FAÇADE TESTING & ADVISORY SERVICES

Classification Report

As per BR135:2013 Annex A

Tested as per BS 8414-1:2015 + A1:2017

Prepared for	:	**Kingspan Insulation Ltd.**
Project	:	**System Development**
Report No.	:	**SR0894 Rev.0**
Sample	:	**Vitracore G2 Composite Panel with 180mm Rockwool Duo Slab Insulation**

UKAS TESTING
4559

July 2018

1 Introduction

This report details the classification of the aluminium composite panel cladding system (described under Section 2 of this report) in accordance with BR135:2013 Annex A, when tested in accordance with BS 8414-1:2015 + A1:2017 at the Al Futtaim Exova (AFE) laboratory in Dubai, at the request of:

Kingspan Insulation Ltd.,
Pembridge, Leominster,
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2 Test Sample Description

The test specimen comprised of an aluminium composite panel wall cladding (Vitracore G2 Composite Panel with 180mm Rockwool Duo Slab Insulation) fixed onto a masonry wall.

The top termination of the cladding system was closed with 2mm thick aluminium sheet. The main wall side and the wing wall side were left open. The interface between the cladding system and the combustion chamber was covered with 5mm thick aluminium sheet. The distance of the finished face of the wing wall to the side opening of the combustion chamber was 180mm.

Materials used in the system are detailed in the table below:

Component	Description	Installation Details
Bracket	ECF-B-S-220 Helping Hand Bracket and 100-HR25 Polypropylene Iso Pad.	The brackets were fixed to the masonry with MFRFB-A4-10x80 concrete support anchors and nylon wall plugs. Polypropylene Iso pad shims were placed between masonry wall and brackets.
Cavity barrier	**Horizontal intumescent cavity barrier:** Siderise RH25G-90/30, 75mm thick.	The horizontal cavity barriers were fixed to the masonry with RS350 brackets and MFRFB-A4-10x80 concrete support anchors and nylon wall plugs. 4 nos. of horizontal continuous cavity barriers were fixed to the main wall and wing wall, at 75mm, 2425mm, 4830mm and 6485mm above the combustion chamber opening.
	Vertical cavity barrier: Siderise RSV-90/30, 75mm thick.	3 nos. of continuous vertical cavity barriers were fixed to the masonry, two on the main wall and one on the wing wall with RS195 brackets and MFRFB-A4-10x80 concrete support anchors and nylon wall plugs.

Component	Description	Installation Details
Insulation	180mm Rockwool Duo Slab insulation	Insulation was fixed to the masonry wall with steel and plastic pins.
Railing	120x60x2mm Aluminium 'T' rail 60x40x2mm Aluminium 'L' rail	Railings were fixed to the Helping Hand brackets with 5.5mm diameter TEK screws.
Cladding panel	Vitracore G2 panel, 4mm thick. Top Skin – Aluminium Core – Aluminium Bottom Skin – Aluminium	Aluminium composite panels were fixed to the railings with rivets. 20mm joints were provided between the panels.

