Virgin Media O2
Virgin Media O2 Site ID 91034
Corporate Projects Detailed Design Report

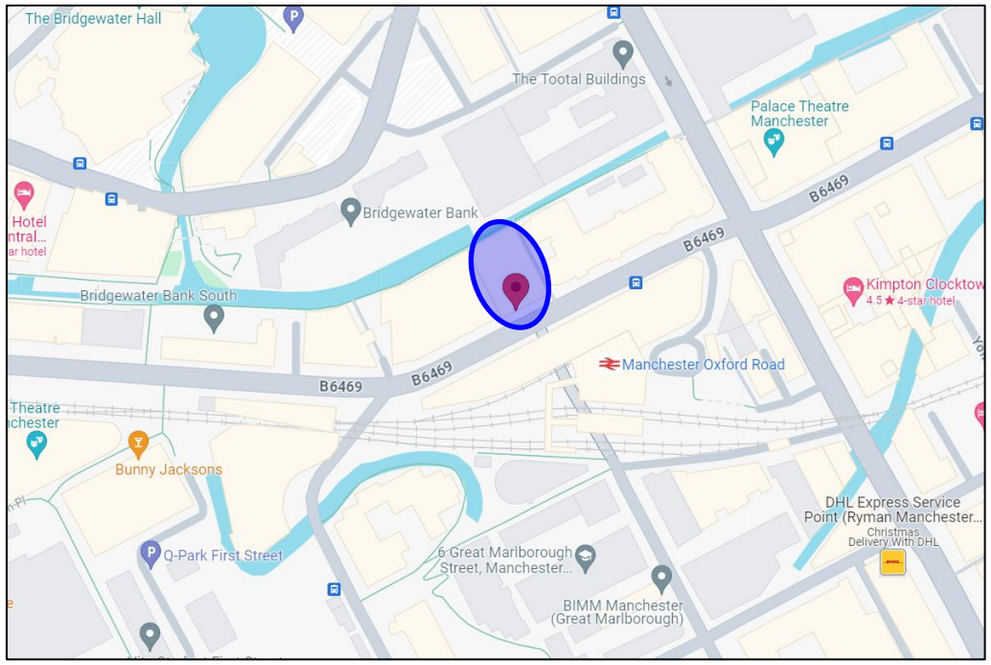
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ISSUE	DESCRIPTION	BY	DATE
V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Front Cover

Drawing Number:
91034_NET_VMO2_DDR_1







Directions to site Google Link	https://maps.app.goo.gl/XyzBgWMG2Q2gemmx8
Eastings/Northings	E: 383 972 N: 397 545
WHAT3WORDS Link	Site Entrance: https://w3w.co/sunk.tracks.blank

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Site Location

Drawing Number:
91034_NET_VMO2_DDR_2

Design Solution

The scope of this design is a new system (LTE1800 / LTE2100 / NR3700) to provide coverage to the requested areas provided in the instruction and shown on page 8.

The proposed solution utilises a single sector Ericsson DOT solution utilising 10x Tri band radio DOT units.

The proposed MER location is on the second floor.

An external GPS antenna is required for timing synchronisation.

As the site is an active entertainment venue, installation works will need to be planned around booked events.

The site follows specific cable and installation methodology with the full documentation available within the **"List of Requirements for Electrical Data and Other Cable Installations V15 12-9-2022"** document which has been included from pages 52-56.

Access Arrangements		
Access for Survey	Days	Yes
	Nights	No
	Weekends	No
Access for MER Installation	Days	Yes
	Nights	No
	Weekends	No
Access for Cable Installation	Days	Yes
	Nights	No
	Weekends	No

System Details	
System Type	Active DAS
System Deployment	4G – MIMO 5G – MIMO
No. of Sectors	1
No. of Passive Antennas	N/A
No. of Active Antennas	10
Number of Users	The venue has a maximum capacity of 1500 users with approximately 375 of those expected to be VMO2 customers.
Additional Information	N/A
Equipment Room Summary	
MER Location	2nd floor
MER Rack Space Required	1x 600mm x 600mm 21U Rack (stand alone rack proposed and provided by VMO2)
Electrical Supply Required	Eltek PSU to be utilised for the VMO2 equipment.
Additional Information	N/A

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Design Solution

Drawing Number:
91034_NET_VMO2_DDR_5

Design Assumptions

- The major considerations from the site specific **"List of Requirements for Electrical Data and Other Cable Installations V17 3-8-2023"** are detailed below
- Site requires all cables to be low smoke and zero halogen and certified accordingly. No PVC is permitted. Data cabling should be BS EN 501173 and BS EN 50288-1-3-1 standard
- Cable**s** must be installed by a Leviton or Excel certified or approved contractor
- All data cabling should be Leviton or Excel Cat6 unless otherwise agreed
- Cables are to be installed within the natural creases of the building where they cannot be installed out of sight
- Where applicable cables are to be secured to walls with black plastic-coated copper "P" clips or coated copper saddle clips or similar approved spaced equally at minimum 300mm centres
- Cables utilising cable tray may be secured with plastic cable ties; however, every fourth tie must be a metal cable tie.
- All cables should be black wherever possible.
- Cables passing through walls must be sealed with intumescent sealant. The approved intumescent sealant is "FirePro High Expansion Intumescent Sealant" manufactured by Rockwool Ltd.
- The minimum cable length for all Ericsson DOT connections is to be 20m.
- The maximum cable length for all Ericsson DOT connections is to be 100m.
- Keystone connectors and a patch panel have been utilised to ensure maximum flexibility for the installation.
- Suitable cable management on site that can be utilised.

Key Risks

- **Asbestos is present onsite; the asbestos register is to be reviewed prior to work commencing with final approval of all cable routes made by the venue asbestos representative.**
- **An inspection of the cable routes and voids will be made by the asbestos representative within the venue to ensure there is not asbestos present, and if there is it remains in good condition and encapsulated, as necessary.**
- MER location needs to be approved by the customer.
- The customer has requested the Ericsson DOT be painted black. It is proposed that an ICNIRP cover, see page 29 for detail, is applied to each DOT, and this is paint black instead of the DOT unit itself. Exact paint type and colour code to be confirmed prior to installation.

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Design Assumptions & Key Risks

Drawing Number:
91034_NET_VMO2_DDR_6

O2 Ritz Manchester



Site Entrance

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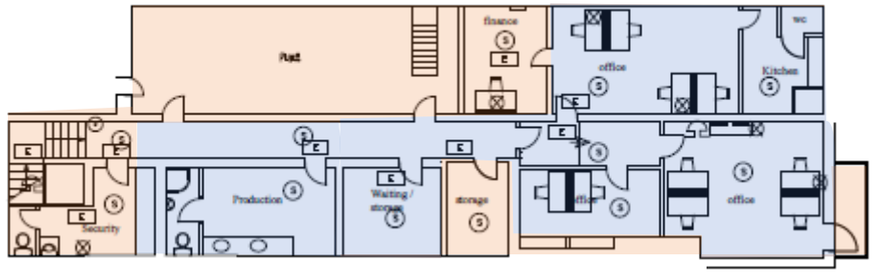
Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Site Layout

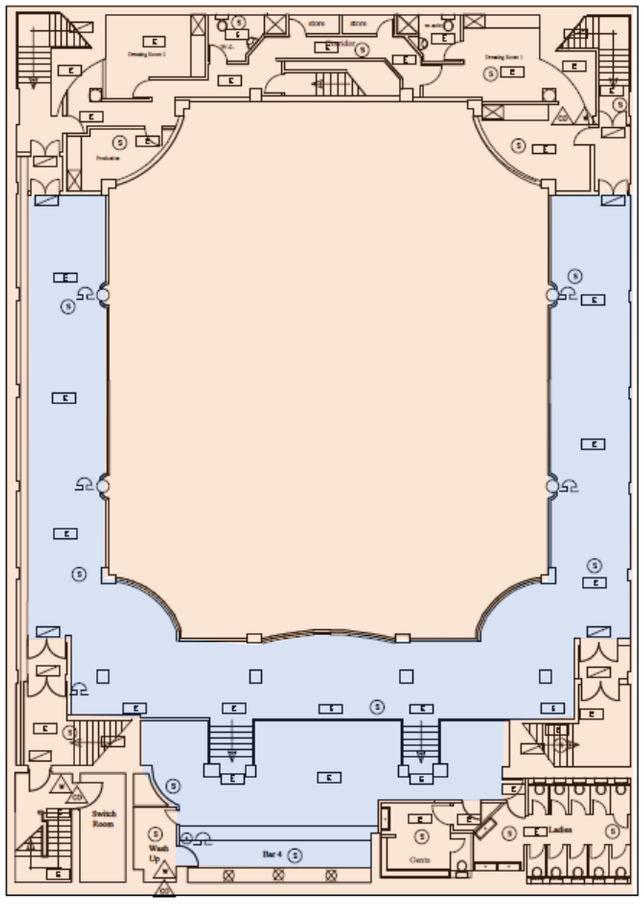
Drawing Number:
91034_NET_VMO2_DDR_7

Coverage Zone Drawing

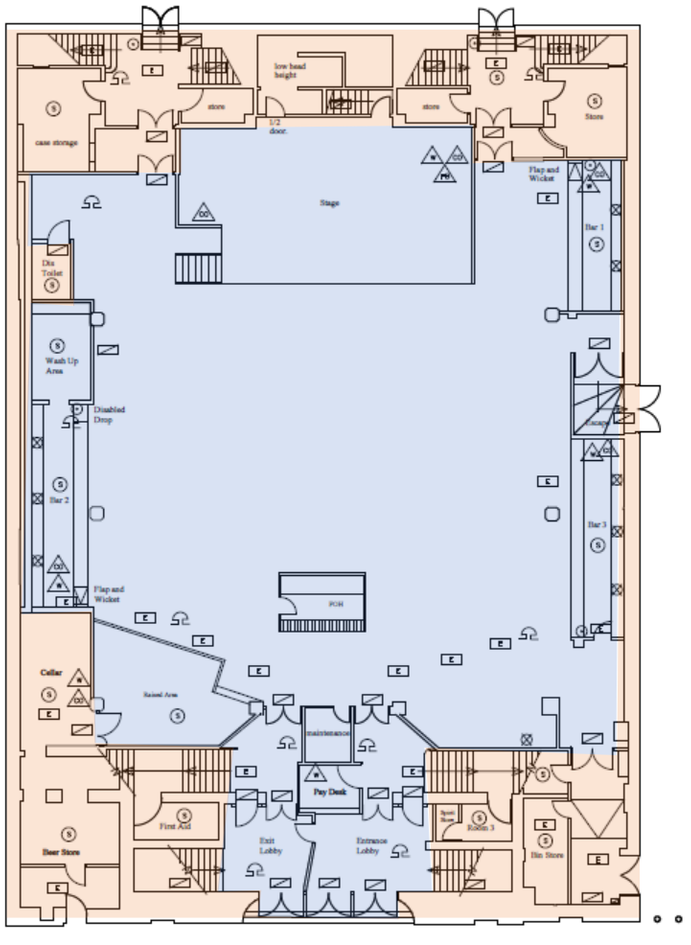
The area shown in blue is the 3 storeys of venue space.
The areas shown in orange are considered out in scope
No external coverage is proposed at this location.



