PEUTZ

Laboratory for Fire Safety

Classification of the fire resistance in accordance with EN 13501-2:2016 of a timber floor construction made of Wolf easi-joist® system, chipboard flooring and gypsum plasterboard (15 mm Gyproc Wallboard type A) ceiling incorporating eight JCC downlights

Classification report

Report number YA 2271-1E-RA-001 dated September 17, 2020

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Classification of the fire resistance in accordance with EN 13501-2:2016 of a timber floor construction made of Wolf easi-joist® system, chipboard flooring and gypsum plasterboard (15 mm Gyproc Wallboard type A) ceiling incorporating eight JCC downlights

Classification report

Client	JCC Lighting Products Ltd. Innovation Centre Southern Cross Trading Estate, Beeding Close, Bognor Regis, West Sussex, PO22 9TS United Kingdom
Prepared by	Peutz bv Lindenlaan 41, NL-6584 AC Molenhoek Postbus 66, NL-6585 ZH Mook The Netherlands
Notified body	NB 2264
Product name	Timber floor construction with *JCC* downlights
Report number	YA 2271-1E-RA-001
Date of issue	September 17, 2020
Reference	HL/TBr//YA 2271-1E-RA-001
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1 Introduction

This classification report defines the fire resistance classification which is assigned to a timber floor construction made of Wolf easi-joist® system, chipboard flooring and gypsum plasterboard ceiling incorporating eight *JCC* downlights. The system was tested in the Peutz Laboratory for Fire Safety in Mook using the standard heating curve and in accordance with the procedures given in EN 1365-2:2014, further referenced as EN 1365-2 and EN 1363-1:2020, further referenced as EN 1363-1.

For performing the testing and classification, the Laboratory for Fire Safety is recognized by the "Stichting Raad voor Accreditatie" (RvA).

The RvA is member of the EA MLA (**EA MLA**: **E**uropean **A**ccreditation Organisation **M**ulti**L**ateral **A**greement: http://www.european-accreditation.org).

EA: "Certificates and reports issued by bodies accredited by MLA and MRA members are considered to have the same degree of credibility, and are accepted in MLA and MRA countries."

2 Details of the classified system

2.1 General

The element, is defined as a loadbearing floor with fire separating function according to EN 13501-2:2016 (further referenced as EN 13501-2), paragraph 7.3.3. The floor has been classified for the fire applied from below only.

2.2 Product description

The element, a timber floor construction made of Wolf easi-joist® system, chipboard flooring and gypsum plasterboard ceiling incorporating eight *JCC* downlights is fully described in the test report listed in table 3.1.

The Wolf easi-joists® are 219 mm high, made of two rectangular timber flanges of 72 mm x 47 mm connected to each other with metal webs (Wolf WS200) and timber blocks (72 x 45 x 125 mm). The Wolf easi-joists® were positioned at 600 mm centres.
On the top of the Wolf easi-joists® a flooring of chipboard 22 mm thick (full board 2400 mm x 600 mm) has been applied.
Under the Wolf easi-joists® a ceiling of gypsum plasterboard (15 mm, British Gypsum, GYPROC Wallboard, type A) has been mounted (full board 2400 mm x 1200 mm). Joints of the plasterboards were taped with fibre tape and filled with joint filler which was also used to cover heads of the screws. On one of the bearing edges the Wolf easi-joists® were mounted to the supporting construction with one screw per joist. No plasterboard edge noggings or perimeter board noggings were used.

Eight *JCC* downlights, listed below, were incorporated in the gypsum plasterboards (note: * is to denote bezel reference).

- 1 x JC94110XX* represented by **JC94110CH** in Ø74 mm,
- 1 x JC94113XX* represented by **JC94113WH** in Ø74 mm,
- 1 x JC1002/XX* represented by **JC1002/BN** in Ø85 mm,
- 1 x JC010023XX* represented by **JC010023BN** in Ø84 mm,
- 1 x JC1001/XX* represented by **JC1001/WH** in Ø70 mm,
- 1 x JC94114XX* represented by **JC94114BN** in Ø85 mm,
- 1 x JC010010XX* represented by **JC010010WH** in Ø72 mm,
- 1 x JC010016XX* represented by **JC010016CH** in Ø72 mm,

At the request of the client an extra load of 112 kg/m^2 has been applied during the test. For the purpose of the supporting construction a frame work made of aerated concrete (class G4/600), respectively 200 mm thick in the vertical direction (bearing sides) and 150 mm thick in the longitudinal direction (free edges), has been used.

For more details of the layout of the construction please refer to the drawing in Appendix 1.

3 Data to support the classification

3.1 Report

The classification is based on the report mentioned in table 3.1. The client has stated that the report provided may be used for this classification report.

t3.1 Report used for classification

Name of laboratory	Name of sponsor	Reports reference number and date	Used methods
Peutz bv	JCC Lighting Products Ltd.	Test report Y 2271-3E-RA-001 dated August 19, 2020	EN 1365-2 EN 1363-1

3.2 Results

The test specimen was heated using the standard heating curve as defined in EN 1363-1 with heating from below.

In the table 3.2 below it is shown after which time each of the criteria was exceeded (fails). The elapsed time is expressed in whole (already elapsed) minutes, counted from the start of the test. After 36 minutes the test was ended (construction collapses).

t3.2 Test results

Assessment criterion	Elapsed time	Pass / Fail
Loadbearing capacity (R)		
– limiting deflection * 1.5	36 minutes	fail (due to collapsing)
– limiting deflection	36 minutes	fail (due to collapsing)
– limiting rate of deflection	31 minutes	fail
Integrity (E)		
– sustained flaming	36 minutes	fail (due to failing R)*
– cotton pad	36 minutes	fail (due to failing R)*
– gap gauges	36 minutes	fail (due to failing R)*
Insulation (I)		
– average temperature rise	36 minutes	fail (due to failing R)*
– maximum temperature rise	36 minutes	fail (due to failing R)*

*According to EN 1363-1, Integrity (E) and Insulation (I) criteria shall automatically be assumed not to be satisfied (failed) when *'limiting deflection*1.5'* or *'limiting deflection'* **and** *'limiting rate of deflection'* are exceeded.

