation of the test results by modelling the interaction between the elements at the same scale.

The test results are directly applicable to a similar untested floor or roof construction provided the following is true:
a) With respect to the structural building member:
- The maximum moments and shear forces, which when calculated on the same basis as the test load, shall not be greater than those tested.
b) With respect to the ceiling system:
- The size of panels of the ceiling lining may be increased by a maximum of 5 % but limited to a maximum of 50 mm. The length of the grid members can be increased accordingly.

- The total area occupied by fixtures and fittings relative to the area of the ceiling lining is not increased and the maximum tested opening in the lining is not exceeded.
c) With respect to the cavity:
- The height of the cavity h and the minimum distance d between the ceiling and the structural members (see Figure 1) are equal to or greater than those tested.
- No material is added to the cavity unless the same amount (in terms of both weight and fire load) of material was included in the test specimen.

As the laboratory was not responsible for the sampling stage, thus the test results only apply to the tested specimen.

12. STATEMENT

'This report gives details about the construction method, the testing conditions and the test results achieved when the specific building element described was tested according to the procedure specified in standard EN 1363-1:2012 and, where applicable, in standard EN 1363-2:1999.

As concerns the dimensions, details, loading, stresses and boundary or end conditions, any significant deviation other than that which is not excluded within the field of direct application of the appropriate test procedure is not covered by this report.

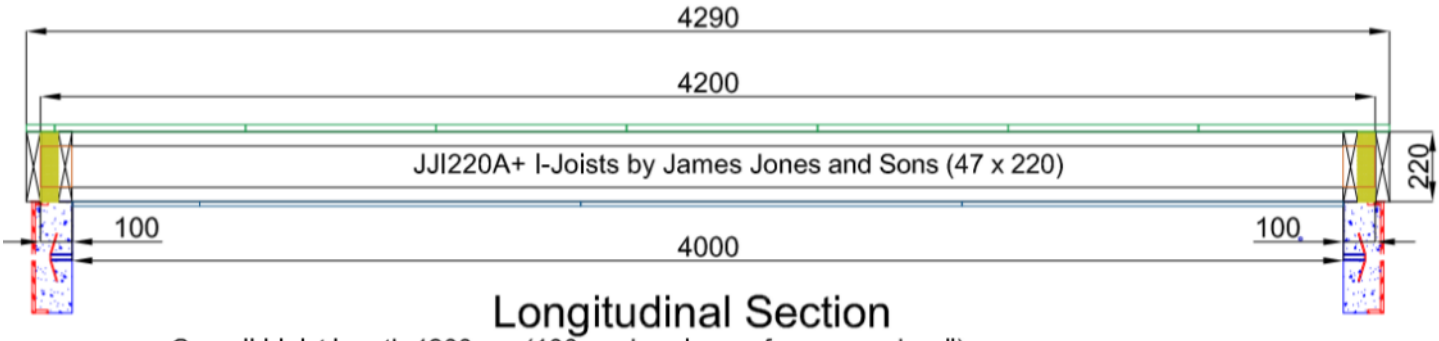
Because of the nature of the fire tests and of the resulting difficulty in quantifying the uncertainty of the fire resistance assessment, it is impossible to establish any level of accuracy of the results.'

27th May 2020

SIGNED **APPROVED**

Project leader Lab Manager

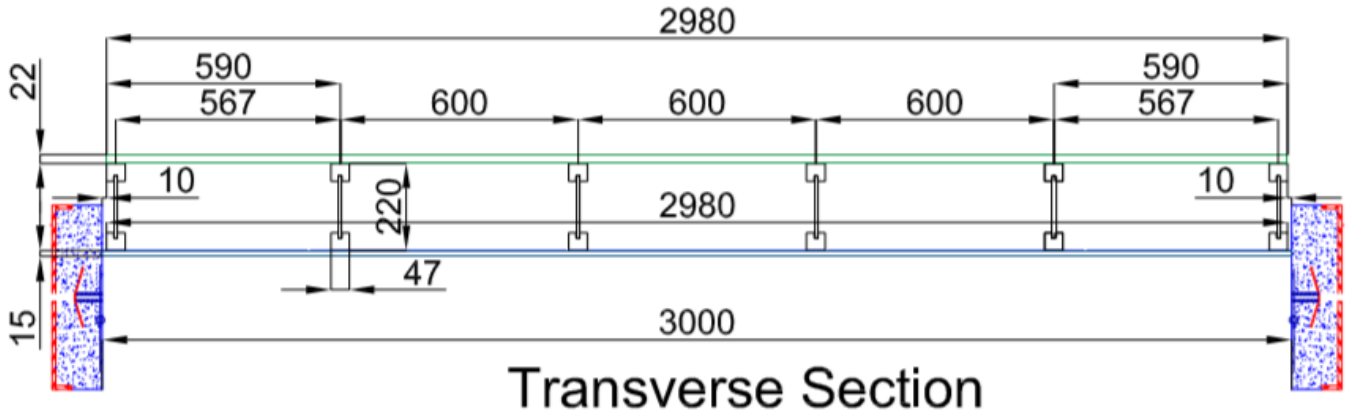
APPENDIX A: DRAWINGS



Longitudinal Section

Overall I-joist length 4200mm (100mm bearing on furnace end wall)
45 x 220mm glulam stability blocking flush with furnace face (fully over furnace end wall)
45 x 220mm glulam rim beam closer at each end (to seal in smoke)
Overall decking length 4290mm (flush with edge of framing)
Overall plasterboard length 4000mm (No Support Noggings)
Plasterboard installed tight to the face of the furnace wall and sealed with Intumescent mastic

Figure 1a – Detail of longitudinal cross-section



Transverse Section

JJI220A+ I-Joists at 600mm centers (reduced to 567mm for edge bays)
Overall framing width 2980mm (10mm shy of furnace wall)
Overall decking width 2980mm (flush with edge of framing if required)
Overall plasterboard width 3000mm
Plasterboard installed tight to the face of the furnace wall and sealed with Intumescent mastic

Figure 1b - Detail of transverse cross-section.

