
Title:

The Fire Resistance
Performance of Timber Floors
When Protected by Ceilings
Incorporating Light Fittings

WF Assessment Report No:

424737

Prepared for:

Orlight Ltd

Unit 03 Victor Way
Radlett Road
Colney Street
St Albans
AL2 2FL

Date:

27th February 2020

Foreword

This assessment report has been commissioned by Orlight Ltd and relates to the fire resistance of timber floors when protected by ceilings incorporating light fittings.

This assessment is for National Application and has been written in accordance with the general principles outlined in BS EN 15725: 2010; *Extended application reports on the fire performance of construction products and building elements*, as appropriate.

This assessment uses established empirical methods of extrapolation and experience of fire testing similar assemblies, in order to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with EN 1365-2: 2014. This assessment cannot therefore be considered for a CE marking application nor can the conclusion be used to establish a formal classification against EN13501-2.

This assessment has been written using appropriate test evidence generated at a suitably accredited laboratory to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated design and is summarised in the Supporting data section of this report.

The defined scope presented in this assessment report relates to the behaviour of the proposed design under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the assembly in use.

This assessment has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the PFPF guidelines to undertaking assessments in lieu of fire tests. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used in lieu of fire tests for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

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Executive Summary

Objective This report presents an appraisal of the fire resistance performance, with respect to EN 1365-2: 2014, of timber floor constructions protected by plasterboard ceilings incorporating the Orlight Ltd downlighters referenced; 'TL-TR-IP44', 'S-HS-IP44', 'IP-44', 'S-IP44', 'IP54' & 'S-IP54' and engines referenced 'DB13-R999', 'DB8-R999' & 'DB6-R999'.

Report Sponsor Orlight Ltd

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Summary of Conclusions Should the recommendations given in this report be followed, it can be concluded that the Orlight Ltd downlighters referenced; 'TL-TR-IP44', 'S-HS-IP44', 'IP-44', 'S-IP44', 'IP54' & 'S-IP54' and engines referenced 'DB13-R999', 'DB8-R999' & 'DB6-R999', as detailed in this report, should be capable of reinstating the fire resistance performance of timber floors/plasterboard ceiling constructions (of the same type tested in WF No. 412951 – Issue 2) for periods of 90 minutes if subjected to a fire resistance test in accordance with EN 1365-2: 2014.

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with EN 1365-2: 2014, on the basis of the evidence referred to above. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Valid until 1st March 2025

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Introduction

This report presents an appraisal of the fire resistance performance, with respect to EN 1365-2: 2014, of a timber floor construction protected by a plasterboard ceiling incorporating the Orlight Ltd downlighters referenced; 'TL-TR-IP44', 'S-HS-IP44', 'IP-44', 'S-IP44', 'IP54' & 'S-IP54' and engines referenced 'DB13-R999', 'DB8-R999' and 'DB6-R999'.

The proposed constructions are required to provide 90 minutes loadbearing capacity, integrity and insulation performance, with respect to EN 1365-2: 2014.

FTSG

The data referred to in the supporting data section has been considered for the purpose of this appraisal which has been prepared in accordance with the Fire Test Study Group Resolution No. 82: 2001.

Assumptions

General Construction

It is assumed that the proposed ceiling assemblies and floor constructions will, unless otherwise described in this report, be identical to those described in the test report referenced WF No. 412951.

Fixtures and Fittings

It is also assumed that the ceiling will not incorporate duct openings, speaker grilles etc., which could, in the absence of relevant test or assessment evidence, be detrimental to the performance of the ceiling.

Proposals

It is proposed that the Orlight Ltd downlighters referenced; 'TL-TR-IP44', 'S-HS-IP44', 'IP-44', 'S-IP44', 'IP54' & 'S-IP54' and engines referenced 'DB13-R999', 'DB8-R999' & 'DB6-R999', as detailed in this report, should be capable of reinstating the fire resistance performance of a timber floor/plasterboard ceiling construction, identical to that tested in WF No. 412951 (Issue 2), to provide 90 minutes loadbearing capacity, integrity and insulation performance were it subject to test as per EN 1365-2: 2014.

Basic Test Evidence

WF Test Report No. 412951 (Issue 2)

The report referenced WF Test Report No. 412951 (Issue 2) and briefly detailed within the supporting data section of this report describes a fire resistance test conducted on a timber floor construction protected by a plasterboard ceiling system with downlighters, in accordance with BS EN 1365-2: 2014.