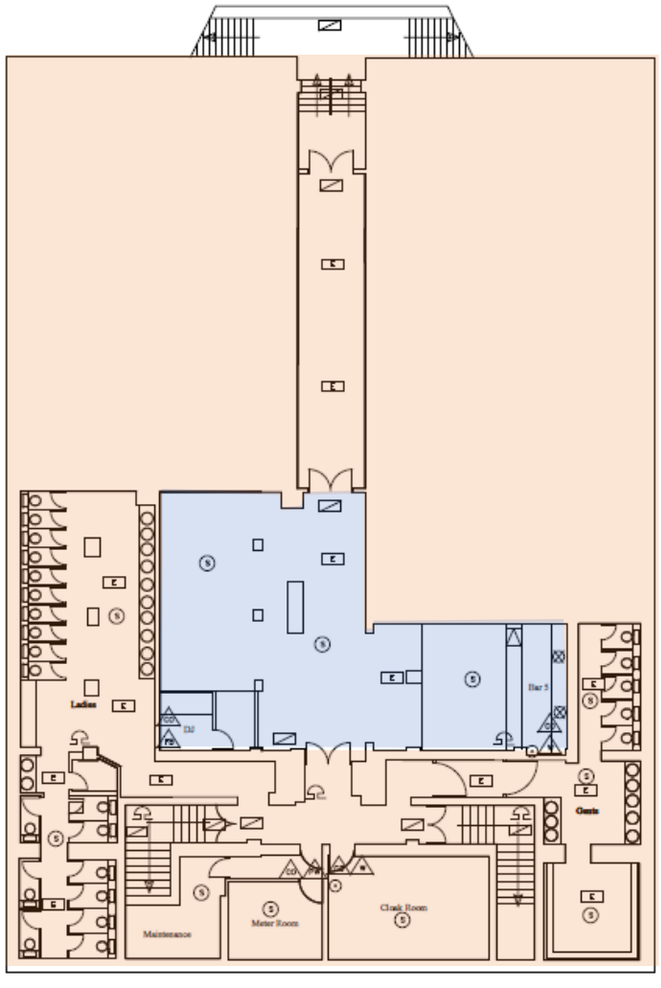
2nd Floor Office



First Floor



Ground Floor



Basement

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Coverage Zone Drawing

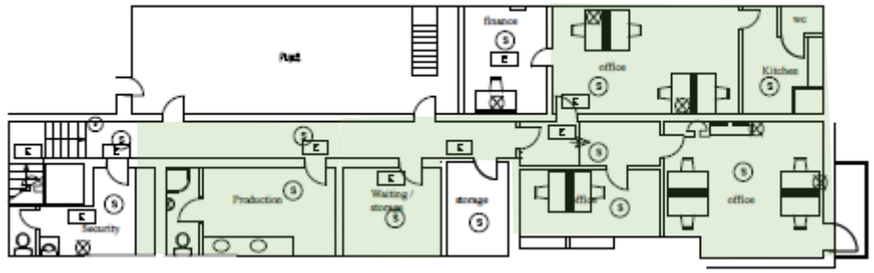
Drawing Number:
91034_NET_VMO2_DDR_8

JOTS Coverage Zones

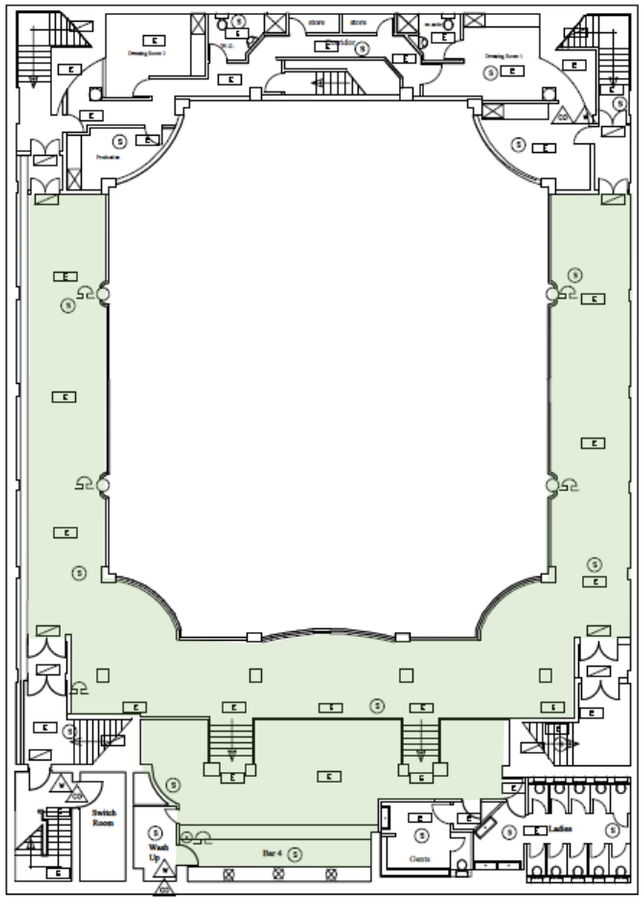
Zone A – High Data Rate

Zone B – Medium Data Rate

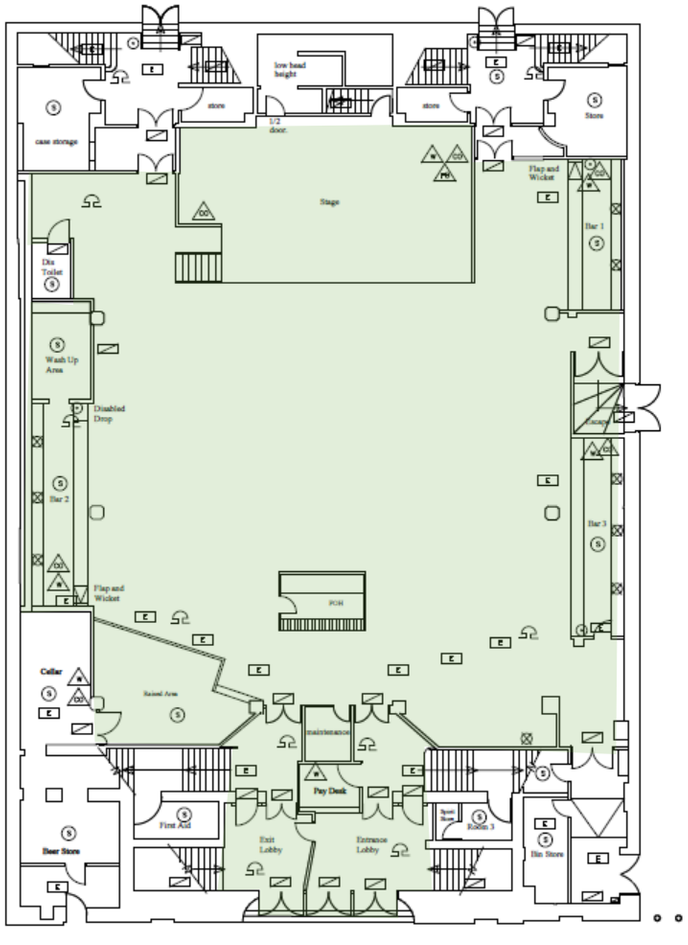
Zone C – Portal Only



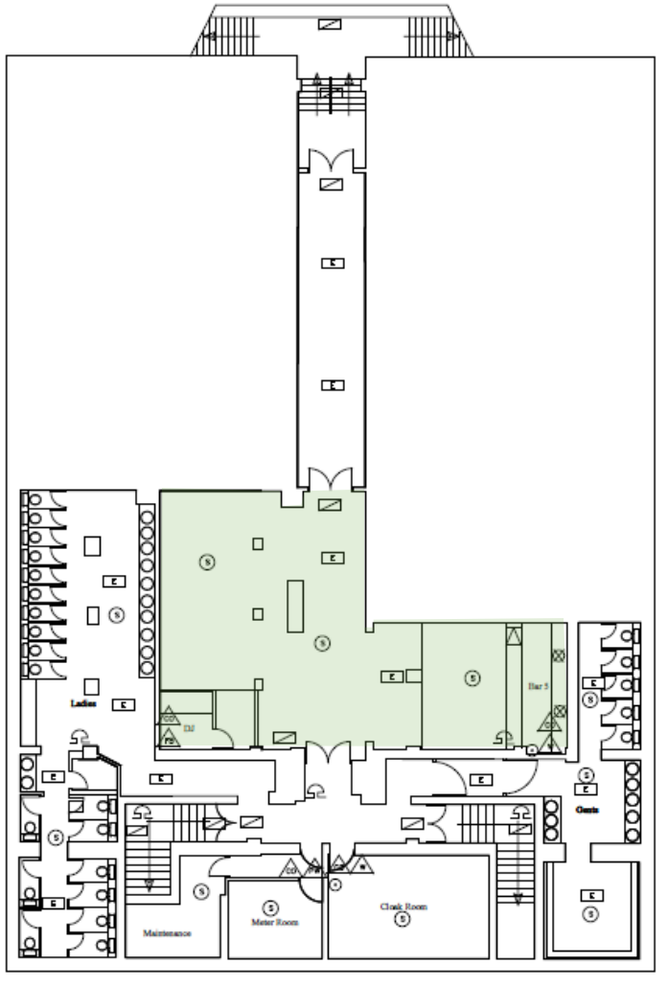
2nd Floor Office



First Floor



Ground Floor



Basement

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Site Address: Whitworth St W, Manchester, M1 5NQ

Coverage Zone Drawing

Drawing Number:
91034_NET_VMO2_DDR_9

Notes:
All cables to be laid inside cable containment where available.
The cables are to be clipped to the ceiling above the false ceiling for locations where there is no containment. Following the venue specific guidelines.

Symbol Key	
	Ericsson BBU/IRU
	Ericsson DOT
	GPS Antenna
	CAT 6A Cable
	LDF4RK-50A Cable
	Riser Location



Roof

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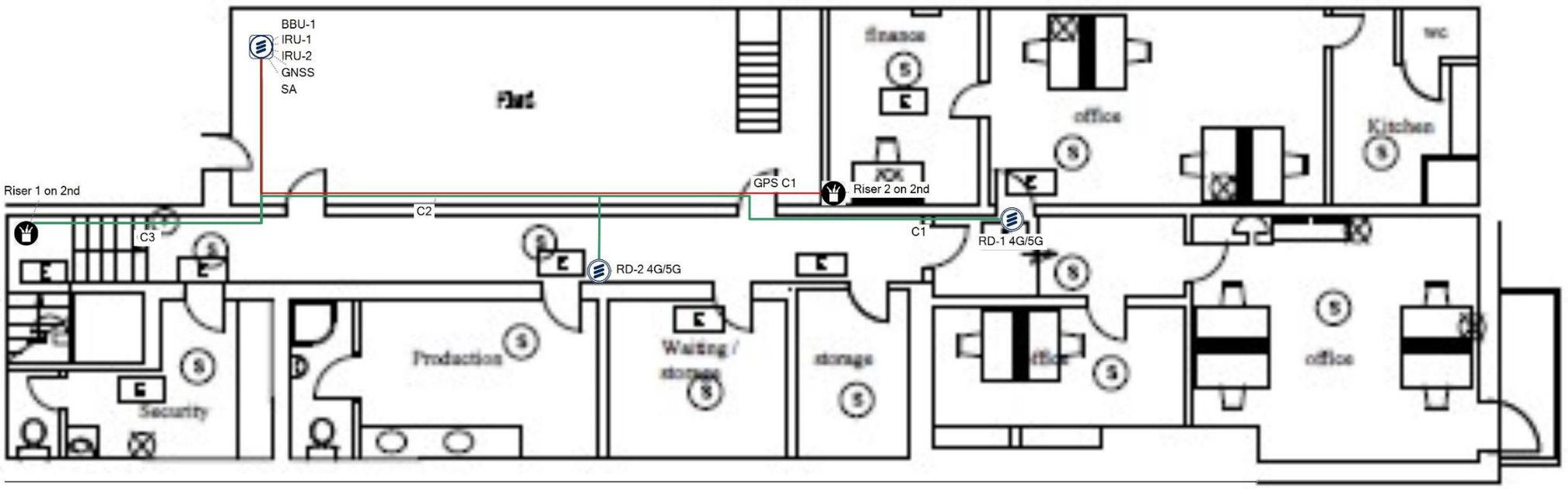
Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

General Arrangement Drawing

Drawing Number:
91034_NET_VMO2_DDR_12

Notes:
All cables to be laid inside cable containment where available.
The cables are to be clipped to the ceiling above the false ceiling for locations where there is no containment. Following the venue specific guidelines.

Symbol Key	
	Ericsson BBU/IRU
	Ericsson DOT
	GPS Antenna
	CAT 6A Cable
	LDF4RK-50A Cable
	Riser Location



2nd Floor

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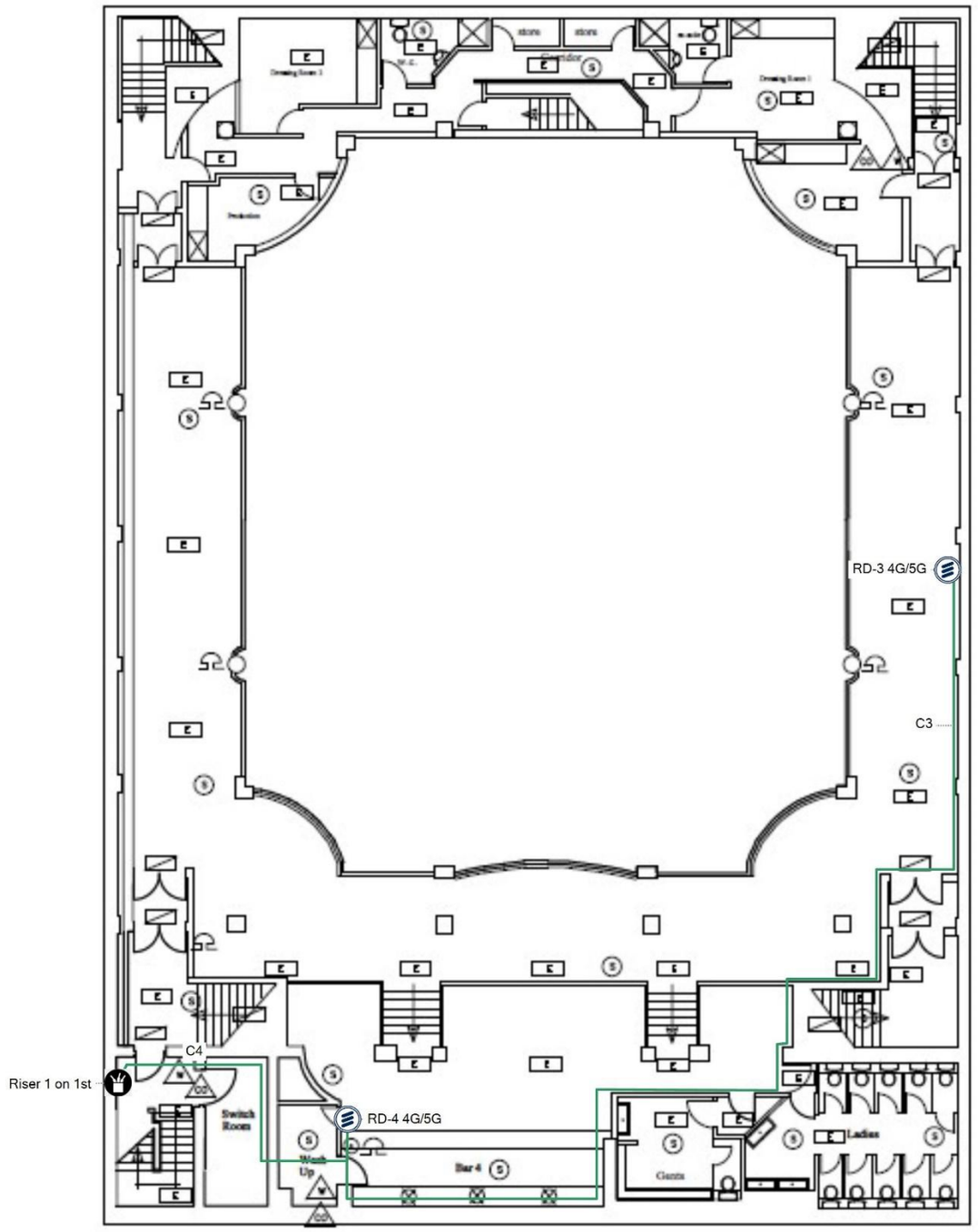
Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

General Arrangement Drawing

Drawing Number:
91034_NET_VMO2_DDR_13

Notes:
All cables to be laid inside cable containment where available.
The cables are to be clipped to the ceiling above the false ceiling for locations where there is no containment. Following the venue specific guidelines.

Symbol Key	
	Ericsson BBU/IRU
	Ericsson DOT
	GPS Antenna
	CAT 6A Cable
	LDF4RK-50A Cable
	Riser Location



1st Floor

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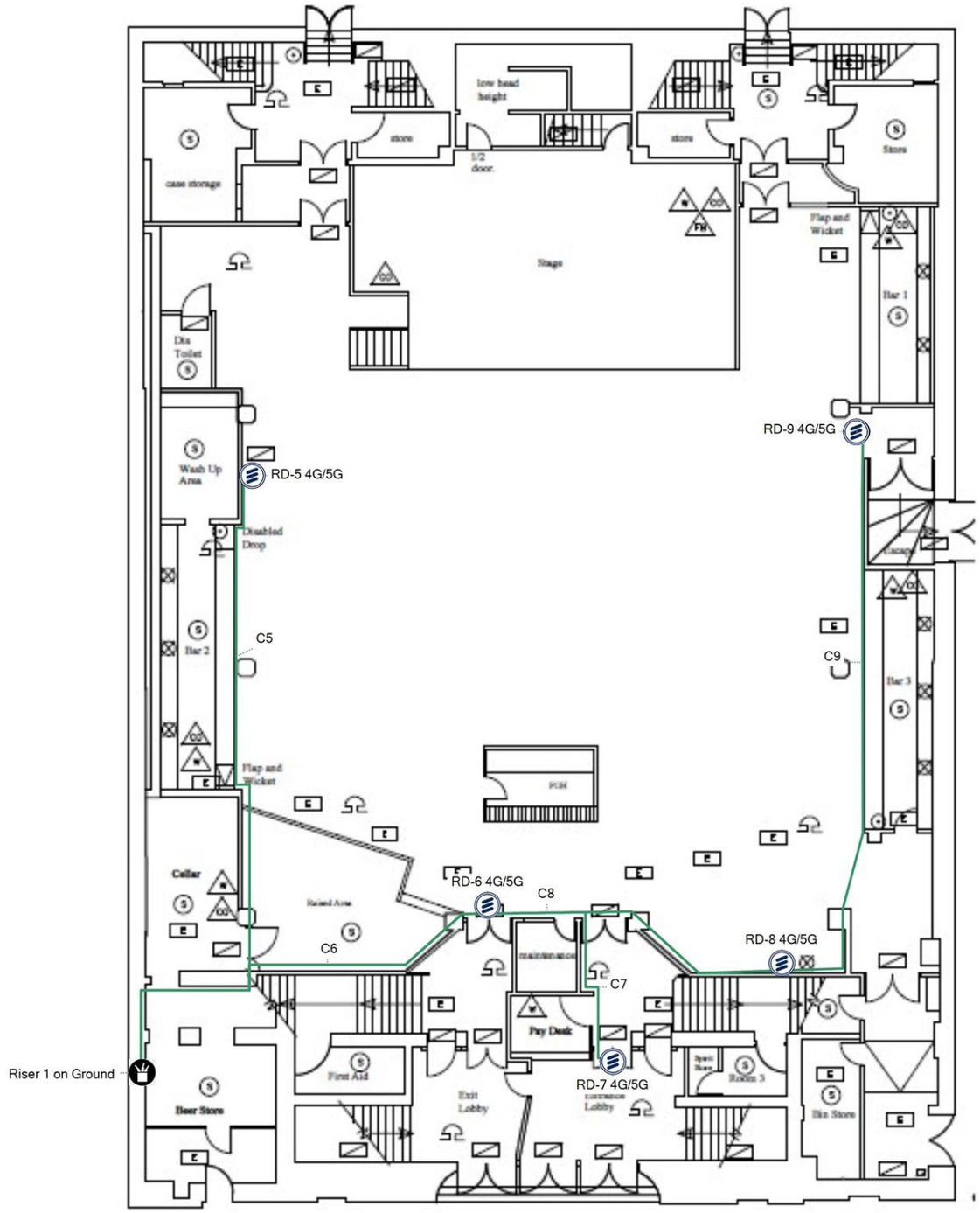
Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

General Arrangement Drawing

Drawing Number:
91034_NET_VMO2_DDR_14

Notes:
All cables to be laid inside cable containment where available.
The cables are to be clipped to the ceiling above the false ceiling for locations where there is no containment. Following the venue specific guidelines.