4 Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with Clause 7.3.3 of EN 13501-2.

4.2 Classification

The element, a timber floor construction, is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification
REI 30

4.3 Field of application

This classification is valid for the construction given on the drawings in Appendix 1 and the description given in Chapter 2.2. The field of application is based on the direct field of application in accordance with the test standard EN 1365-2. The test results are directly applicable to a similar untested floor or roof construction with the following end use applications.

4.3.1 Construction element

The span of the construction may be increased or decreased, the spacing of the Wolf easi-joists® may be decreased, or the depth and flange size of the Wolf easi-joists® increased, provided that the maximum moments and shear forces on the Wolf easi-joists®, considering the load applied in practise, are not greater than those tested (112 kg/m^2), when calculated on the same basis in the fire condition.

4.3.2 The dimension crosswise to the span direction

The dimension perpendicular to the span direction may be increased or decreased provided that the spacing of the Wolf easi-joists® is not greater than 600 mm.

4.3.3 Boards of the ceiling

The maximum size of boards of the ceiling is 2450 mm x 1250 mm, provided that the number of fixings per square meter remains at least the same as tested. The boards shall be of the type British Gypsum, Gyproc Wallboard, Type A, 15 mm.

4.3.4 Cavity

The height of the cavity between the ceiling and the flooring may be increased but with a minimum Wolf easi-joists® height of 219 mm. No extra material may be added to that cavity.

4.3.5 Fittings

JCC downlights

The centre-to-centre distance between 2 random fittings shall be no less than 500 mm in the direction parallel to the joists and no less than than 1000 mm in the direction perpendicular to the joists. Alternatively the downlights may be spaced closer than 1000 mm perpendicular to the joists provided that the spacing is adjusted accordingly in the parallel direction such than the density of downlights per m^2 is no greater than one downlight per 1.5 m^2 for the entire ceiling area. The distance between a downlight and a joint of the gypsum board shall be at least 300 mm and between a downlight and centre of the Wolf easi-joists® shall be at least 200 mm.

The diameter of the hole in the gypsum board for the installation of the downlight shall not exceed:

- 70 mm for:
  - JC1001/WH
- 72 mm for:
  - JC010010WH and JC010016CH
- 74 mm for:
  - JC94110CH and JC94113WH
- 84 mm for:
  - JC010023BN
- 85 mm for:
  - JC1002/BN and JC94114BN

5 Limitations

This classification document does not represent type approval of certification of this product.

Mook,

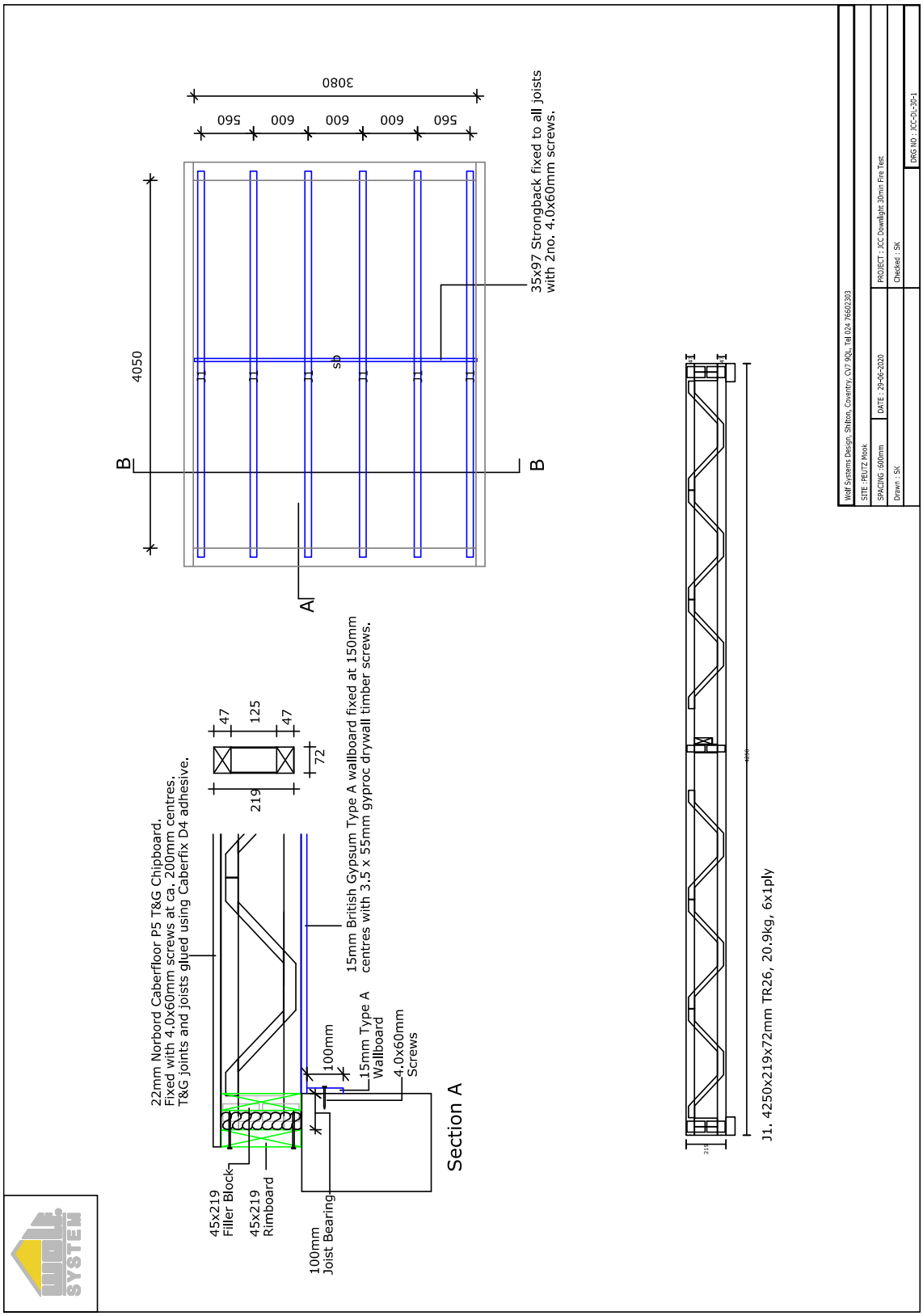
H.H.A. Leenders, BSc.