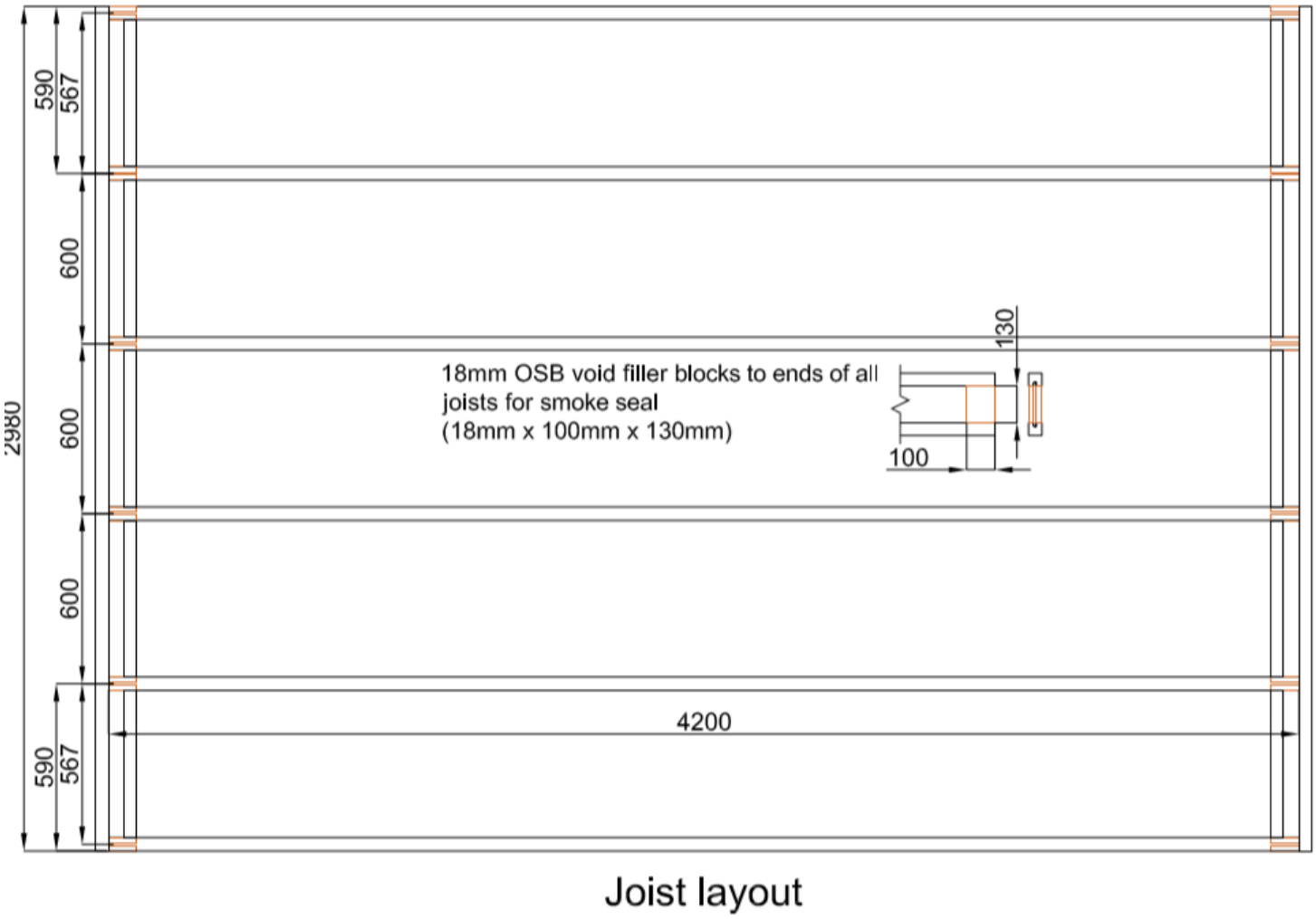


Figure 2 - Overall view of the frame

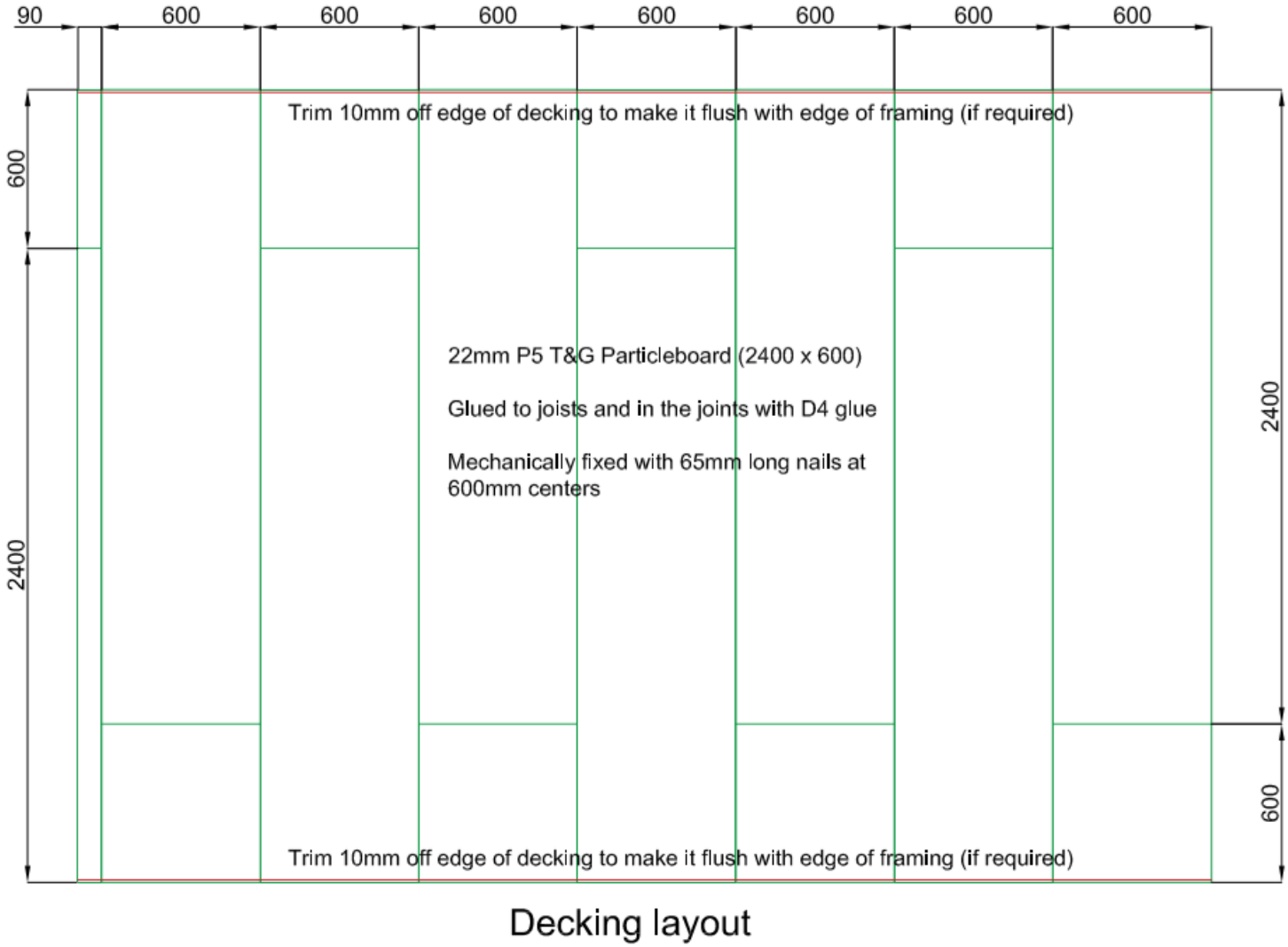


Figure 3 - Overall view of the unexposed side in relation to the sample frame

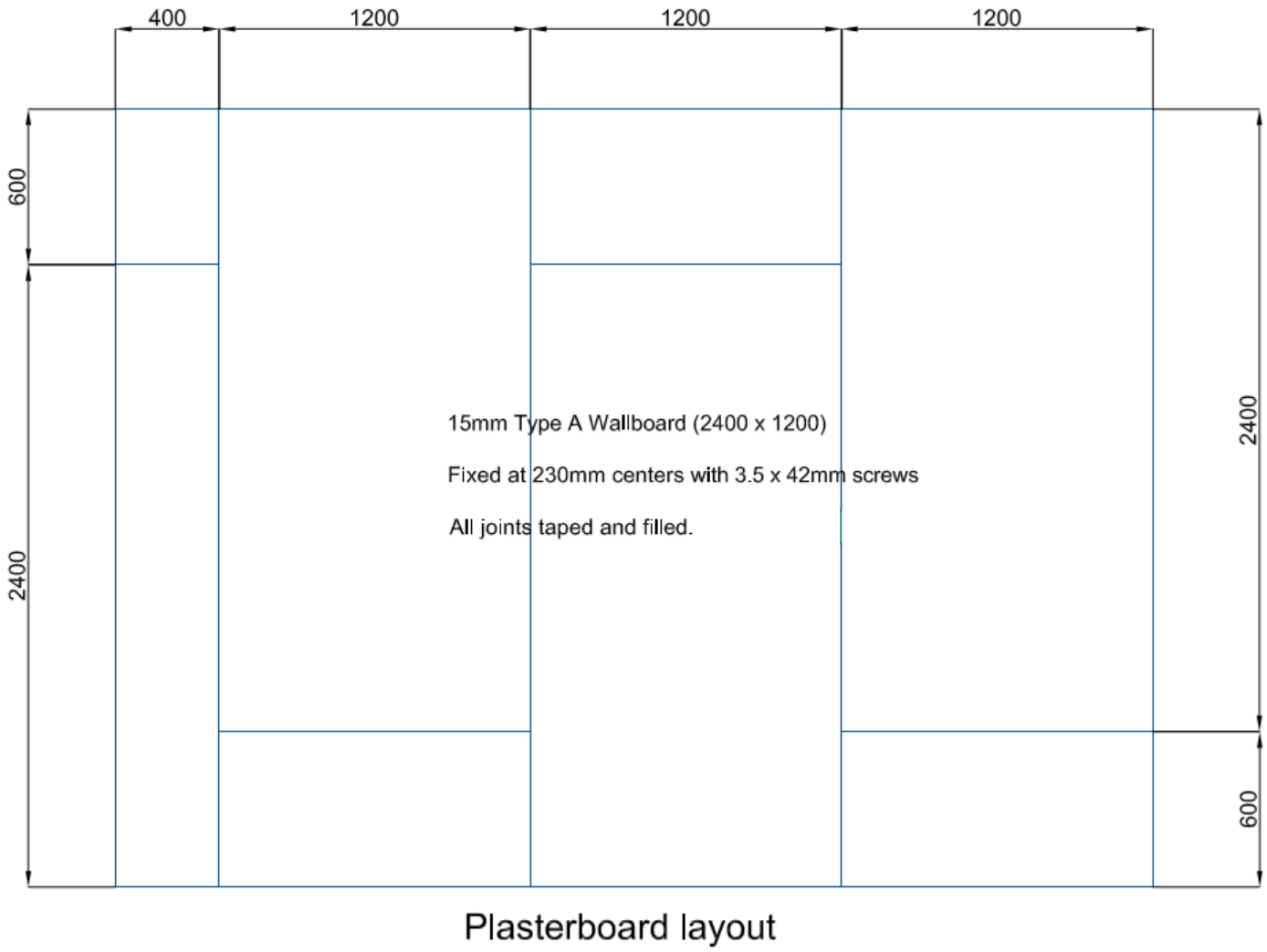


Figure 4 - Overall view of the exposed side in relation to the sample frame

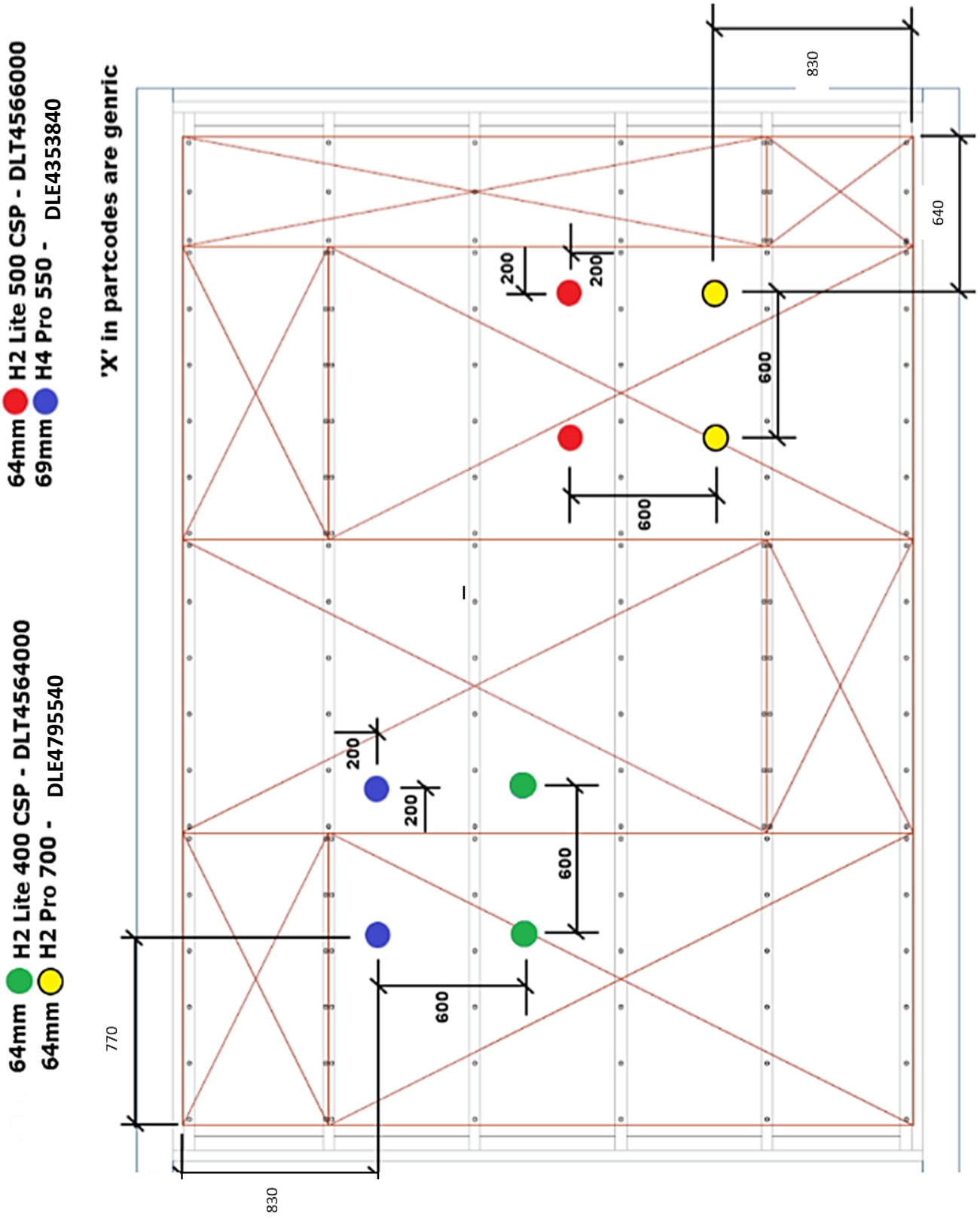