Symbol Key	
	Ericsson BBU/IRU
	Ericsson DOT
	GPS Antenna
	CAT 6A Cable
	LDF4RK-50A Cable
	Riser Location



Ground Floor

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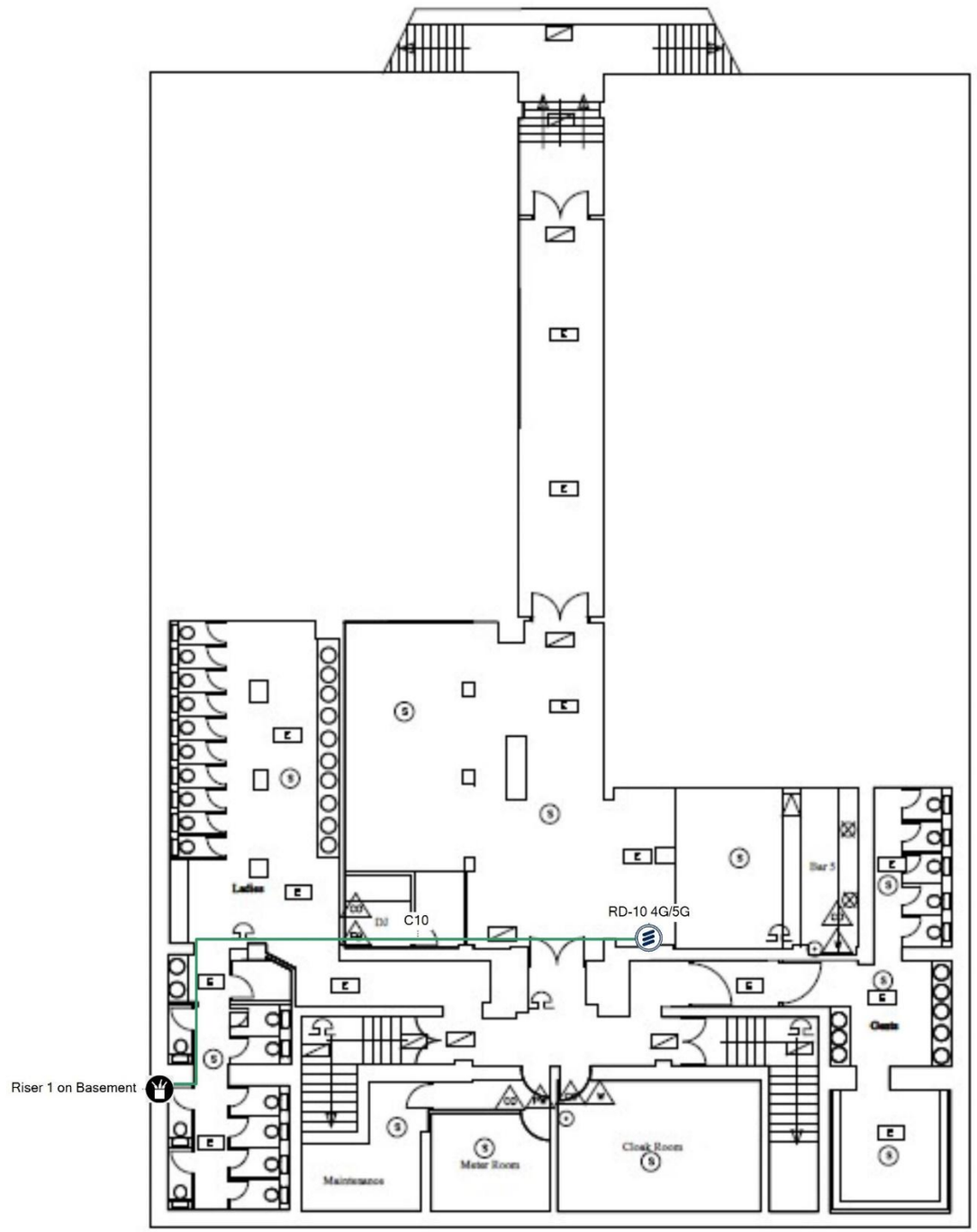
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General Arrangement Drawing

Drawing Number:
91034_NET_VMO2_DDR_15

Notes:
All cables to be laid inside cable containment where available.
The cables are to be clipped to the ceiling above the false ceiling for locations where there is no containment. Following the venue specific guidelines.

Symbol Key	
	Ericsson BBU/IRU
	Ericsson DOT
	GPS Antenna
	CAT 6A Cable
	LDF4RK-50A Cable
	Riser Location



Basement

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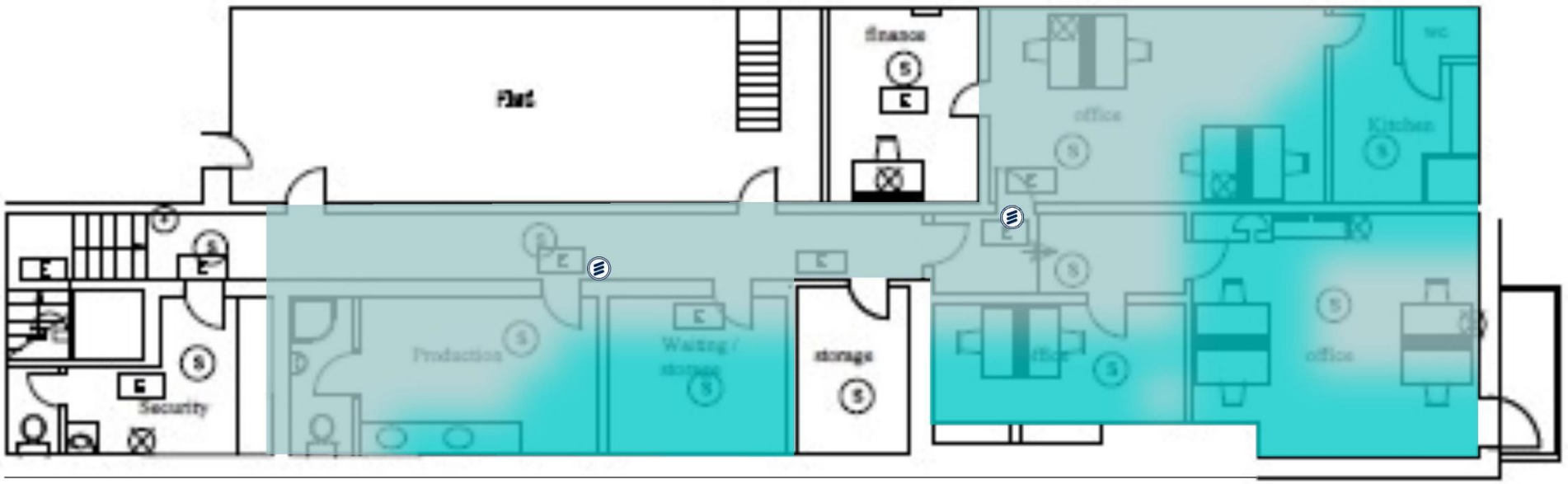
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General Arrangement Drawing

Drawing Number:
91034_NET_VMO2_DDR_16

LTE 1800MHz – RSRP



Indoor prediction legend
RSRP (Automatic)
[dBm]
>0.00 (0.0%)
>-65.00 (57.5%)
>-80.00 (100.0%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-113.00 (100.0%)
>-121.00 (100.0%)
Average: -59.60 [dBm]
VMO2 - 1800 MHz - DCS - LTE
Min -95.00 dBm: 100.0 % >= 95.0 %
Min -105.00 dBm: 100.0 % >= 95.0 %
Min -110.00 dBm: 100.0 % >= 95.0 %

2nd Floor

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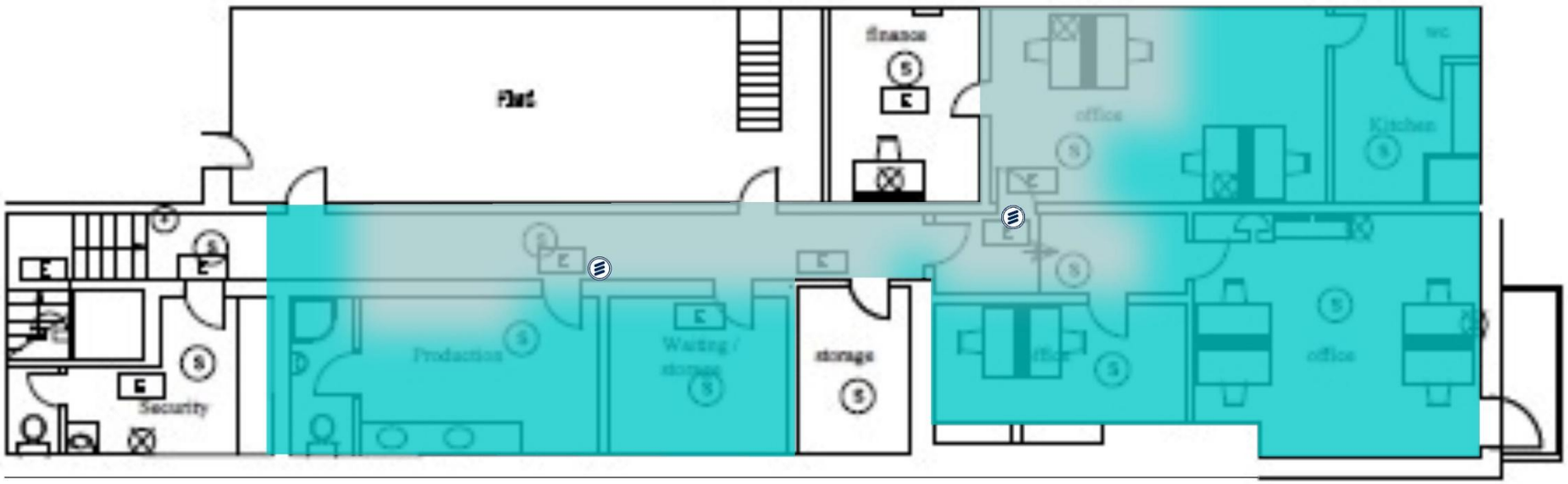
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Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_17

LTE 2100MHz – RSRP



Indoor prediction legend
RSRP (Automatic)
[dBm]
>0.00 (0.0%)
>-65.00 (29.0%)
>-80.00 (100.0%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-113.00 (100.0%)
>-121.00 (100.0%)
Average: -65.34 [dBm]
VMO2 - 2100 MHz - UMTS - LTE
Min -95.00 dBm: 100.0 % >= 95.0 %
Min -105.00 dBm: 100.0 % >= 95.0 %
Min -110.00 dBm: 100.0 % >= 95.0 %

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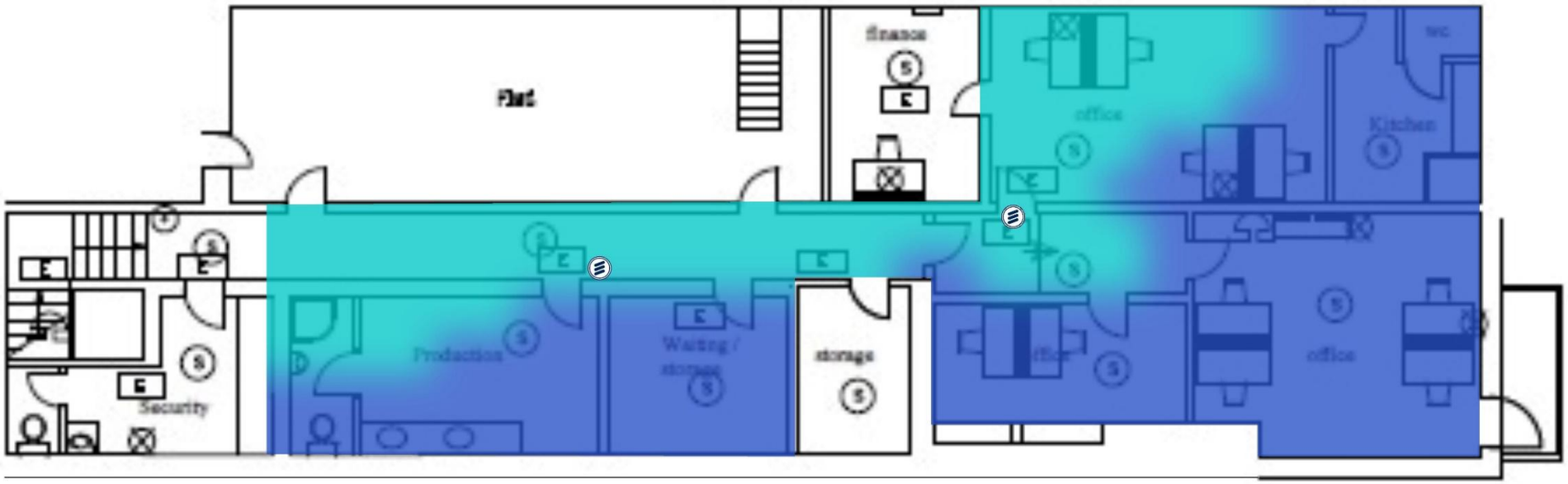
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Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_18

5G NR 3700MHz – SS-RSRP



Indoor prediction legend

5GNR SS-RSRP (Best path)
[dBm]

>0.00 (0.0%)
>-65.00 (0.0%)
>-80.00 (36.0%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-113.00 (100.0%)
>-121.00 (100.0%)

Average: -79.72 [dBm]
VMO2 - 3.7 GHz - 5G NR - TDD - 40 MHz - n77

Min -95.00 dBm: 100.0 % >= 95.0 %
Min -105.00 dBm: 100.0 % >= 95.0 %
Min -110.00 dBm: 100.0 % >= 95.0 %

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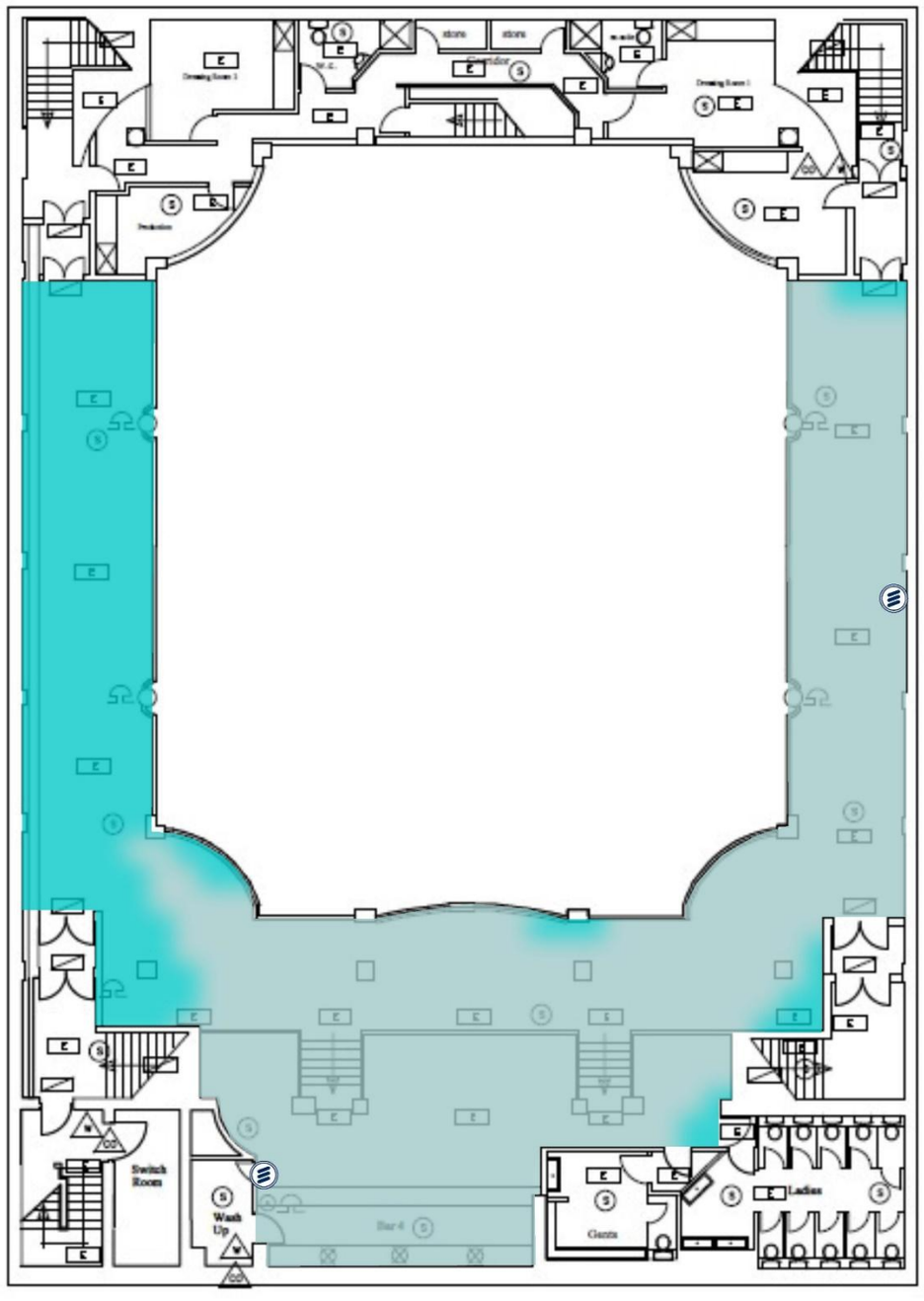
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Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_19