The report demonstrated the ability of the floor to provide 90 minutes loadbearing capacity, integrity and insulation performance.

Assessed Performance

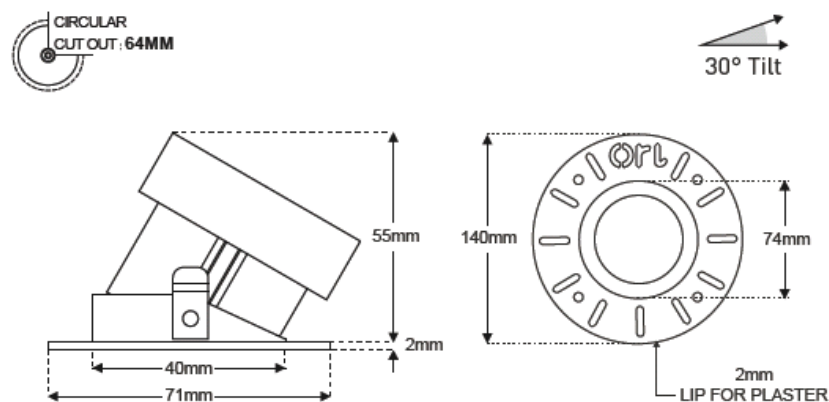
The loaded floor test referenced WF Test Report No. 412951 (Issue 2); consisted of a timber floor assembly protected on its underside by three 12.5mm thick layers of 'Gyproc Fireline Wallboards'. The ceiling provided was specified to provide 90 minutes fire resistance performance. The ceiling incorporated a number of recessed downlighter fittings as detailed below:

Test Ref.	Model Ref.	Type
A	ORL1009-HS-IP44	IP44 Fixed Magnetic Downlight
B	ORL009-TL-CL-IP44-NL	Tiltable Anti-glare Downlight
C	ORL009-TR-IP44-NL	Trimless IP Rated Fixed Anti-glare Downlight
D	ORL019MAXI-IP54-NL	IP Rated Adjustable Maxi Downlight
E	AQUASPOT-NL	IP65 Aquaspot
F	ORLCL-IP54	Fixed Minimal Trim Downlight
G	ORION	Adjustable LED Downlight
H	ORION-XL	Adjustable LED Downlight
I	ORL009-IP44-NL	Fixed IP Rated Anti-glare Downlight
J	ORL1019-HS-IP54	IP 54 Tilt Magnetic Downlight

The purpose of the test was to demonstrate that the inclusion of these downlighters would not compromise the fire resistance performance of the ceiling/floor assembly. Each of the above downlighters was fitted with the 'DB13-R999' engine. The tested assembly achieved 91 minutes loadbearing capacity, integrity and insulation as per the requirements of EN 1365-2: 2014.

'TL-TR-IP44' (Part of the ORL009 Family)

The 'TL-TR-IP44' downlight design was not included in the construction tested in the referenced test. Several other examples from the same product family (the ORL009 family) were, however, included in the test. They were the 'ORL009-IP44-NL', 'ORL009-TL-CL-IP44-NL' & 'ORL009-TR-IP44-NL' downlight designs. A basic drawing of the 'TL-TR-IP44' design is shown below:



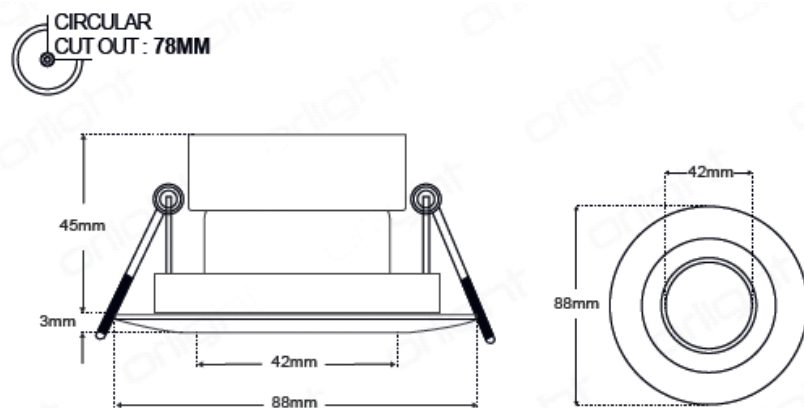
'TL-TR-IP44'

The untested, 'TL-TR-IP44', design shares some features with other, tested, designs in the ORL009 family. It has the same glass exposed face design as the tested 'TL-CL-IP44' design. It also has the same bezel section (to be skimmed over with plaster), dimensions, cut-out requirement (64mm) and fixing method as that tested in the 'TR-IP44' design.