Figure 5 - Overall view of the electrical equipment installed on the exposed side, in relation to the sample frame and the plasterboards. Note the information of the hole cut-out size used in each item.

APPENDIX B: INSTRUMENTATION

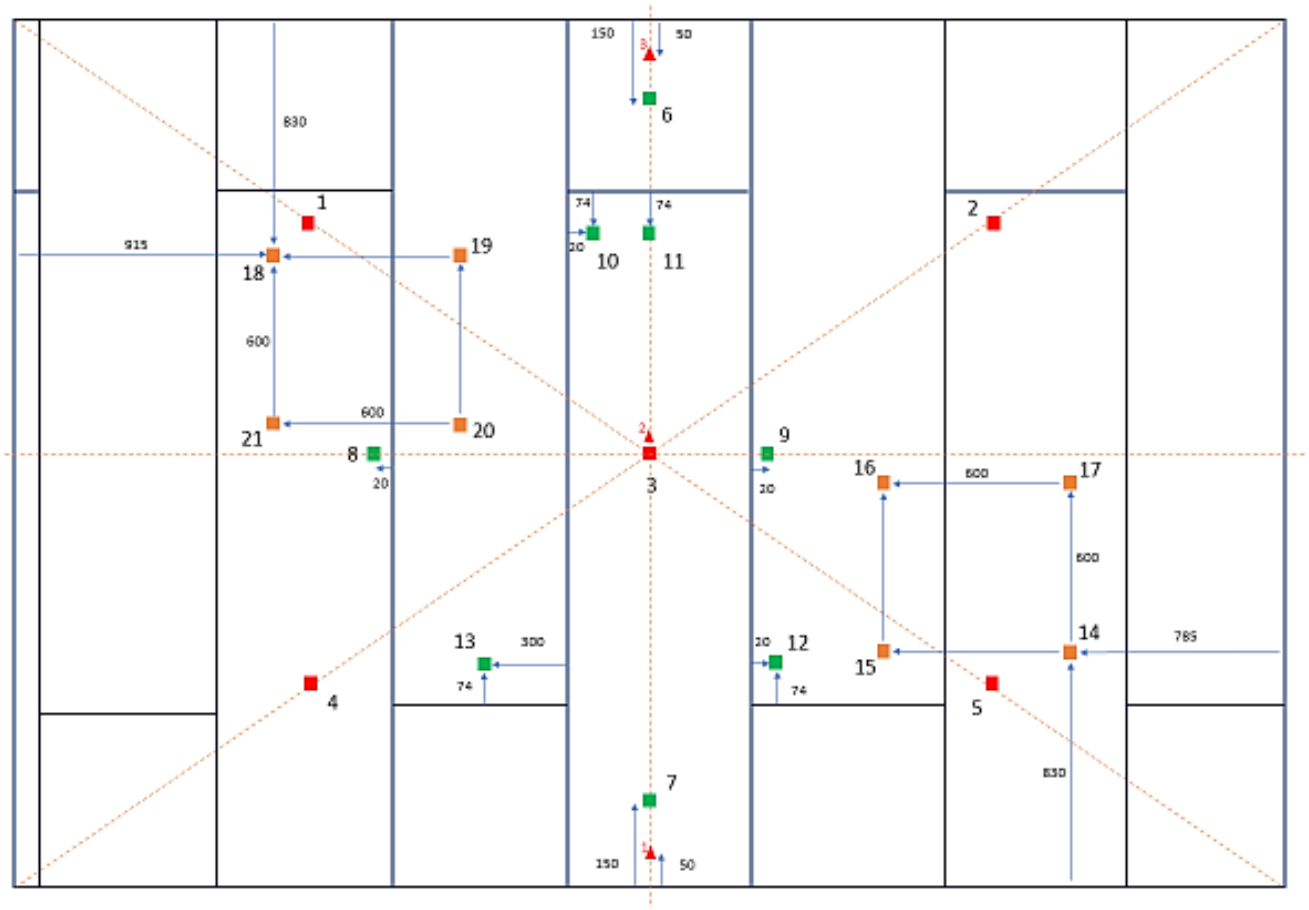


Figure 1 - Layout of the instrumentation installed on the unexposed side, including the thermocouples installed over the electrical equipment.