LTE 1800MHz – RSRP



Indoor prediction legend

RSRP (Automatic)
[dBm]

>0.00 (0.0%)
>-65.00 (69.1%)
>-80.00 (100.0%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-113.00 (100.0%)
>-121.00 (100.0%)

Average: -60.32 [dBm]
VMO2 - 1800 MHz - DCS - LTE

Min -95.00 dBm: 100.0 % >= 95.0 %
Min -105.00 dBm: 100.0 % >= 95.0 %
Min -110.00 dBm: 100.0 % >= 95.0 %

First Floor

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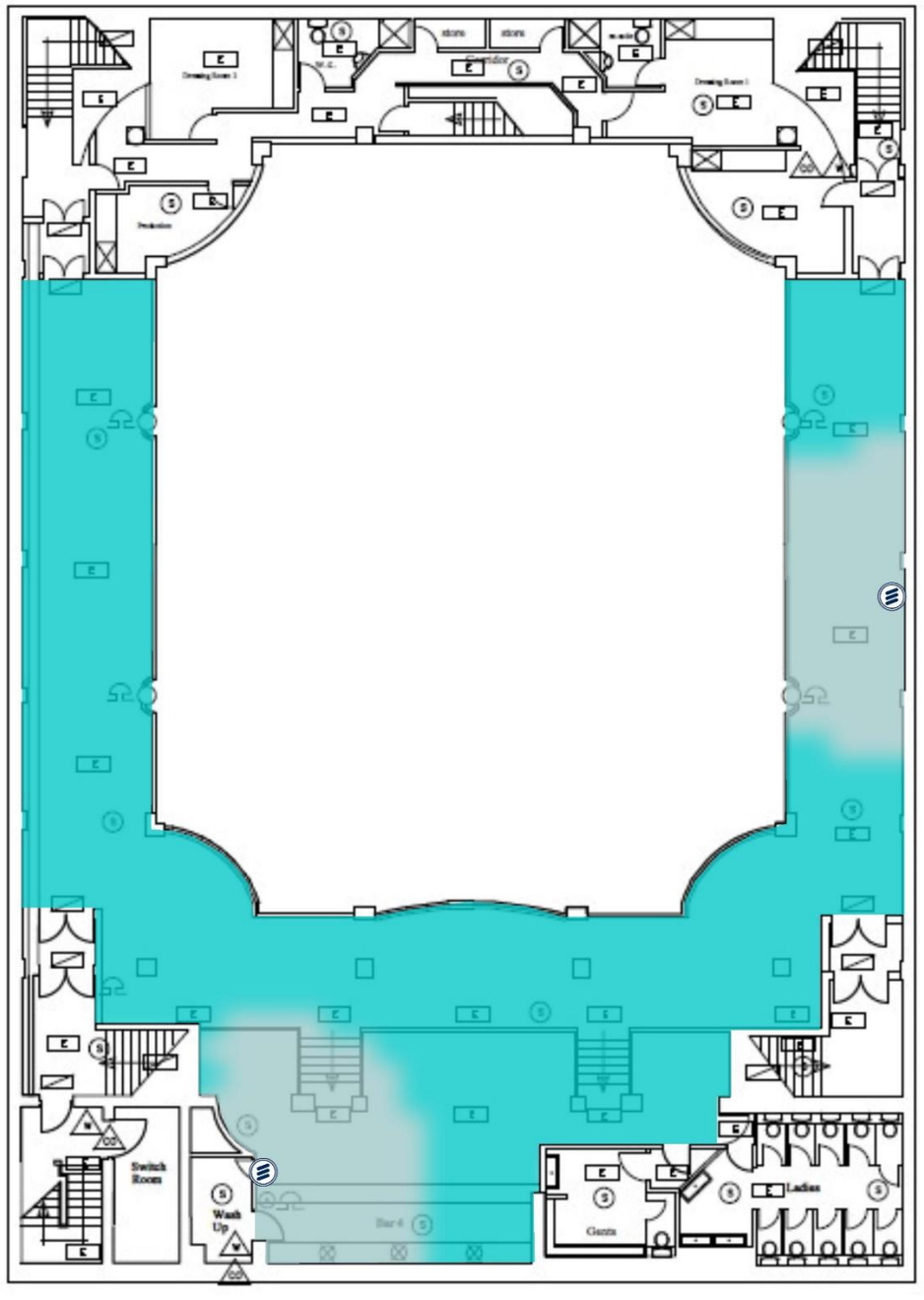
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Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_20

LTE 2100MHz – RSRP



Indoor prediction legend

RSRP (Automatic)
[dBm]

>0.00 (0.0%)
>-65.00 (22.5%)
>-80.00 (100.0%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-113.00 (100.0%)
>-121.00 (100.0%)

Average: -65.82 [dBm]
VMO2 - 2100 MHz - UMTS - LTE

Min -95.00 dBm: 100.0 % >= 95.0 %
Min -105.00 dBm: 100.0 % >= 95.0 %
Min -110.00 dBm: 100.0 % >= 95.0 %

First Floor

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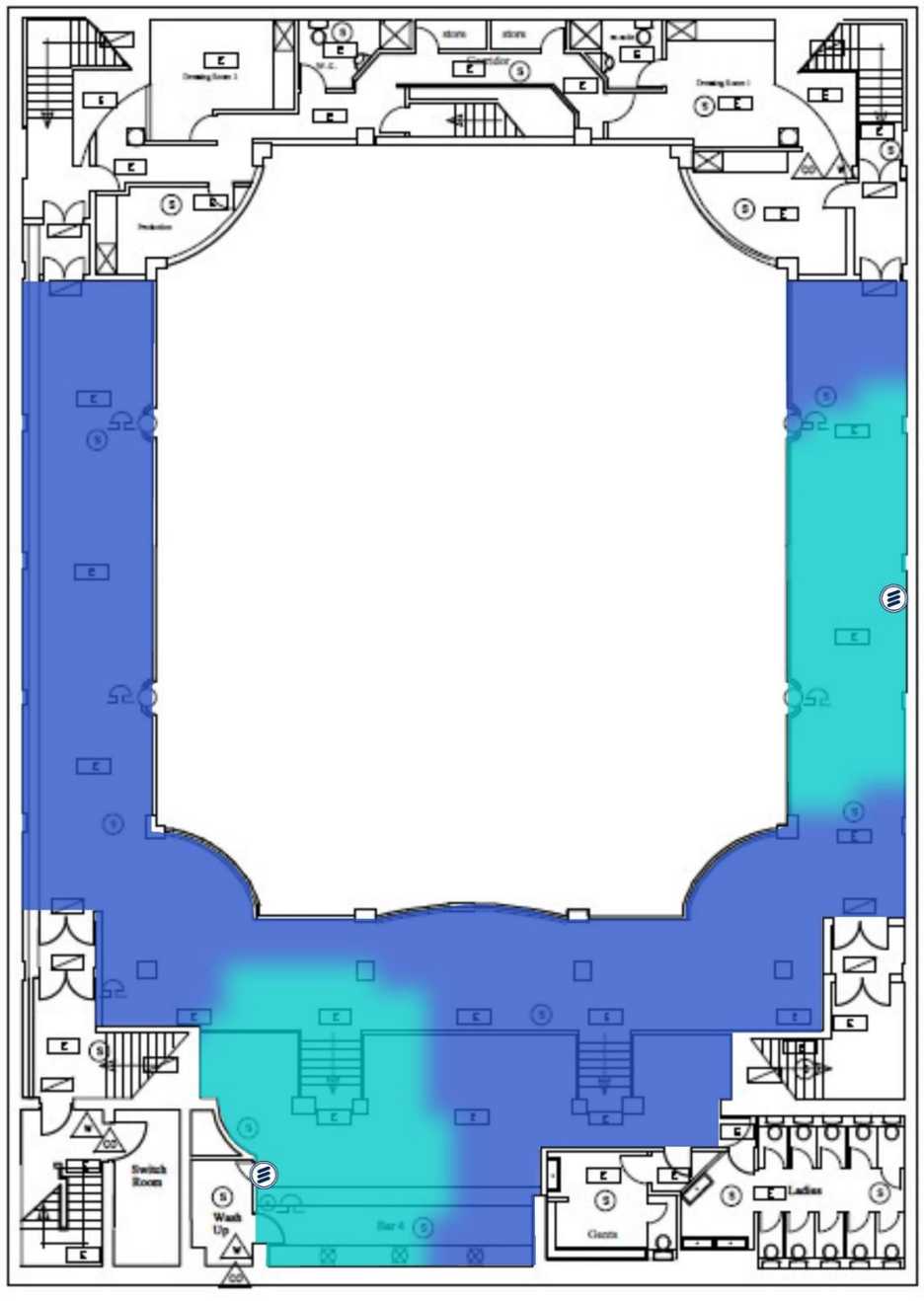
ISSUE	DESCRIPTION	BY	DATE
V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_21

5G NR 3700MHz – SS-RSRP



Indoor prediction legend

5GNR SS-RSRP (Best path)
[dBm]

>0.00 (0.0%)
>-65.00 (0.0%)
>-80.00 (32.4%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-113.00 (100.0%)
>-121.00 (100.0%)

Average: -79.68 [dBm]
VMO2 - 3.7 GHz - 5G NR - TDD - 40 MHz - n77

Min -95.00 dBm: 100.0 % >= 95.0 %
Min -105.00 dBm: 100.0 % >= 95.0 %
Min -110.00 dBm: 100.0 % >= 95.0 %

First Floor

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Craven Court
Stanhope Road
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Surrey
GU15 3BS
TEL: +44 1276 854 440
FAX: +44 1276 854 450

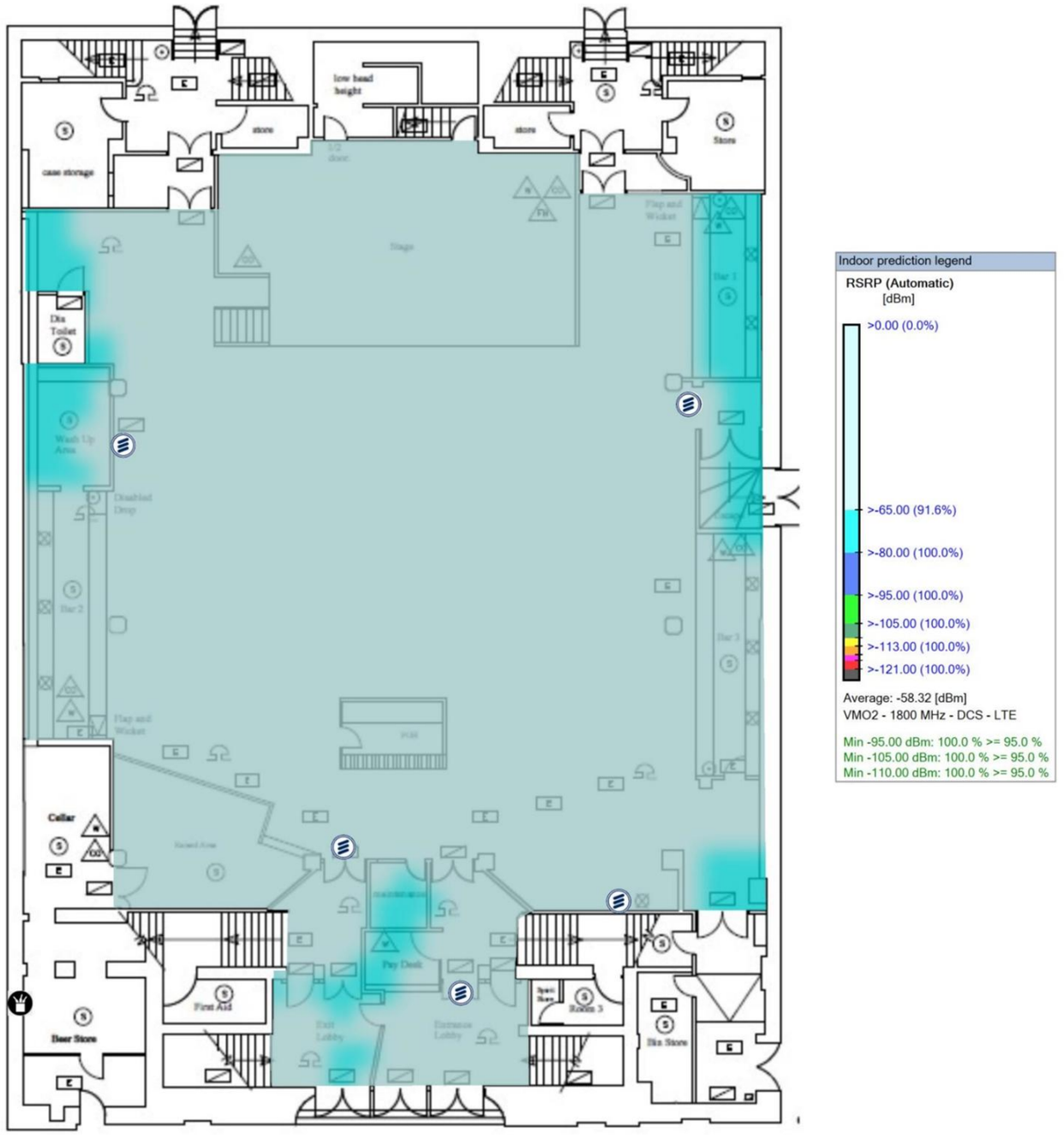
ISSUE	DESCRIPTION	BY	DATE
V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_22

LTE 1800MHz – RSRP



Ground Floor

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FAX: +44 1276 854 450

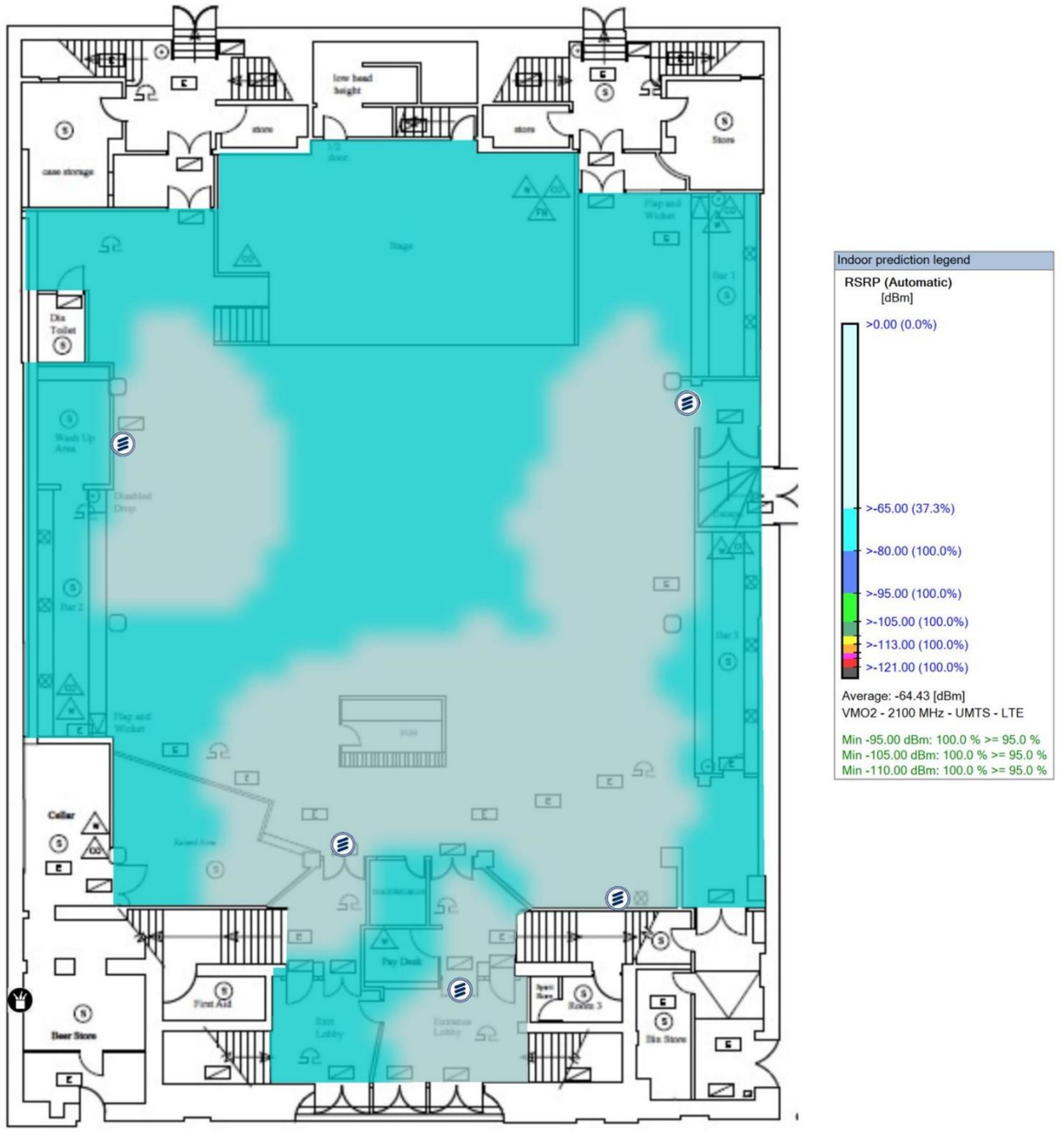
ISSUE	DESCRIPTION	BY	DATE
V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_23