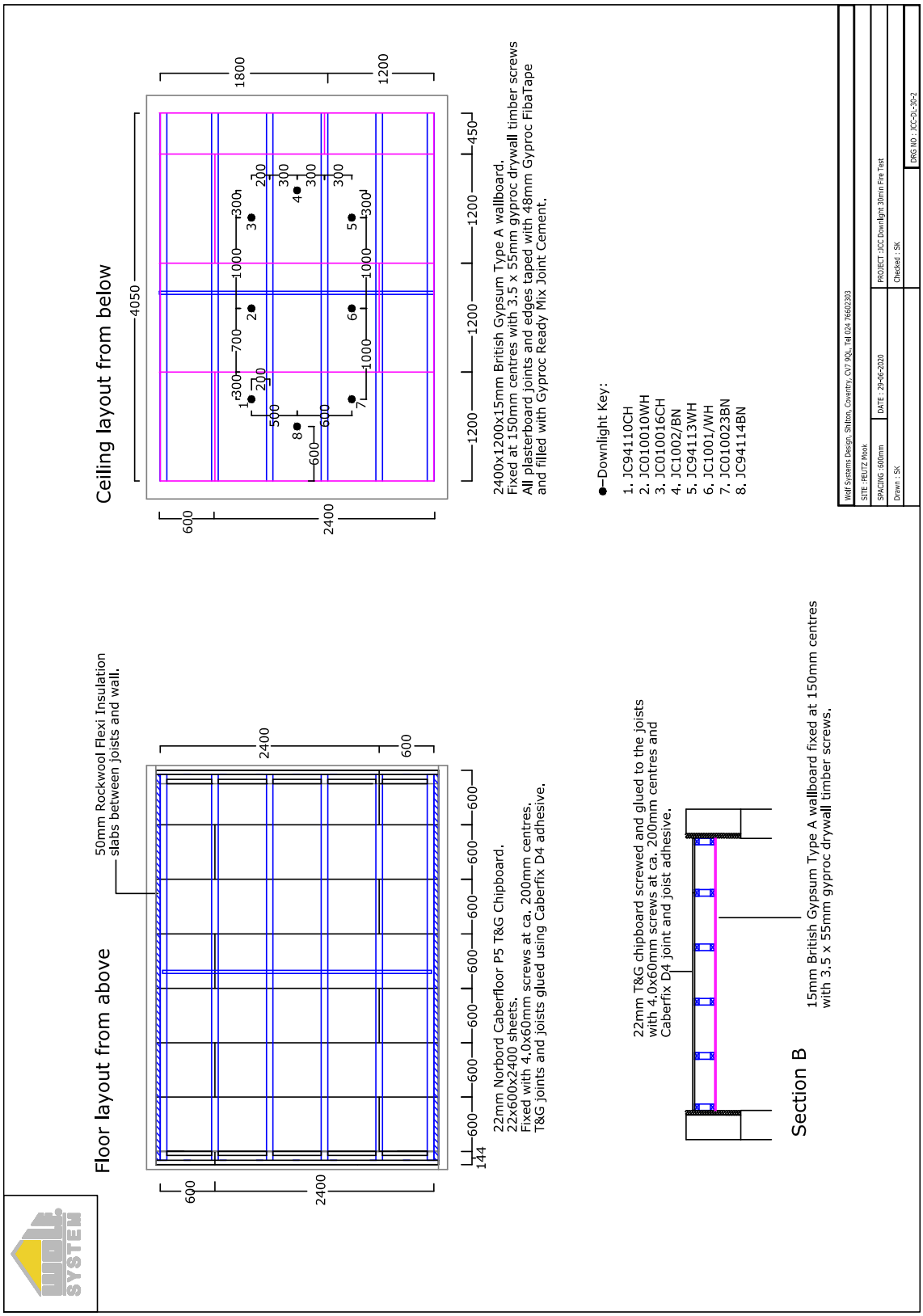
D.J. Den Boer, BSc.

