NETWORK INVENTORY, REGISTER AND LABELLING

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INDEX

1. INTRODUCTION

This document aims to give a general view with the construction instructions that must be considered for the inventory, register and labelling of the network of UGG.

1.1 REVISIONS

EDITION	DATE	REVISED SECTIONS	CHANGES	OBSERVATIONS
1st	MAY 2023			This document is extracted from the document "Construction Instruction for fiber deployment". This document includes two main chapters of the old normative "Network inventory and Register" and "Network field labelling". Also, the chapter "Bundle position in the trench" have been included as a sub-chapter inside the "Network field labelling" chapter.
2nd	DECEMBER 2023	All		The document is codified with the document code: TEF-NORM-00012. The logo of UGG is updated in the page header.

2. NETWORK INVENTORY AND REGISTER

All the singular points in the network must be registered in the inventory system with GPS with a centimetre precision (tolerance: 2 cm maximum).

The measures must be taken in the field and must be uploaded to the inventory system directly.

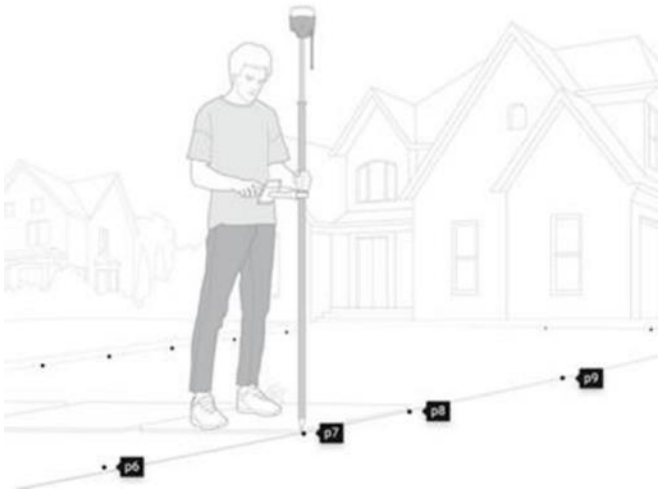


Figure 1. Example of points measurement with GPS

The following elements should be registered with GPS with accuracy of centimetres (tolerance: 2 cm maximum):

- POP
- DP
- Mini-DP
- OTB
- Splice Closures
- Pipelines.
- Handholes

For all the routes of pipelines, it is compulsory to register the start point and the destination point. When the pipeline goes in straight line, measures must be taken each 5 meters. The points to be registered must be the same in which the bundle is identified with a plastic label.

The curves of the pipeline must be also registered with 3 points, the curve start point, the middle point and the final point of the curve.

The ducts joints will be registered also since this point could be a failure point in the future.

The points in which the network has a branch off should be registered as a virtual handhole, and this point must be registered with GPS coordinates. This applies to all the sections of the network.

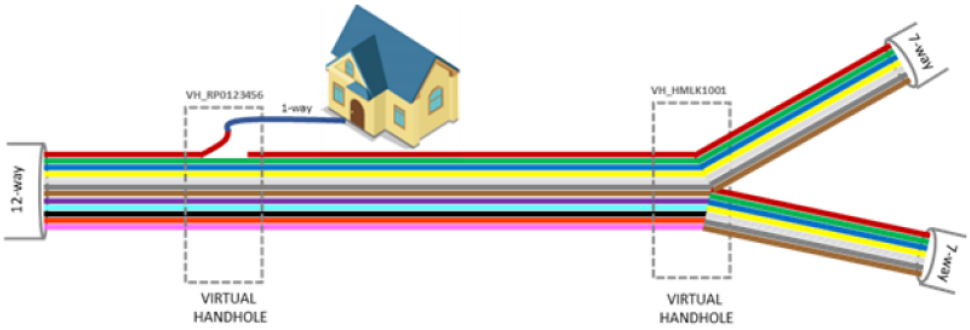


Figure 2. Example of branches that should be registered as Virtual Handhole.

The point in which a micro-duct is stored coiled directly buried in the ground must be registered.

The entry point of the pipeline to the customer house must be registered.

3. NETWORK FIELD LABELLING

The network deployed must be labelled in the field to allow an easy identification of each point in the field. All the elements and the singular points must be labelled according to this section and including the information that must be provided by the engineering project of UGG.