Figure 1: Tested sample elevation showing cladding panel layouts

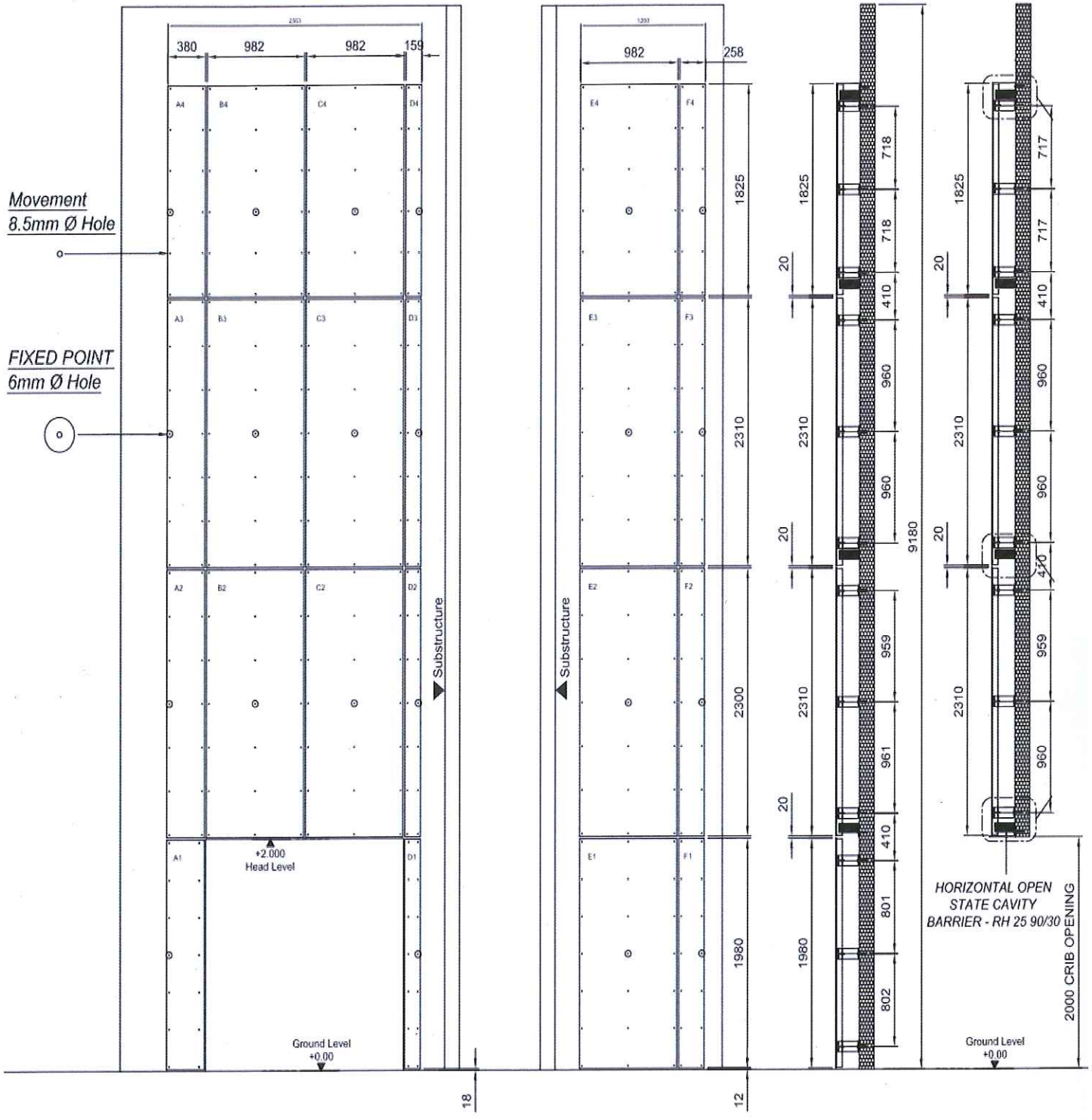