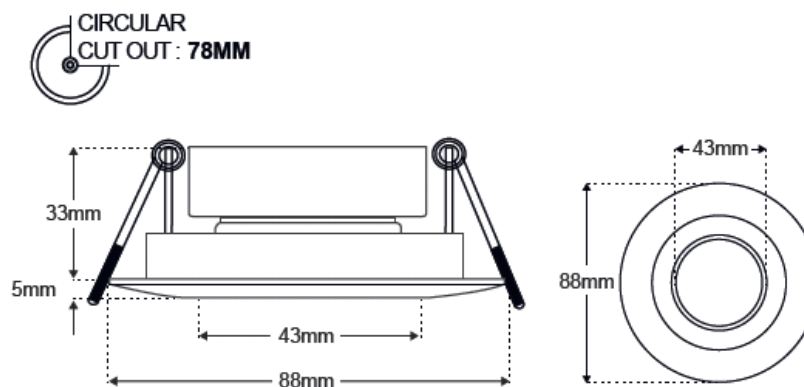
The combination of these factors, albeit tested in other designs, provides confidence that the use of the 'TL-TR-IP44' would not be of detriment if used in substitution of one of the tested designs. Furthermore the light fitting is of an all-aluminium construction. Given these factors, the use of the 'TL-TR-IP44' downlighter design can be positively appraised.

'S-HS-IP44' (Part of the ORL1009 Family)

The 'S-HS-IP44' design is almost identical in form to the tested 'HS-IP44' design. The only difference being the reduction in height, of the overall down lighter construction, when compared to that tested. The tested 'HS-IP44' and untested 'S-HS-IP44' designs are both shown in the below drawings:



'HS-IP44'

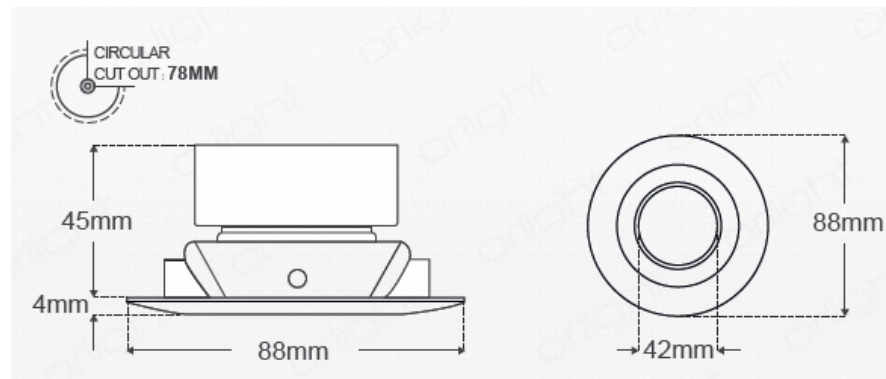


'S-HS-IP44'

The same, 78mm, cut-out is required by both designs and both are aluminium in construction. Given the similarity to the tested design, the use of the 'S-HS-IP44' design, can be positively appraised.

‘IP44’ (Part of the ORL1009 Family)

This, ‘IP44’, design is also almost identical in form to the tested ‘HS-IP44’. The main difference being the use of wings, for fixing the downlighter in place, instead of springs. The ‘IP44’ design is shown below:



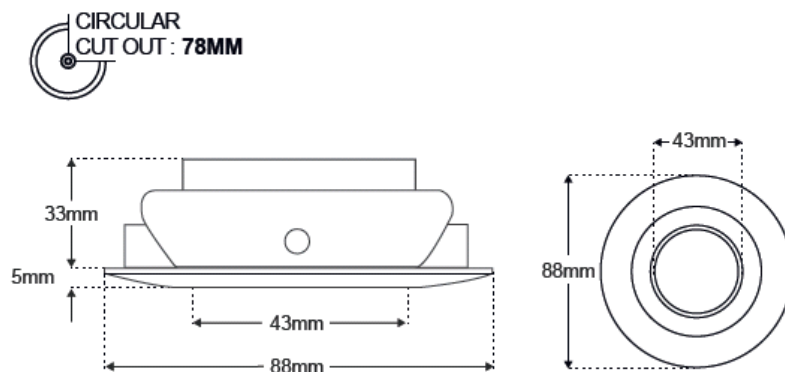
‘IP44’

The wings have, however, been tested in the ‘ORL009-IP44’ design. This is from a different product family, in which the downlighter weighed fractionally less, but it provides confidence that the wing design is an effective means of fixing the downlight.