■ Thermocouples for average temperature rise and maximum temperature rise. TCs 1 to 5 at least 50 mm from joints on the boarding

■ Thermocouples for maximum temperature rise.

■ Thermocouples for maximum temperature rise, installed on the unexposed side of the sample, directly above the downlighters

▲ LVDTs for vertical deflection

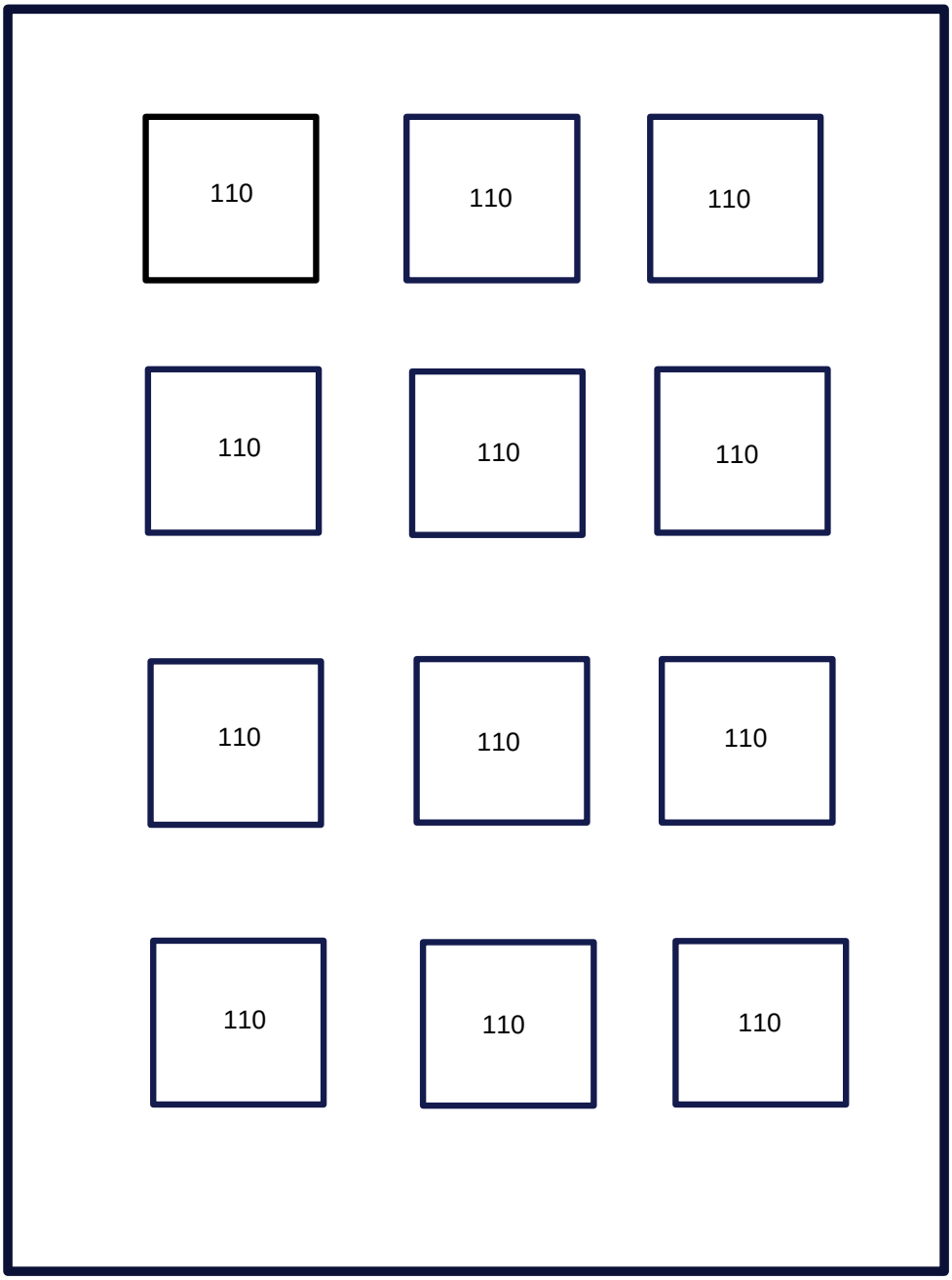


Figure 2 - Layout of the load distribution across the unexposed side of the sample

Note: Value expressed in kilogram per loading point.

