Contest topic

WorldSkills Fiber Optic

Joiners Competition

National phase

Cluj - Napoca

May 20-21, 2024

- First edition -

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EXPLANATION OF THE SUBJECT

TOTAL DURATION OF THE TEST:
5 hours SUBJECT DIFFUSION: 8 weeks before the competition, i.e. on 05.03.2024

You are a technician in a company specialized in providing electronic communications services and fiber optic cabling. You are competent in fiber optic cabling and in the job of fiber optic splicer.

Your company has obtained various contracts:

- implementing and connecting part of a telecom operator's FTTH network as a Subcontractor;
- connecting subscribers with fiber optics;
- complying with speed and quality standards;

Your department head has entrusted you with the responsibility for the completion of these projects, which will be the subject of this competition test.

He also requires you to perform various certification tests for the works you perform, put them into operation, and perform functional tests.

Your professional skills will be assessed:

- during the installation and connection of various cables, boxes and accessories;
- during certification tests and functional tests;
- and during the speed and quality test for timely delivery to the customer.

The evaluation of your work will take into account:

- compliance with the specifications and the junction diagram,
- the functional appearance of the network and its quality of implementation,
- the results of the network control measurements,
- compliance with OSH rules, norms and standards,
- compliance with hygiene and cleanliness rules,
- maintaining a clean workplace,
- waste management.

Now you are on the construction site and you have to complete this work in a limited time. 5 hours, distributed over 3 competition modules, over 2 competition days.

The work must be carried out on a work table, with a length between 3 and 4 m, a width of maximum 1.5 m, on which the equipment, cables and accessories received will be mounted to cable with fiber optics a home at the other end of the table and an apartment in a block of flats (see attached plan).

An ODF with 12 FO ports will simulate the POP of the telecom operator from which the customer will be powered. The ODF will be connected to 2 subscribers by passing through 2 junction boxes (simulating the FTTH network) to the 2 subscriber terminal boxes (port 2 at the house and port 10 at the block), which will be located at the other end of the table. The first 24 FO junction box is located under the table as if it were underground (in a small room) and the second 12 FO junction box is located on the table as if it were on a pole.

The choice of each candidate's work table is made by drawing lots at the beginning of the The test. Similarly, the tool kits will be drawn. The entire

work is divided into 3 modules distributed throughout the competition.

At the end of each module, the competitor must announce to the jury the completion of the work its to validate execution speed points (these points can only be obtained after completing and validating the modules).

Good luck and courage to everyone in this wonderful adventure!

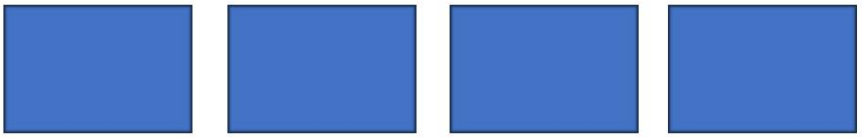
LIST OF ANNEXES

Annex 1: JOB PLAN

MODULE 1: FTTH NETWORK

ODF 12 FO CJ 1 CJ 2 OBD 2

The table of WORK



24 FO microcable 24 FO ADSS cable 2 FO subscriber cable

ODB 1

MODE 2: ACTIVATING THE CONNECTION TO SUBSCRIBERS

MC 1a (port 2) – MC 1b (home subscriber)

MC 2a (port 10) – MC 2b (block subscriber)

MODULE 3: SPEED and QUALITY TEST

This test will be done with the cable already used and previously prepared in Module 1, between ODF and CJ 1, with the 2 buffers at each end of the cable and an SC/APC Pigtail.

All other unnecessary materials will be removed from the table during this Module.

Annex 2: LIST OF MATERIALS AND EQUIPMENT

MATERIAL NEEDS FOR A COMPETITOR

No.	Material	Unit	Quantity
1	Competition table - 4 m long x 1.5 m wide	boo c	1
2	Chair	boo c	1
3	ODF pre-equipped with 12 FO ports, SC/APC connectors and SC/APC-SC/APC adapters	boo c	1
4	Junction box for 24 FO in the room (underground)	boo c	1
5	Junction box for 12 FO to be mounted on a pole	boo c	1
6	ODB 1 - for subscribers in the home area, equipped with an SC/APC pigtail and adapter	boo c	1
7	ODB 2 - for 8 subscribers in a block, equipped with an SC/APC pigtail and adapter	boo c	1
8	Micro-cable with minimum 24 FO G.652d or G.657	m	20
9	ADSS cable with 24 FO G.652	m	15
10	Drop cable with 2 FO G.657	m	4
11	Pigtail 3 m, with SC/APC connector, FO SM	boo c	1
12	Heat shrinkable sleeves for FO junctions	boo c	50
13	Patch cord SC/APC – SC/APC, 3 m	boo c	4
14	Media Converter on one fiber, 20 km, SM	boo c	4

ACCESSORY

Cleaning bags
Clamps (facets/mice) / writable labels
Adhesive tape / Scotch tape
Clamps (facets)
Tags
Trash can
Gloves
Goggles