Head of Laboratory for Fire Safety

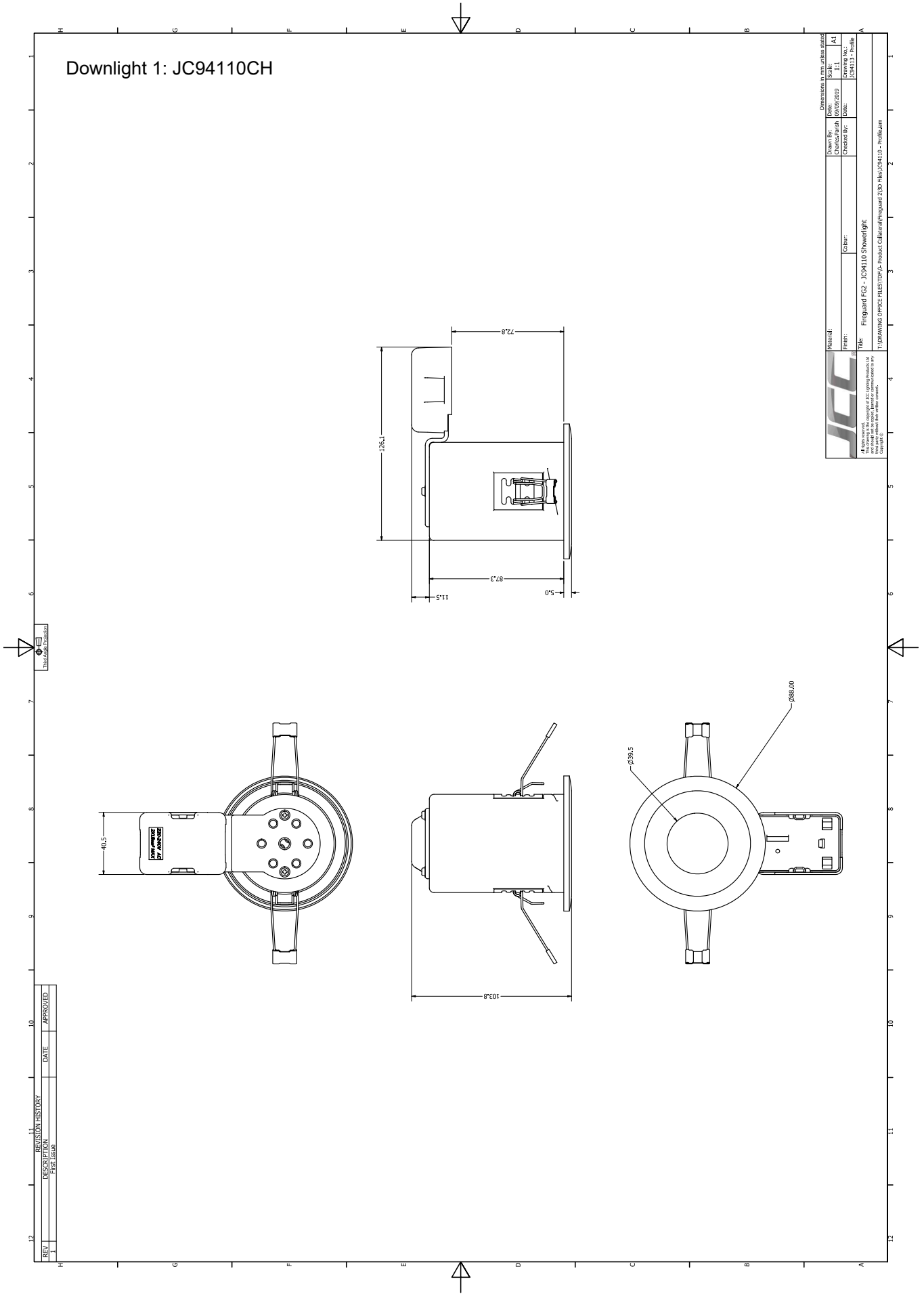
Management

This report contains 8 pages and 1 appendix:
Appendix 1 Drawings of the classified system.


3080
560
600
600
600
560
4050
B
B
A
A
J1
J1
J1
sb
J1
J1
J1
35x97 Strongback fixed to all joists
with 2no. 4.0x60mm screws.
22mm Norbord Caberfloor P5 T&G Chipboard.
Fixed with 4.0x60mm screws at ca. 200mm centres.
T&G joints and joists glued using Caberfix D4 adhesive.
47
125
47
72
219
15mm British Gypsum Type A wallboard fixed at 150mm
centres with 3.5 x 55mm gyproc drywall timber screws.
100mm
15mm Type A
Wallboard
4.0x60mm
Screws
45x219
Filler Block
45x219
Rimboard
100mm
Joist Bearing
Section A
J1. 4250x219x72mm TR26, 20.9kg, 6x1ply
Wolf Systems Design, Shilton, Coventry, CV7 9QL. Tel 024 76602303
SITE : PEUTZ Mook
SPACING :600mm
DATE : 29-06-2020
PROJECT : JCC Downlight 30min Fire Test
Drawn : SK
Checked : SK
DRG NO : JCC-DL-30-1