APPENDIX C: CHARTS

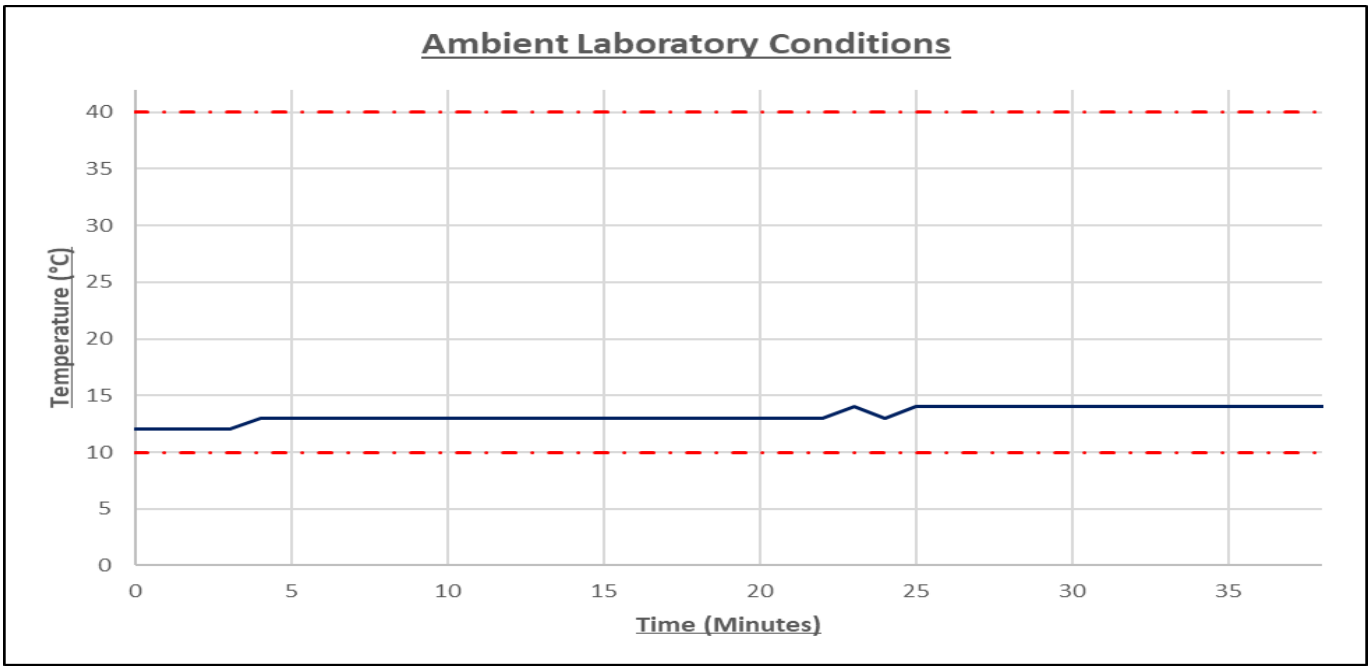


Chart 1 - Ambient temperature inside the laboratory during the test

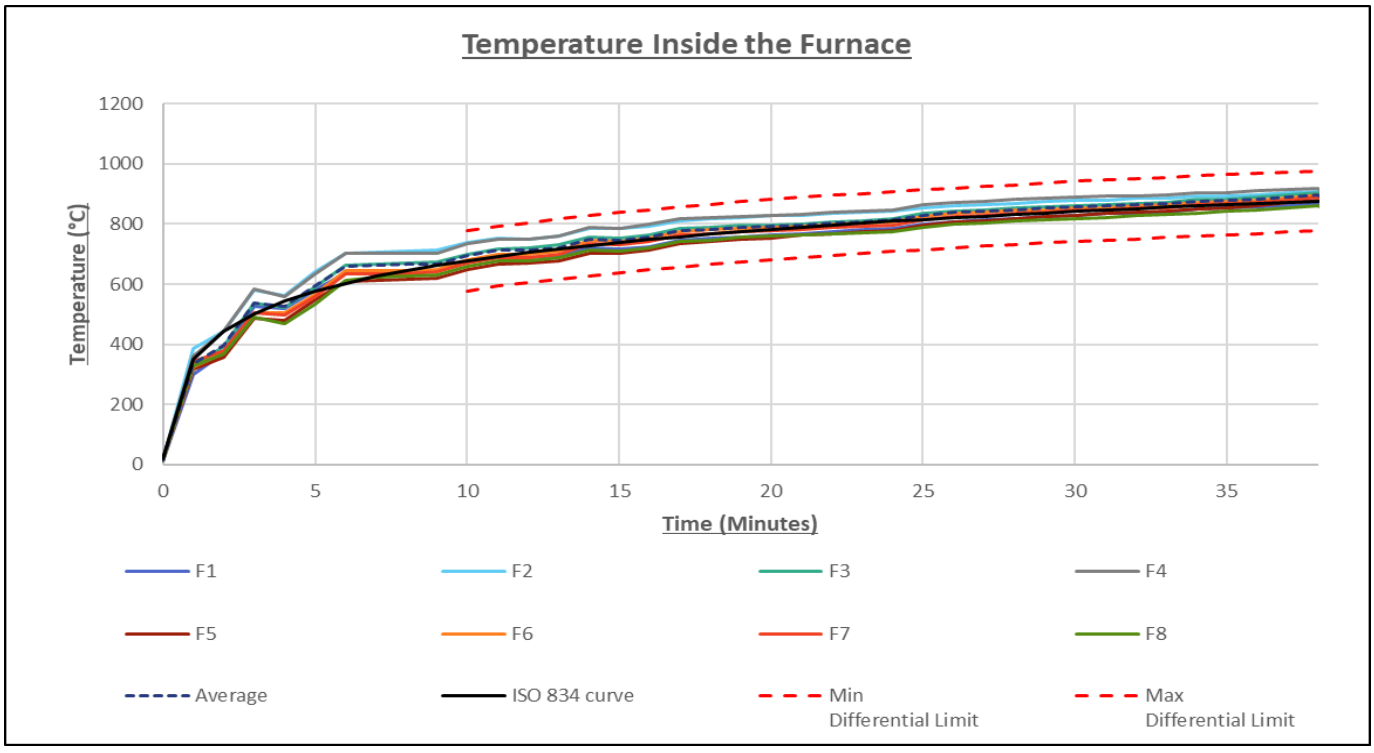


Chart 1 - Temperature inside the furnace, including the ISO 834 curve as reference