Figure 2: Thermocouple and cavity barrier locations

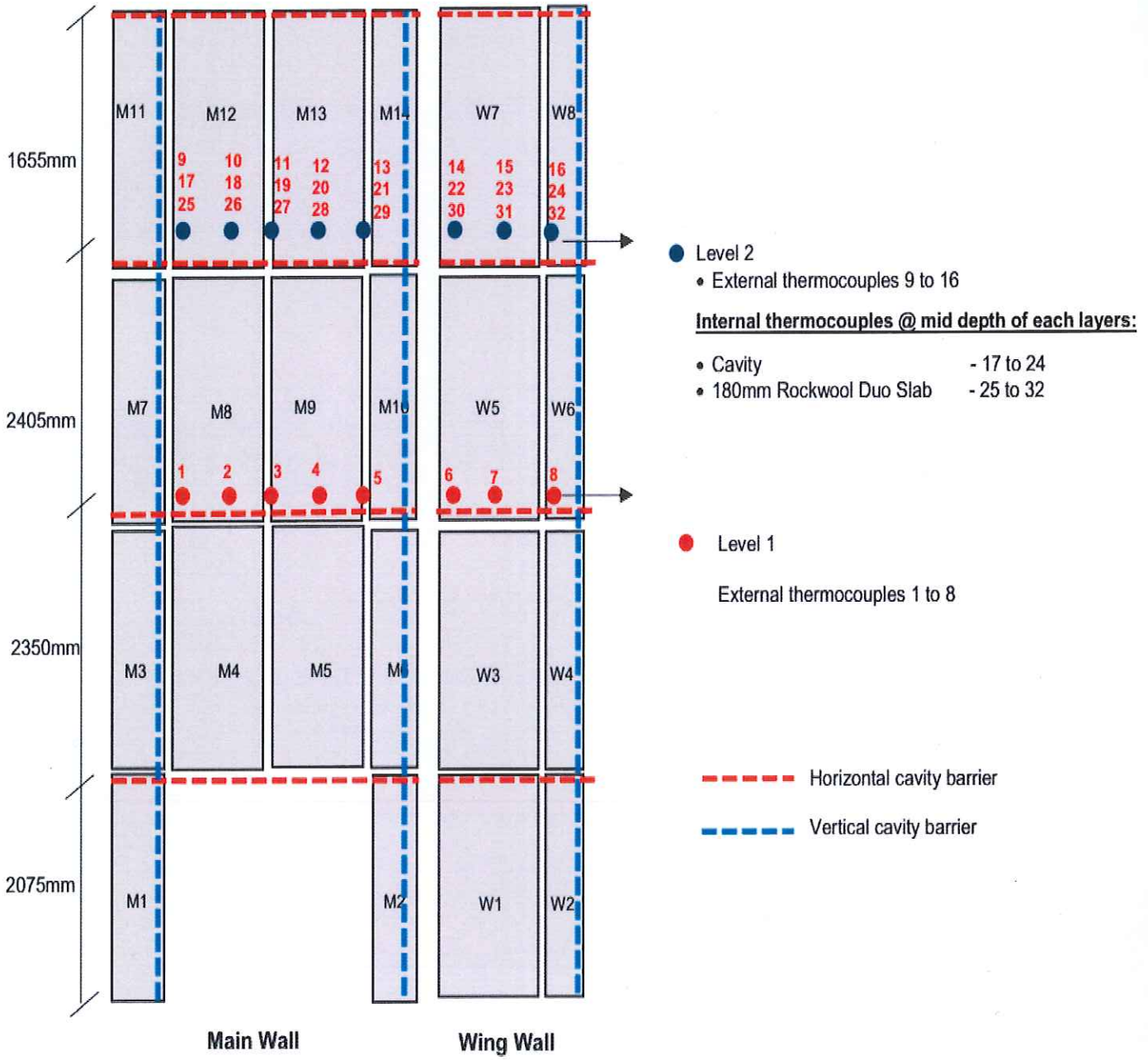