3.1 DUCTS AND BUNDLE LABBELING IN THE TRENCH

The ducts or bundles of micro-ducts deployed must be labelled in the field. If the laying technique allows its, all the bundles will be labelled each 5 meters. In the cases in which the laying techniques doesn't allow the installation of labels (ploughing, HDD, or other drillings techniques), only the starting point and the destination point of the laying path will be labelled.

In the next table, it is resumed the labelling field rules for the different sections of the network:

Bundle type	Labelling
Backhaul	Without labelling. It will only be necessary to place labels on the accessible sides (beginning and end of the bundle), with a printed label identifying the bundle, origin, and the destination.
Local backbone	Without labelling while there is no parallelism. In case of parallelism, dual labelling: First label Black and the second label following the DIN VDE0888 colour code.
Feeder	Simple labelling all the paths thought for each bundle. Colours from 1 to 8 following the DIN VDE0888 colour code. If there are more than 8 bundles, dual labelling following the same colour code (for example: B08 – Violet; B09 – Red/Red)
Distribution	Simple labelling all the paths thought for each bundle. Colours from 9 to 12 following the DIN VDE0888 colour code. If there are more than 4 bundles, dual labelling following the same colour code limitation will be used (for example B04 – pink; B05 – turquoise/turquoise.
Branches or bundles splits (in feeder or distribution sections)	When a bundle splits into 2 or more bundles, the colour of the input bundle is maintained on all the output bundles. If a multiple bundle of a branch off continues in parallel during some meters in the same trench, labels must be printed to differentiate them. Furthermore, it will be necessary to label all the bundles around the Split point with printed labels to identify all the input and output bundles univocally.

Note: The idea behind this proposal for labelling based in different colours, is to minimize the time needed avoiding as much as possible the neecesity to stamp the labels (to add text) in the field.

The next figure, shows as an example, the labelling field rules for the ducts and bundles:

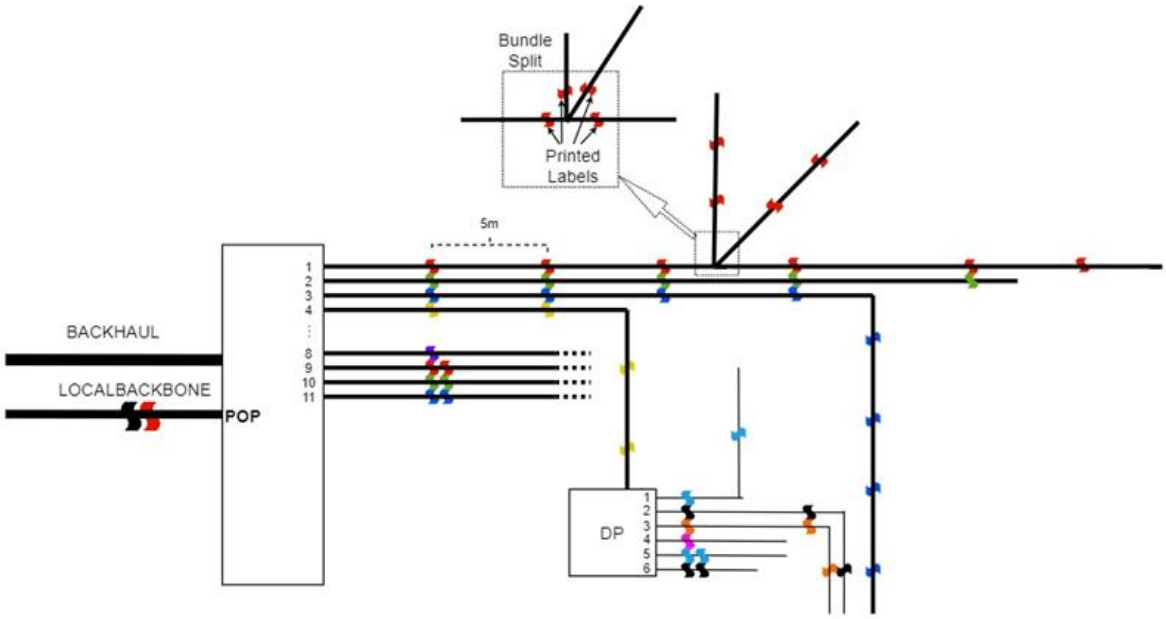


Figure 3. Example of network pipeline labelling in the field

The labels that must be used in the deployment will be as the following ones and will be necessary to have available the 12 colours of the standard DIN VDE 0888.