LTE 2100MHz – RSRP



Ground Floor

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Stanhope Road
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Surrey
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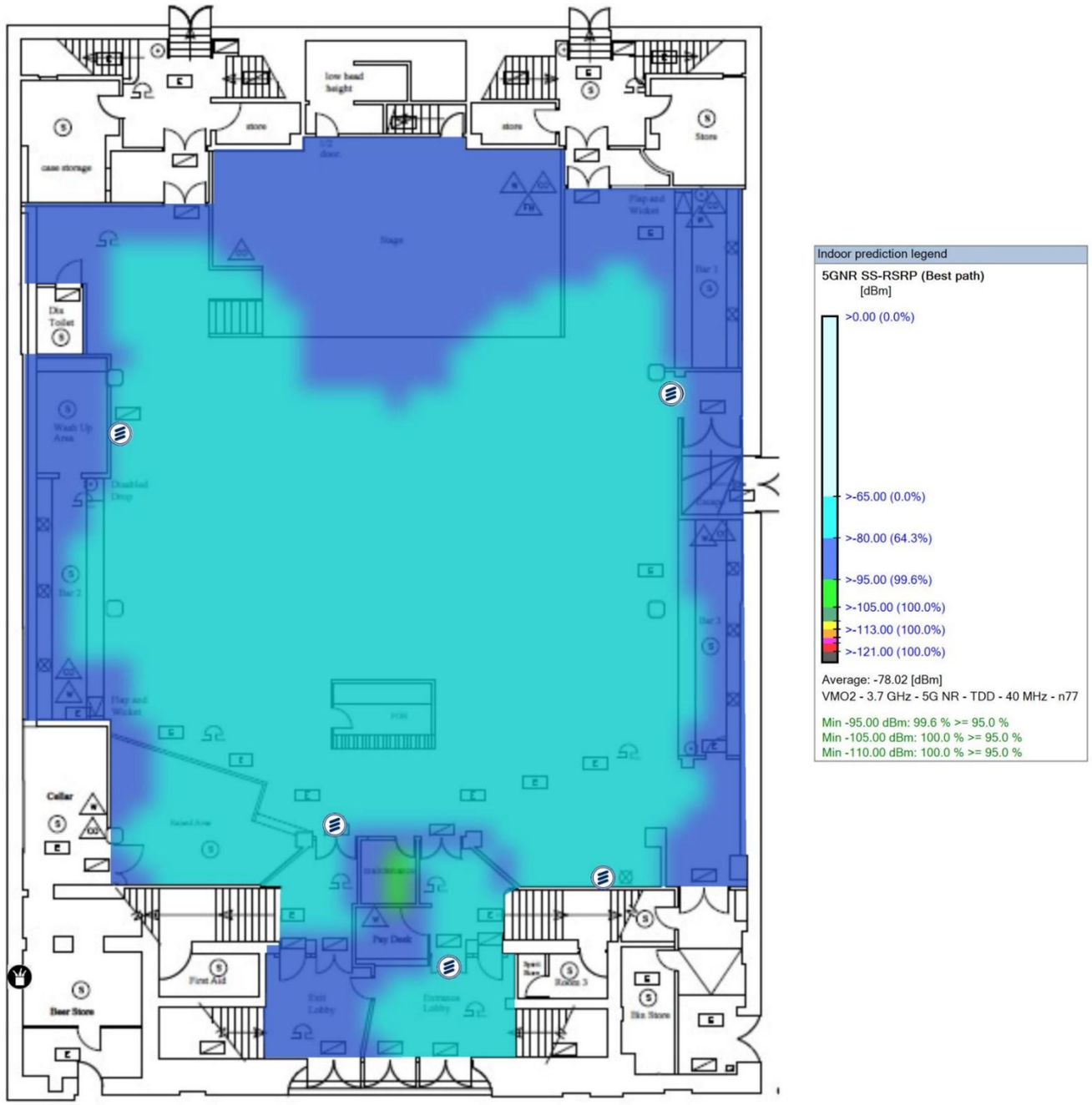
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V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_24

5G NR 3700MHz – SS-RSRP



Ground Floor

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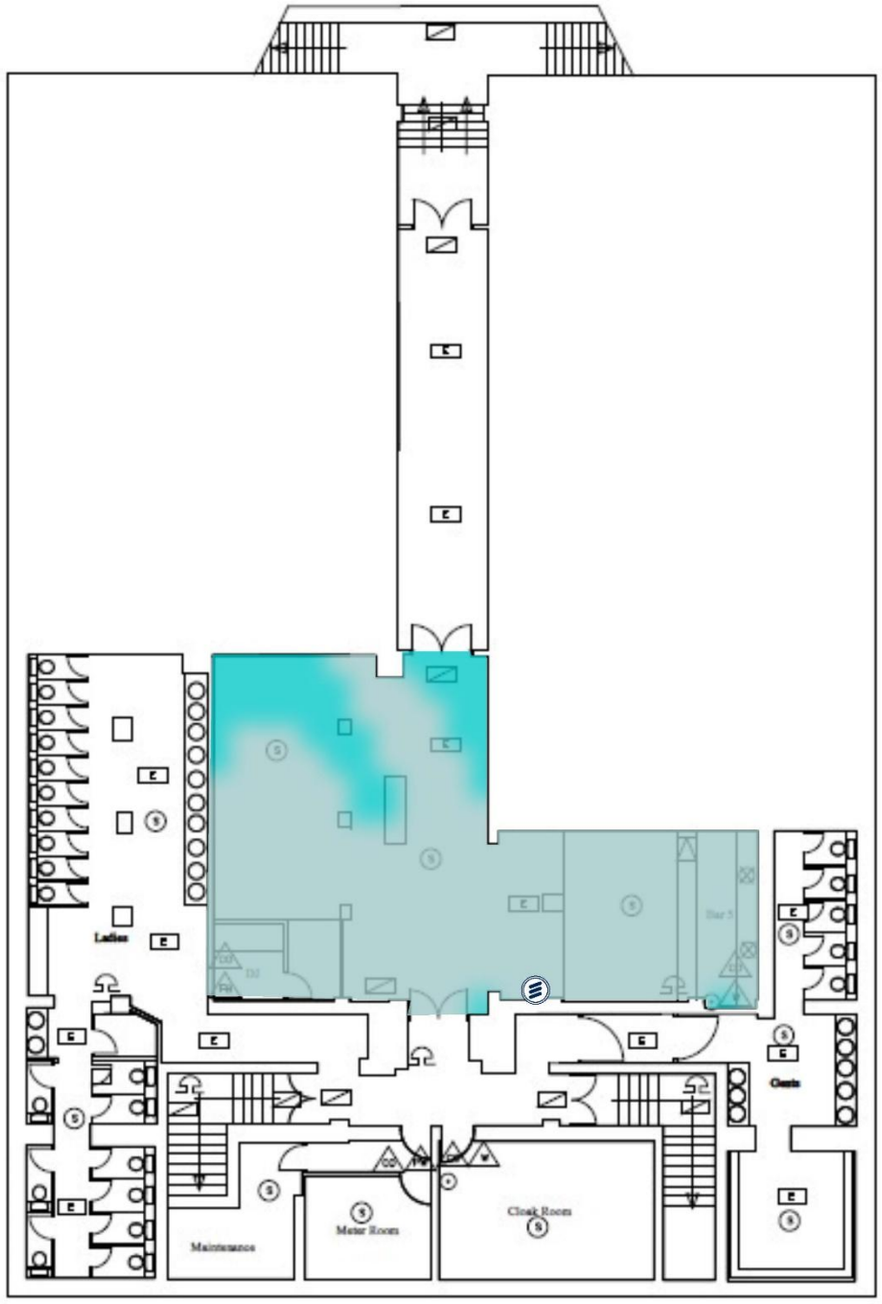
ISSUE	DESCRIPTION	BY	DATE
V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

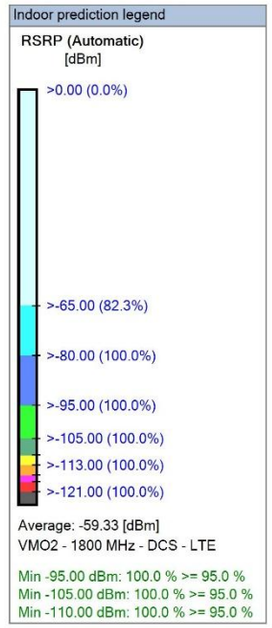
Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_25

LTE 1800MHz – RSRP





Basement

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FAX: +44 1276 854 450

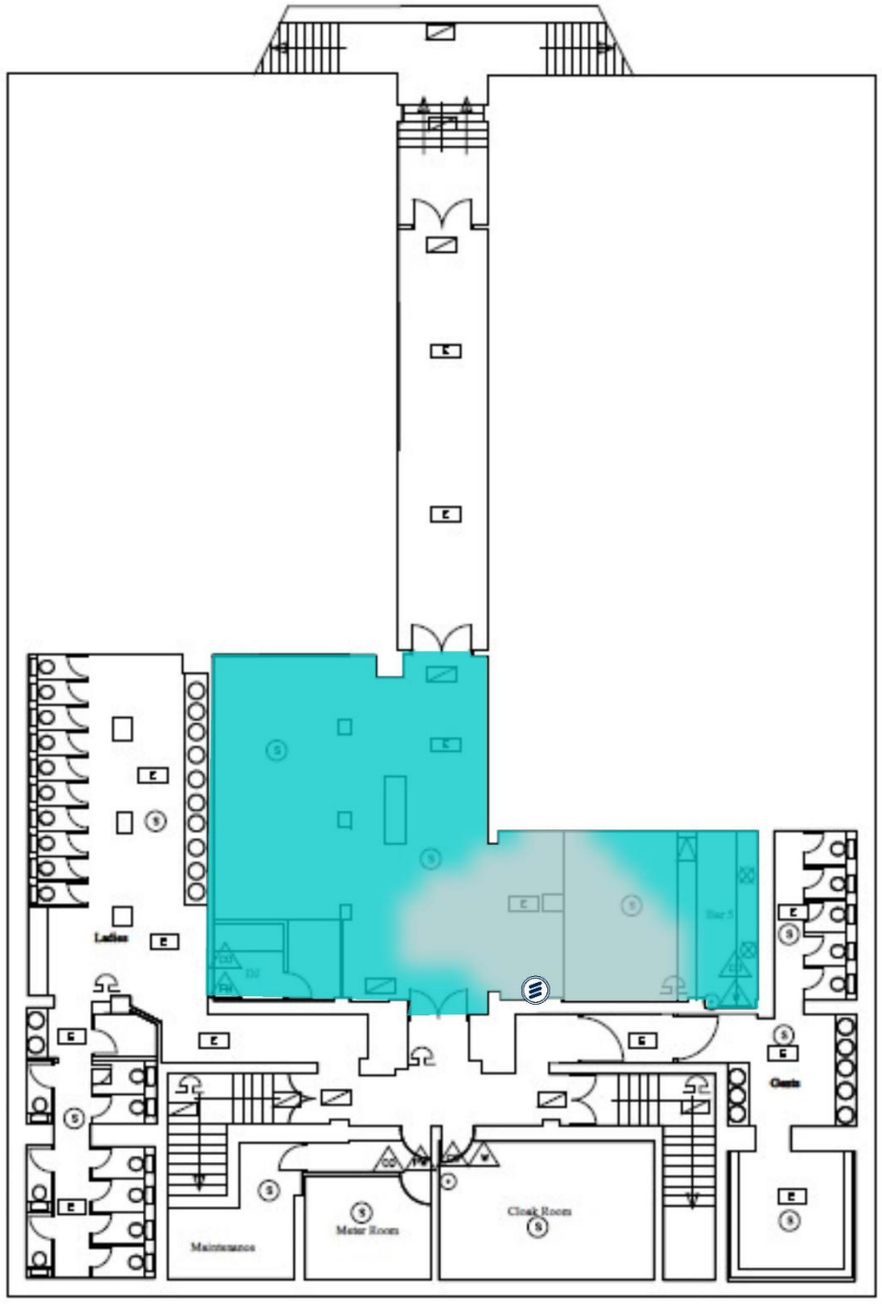
ISSUE	DESCRIPTION	BY	DATE
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V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_26

LTE 2100MHz – RSRP



Basement

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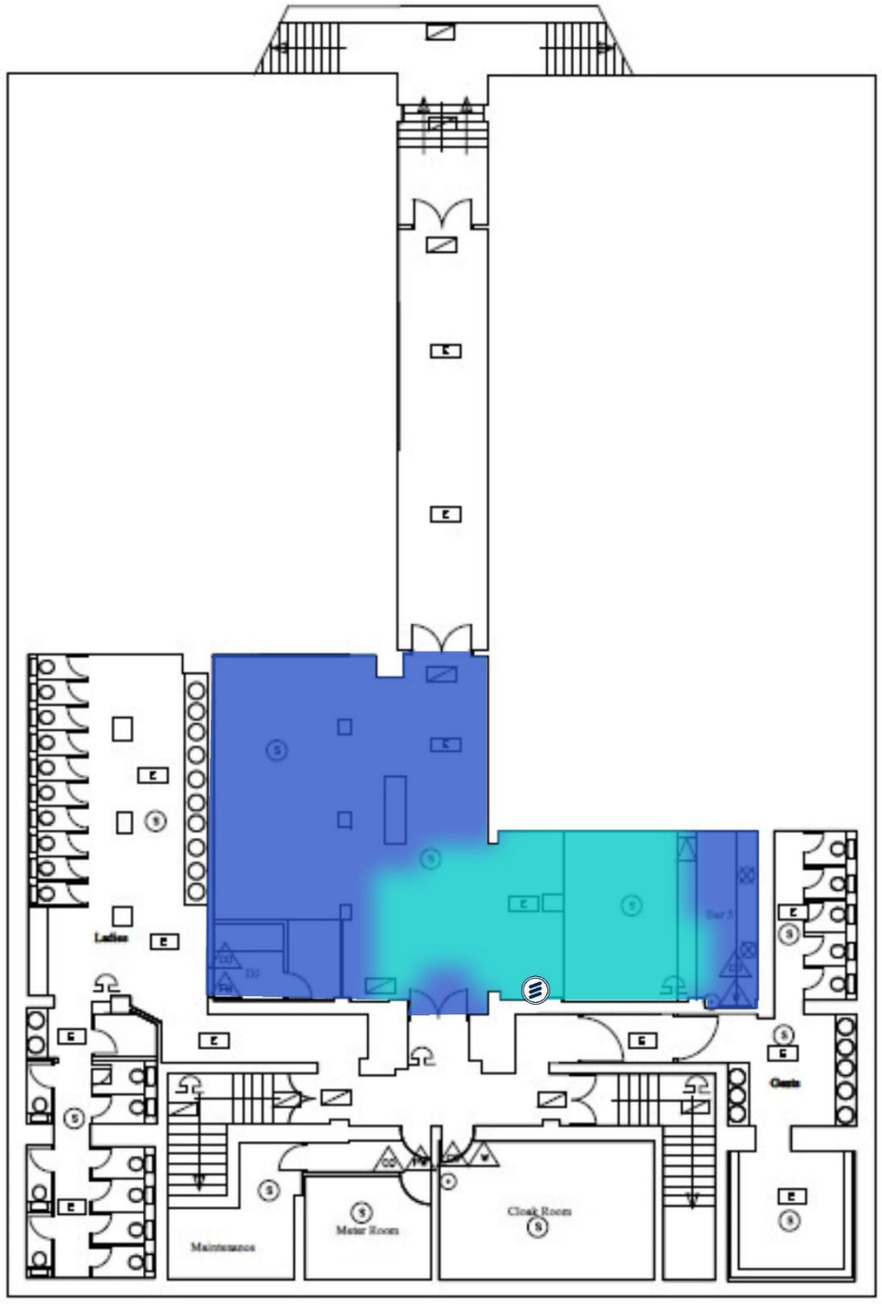
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V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_27

5G NR 3700MHz – SS-RSRP



Indoor prediction legend

5GNR SS-RSRP (Best path)
[dBm]

>0.00 (0.0%)
>-65.00 (0.0%)
>-80.00 (34.9%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-113.00 (100.0%)
>-121.00 (100.0%)

Average: -79.55 [dBm]
VMO2 - 3.7 GHz - 5G NR - TDD - 40 MHz - n77

Min -95.00 dBm: 100.0 % >= 95.0 %
Min -105.00 dBm: 100.0 % >= 95.0 %
Min -110.00 dBm: 100.0 % >= 95.0 %

Basement

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V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Propagation Model

Drawing Number:
91034_NET_VMO2_DDR_28

Declaration of Conformity (DoC)

ICNIRP Public and Occupational Exposures Guidelines for Ericsson DOT 4475 (B1B3B78K)

Concerning the Ericcson DOT 4475 (B1B3B78K)

The Ericsson DOT 4475 units are NOT deemed to be touch-safe for **General Public**, and a touch safe cover for the DOT 4475 must be used if the units are mounted at 2.5 m or lower to have the unit touch-safe for General Public.