Figure 3: Corner detail of tested system

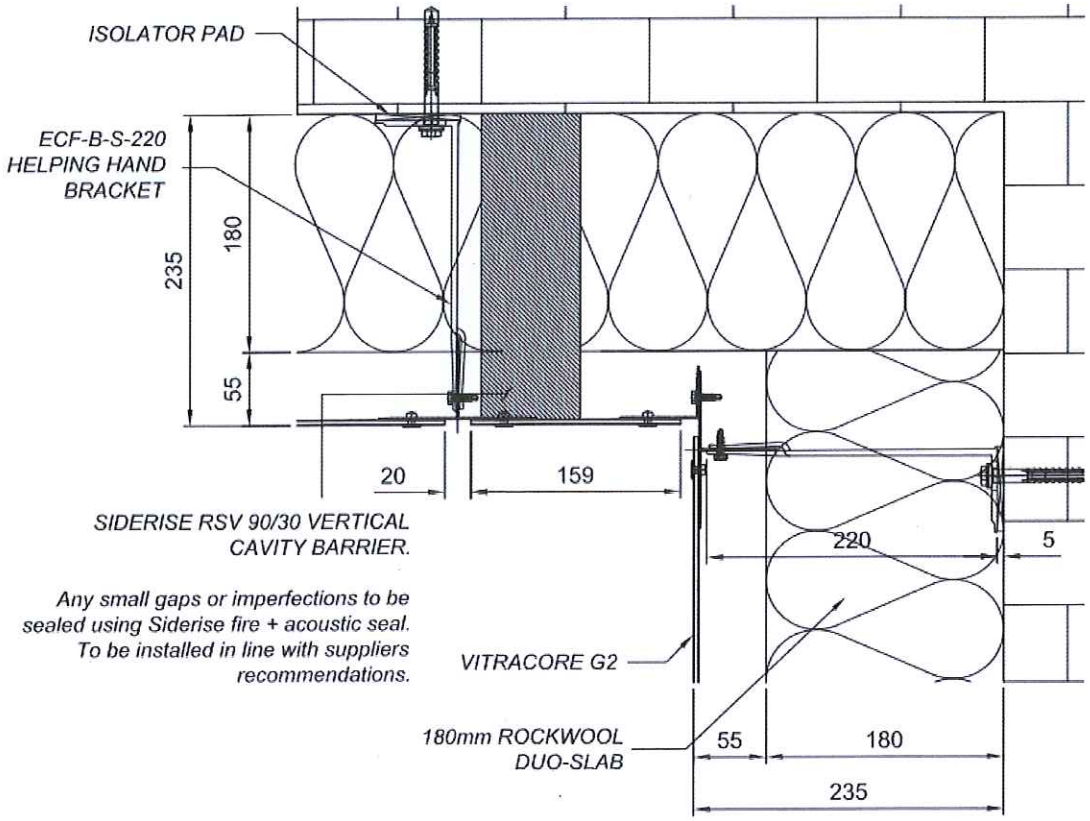


Figure 4: Detail of the system above