Figure 4. Example of labels that could be used

Labels must have some space to engrave the identifying code of the bundle if needed.

Figure 5. Examples of printing devices for labels (to print or stamp letters on it)

Also, the points in which is expected to be the connection point between the drop section and the distribution point in the future for some building (Virtual Handhole), must be labelled to make possible the identification of the bundle when be needed.

All the points with labels must be registered in the inventory system with GPS coordinates.

It will be very important to locate the correct bundle when the constructor company (CC) need to connect a client to the distribution network and the bundles have been buried. In those cases, the CC must open the Virtual Handhole in front of the client's house and look for the assigned bundle for the user. This can be very difficult to do if there is no label around the virtual handhole so, when many bundles are deployed in parallel near a virtual handhole, they must be labelled each 0.5m along 3m around the clients virtual handholes.

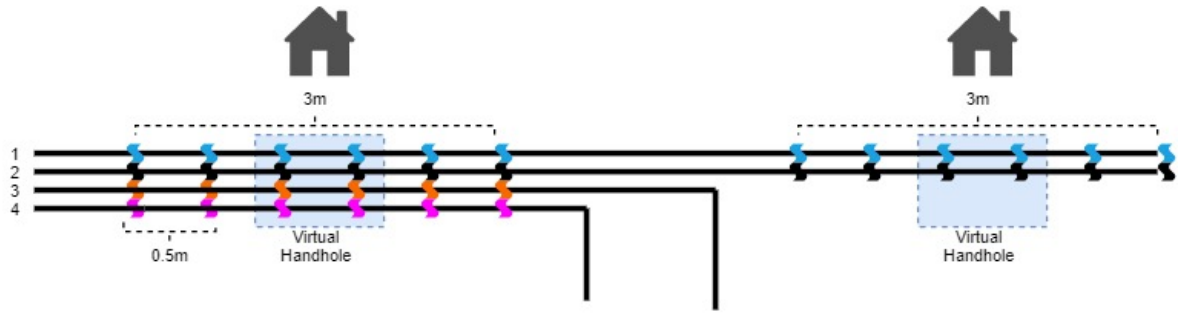


Figure 6. Bundles field labelling (virtual handhole at customer premises)

3.1.1 BUNDLE POSSITION IN THE TRENCH

The bundles must have a defined position inside the trench that must be respected along the route (if it is possible). The numeration is from the left to the right in each row starting from the bottom.

NOTE: This criterion will allow labelling to be carried out consistently along the route.

The starting point that will fix the direction for the pipeline numeration will be:

- Active POP – Passive POP for the local backbone.
- POP – DP for the feeder network.
- DP – customer premises (for the distribution network)

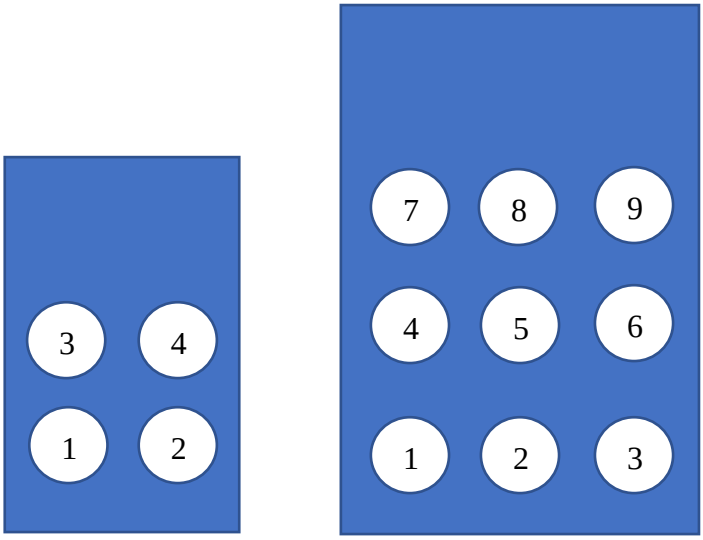


Figure 7. Example of numeration of bundles or ducts inside different trenches.