Please refer to the Datasheet and Installation Instruction for the Snap-on Cover of the RD4475B78K in the next pages.

If the Ericsson DOT 4475 units are installed above 2.5m, this is considered as Occupational Limit and consequently extra measures are not needed.

It is highly recommended that the DOT units are installed above 2.5m as much as possible.

Function Description

The Snap On Cover is a toolless installation product that together with the dot make a solid and clean installation.



PRODUCT NAME	PRODUCT NUMBER
Snap On Cover Dot 4475	SDD 513 1591/1
CONSIST OF	**Quantity**
Snap On Cover	1pcs
Snap Clips	4pcs
MECHANICAL DATA	
Material for cover	PC/ABS
Material for snap part	PA46-GF30
Color	NCS S 1002-B
Flammability rating	UL94 V-0 @ 2mm
ENVIRONMENTAL	
Operation Temperature	-10°C to + 80°C

PRODUCT DIMENSIONS	LENGTH	WIDTH	HEIGHT	WEIGHT
SDD 513 1591/1	251mm	251mm	30mm	270g

PACKAGE DIMENSIONS	LENGTH	WIDTH	HEIGHT	WEIGHT
SDD 513 1591/1	260mm	260mm	35mm	275g

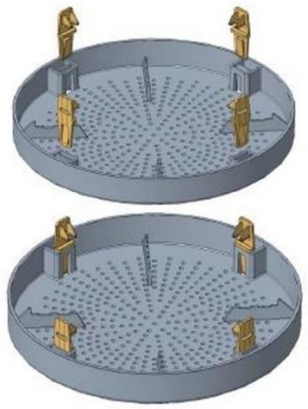
The Verification is done in accordance to
- Compliance to RoHS 2&3 (2011/65/EU&2015/863/EU)
- EMF Touch compliance as per EN/IEC 62232:2017

Introduction

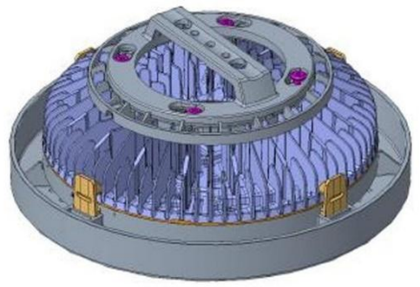
a) Mounting the radio dot on the ceiling.



b) Touch Safe Snap Part is snapped to the Touch Safe Cover from top.



c) Touch safe cover with the snap part is then snapped to RD 4475 B78K.



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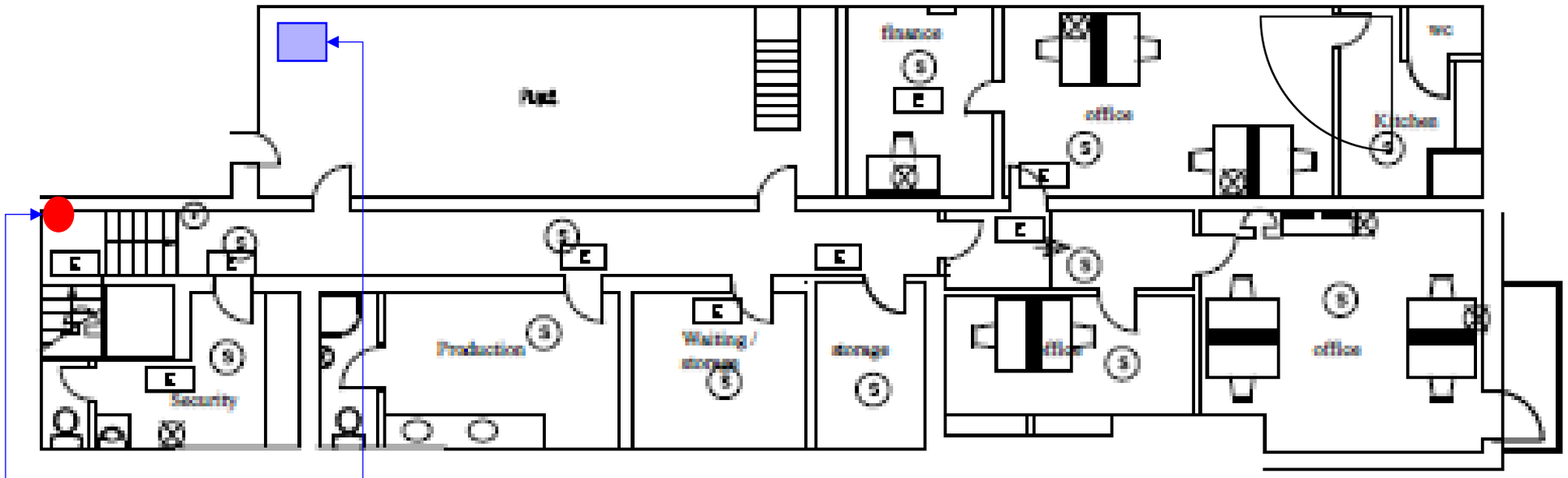
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Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

ICNIRP Compliance

Drawing Number:
91034_NET_VMO2_DDR_29

Main Equipment Room Location



Please note: The customer will need to confirm if this space can be utilised. To power the equipment a 32A single phase ceeform socket will be required at the proposed rack location.

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V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Main Equipment Room Detail

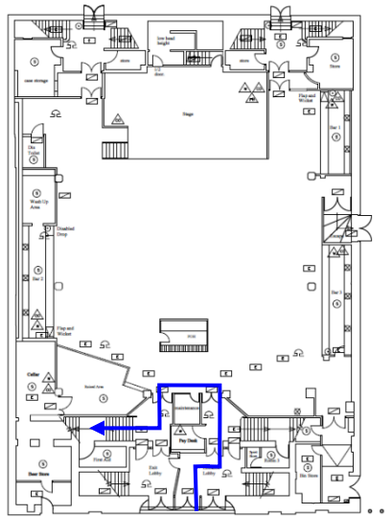
Drawing Number:
91034_NET_VMO2_DDR_30

Access Route to MER

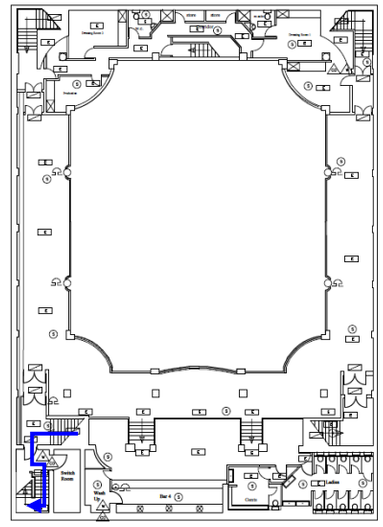
Access route from Main Entrance to Second Floor MER



Main Entrance

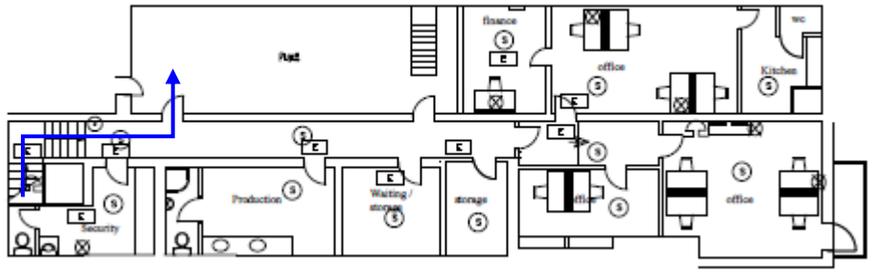


Ground Floor



Proposed First Level

First Floor



Second Floor

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ISSUE	DESCRIPTION	BY	DATE
V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

MER Access Route

Drawing Number:
91034_NET_VMO2_DDR_32

Access Route to MER

Access route from Main Entrance to Second Floor MER















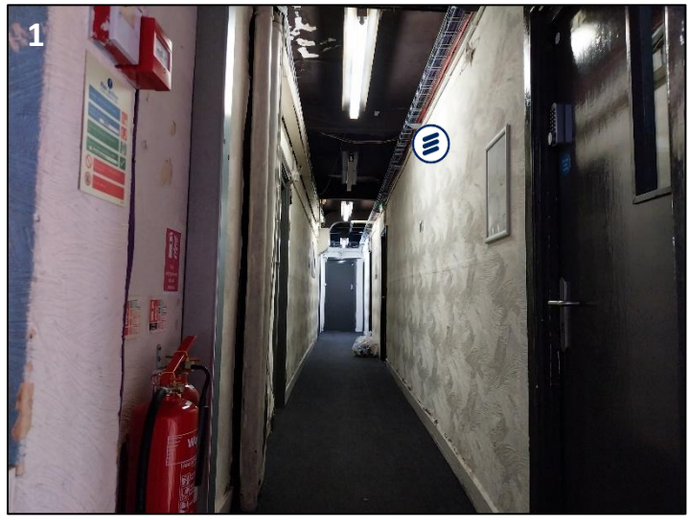
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TEL: +44 1276 854 440
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ISSUE	DESCRIPTION	BY	DATE
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V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

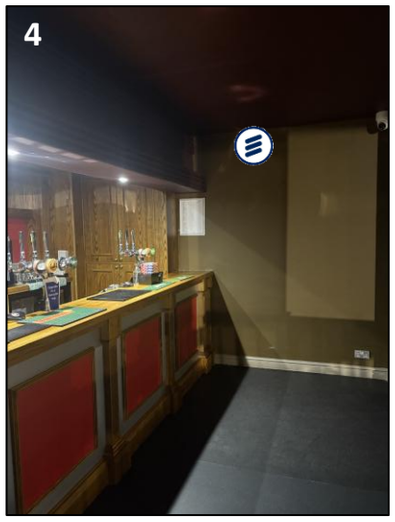
MER Access Route

Drawing Number:
91034_NET_VMO2_DDR_33













1. RD-1 4G/5G within 2nd floor office space corridor (Approx. height 2.5m).
2. RD-2 4G/5G within 2nd floor office space corridor (Approx. height 2.5m).
3. RD-3 4G/5G within first floor balcony (Approx. height 2.5m).
4. RD-4 4G/5G within first floor balcony (Approx. height 2.5m).
5. RD-5 4G/5G within ground floor auditorium (Approx. height 3m).
6. RD-6 4G/5G within ground floor auditorium (Approx. height 2.5m).

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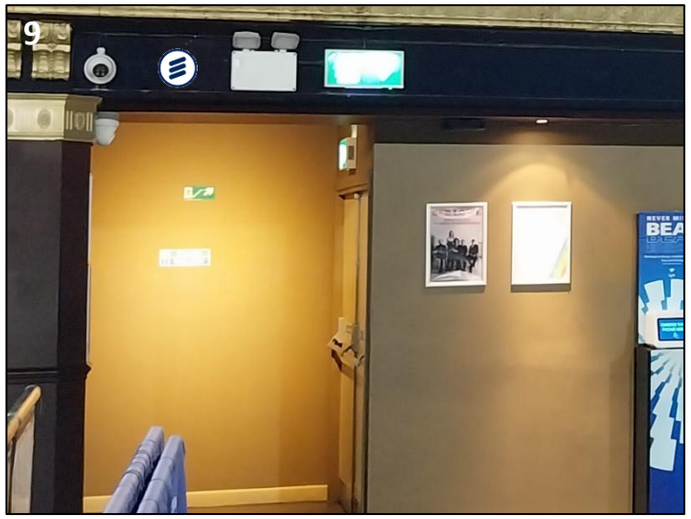
Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Site Photos

Drawing Number:
91034_NET_VMO2_DDR_34









7. RD-7 4G/5G within Entrance lobby (Approx. height 2.5m).
8. RD-8 4G/5G within ground floor bar space (Approx. height 2.5m).
9. RD-9 4G/5G within ground floor auditorium (Approx. height 3m).
10. RD-10 4G/5G within basement bar space (Approx. height 2.5m).

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ISSUE	DESCRIPTION	BY	DATE
V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Site Photos

Drawing Number:
91034_NET_VMO2_DDR_35



Riser from 2nd Floor



Riser – First Floor



Cable route from Riser to first floor



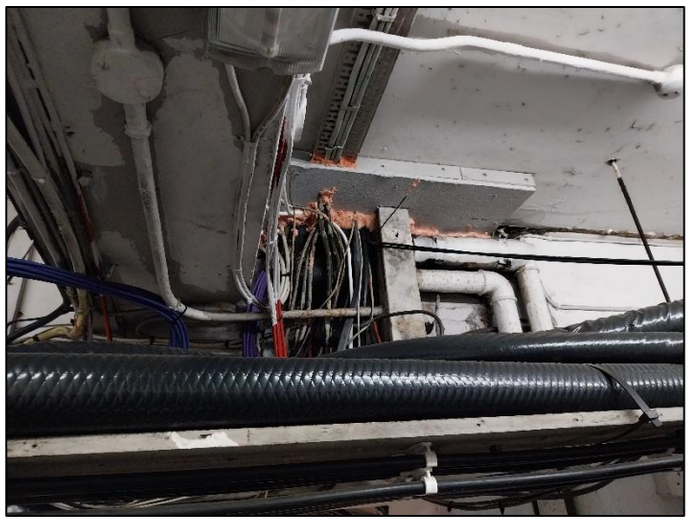
Cable route from Riser to first floor



Cable route from Riser to first floor



Cable route from Riser to first floor



Riser – Ground Floor



Cable route from Riser to Ground Floor



Cable route from Riser to Ground Floor

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ISSUE	DESCRIPTION	BY	DATE
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V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Site Photos

Drawing Number:
91034_NET_VMO2_DDR_36



Riser from 2nd Floor



Riser – First Floor



Cable route from Riser to first floor

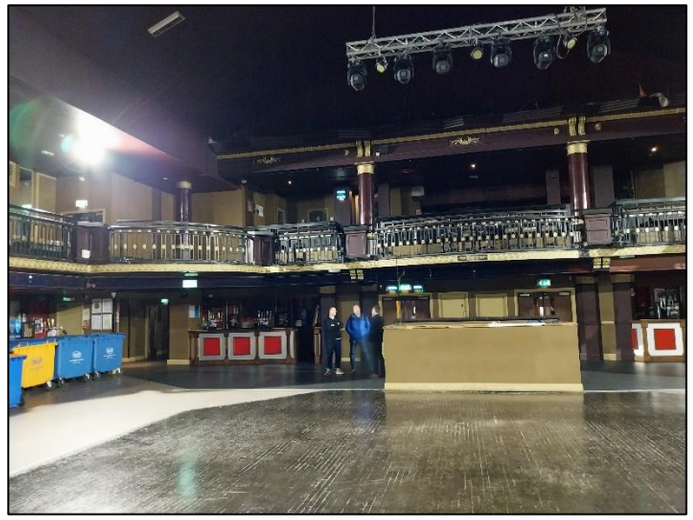
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Surrey
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TEL: +44 1276 854 440
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ISSUE	DESCRIPTION	BY	DATE
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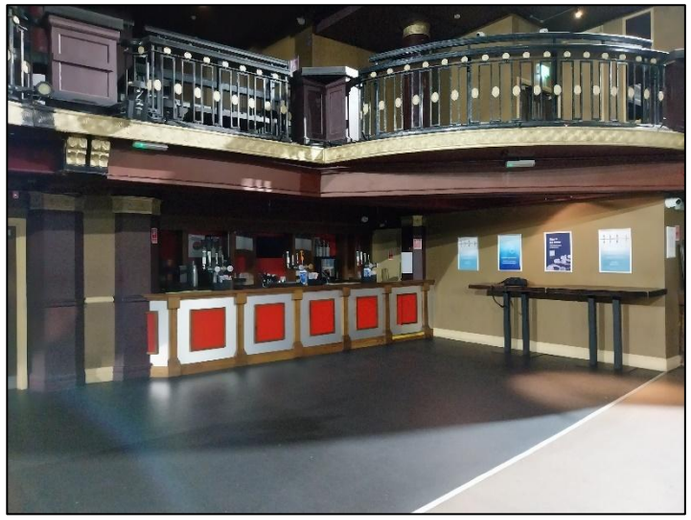
Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Site Photos