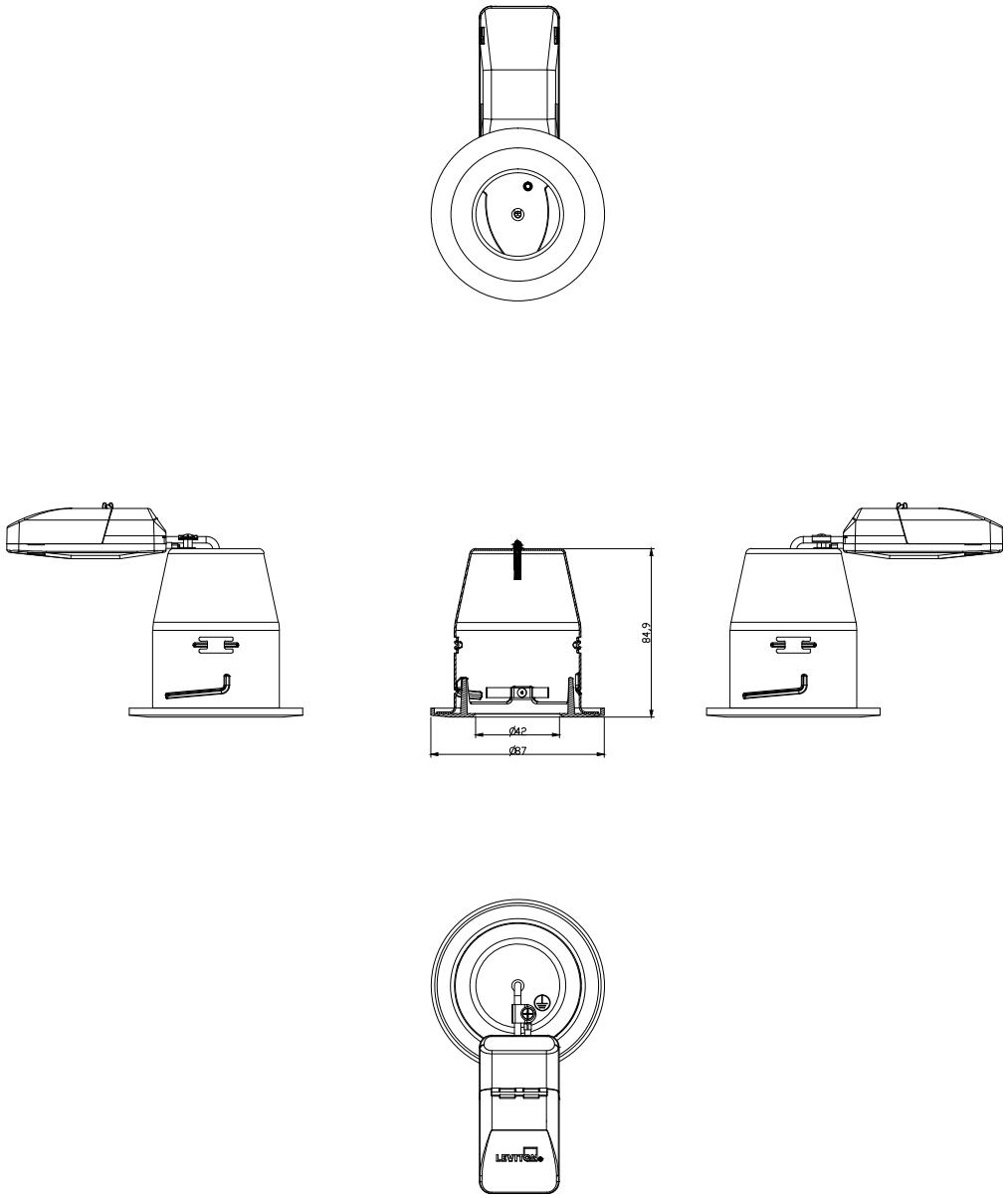

Ceiling layout from below
4050
1800
1200
2400
600
1200
1200
1200
450
2400x1200x15mm British Gypsum Type A wallboard.
Fixed at 150mm centres with 3.5 x 55mm gyproc drywall timber screws
All plasterboard joints and edges taped with 48mm Gyproc FibaTape
and filled with Gyproc Ready Mix Joint Cement.
Downlight Key:
1. JC94110CH
2. JC010010WH
3. JC010016CH
4. JC1002/BN
5. JC94113WH
6. JC1001/WH
7. JC010023BN
8. JC94114BN
Floor layout from above
50mm Rockwool Flexi Insulation
slabs between joists and wall.
2400
600
600
600
600
600
600
600
600
600
144
2400
600
22mm Norbord Caberfloor P5 T&G Chipboard.
22x600x2400 sheets.
Fixed with 4.0x60mm screws at ca. 200mm centres.
T&G joints and joists glued using Caberfix D4 adhesive.
22mm T&G chipboard screwed and glued to the joists
with 4.0x60mm screws at ca. 200mm centres and
Caberfix D4 joint and joist adhesive.
15mm British Gypsum Type A wallboard fixed at 150mm centres
with 3.5 x 55mm gyproc drywall timber screws.
Section B
Wolf Systems Design, Shilton, Coventry, CV7 9QL. Tel 024 76602303
SITE : PEUTZ Mock
SPACING :600mm
DATE : 29-06-2020
PROJECT : JCC Downlight 30min Fire Test
Drawn : SK
Checked : SK
DRG NO : JCC-DL-30-2