NOTE: No control position is required when the laying technique not allow this positioning (for example drilling techniques like HDD).

If bundles of different sections of the network are installed in the same trench, the section that (logically) is closer to the customer premises should be installed in the top of the trench, and the section that (logically) is far should be installed in the bottom part of the trench.

The order of installation in the trench is as follows (from the bottom to the top):

- Backhaul.
- Local Backbone.
- Feeder Network.
- Distribution Network.

3.2 MICRO-DUCTS LABELING (SINGULAR POINTS)

The micro-ducts also must be labelled in the field when they enter to the singular points with accessibility (for example, POPs, DPs).

In this label, must be included the information that UGG defines, in the engineering project. For example, information related to the origin and the destination of the duct could be included.

The label that must be used to mark the micro-ducts:

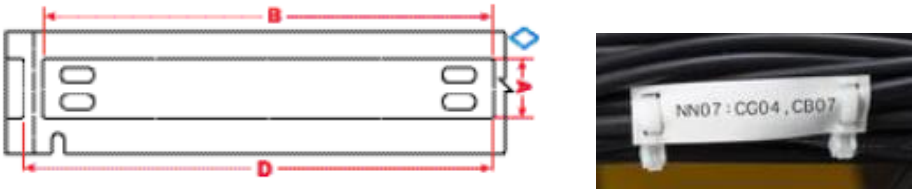


Figure 8. Identification labels for individual micro-ducts and for cables.

The labels must be printed in the field with an electronic printer for labels. The following pictures shows 2 models of printers from the manufacturer BRADY that could be used.

Brady Label printer MBP61

Brady printer M611

Figure 9. Portable printers for labels

3.3 CABLE LABELING (SINGULAR POINTS: POPS AND DPS).

The cables laid also must be labelled in the field when they enter to the singular points with accessibility (for example, POPs, DPs…).

In this label, must be included the information that UGG defines, but at least information related to the origin and the destination of the duct must be included.

On handholes with splices or in splices directly buried, a label shall be placed on each of the cables accessing the splice box, in an area near the entrances of the splice box and with the cable straight. In handholes with pass-through cables, a label will be placed on the duct that protects and cantered on the cable.

In the entries of the optical cables into the POPs, labels will be placed under the false floor at the point of the transition of the cable from the micro-duct. Also, the cables that reach the ODF (inside the POP), shall be labelled in an area near the entrance of the cable in such a way as to differentiate the cables accessing the same point to the different modules of the ODF.

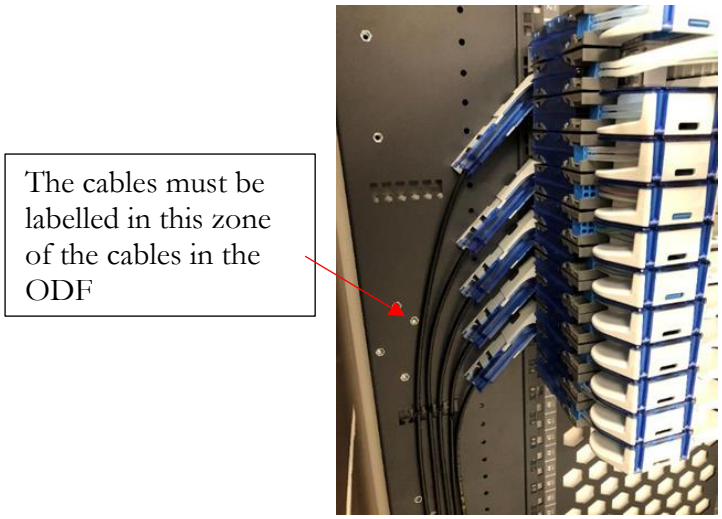


Figure 10. Example of the entry points of the optical cables into the modules of the ODF that must be labelled.

On cables that reach the distribution points, a label shall be placed for each cable in an area near the entrance.

The label that must be used to mark the cables could be the following:

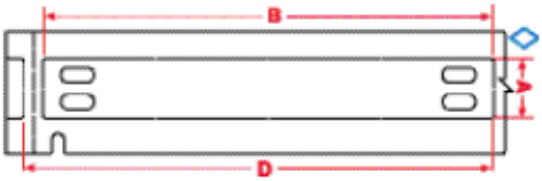


Figure 11. Identification labels for cables.