Drawing Number:
91034_NET_VMO2_DDR_37



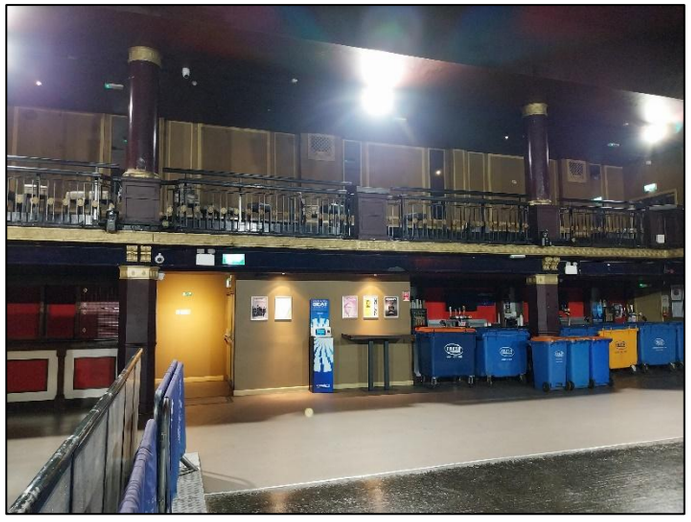
Ground Floor Overview



Ground Floor Overview



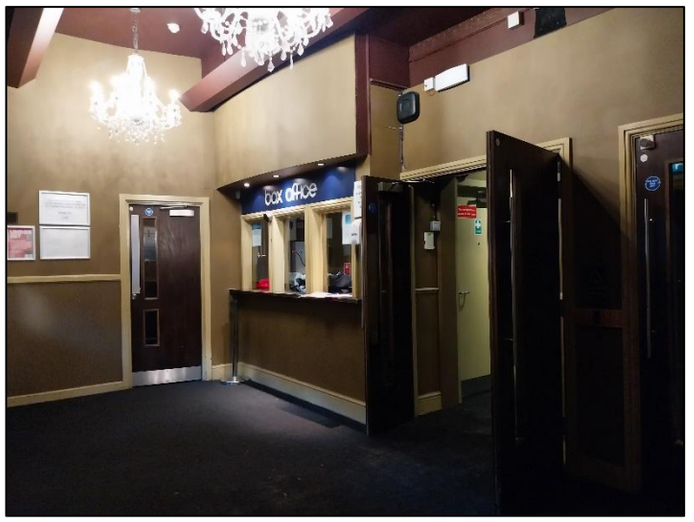
Ground Floor Overview



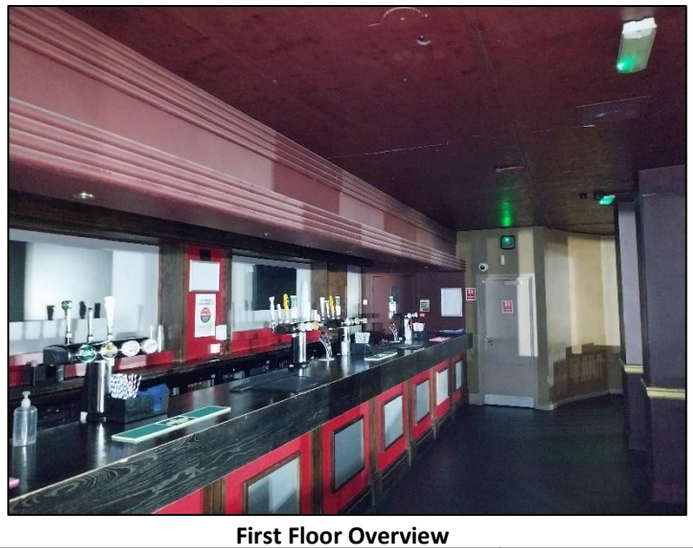
Ground Floor Overview



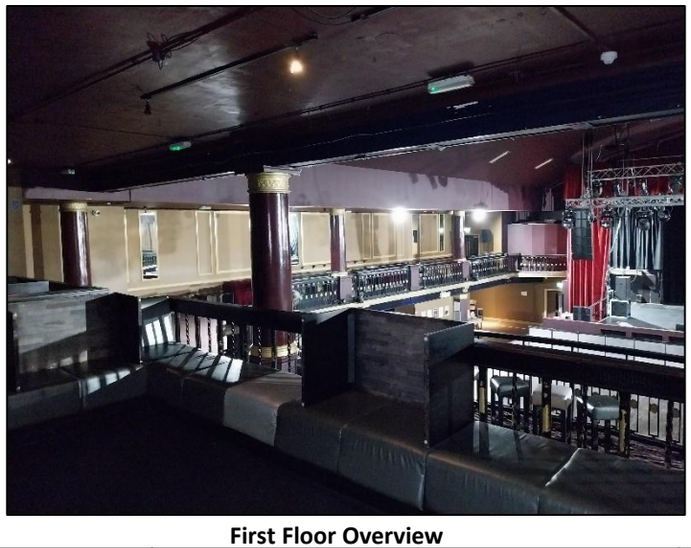
Ground Floor Overview



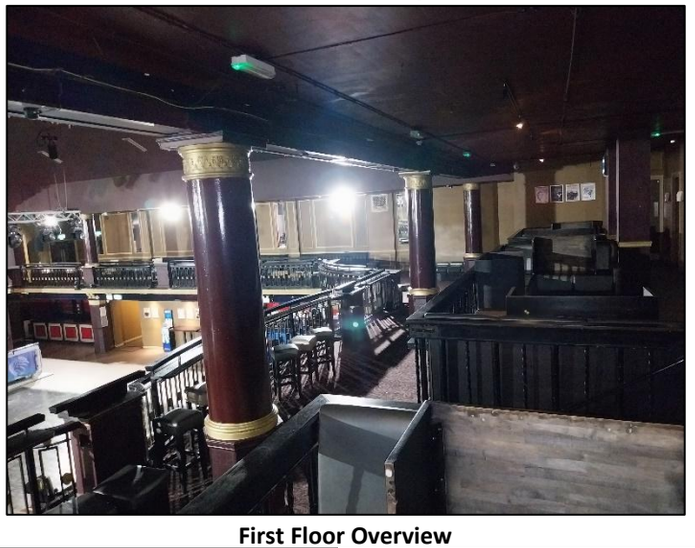
Entrance Lobby



First Floor Overview



First Floor Overview



First Floor Overview

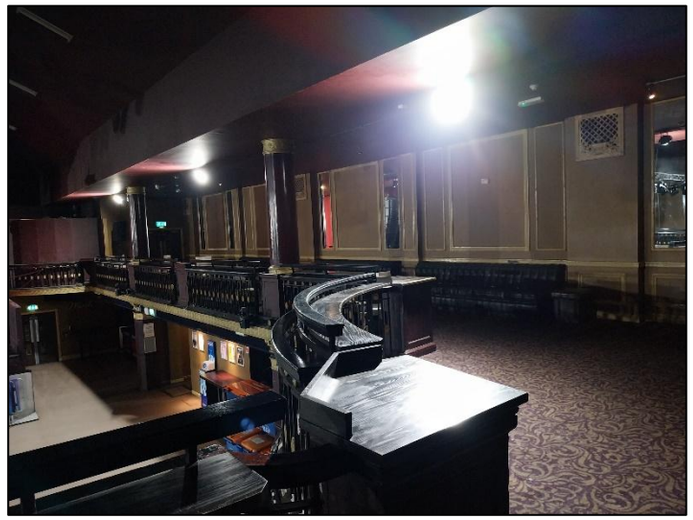
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Site Address: Whitworth St W, Manchester, M1 5NQ

Site Photos

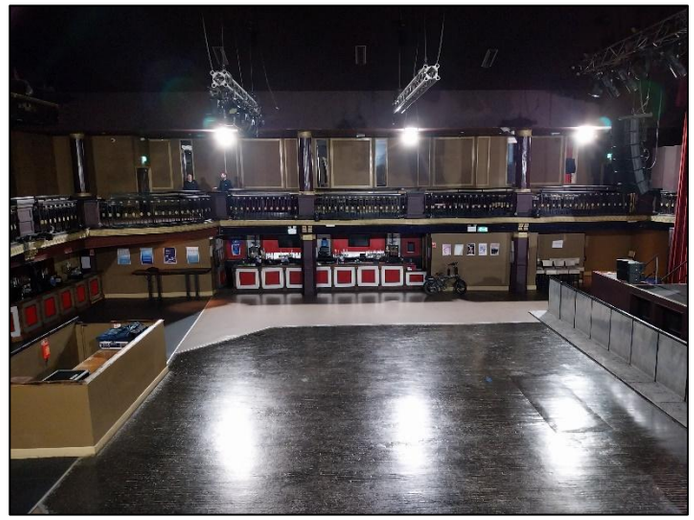
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91034_NET_VMO2_DDR_38



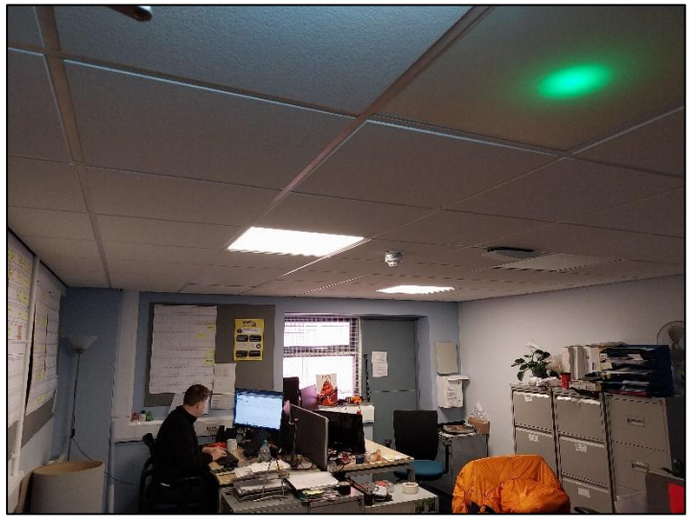
First Floor Overview



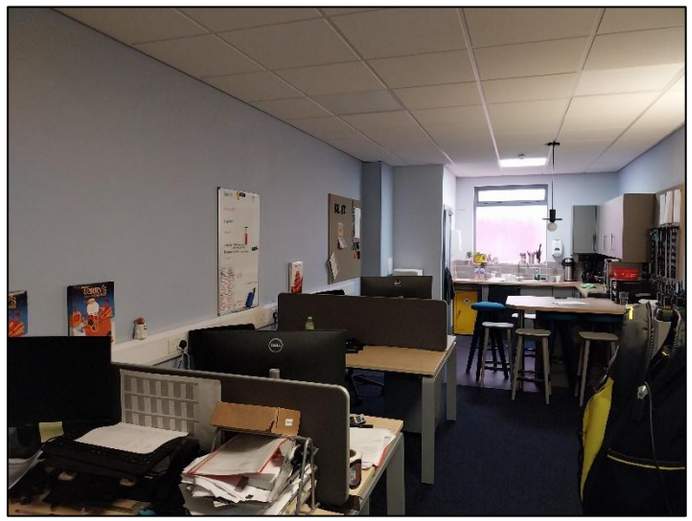
First Floor Overview



First Floor Overview



2nd Floor office space overview



2nd Floor office space overview



2nd Floor office space overview

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ISSUE	DESCRIPTION	BY	DATE
V3	Design Version Issue 3 – Planners Feedback Amendment	DP	26/11/24
V2	Design Version Issue 2 – Vendor Change	JM	18/03/24
V1	Design Version Issue 1	DP	20/12/23

Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

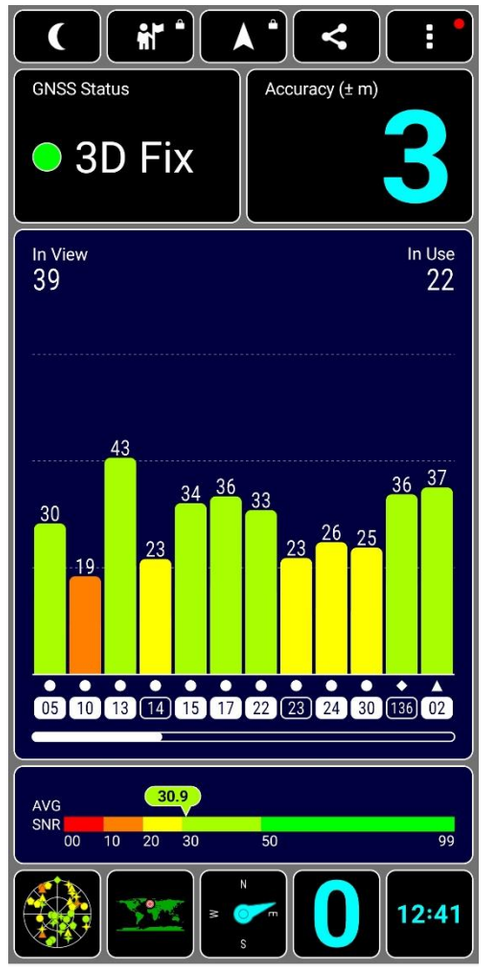
Site Photos

Drawing Number:
91034_NET_VMO2_DDR_39



GPS Antenna Location





GPS Test Result

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Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Site Photos

Drawing Number:
91034_NET_VMO2_DDR_40

Cable route from GSP location to MER

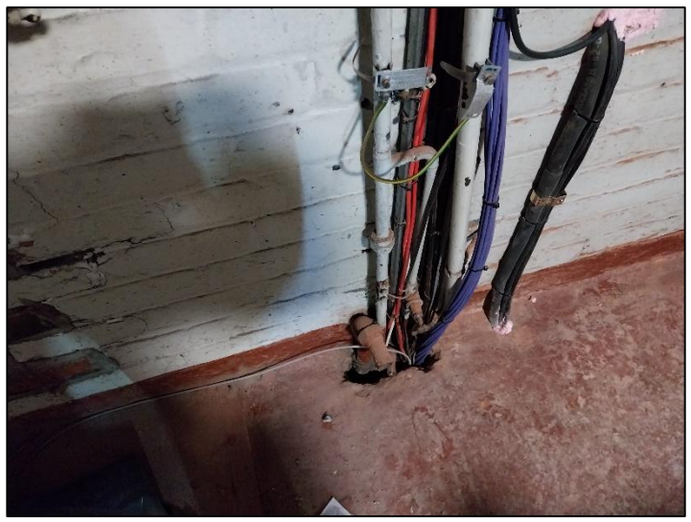


Proposed GPS Location











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Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Site Photos

Drawing Number:
91034_NET_VMO2_DDR_41



Dot 4475 B78K B1 B3

KRY901479/1

Dot 4475 B78K B1 B3 is a triple-band indoor radio optimized for compact deployments. Features include:

- 250 mW output power per antenna branch for B78K
- 125 mW output power per antenna branch for B1 and B3
- Instantaneous bandwidth (IBW) is 100 MHz for B78K with 4 x 4 MIMO*
- Instantaneous bandwidth (IBW) is full-band for B1 and B3 with 2 x 2 MIMO
- Flexible IT-like deployment with CAT6A and hybrid fiber cables for extended reach**

* Possible to configure B78K instantaneous bandwidth (IBW) of 2 x 100 MHz with 2 x 2 MIMO TDD