The same, 78mm, cut-out is required by both designs and both are aluminium in construction. Given the similarity to the tested design, the use of the ‘IP44’ design, can be positively appraised.

‘S-IP44’ (Part of the ORL1009 Family)

This, ‘S-IP44’, design is also almost identical in form to the tested ‘HS-IP44’. The main differences being the use of wings, for fixing the downlighter in place, instead of springs and the reduction in overall height of the downlighter. The ‘S-IP44’ design is shown below:



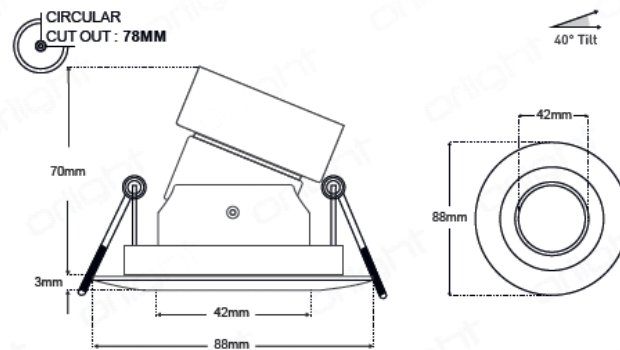
‘S-IP44’

As discussed previously, the wings have been tested in the ‘ORL009-IP44’ design. This is from a different product family, in which the downlighter weighed fractionally less, but it provides confidence that the wing design is an effective means of fixing the downlight. It is not considered that the reduction in overall height will be of detriment to the proposed use of the ‘S-IP44’ design.

Again, the same, 78mm, cut-out is required by both designs and both are aluminium in construction. Given the similarity to the tested design, the use of the ‘S-IP44’ design, can be positively appraised.

'IP54' (Part of the ORL1019 Family)

The 'IP54' design is almost identical in form to the tested 'HS-IP54' design. The main difference being the degree to which each fitting can be tilted (40° arc for the 'HS-IP54' compared to 30° arc for the 'IP54'). The tested 'HS-IP54' design is shown in the below drawing:

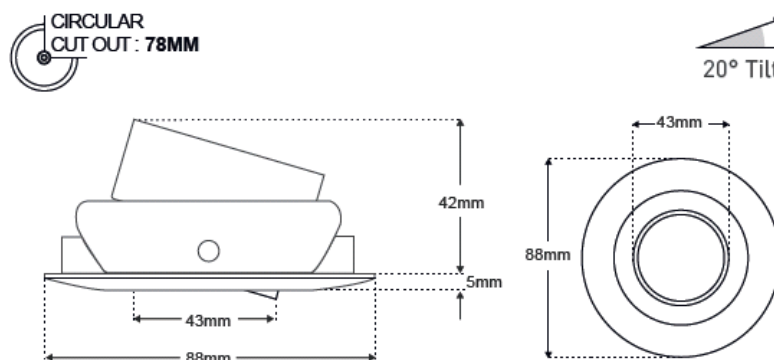


'HS-IP54'

It is not considered that a difference in the tilt arc of the downlighter fittings will have any significant effect on the performance of the downlight fitting. The same, 78mm, cut-out is required by both designs, both are held by springs, both have similar dimensions and both are aluminium in construction. Given the similarity to the tested design, the use of the 'IP54' design, can be positively appraised.

'S-IP54' (Part of the ORL1019 Family)

The 'S-IP54' design is almost identical in form to the tested 'HS-IP54' design. The main differences being the degree to which each fitting can be tilted (40° arc for the 'HS-IP54' compared to 20° arc for the 'S-IP54'), the use of wings, for fixing the downlighter in place, instead of springs and the reduction in height, of the overall downlighter construction, when compared to that tested. The 'S-IP54' design is shown in the below drawing:



'S-IP54'

It is not considered that a difference in the tilt arc of the downlighter fittings will have any significant effect on the performance of the downlight fitting.

As discussed previously, the wings have been tested in the 'ORL009-IP44' design. This is from a different product family, in which the downlighter weighed fractionally less, but it provides confidence that the wing design is an effective means of fixing the downlight.

The same, 78mm, cut-out is required by both designs, both have similar dimensions and both are aluminium in construction. Given the similarity to the tested design, the use of the 'IP54' design, can be positively appraised.