The labels must be printed in the field with an electronic printer for labels.

3.4 FIBER UNITS LABELLING (DPS)

All the fiber units blown from the DP to the customer premises, must be labelled in the field (inside the DP) with an adhesive label, including all the information related to the client connection that UGG defines.

The labels must be added to the fiber units near the gas-blocker, in the zone where the micro-ducts and the fiber units are fixed and organized by the fixing point of the micro-ducts.

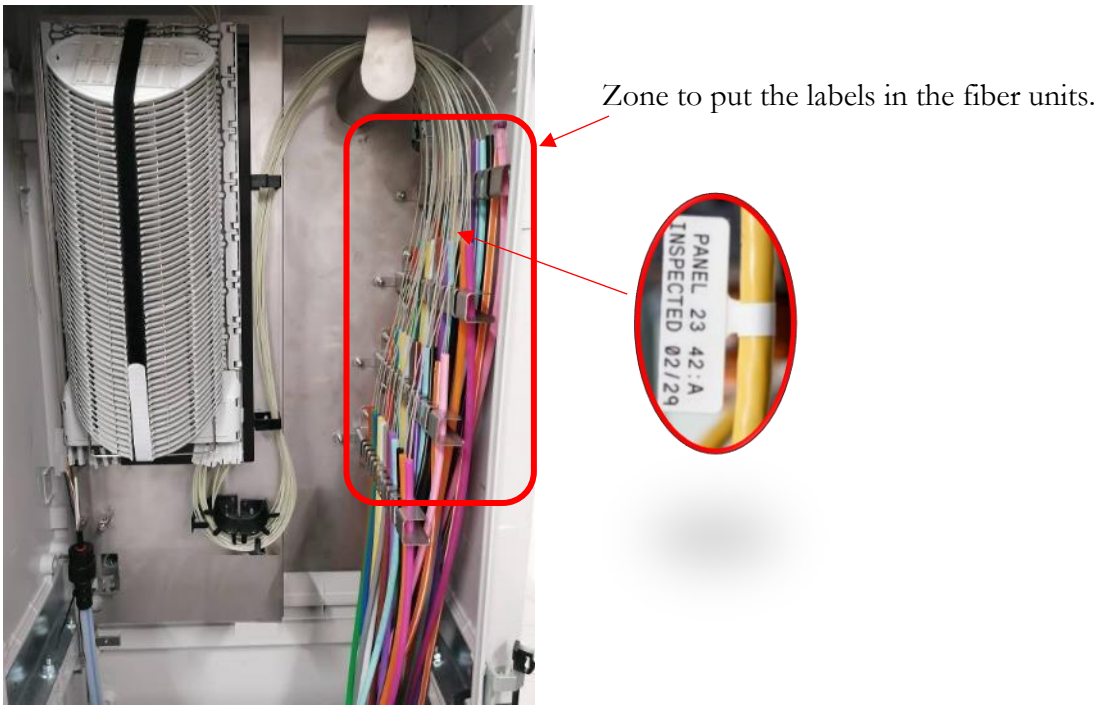
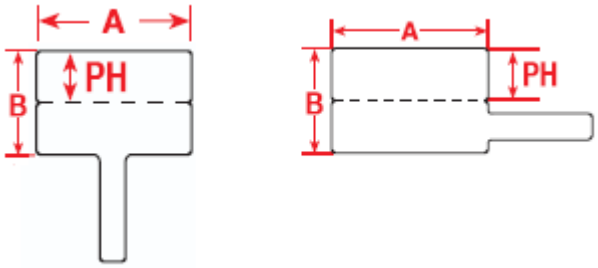


Figure 12. Fiber units labelling in the Distribution Points

The label, that must be used is a flag label type that must have the following characteristics:



A: 30 mm
B: 20 mm
PH (Printable Height): 10 mm

Figure 13. Labels for Fiber Units in the DPs

This kind of labels allow to identify a fiber unit, without the necessity of move or touch the fiber.

The labels must be printed in the field with an electronic printer for labels.

NOTE: It is also possible to put the identification label in the micro-duct instead of the FU. For this purpose, the size of the label should be bigger.