** Requires RFX 1110 RDS Fiber Extender

Technical Specifications for Dot 4475 B78K B1 B3

GENERAL RADIO INFO	Operating Band	B78K (3420-3800 MHz) B1 (1920-2170 MHz) B3 (1710-1880 MHz)
RADIO GENERAL	Single/Multi-Band Radio Segment	Capacity
RADIO CHARACTERISTICS	Duplex Mode	FDD TDD
	Base Station Class	Local Area
	Cascading Support	Not Applicable Cascading Support
	NR Base Station Type	Type 1-C
	Antenna HW Calibration	Not Supported
RADIO OTHER	Radio Power Supply	-48V DC
MECHANICAL SPECIFICATIONS	Cooling Method	Natural Convection
	Maintenance Button	No
	Mounting Direction	Secondary Vertical Primary Horizontal
	Product Environment	Indoor
	Mounting Options	Wall Ceiling
	Fan Option	No
	Product Color	Gray; NCS S 1002-B (Product Main Color)
	Board Restore Button	No
	Product Dimensions	67 mm (Product Height) 210 mm (Product Width) 210 mm (Product Depth)
	Volume	2 l
	Weight	1.60 kg
ENVIRONMENTAL SPECIFICATIONS	Temperature, Normal Operation	5 °C (Min Temperature) 40 °C (Max Temperature)
	Relative Humidity, Normal Operation	5 % (Min Relative Humidity) 85 % (Max Relative Humidity)

CERTIFICATIONS	Radio Standards, Europe	ETSI EN 301 908-15 ETSI EN 301 908-11 ETSI EN 301 908-24 ETSI EN 303 609
	Radio Standards, International	3GPP TS37.141 3GPP TS38.141-1
	Encapsulation Class	IP20
	Safety Standards	IEC/EN 62 368-1
	Regulatory Approval	CE CB
	EMC Immunity	ETSI EN 301 489-1 TS37.113
	EMC Emission	ETSI EN 301 489-1 TS37.113
	EMC Emission Class	Class B
	EU Directives	RoHS2 2011/65/EU RED 2014/53/EU
	EMF Standards	EN/IEC 62232
RADIO DOT SYSTEM	Antenna Radio Dot	Built in Omni-directional
RADIO INFORMATION	Supported Operation Modes (DL, multi-band)	Band B1: WCDMA-FDD, LTE-FDD, NR-FDD, ESS FDD; SRO Band B3: LTE-FDD, NR-FDD, NB-IoT, ESS FDD; SRO Band B78K : LTE-TDD, NR-TDD LTE-TDD + NR-TDD; SRO, MRO

03 Aug 2023
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Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Spec Sheets

Drawing Number:
91034_NET_VMO2_DDR_49

LDF4RK-50A



LDF4-50, HELIAX® Low Density Foam Coaxial Cable, corrugated copper, 1/2 in, black non-halogenated, fire retardant polyolefin jacket B2ca-s1a-d1,a1 (CPR testing is conducted annually please reference the website for latest classification)

Product Classification

Product Type	Coaxial wireless cable
Product Brand	HELIAX® | SureFlex®
Product Series	LDF4-50A
Ordering Note	CommScope® standard product in Asia Pacific | CommScope® standard product in Europe, the Middle East, and Africa

General Specifications

Flexibility	Standard
Jacket Color	Black
Performance Note	Attenuation values typical, guaranteed within 5%

Dimensions

Diameter Over Dielectric	12.954 mm | 0.51 in
Diameter Over Jacket	16.002 mm | 0.63 in
Inner Conductor OD	4.826 mm | 0.19 in
Outer Conductor OD	13.97 mm | 0.55 in
Nominal Size	1/2 in

Electrical Specifications

Cable Impedance	50 ohm ±1 ohm
Capacitance	75.8 pF/m | 23.104 pF/ft
dc Resistance, Inner Conductor	1.48 ohms/km | 0.451 ohms/kft
dc Resistance, Outer Conductor	2.69 ohms/km | 0.82 ohms/kft
dc Test Voltage	4000 V
Inductance	0.19 µH/m | 0.058 µH/ft

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LDF4RK-50A

4900.0	17.798	5.425	0.43
5000.0	18.01	5.489	0.42
6000.0	20.055	6.113	0.38
8000.0	23.826	7.262	0.32
8800.0	25.244	7.694	0.3

Material Specifications

Dielectric Material	Foam PE
Jacket Material	Non-halogenated, fire retardant polyolefin
Inner Conductor Material	Copper-clad aluminum wire
Outer Conductor Material	Corrugated copper

Mechanical Specifications

Minimum Bend Radius, multiple Bends	127 mm | 5 in
Minimum Bend Radius, single Bend	50.8 mm | 2 in
Number of Bends, minimum	15
Number of Bends, typical	50
Tensile Strength	113 kg | 249.122 lb
Bending Moment	3.8 N-m | 33.633 in lb
Flat Plate Crush Strength	2 kg/mm | 111.995 lb/in

Environmental Specifications

Installation temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Operating Temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Storage Temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Attenuation, Ambient Temperature	68 °F | 20 °C
Average Power, Ambient Temperature	104 °F | 40 °C
Average Power, Inner Conductor Temperature	212 °F | 100 °C
EN50575 CPR Cable EuroClass Fire Performance	B2ca
EN50575 CPR Cable EuroClass Smoke Rating	s1a
EN50575 CPR Cable EuroClass Droplets Rating	d1
EN50575 CPR Cable EuroClass Acidity Rating	a1
Fire Retardancy Test Method	IEC 60332-1-2 | NFPA 130-2010 | UL 1666/CATVR/CMR

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LDF4RK-50A

Smoke Index Test Method	IEC 61034
Toxicity Index Test Method	IEC 60754-1 | IEC 60754-2

Packaging and Weights

Cable weight	0.25 kg/m | 0.168 lb/ft

Regulatory Compliance/Certifications

Agency	Classification
CENELEC	EN 50575 compliant, Declaration of Performance (DoP) available
CHINA-ROHS	Below maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
REACH-SVHC	Compliant as per SVHC revision on www.commscope.com/ProductCompliance
ROHS	Compliant
UK-ROHS	Compliant
UL/ETL Certification	CATVR/CMR

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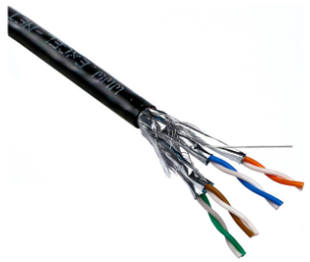
Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Spec Sheets

Drawing Number:
91034_NET_VMO2_DDR_50

Excel Solid Cat6A Cable S/FTP LSOH CPR Euroclass B2ca 500 m Reel Black

Item Code: 190-914-BK



- Cat6A solid copper cable
- S/FTP overall screening and foil screen per pair
- Support PoE++ Type 4 (90 W)
- Outer sheath colour: Black
- Reaction-to-fire class according to EN 13501-6: B2ca
- Smoke development class according to EN 13501-6: s1a

Product Overview

Excel screened Cat6A cable S/FTP LSOH with individual foil wrapped pairs and overall foil wrap and braided screening supplied on 500 m Reel. Excel Cat6A fully screened (S/FTP) cable takes the performance capabilities of copper infrastructure to new levels.
This delivers Class EA/Augmented Category 6 link performance over distances of up 90 m which supports the applications including 10GBASE-T, 10 Gigabit Ethernet.

Each cable consists of four pairs which are individually wrapped with a high quality, strong, aluminium/polyester foil tape providing screening for each pair.
The individual pairs are set to different lay lengths to ensure optimum performance. These are then wrapped in another, overall foil and an overall braid screening.

These cables are also suitable for PoE, PoE+ and PoE++ applications including type 3 and type 4, which enables delivery of 90 W over the four pairs.

Product Specifications

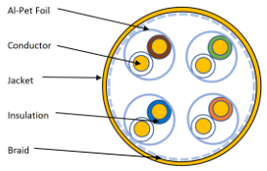
Feature	Values
Conductor surface	Bare
AWG size	23
Conductor category	Class 1 = solid
Total number of cores	8
Stranding element	Pairs

Excel Solid Cat6A Cable S/FTP LSOH CPR Euroclass B2ca 500 m Reel Black

Item Code: 190-914-BK

Specification core insulation	PE
Core identification	Colour
Overall screening	Braiding
Conductor screening	Foil
Outer sheath material	Copolymer, thermoplastic (LS0H)
Outer sheath colour	Black
Reaction-to-fire class according to EN 13501-6	B2ca
Smoke development class according to EN 13501-6	s1a
Euro class flaming droplets/particles according to EN 13501-6	d1
Euro class acidity according to EN 13501-6	a1
Halogen free (acc. EN 60754-1/2)	yes
Flame retardant	In accordance with EN 60332-1-2 and EN 50399
Low smoke (acc. BS EN 61034-2)	yes
Outer diameter approx.	7.5 mm
Operating Temperature Range	-20...70 °C
Category	6A (IEC)
NVP value	74 %

Cross-section diagram



Excel Solid Cat6A Cable S/FTP LSOH CPR Euroclass B2ca 500 m Reel Black

Item Code: 190-914-BK

Cable specifications

Features	Values
Dielectric strength	2.5kV for 2s
Maximum pulling load	60N/6.1KgF
MBR during installation	8x cable OD
MBR installed	4x cable OD

Standards

Applicable standard	Subject
ISO/IEC 11801-1:2017	Information technology - Generic cabling for customer premises: Part 1 General Requirements
IEC 61156-5:2020	Multicore and symmetrical pair/quad cables for digital communications - Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz - Horizontal floor wiring - Sectional specification
EN 50173-1:2018	Information technology. Generic cabling systems - General requirements
EN 50173-2:2018	Information technology. Generic cabling systems - Office premises
BS EN 50288-3-1:2013	Multi-element metallic cables used in analogue and digital communication and control. Sectional specification for unscreened cables characterised up to 250 MHz
EN 50399:2011+A1:2016	Common test methods for cables under fire conditions. Heat release and smoke production measurement on cables during flame spread test. Test apparatus, procedures, results
IEC 60332-1-2:2004 + A12:2020	Tests on electric and optical fibre cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable. Procedure for 1 kW pre-mixed flame
ANSI/TIA 568-D:2015	Balanced Twisted-Pair Telecommunications Cabling and Components Standards
IEC 60754-2:2014	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity
IEC 61034-2:2005+A2:2020	Measurement of smoke density of cables burning under defined conditions – Part 2: Test procedure and requirements
EN 50575:2014 + A1:2016	Power, control and communication cables — Cables for general applications in construction works subject to reaction to fire requirements
IEEE 802.3bt (Type 4)	Compliant to IEEE 802.3bt (Type 4)
RoHS-II/-III (2011/65/EU & 2015/863): 2023	Our products, demonstrate full adherence to the regulatory stipulations of the EU Directive 2011/65/EU (RoHS-II) and its corresponding delegated directive 2015/863 (RoHS-III).
WFD: 2023	Compliant to Waste Framework Directive
SCIP: 2023	Compliant - Does Not Contain Substances of Concern In articles as such or in complex objects (Products)

Part Number Table

Part Number	Description
100-914	Excel Solid Cat6A Cable S/FTP LSOH CPR Euroclass Dca 500 m Reel White
100-914-GRY	Excel Solid Cat6A Cable S/FTP LSOH CPR Euroclass Dca 500m Reel Grey
100-914-ORG	Excel Solid Cat6A Cable S/FTP LSOH CPR Euroclass Dca 500m Reel Orange
190-914	Excel Solid Cat6A Cable S/FTP LSOH CPR Euroclass B2ca 500 m Reel White
190-914-BK	Excel Solid Cat6A Cable S/FTP LSOH CPR Euroclass B2ca 500 m Reel Black

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Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Spec Sheets

Drawing Number:
91034_NET_VMO2_DDR_51

LIVE NATION

Appendix Two:

'QuelFire – Quelstop Fire Batt.'

QUELSTOP FIRE BATT

Quelfire
PROTECTING PEOPLE & PROPERTY

QuelStop Fire Batt is a coated mineral wool board used to reinstate the fire rating of wall and floor constructions where they have been penetrated by services.



QuelStop Fire Batt



QuelStop Fire Batt used in conjunction with QuelStop Intumescent Acrylic Sealant

FEATURES & BENEFITS

- Up to 2 hour fire rating
- Suitable for use in flexible walls, rigid walls and floors
- Suitable for use around cables, cable bunches, cable trays, cable ladders and non-combustible pipes
- Also suitable for use around plastic pipes and insulated non-combustible pipes with the addition of other Quelfire products
- Can be used as a blank seal as a head of wall detail

STANDARDS & APPROVALS

- Fire resistance testing to BS EN 1366-3:2009
- EI30, EI90, EI120
- Classified to EN 13501-2: 2007 + A1: 2009
- Acoustic tested to EN 10140 to 60dB

TESTED TO BSEN 1366-3:2009 warringtonfire

The Warringtonfire Logo is used by Quelfire Limited in the United Kingdom under licence from Warringtonfire and is evidence that the products denoted as 'Tested by Warringtonfire' were tested to BSEN 1366-3: 2009 in England between September 22nd 2015 and June 21st 2019.

SIZE

- 1200mm x 600mm, 50mm thick, 140kg/m³ density

APPLICATION

QuelStop Fire Batts are cut and friction fitted into the aperture with all edges and cuts sealed with the QuelStop Intumescent Acoustic Acrylic Sealant. All surfaces must be clean and free of any bond breaking contamination prior to application of the QuelStop Fire Batt and QuelStop Intumescent Acoustic Acrylic Sealant.

Additional products, including the QuelStop HPE Intumescent Graphite Sealant, the QuelCoil Continuous Intuwrap and the QWR CE Marked Fire Collars should be used in conjunction with the QuelStop Fire Batt depending on the type of penetrating services. Refer to the relevant product datasheet(s) for more information on these products.

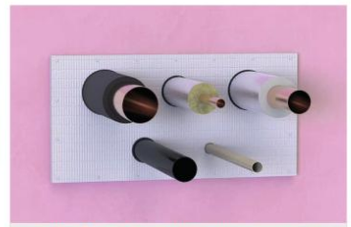
0161 928 7308 sales@quelfire.co.uk www.quelfire.co.uk

QUELSTOP FIRE BATT

Quelfire
PROTECTING PEOPLE & PROPERTY



QuelStop Fire Batt used in conjunction with QuelStop HPE Intumescent Graphite Sealant



Pattress fitted QuelStop Fire Batt used in conjunction with QuelCoil Continuous Intuwrap

INSTALLATION WITHIN THE FLOOR OR WALL APERTURE:

Ensure that the QuelStop Fire Batt is friction fitted within the aperture and coat all joints and interfaces of the QuelStop Fire Batt using QuelStop Intumescent Acoustic Acrylic Sealant. Then finish off the edges with a bead of QuelStop Intumescent Acoustic Acrylic Sealant to create a seal.

INSTALLATION - PATTRESS FIT TO WALLS:

Ensure that you install the QuelStop Fire Batt with at least 75mm overlap and fix it to the substrate with the minimum 80mm steel screws and penny washers at maximum 300mm centres overcoated with QuelStop Coating. Coat all joints using QuelStop Intumescent Acoustic Acrylic Sealant and ensure all leading edges of the QuelStop Fire Batt are coated with QuelStop Intumescent Acoustic Acrylic Sealant.

SAMPLE SPECIFICATION

Install QuelStop Fire Batt to provide up to 2 hours fire protection where compartment walls and floors have been penetrated by services. Installation to be in accordance with manufacturer's instructions.

TECHNICAL SUPPORT & GUIDANCE

Should you require any further information regarding this product, please don't hesitate to contact one of our specialists.



QuelStop Fire Batt used in conjunction with QuelStop HPE Intumescent Graphite Sealant around the pipes

WARRANTY The Company warrants its products to be free from defects in material and workmanship for a period of 12 months from the date of delivery. The Company's obligation under this warranty is limited, as its option, to the repair or replacement, free of charge, or refund of the net invoiced price of any part found to be defective, and which, in the Company's opinion, has not been subject to undue wear and tear, accident, alteration, abuse or misuse. Consequent damages are expressly disclaimed. Technical advice from Quelfire whether verbal, in writing or by way of trials, is given in good faith but without warranty. The application, use and installation of the Company's products are beyond the control of the Company, and the purchaser is solely responsible that goods are fit for any particular purpose. In line with the Company's policy of continual research and development, product specifications and availability are subject to change or withdrawal without prior notice.

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Site Number: 91034
Site Name: O2 Ritz Manchester
Site Address: Whitworth St W, Manchester, M1 5NQ

Spec Sheets

Drawing Number:
91034_NET_VMO2_DDR_56