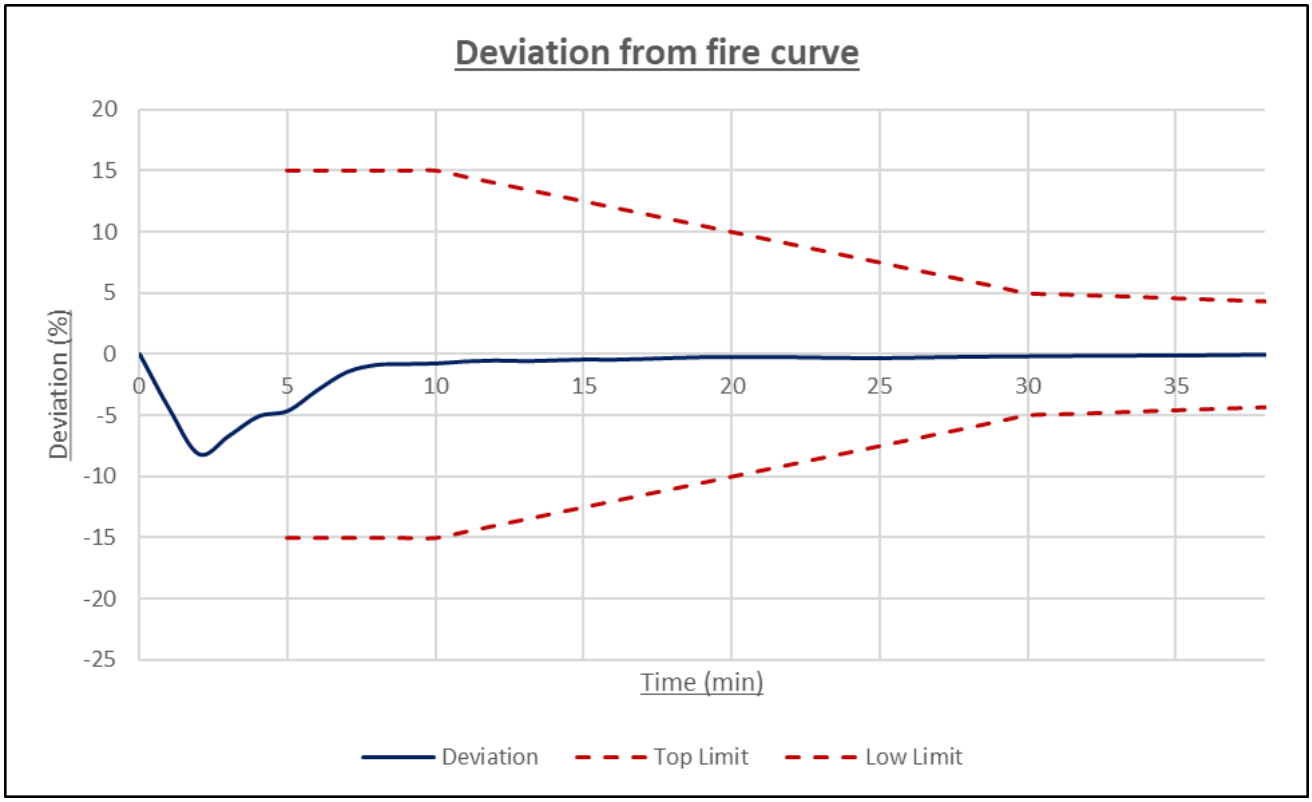


Chart 2 - Deviation from the theoretical fire curve

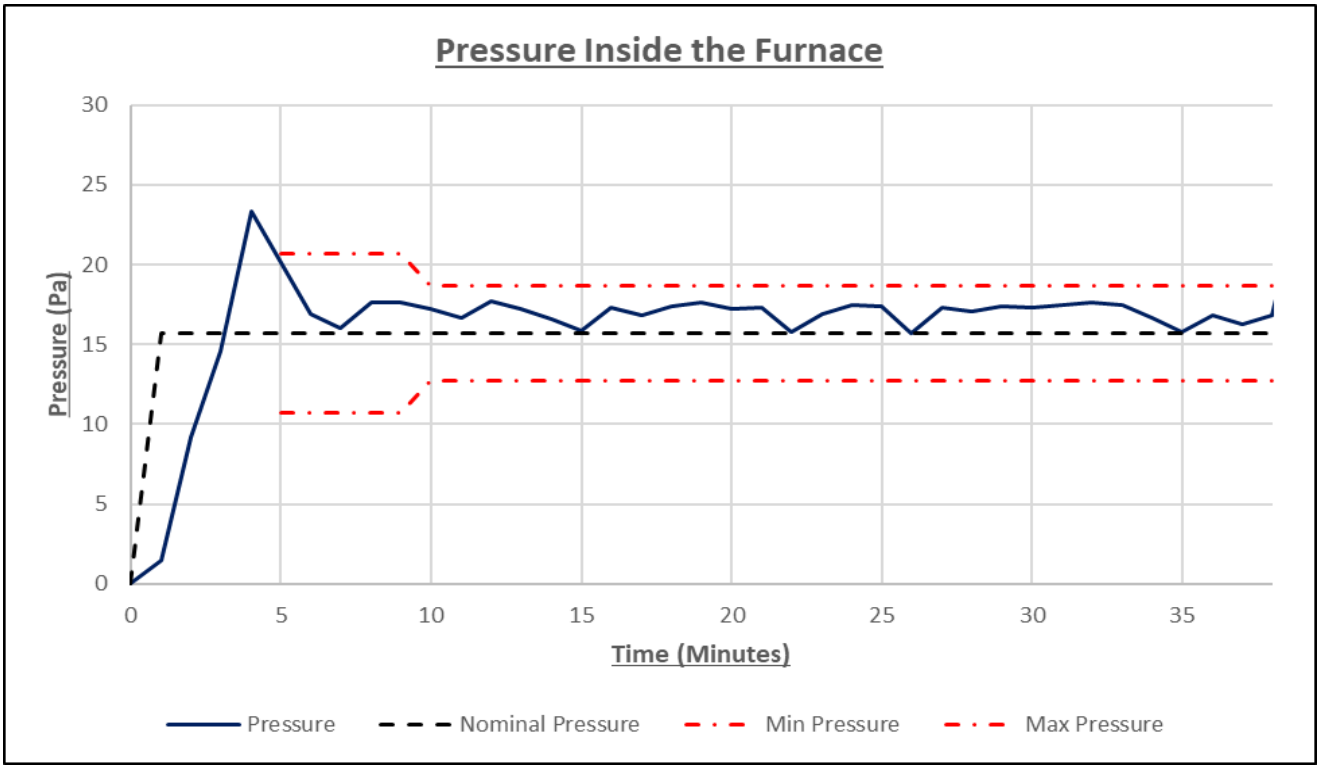


Chart 3 - Pressure conditions inside the furnace

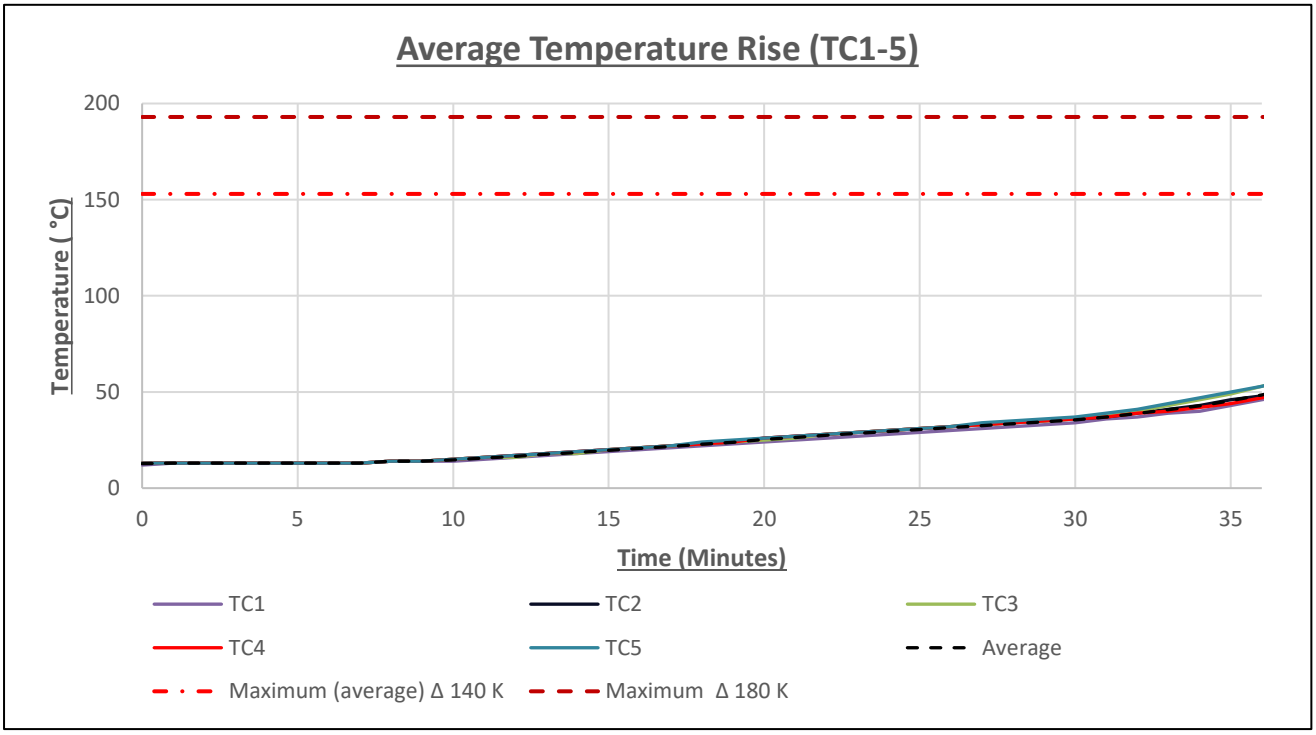


Chart 4 - Average temperature rise on the unexposed surface of the sample

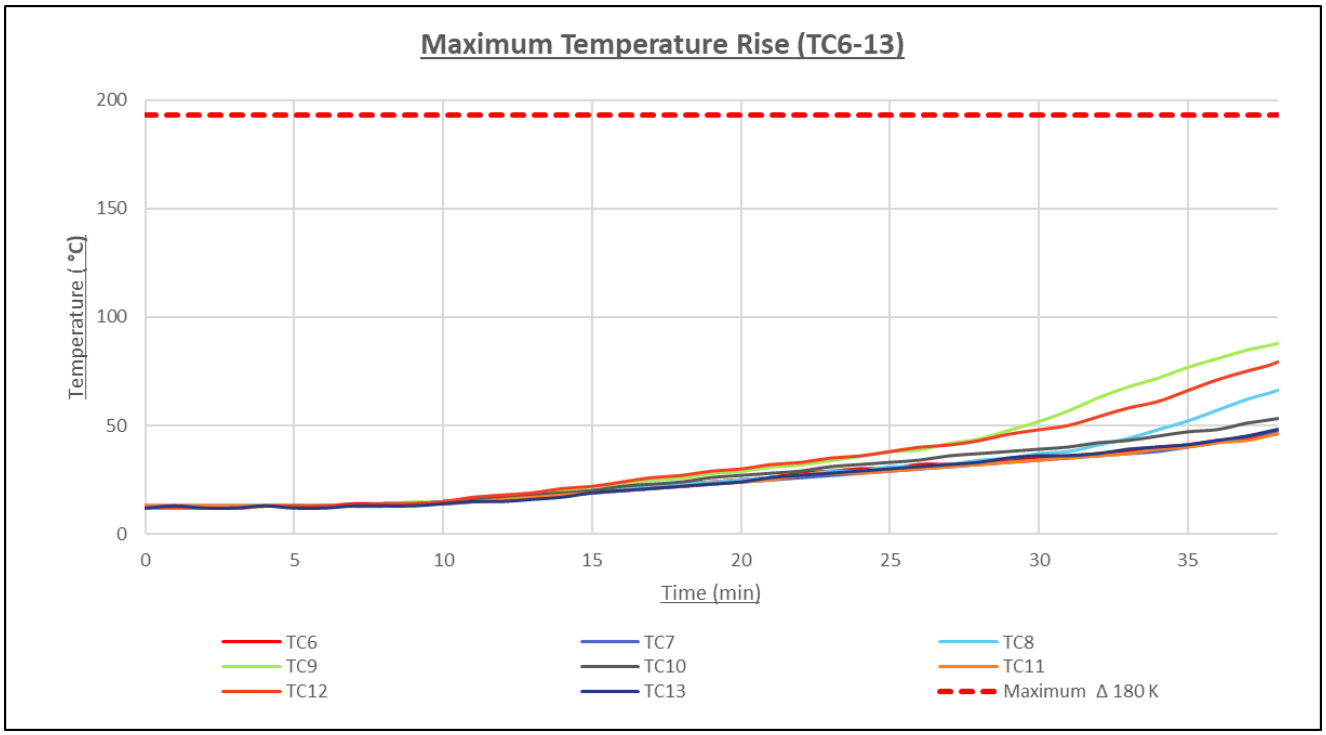


Chart 5A - Maximum temperature rise on the unexposed surface of the sample (TC 6 to TC 13)