The splice tray should be labelled with the same information.

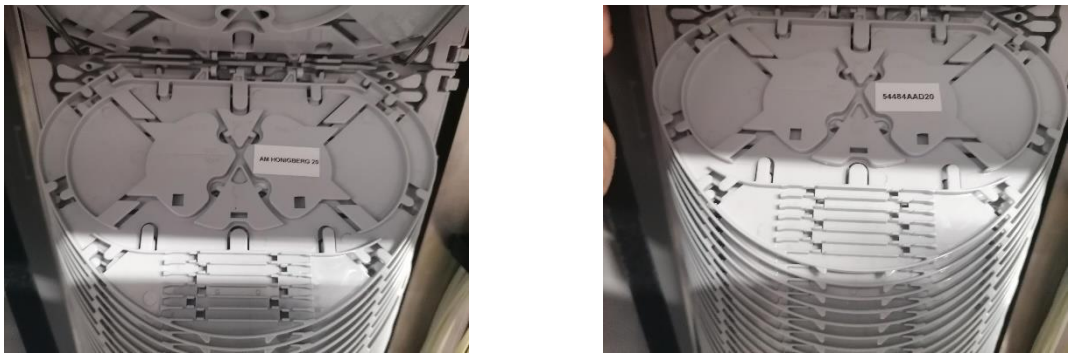


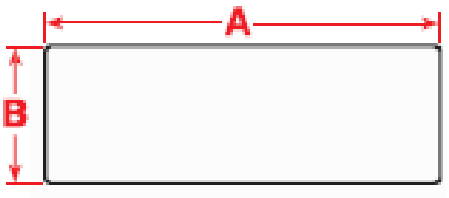
Figure 14. Example of splice tray labelling in the DP

3.5 OPTICAL BOXES (OTB AND OTO) LABELLING

All the OTBs and OTOs installed must be labelled in the field with an adhesive label, including all the information related to each type of box that UGG defines.

The labels must be added to the front cover of the OTB or the Outlet, in a visible area to make easy the identification.

The label, that must be used must have the following characteristics:



A: 50 mm
B: 10 mm

Figure 15. Labels for OTBs and OTOs

The labels must be printed in the field with an electronic printer for labels.

3.6 OPTICAL DISTRIBUTION FRAME (ODF) LABELLING

All the modules installed in the ODFs must be labelled in the field including all the information that UGG defines.

The labels must be added to the front part of the in a visible area to make easy the identification. The ports identification is not needed to add in the field as is predefined by the ODF module.

Figure 16. Space to identify and label the ODF modules of Commscope

In the case of the ODF of Commscope, there is not a big physical limitation for the labels to be included in the field. A label with a dimension of 80 mm x 20 mm could be used without any problem.

In the case of the R&M modules, the space available to put the labels in the field is more restricted., and the size of the labels must be inferior to 25 mm x 10 mm.