Alternative Engines

Each of the downlighters, tested in WF No. 412951 – Issue 2, was fitted with the 'DB13-R999' engine. It is proposed that, alternatively, the 'DB8-R999' or 'DB6-R999' engines may be used with any of the down lighter designs that were tested in WF No. 412951 – Issue 2. Further to this it is proposed that any of the three engine designs may be used with the downlighters which are the subject of this appraisal.

The engine used in the test (for all fittings) was the 'DB13-R999' design. This is the largest and heaviest of the three alternatives. It is, therefore, considered to be the most onerous as it puts an increased strain on the downlighter fitting, when compared to the smaller, lighter 'DB8-R999' or 'DB6-R999' engines.

The use, therefore, of any of the three engine designs ('DB13-R999', 'DB8-R999' or 'DB6-R999') with the downlighters tested in WF No. 412951 – Issue 2 or those which are the subject of this appraisal, can be positively appraised.

Conclusions

Should the recommendations given in this report be followed, it can be concluded that the Orlight Ltd downlighters referenced; 'TL-TR-IP44', 'S-HS-IP44', 'IP-44', 'S-IP44', 'IP54' & 'S-IP54' and engines referenced 'DB13-R999', 'DB8-R999' & 'DB6-R999', as detailed in this report, should be capable of reinstating the fire resistance performance of timber floors/plasterboard ceiling constructions (of the same type tested in WF No. 412951 – Issue 2) for periods of 90 minutes if subjected to a fire resistance test in accordance with EN 1365-2: 2014.

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with EN 1365-2: 2014, on the basis of the evidence referred to above. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Validity

This assessment is issued on the basis of test data and information available at the time of issue. If contradictory evidence becomes available to Warringtonfire the assessment will be unconditionally withdrawn and **Orlight Ltd** will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years i.e. until 1st March 2025, after which time it is recommended that it be returned for re-appraisal.

The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.

Summary of Supporting Data

WF Test Report No. 412951 (Issue 2)

A fire resistance test conducted in accordance with BS EN 1365-2: 2014, on a timber floor construction protected by a plasterboard ceiling system.

The timber floor had overall nominal dimensions of 4500 mm long by 2960 mm wide and comprised softwood timber joists at 600 mm centres. The upper surface of the floor comprised nominally 22 mm thick tongue and grooved chipboard flooring.

The floor assembly was protected on its underside by a direct fixed ceiling, formed from three layers of 12.5mm plasterboard referenced 'Gyproc Fireline Wallboard'.

The floor supported an evenly distributed load of 1.246 kN/m².

The ceiling incorporated ten downlighter light fittings referenced:

Test Ref.	Model Ref.	Type
A	ORL1009-HS-IP44	IP44 Fixed Magnetic Downlight
B	ORL009-TL-CL-IP44-NL	Tilttable Anti-glare Downlight
C	ORL009-TR-IP44-NL	Trimless IP Rated Fixed Anti-glare Downlight
D	ORL019MAXI-IP54-NL	IP Rated Adjustable Maxi Downlight
E	AQUASPOT-NL	IP65 Aquaspot
F	ORLCL-IP54	Fixed Minimal Trim Downlight
G	ORION	Adjustable LED Downlight
H	ORION-XL	Adjustable LED Downlight
I	ORL009-IP44-NL	Fixed IP Rated Anti-glare Downlight
J	ORL1019-HS-IP54	IP 54 Tilt Magnetic Downlight

The result obtained was as follows:

Loadbearing Capacity : 91 minutes*

Integrity Performance

Sustained flaming : 91 minutes*

Gap Gauge : 91 minutes*

Cotton pad : 91 minutes*

Insulation : 91 minutes*

*The test duration. The test was discontinued after a period of 91 minutes.

Test Date : 6th June 2019

Test Sponsor : Orlight Ltd

Declaration by Orlight Ltd

We the undersigned confirm that we have read and complied with the obligations placed on us by the UK Fire Test Study Group Resolution No. 82: 2001.

We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.

We are not aware of any information that could adversely affect the conclusions of this assessment.

If we subsequently become aware of any such information we agree to cease using the assessment and ask Warringtonfire to withdraw the assessment.

Signed:

For and on behalf of:

Signatories



Responsible Officer

T Benyon* - Certification Engineer



Approved

A Kearns* - Technical Manager

* For and on behalf of **Warringtonfire**.

Report Issued: 27th February 2020

The assessment report is not valid unless it incorporates the declaration duly signed by the applicant.

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