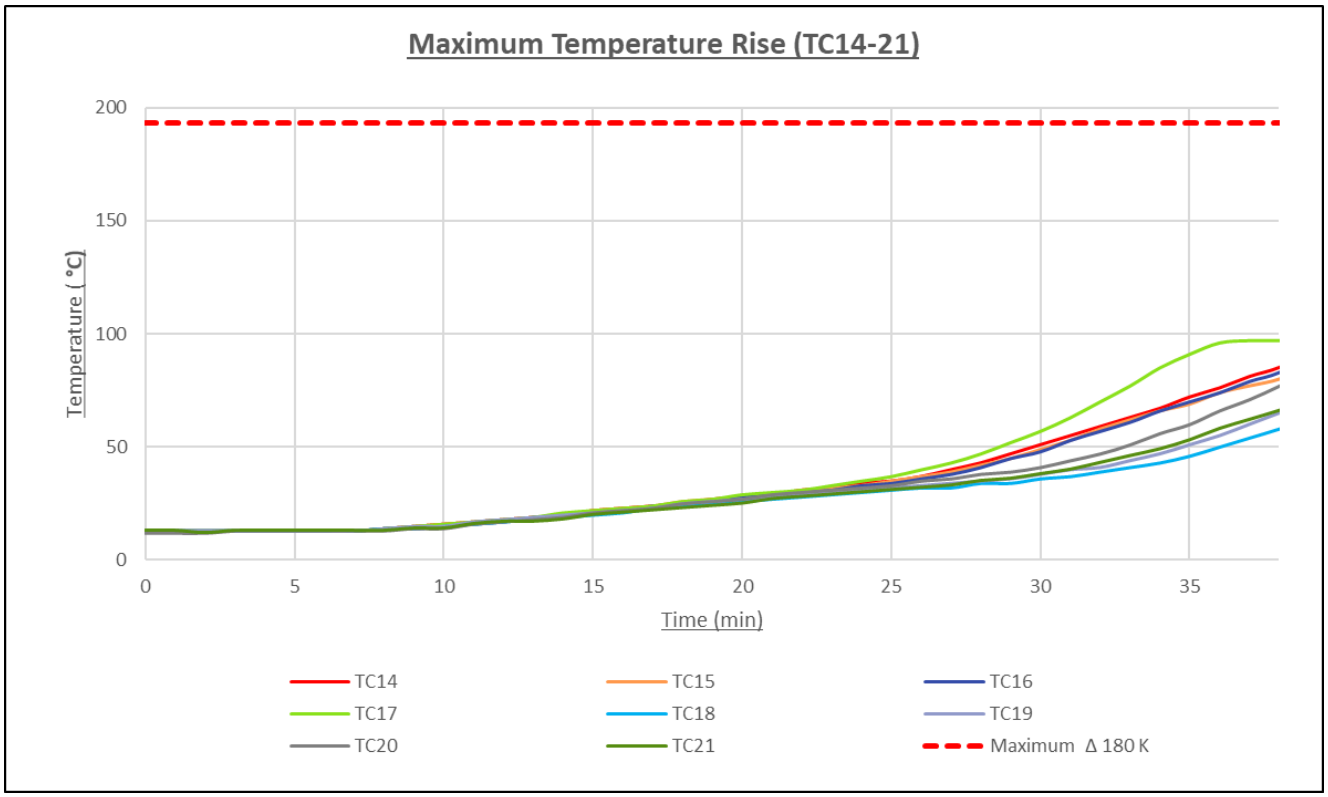


Chart 6B – (Cont.) Maximum temperature rise on the unexposed surface of the sample, registered by the thermocouples placed above the downlighters (TC 14 to TC 21)

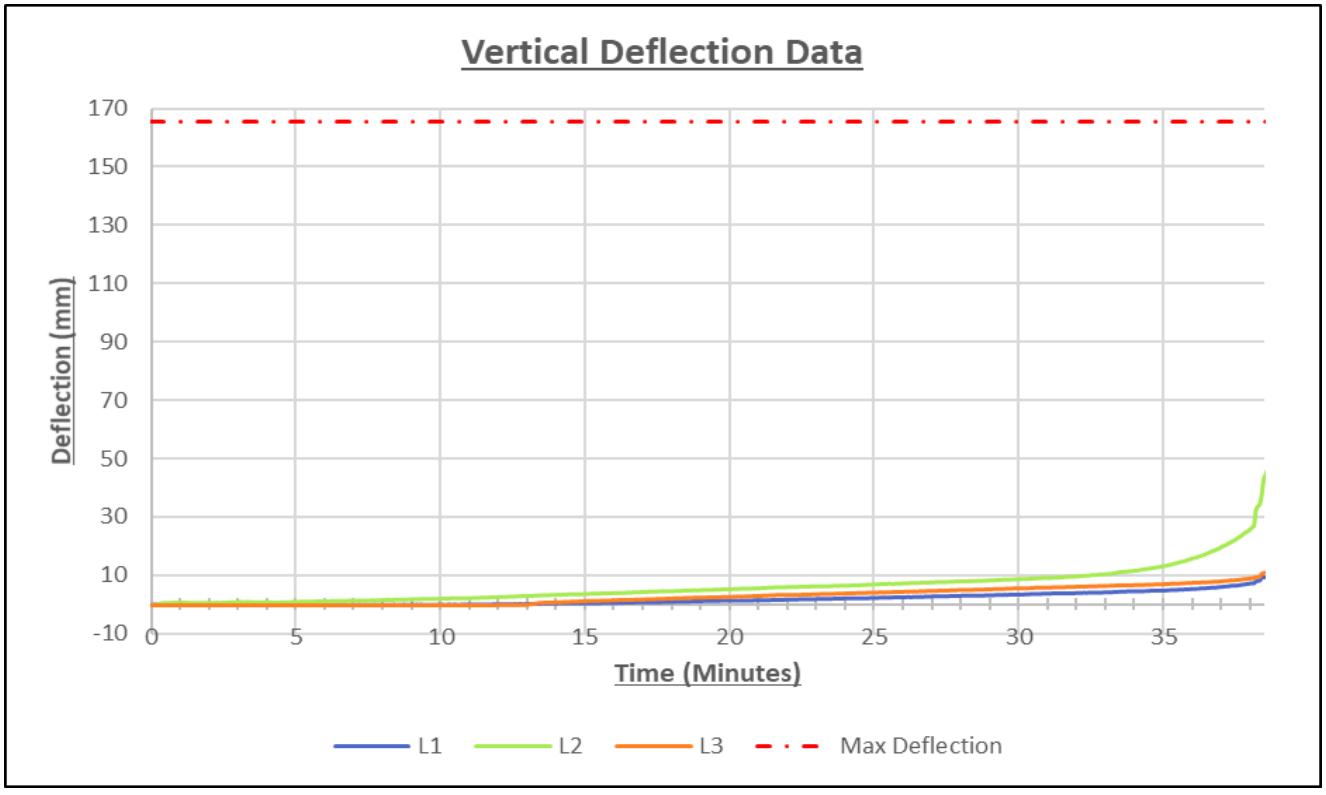


Chart 7 - Deflection recorded during the test
Note: Positive values represent downward movement.