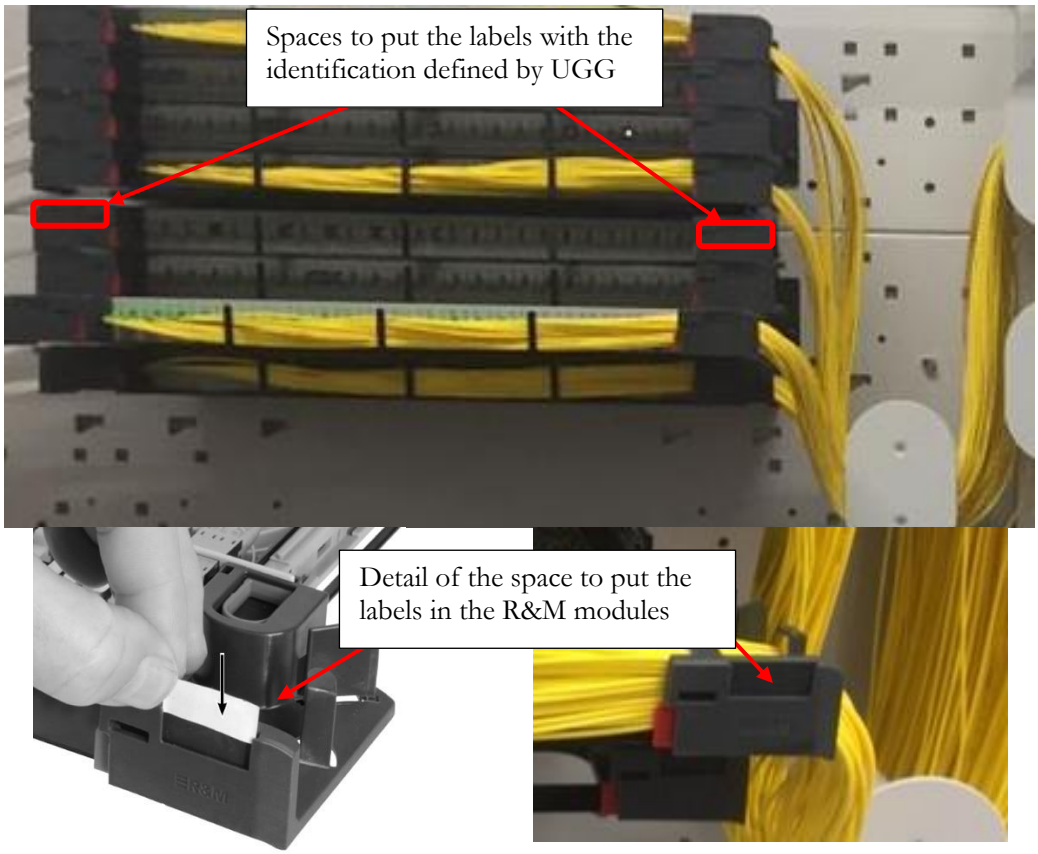
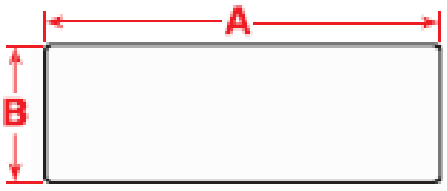


Figure 17. Space to identify and label the ODF modules of R&M

The label, that must be used for the R&M modules must have the following characteristics (as maximum):



A: 25 mm
B: 10 mm

Figure 18. Labels for the ODF modules of R&M

The labels must be printed in the field with an electronic printer for labels.

3.7 PATCHCORDS LABELLING IN THE POPS

The patch-cords deployed in the POPs, to connect the active equipment (OLTs, aggregation switches, etc) with the ODFs modules (splitters modules, or other modules as can be "splice and connector modules") must be labelled in the field in both sides of the patch-cord with an adhesive label, including all the information related to origin and the destination of the patch-cord.

The patch-cords deployed inside the ODF, to connect different modules between verticals (for example, splitter outputs with outside plant fiber) will also be labelled in the field.

The labels must be added to the patch-cords near the boot of the connectors.

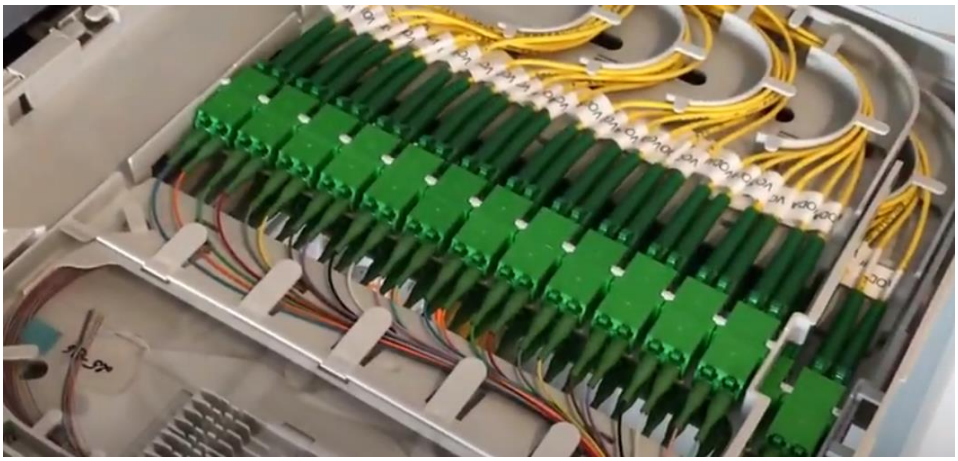


Figure 19. Example of patch-cord labelling inside the ODF (splice and connector module)