Downlight 1: JC94110CH



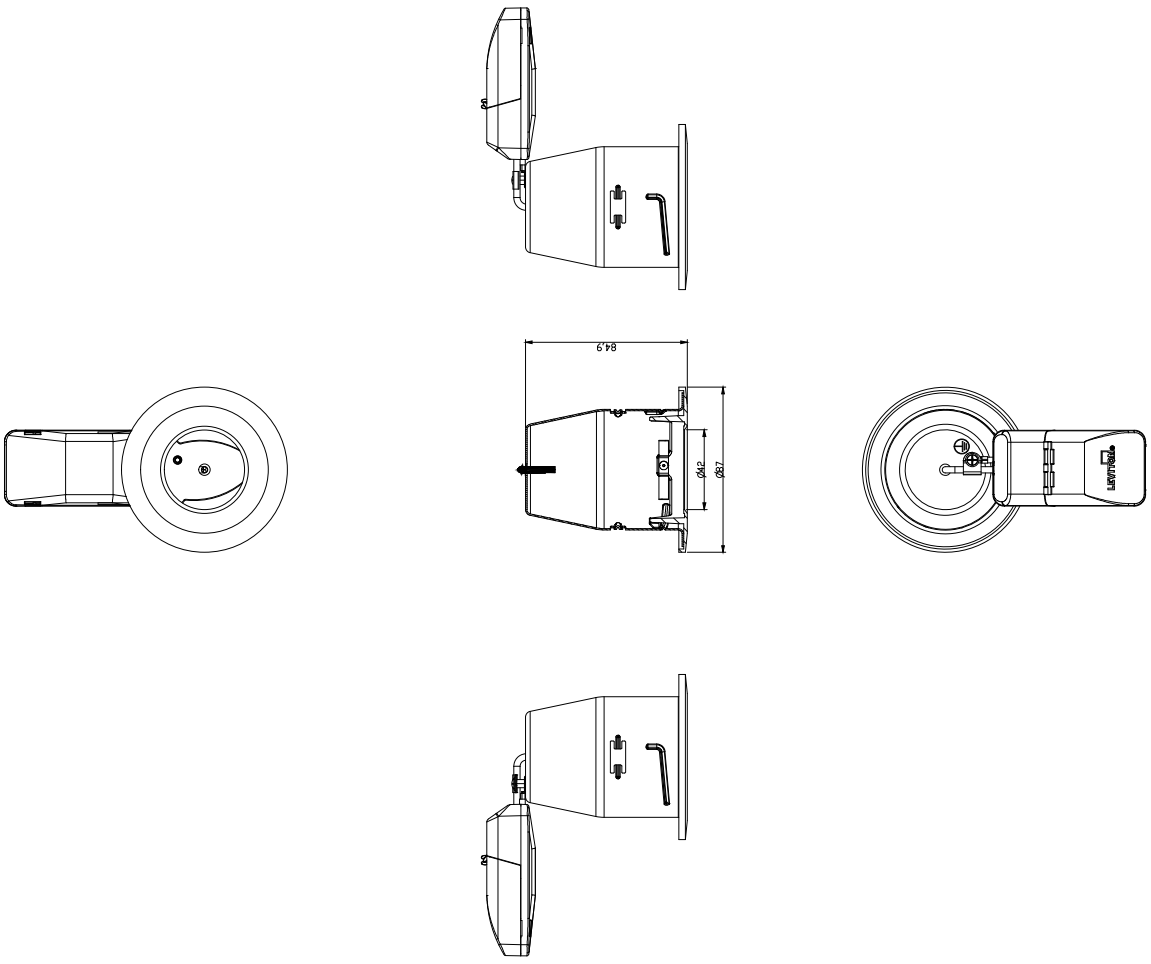
Appendix 1 Drawings

Downlight 2: JC010010WH



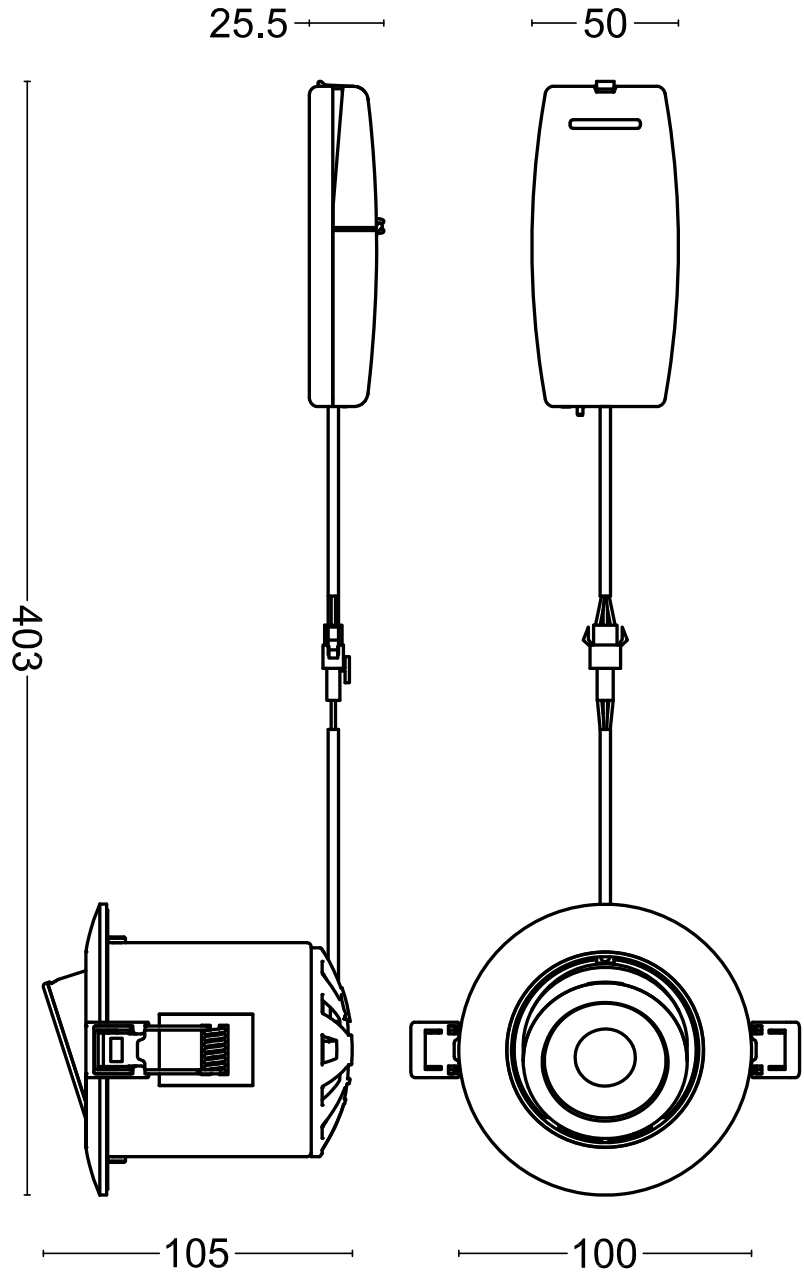