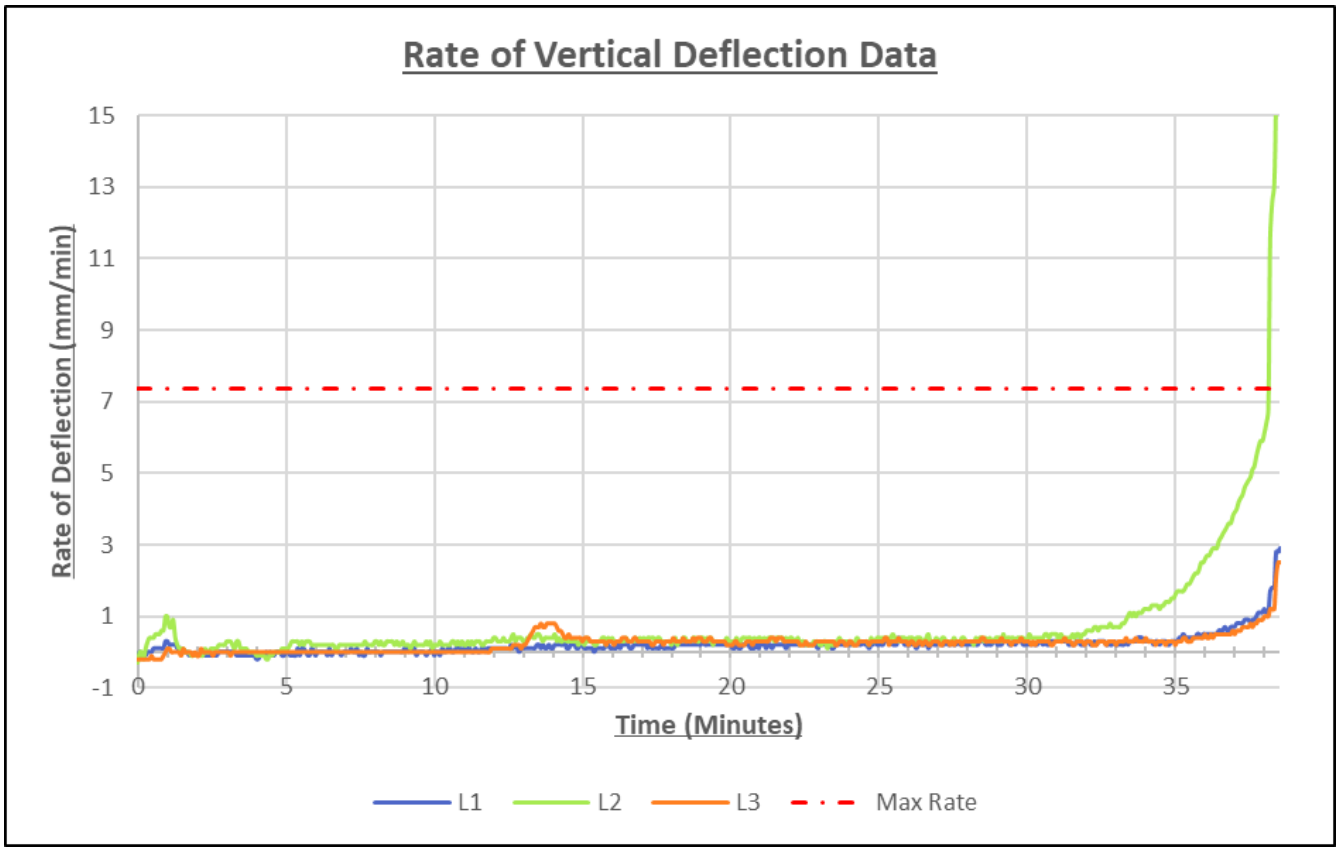


Chart 8 – Rate of deflection recorded during the test.
Note: The maximum rate of deflection prescribed for the sample was reached before minute 39.

APPENDIX D: PHOTOGRAPHS

Photograph 1 – Overall view of the completed frame

Photograph 2 - Detail of the sample frame. Note the placement of the frame elements and the cavity formed between the rim board and the timber blocks (photo taken before the cavity being filled with glass mineral wool).

Note the placement of the nails used to secure the joist and the rim board – two on the top flange and one on the bottom flange.

Photograph 3 – Detail of the void fillers in-between the joists and timber blocks
Note: Photo taken prior to fixing with nails

Photograph 4 - Detail of the sample. Note the tongue and groove joint on the CaberFloor P5 layer and the adhesive used to secure the floor to the frame.

Photograph 5 – Overall view of the unexposed side of the CaberFloor P5 layer.

Photograph 6 - Overall view of the exposed side of the CaberFloor P5 layer before the installation of the Gyproc Plasterboard layer

Photograph 7 - Overall view of the exposed side of the Gyproc Plasterboard layer, showing the general position of the downlighters.

Photograph 8 - Overall view of the unexposed side of the sample, showing the position of the loading cages.

Photograph 9 - Frontal view of the sample before the start of the test

Photograph 10 – Overall view of the unexposed side of the sample, after the test and cooldown.

Photograph 11 – Overall view of the exposed side of the sample, after the test and cooldown.

APPENDIX E: TABLES

Time	TC 1	TC 2	TC 3	TC 4	TC 5	TC 6	TC 7	TC 8	TC 9	TC 10	TC 11	TC 12	TC 13	TC 14	TC 15	TC 16	TC 17	TC 18	TC 19	TC 20	TC 21
min	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
0	12	13	13	13	13	13	13	13	13	13	13	12	12	13	13	13	13	13	13	12	13
1	13	13	13	13	13	13	13	13	13	13	13	12	13	13	13	13	13	13	13	12	13
2	13	13	13	13	13	13	13	13	13	13	13	12	12	13	13	13	13	13	13	12	12
3	13	13	13	13	13	13	12	13	12	13	13	12	12	13	13	13	13	13	13	13	13
4	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
5	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	13	13	13	13	13	13
6	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	13	13	13	13	13	13
7	13	13	13	13	13	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
8	14	14	14	14	14	14	13	14	14	14	13	14	13	14	14	14	14	14	14	13	13
9	14	14	14	14	14	14	14	14	15	14	14	14	13	15	15	14	15	14	15	14	14
10	14	15	15	15	15	15	14	15	15	15	14	15	14	16	16	15	16	15	15	14	14
11	15	16	16	16	16	16	15	16	17	16	15	17	15	17	17	16	17	16	17	16	16
12	16	17	16	17	17	17	16	17	18	17	16	18	15	18	18	17	18	17	18	17	17
13	17	18	18	18	18	17	17	18	19	18	17	19	16	19	19	19	19	18	19	18	17
14	18	19	18	19	19	19	18	19	20	19	18	21	17	20	20	20	21	19	20	19	18
15	19	20	20	20	20	20	19	20	22	20	19	22	19	22	22	21	22	20	21	21	20
16	20	21	21	21	21	21	20	21	23	22	20	24	20	23	23	22	23	21	22	22	21
17	21	22	22	22	22	22	21	22	25	23	21	26	21	24	24	24	24	23	23	23	22
18	22	23	23	23	24	23	22	23	26	24	22	27	22	25	26	25	26	24	25	25	23
19	23	24	24	24	25	24	23	24	28	26	23	29	23	27	27	26	27	25	26	26	24
20	24	26	25	26	26	25	24	25	29	27	24	30	24	28	28	28	29	26	27	27	25
21	25	27	26	27	27	26	25	26	31	28	25	32	26	29	29	29	30	27	28	29	27
22	26	28	28	28	28	28	26	27	32	29	27	33	27	31	31	30	31	28	29	30	28
23	27	29	29	29	29	29	27	29	34	31	28	35	28	32	32	31	33	29	30	31	29
24	28	30	30	30	30	30	28	29	36	32	28	36	29	34	33	33	35	30	31	32	30
25	29	31	31	31	31	30	29	31	38	33	29	38	30	35	35	34	37	31	32	33	31
26	30	32	32	32	32	32	30	31	39	34	30	40	31	37	37	36	40	32	33	35	32
27	31	33	33	33	34	32	31	32	42	36	31	41	32	40	39	38	43	32	34	36	33
28	32	34	34	34	35	33	32	34	44	37	32	43	33	43	42	41	47	34	35	38	35
29	33	35	35	35	36	34	33	35	48	38	33	46	35	47	45	45	52	34	36	39	36
30	34	36	36	36	37	35	34	37	52	39	34	48	36	51	49	48	57	36	38	41	38
31	36	37	38	37	39	36	35	38	57	40	35	50	36	55	53	53	63	37	40	44	40
32	37	39	40	39	41	37	36	41	63	42	36	54	37	59	58	57	70	39	41	47	43
33	39	41	43	40	44	38	37	44	68	43	37	58	39	63	62	61	77	41	44	51	46
34	40	43	46	42	47	40	38	48	72	45	39	61	40	67	66	66	85	43	47	56	49
35	43	46	49	44	50	41	40	52	77	47	40	66	41	72	69	70	91	46	51	60	53
36	46	48	53	47	53	43	42	57	81	48	42	71	43	76	74	74	96	50	55	66	58
37	49	51	57	51	57	44	45	62	85	51	43	75	45	81	77	79	97	54	60	71	62
38	53	55	61	55	60	46	47	66	88	53	46	79	48	85	80	83	97	58	65	77	66

Table 1 – Temperatures registered by the thermocouples installed on the unexposed side of the sample

END OF TEST REPORT