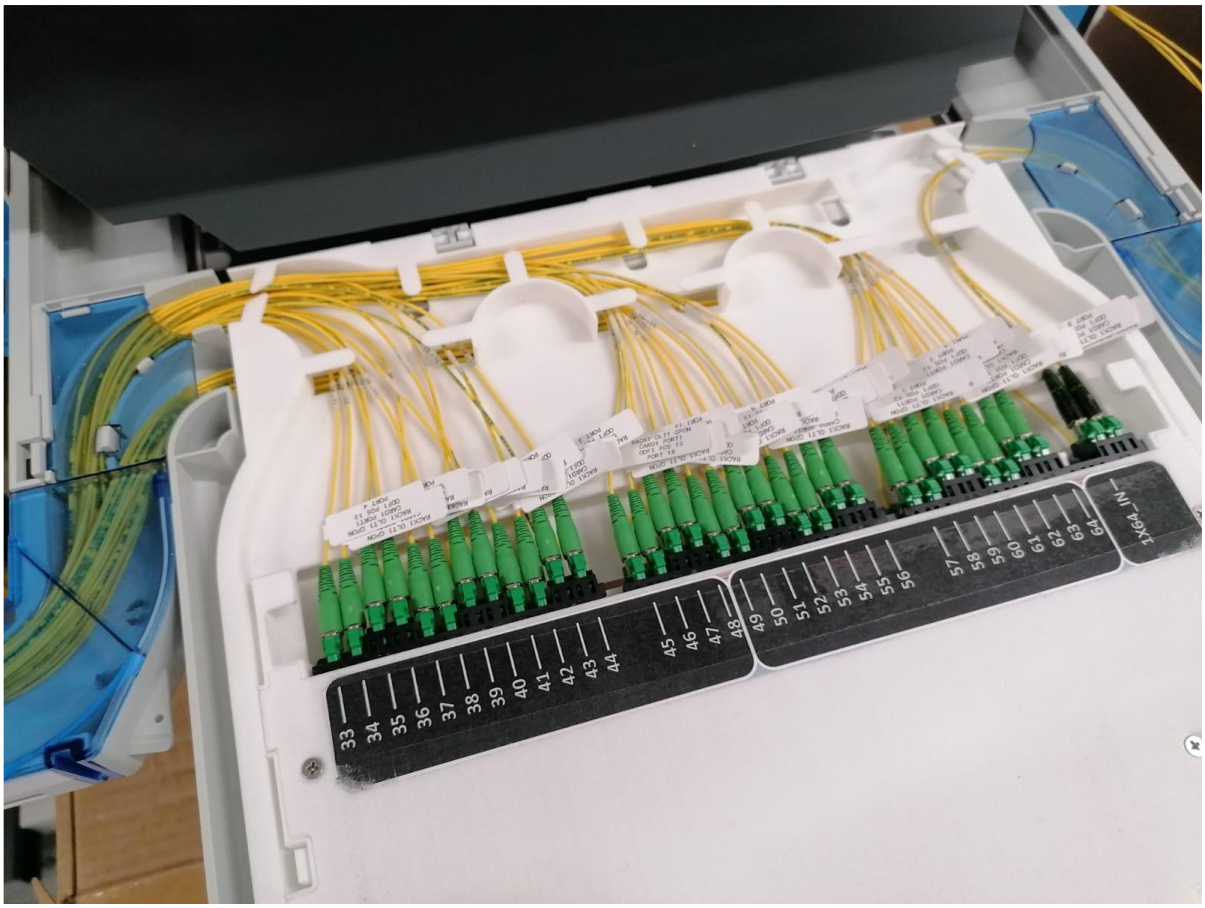
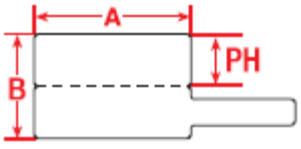


Figure 20. Example of patch-cord labelling inside the ODF (splitter module)

The label, that must be used is a flag label type that must have the following characteristics:



A: 30 mm
B: 20 mm
PH (Printable Height): 10 mm

Figure 21. Labels for patch-cords inside the ODFs

This kind of labels allow to identify a patch-cord, without the necessity of move or touch the patch-cord.

The labels must be printed in the field with an electronic printer for labels.