the combustion chamber

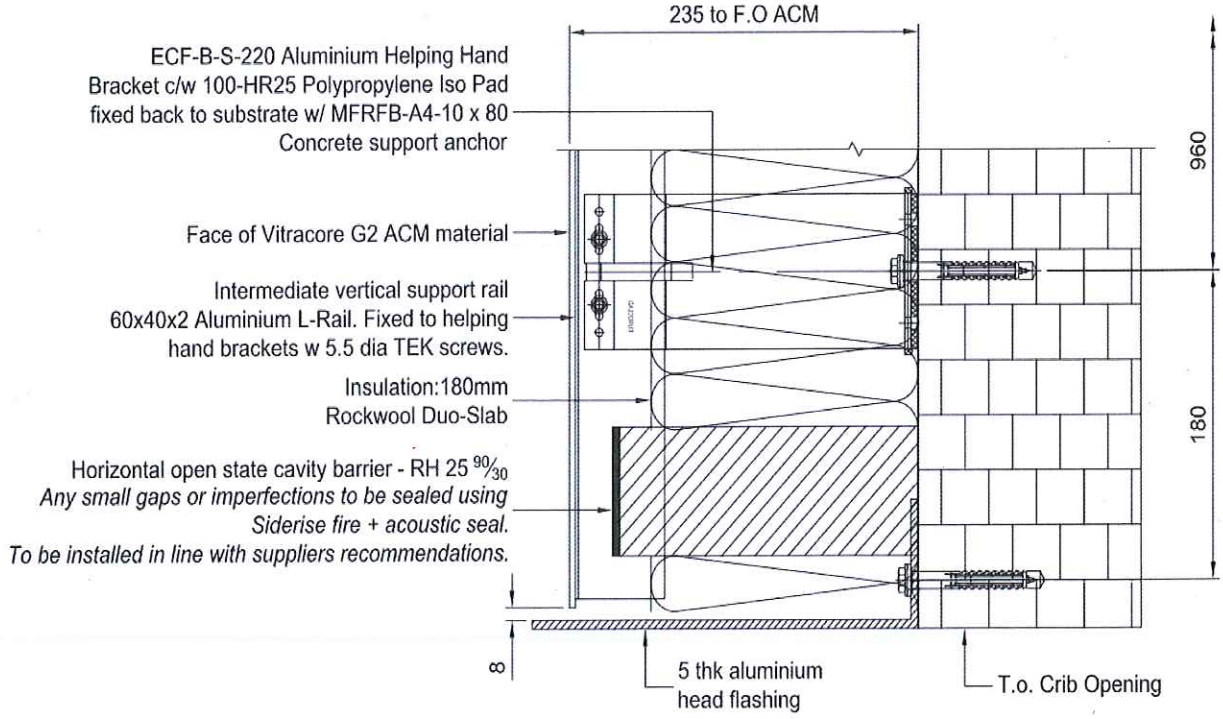
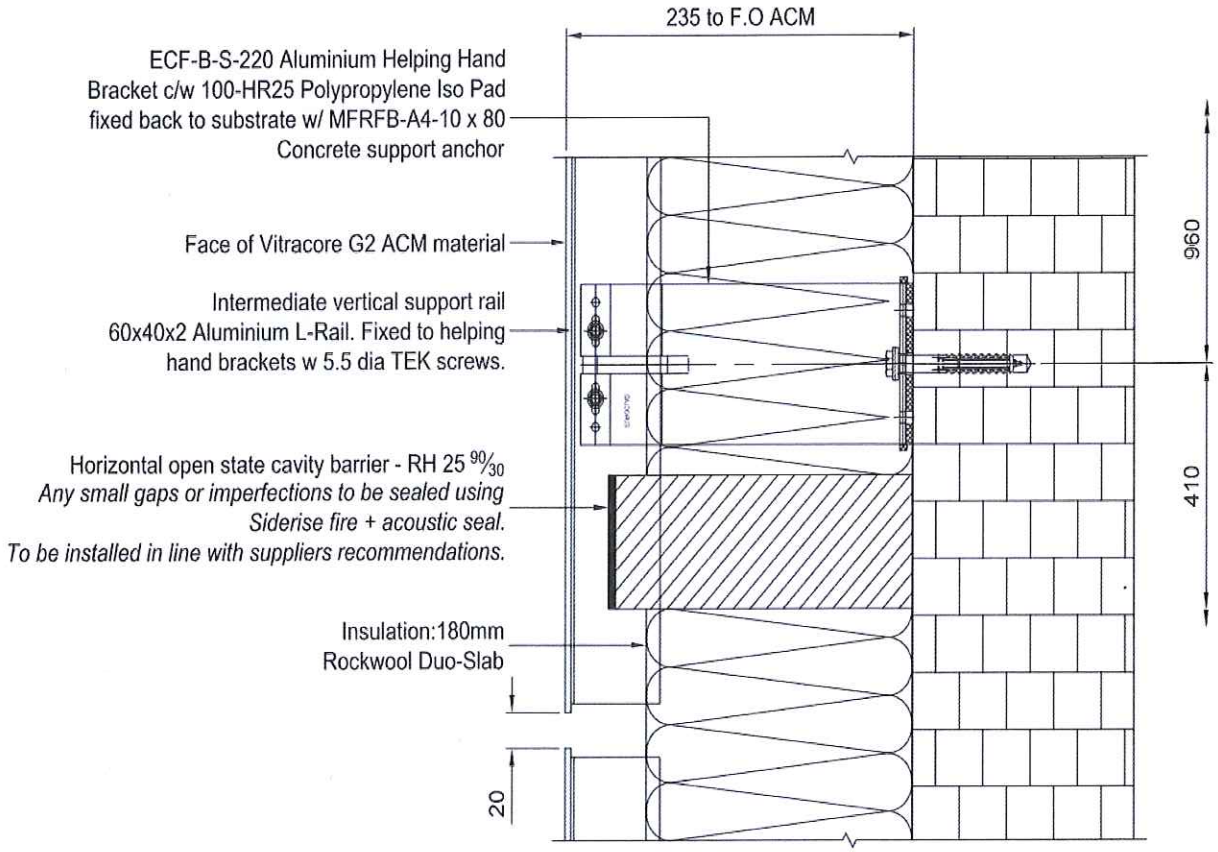