Appendix 1 Drawings

Downlight 3: JC010016CH

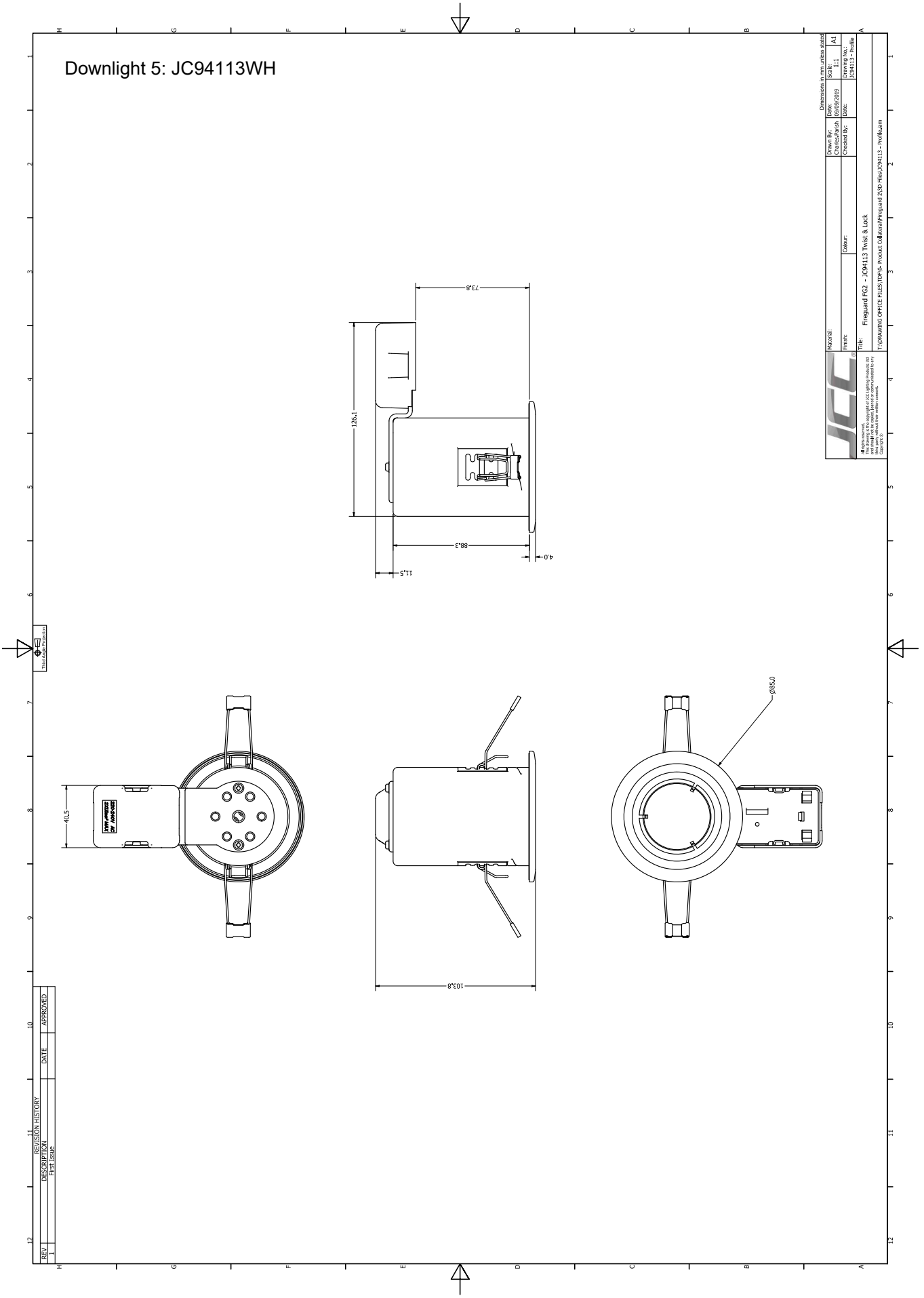


Appendix 1 Drawings

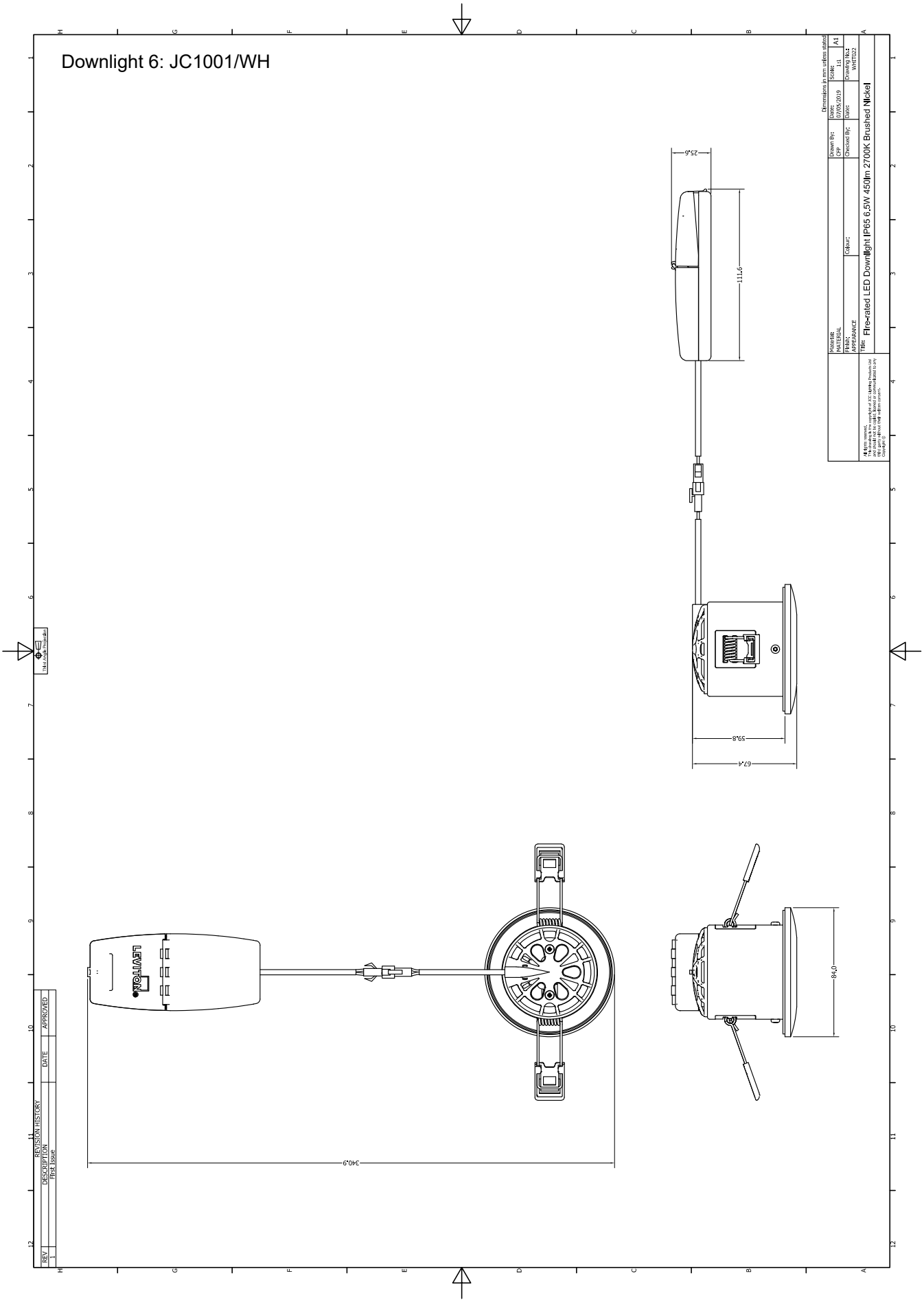
Downlight 4: JC1002/BN



Downlight 5: JC94113WH

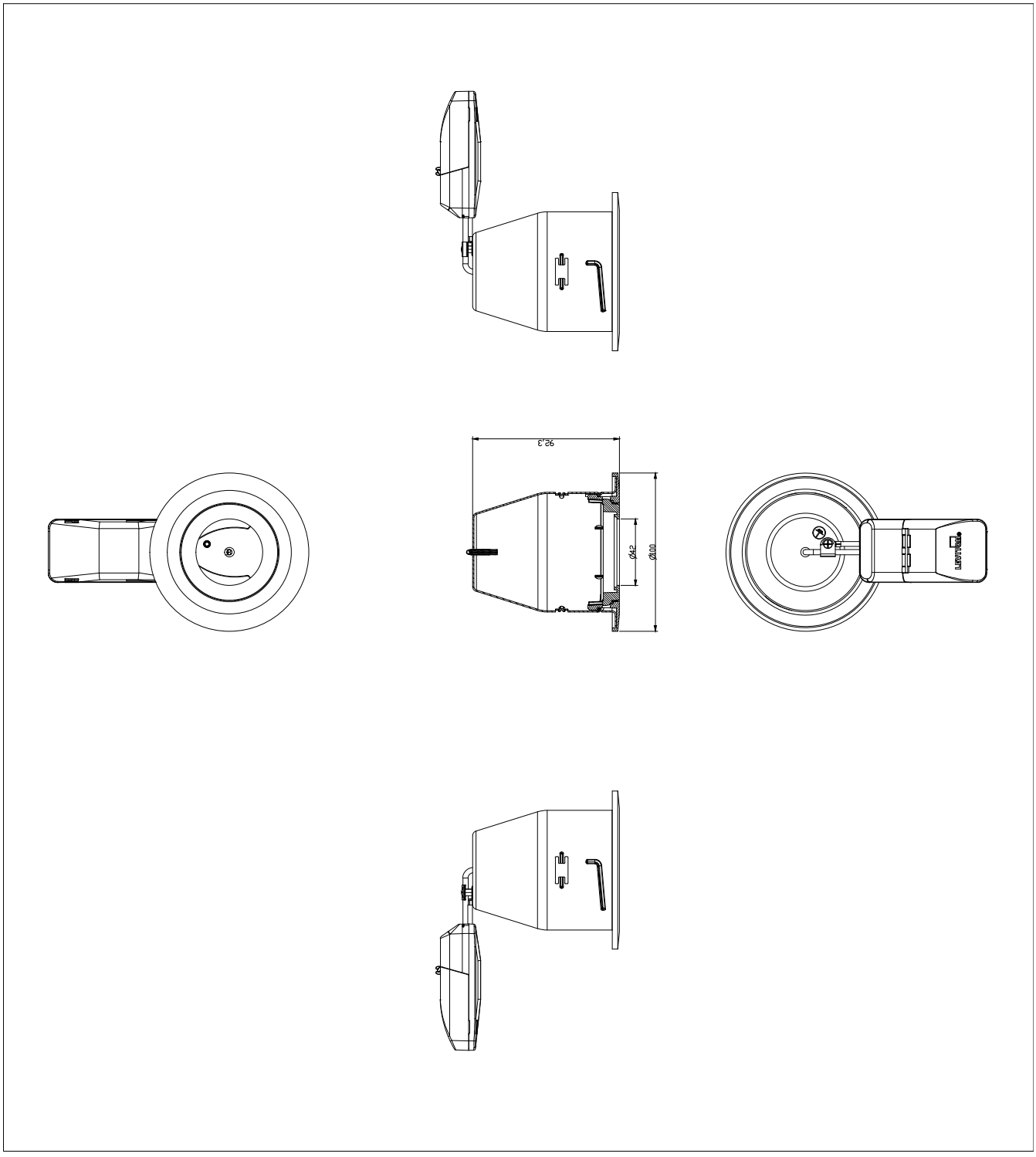


Downlight 6: JC1001/WH



Appendix 1 Drawings

Downlight 7: JC010023BN



Downlight 8: JC94114BN