Figure 5: Detail of the system showing intumescent cavity barrier and panel joint



3 Test Data / Observations

Parameters	Temperature data / observations
T_s, start temperature	28°C
t_s, start time	165 seconds after ignition of the crib (thermocouple 3)
Temperature exceeded 628°C (600°C above T_s) within 15 minutes from t_s and sustained for at least 30 seconds	631°C – 695°C for a period of 33 seconds (thermocouple 12)
Peak temperature & time at Level 2 (External)	728°C at 753 seconds from t_s (thermocouple 12)
Peak temperature / time at Level 2 (Mid-depth of cavity)	602°C at 891 seconds from t_s (thermocouple 20)
Peak temperature / time at Level 2 (Mid-depth of 180mm Rockwool Duo Slab Insulation)	498°C at 1569 seconds from t_s (thermocouple 28)

See Figure 2 for thermocouple locations.

Level 1: 2500mm above the top of the combustion chamber opening on the test apparatus.

Level 2: 5000mm above the top of the combustion chamber opening on the test apparatus.

Start Temperature, T_s: Mean temperature of the thermocouples at Level 1, five minutes prior to ignition of the heat source.

Start Time, t_s: Time when the temperature recorded by any external thermocouple at Level 1 equals or exceeds 200°C above T_s and remains above this value for at least 30 seconds.

4 Compliance Criteria

External fire spread

Failure due to external fire spread is deemed to have occurred if the temperature rise above T_s of any of the external thermocouples at level 2 exceeds 600°C, for a period of at least 30 seconds, within 15 minutes of the start time, t_s.

Internal fire spread

Failure due to internal fire spread is deemed to have occurred if the temperature rise above T_s of any of the internal thermocouples at level 2 exceeds 600°C, for a period of at least 30 seconds, within 15 minutes of the start time, t_s.

5 Test Results

Parameters	Fire Spread Time, t_s	Result
External fire spread	<15 minutes	**Non-compliant**
Internal fire spread (Mid-depth of cavity)	>15 minutes	**Compliant**
Internal fire spread (Mid-depth of 180mm Rockwool Duo Slab insulation)	>15 minutes	**Compliant**
Mechanical performance	• Approximately 6m² of the external visible surface area was completely consumed by fire. • Approximately 14m² of the external visible surface area was discoloured. The heat source was extinguished 30 minutes from the ignition. The sample was allowed to burn for another 30 minutes and observations were recorded.	

6 Classification

The system described in this report has been tested in accordance BS 8414-1:2015 + A1:2017 and did not comply with the performance criteria detailed in BR135:2013 Annex A in terms of external fire spread.

Table 1 Document Status

Rev No.	Author	Approved for Issue		
		Name	Signature	Date
0	Arun Kumar M.	Manoj Kumar Laboratory Manager		19.07.2018

Al-Futtaim Exova
Façade Testing & Advisory Services Division