THE NEED FOR EQUIPMENT AND TOOLS FOR A COMPETITOR

No.	EQUIPMENT/WORK TOOLS	U I am	Amount	Notes
1	Tool box - tool kit for Fiber Optics	drunk. c	1	plastic box
2	Cleaver (fiber optic cutting device)	boo c	1	

3	Fiber Optic Splicer (FO splicing device)	boo c	1	
4	VFL - pencil for visual identification of defects in optical fiber	boo c	1	
5	Patent/Spec	boo c	1	
6	Right screwdriver	boo c	1	
7	Phillips screwdriver	boo c	1	
8	Kevlar scissors	boo	1	
9	Fiber optic stripper	that's good c	1	
10	Fiber optic buffer stripper	boo c	1	
11	Jokari type cable stripping knife	boo c	1	

An OTDR will be used together with a launch coil of at least 500 m to verify the final works in Modules 1 and 3, for all competitors.

Annex 3: PLANNING

Monday, May 20,

2024: 3:00 PM – 4:00 PM: Familiarization of candidates with the work tables.

Their training and labor protection

16.00 – 18.00: Module 1 – first part

Tuesday, May 21, 2024:

09:00 - 11:00	Module 1 – part 2	120 minutes
11:00 - 11:30	Evaluation / Scoring Competitors	30 minutes
11:30 - 11:40	Mode 2	10 minutes
11:40 – 11:50	Evaluation / Grading	
11:50 - 12:30	Mode 3	40 minutes
12:30 - 13:00	Competitors Evaluation / Scoring	30 minutes
	Workplace cleanliness	
1:00 PM - 1:30 PM	Mediation of jury scores	

Wednesday, May 22, 2024:

09.00 – 10.00: RFOC 2024 Awards Ceremony

Mode 1	**FTTH network POP - Subscribed**
Mounting ODF 12 FO with 24 FO microcable	90 min
Microcable Junction Box 24 FO - ADSS 24 FO	70 minutes

ADSS 24 FO Junction Box – Drop 2 FO	50 minutes
Installing ODB 1 in block	20 minutes
Installing ODB 2 at home	20 minutes
	250 minutes
	4.10 a.m.

Mode 2	**Network activation**
Material preparation	5 minutes
Connecting patchcords and MCs	5 minutes
	10 minutes

Mode 2	**Speed Test**
Preparing the 2 cable ends in CJ 1 and cleaning the table	20 minutes
Junction 14 - 20 FO	20 minutes
	40 minutes

TOTAL DURATION	**300 minutes**
	5 hours

Annex 4: JURY SCORE SCALE

Mode 0	**4**	**Compliance with OSH rules**	**Point j**
		Use of protective gloves, correct tools (NOT cutters), work space "clean"	1
		Protective caps for SC connectors	1
		Use and compliance with materials	1
		Quality of organization (workspace, materials, tools, equipment, waste)	1
Mode 1	**75**	**FTTH POP Network - Subscriber**	
ODF Mounting ODF 12 FO with a 24 FO microcable		14 FO cable preparation	2
		Fixing FO cable in ODF	2
		ODF and fiber preparation for splicing	3
		Junction 12 FO	3
		90 min time frame for this sub-module	2
		FO arrangement in the box, labeling and closing of ODF	2
CJ 1 Box Junction 1 microcable 24 FO + ADSS 12 FO + 2 FO drop cable		23 FO cable preparation - the 3 cable ends	6
		Junction box preparation	2
		Inserting and fixing cables in the box	3
		Preparing FO for splicing according to the diagram	3
		Junction 12 FO	3
		Time frame for this sub-module: 70 min	3
		FO arrangement in the box and labeling	2
		Junction box closure	1
CJ 2 Box		16 FO cable preparation - the 2 ends	4
		Junction box preparation	2

Junction 2 ADSS 12 FO - Drop 2 FO		Inserting and fixing cables in the box	2
		Preparing FO for splicing according to the diagram	3
		2 FO junction	2
		FO arrangement in the box and labeling	2
		Closing junction nails	1
OBD 1 installation in block	11	FO cable preparation	2
		Fixing FO cable in ODB	2
		Preparation of ODB and fibers for splicing	3
		1 FO junction	2
		FO arrangement in the box, labeling and closing ODB	2
OBD 2 installation at home	11	FO cable preparation	2
		Fixing FO cable in ODB	2
		Preparation of ODB and fibers for splicing	3
		1 FO junction	2
		FO arrangement in the box, labeling and closing ODB	2
MODULE 2	**4**	Preparing the necessary materials	2
Activate FO network		Connecting patchcords and MCs according to the given topic	2
Mode 3	**17**	**Speed and Quality Test**	
Preparing 2 cable ends 24 FO	5	Preparing the 2 ends of the 24 FO cable (microcable)	4
		FO pigtail preparation	1
Junction 10 - 20 FO	12	Junction minimum 10 FO with attenuation <0.3 dB unidirectional	10
		FO splice with pigtail	2
TOTAL SCORE	**100**		

Annex 5: MODULE 1

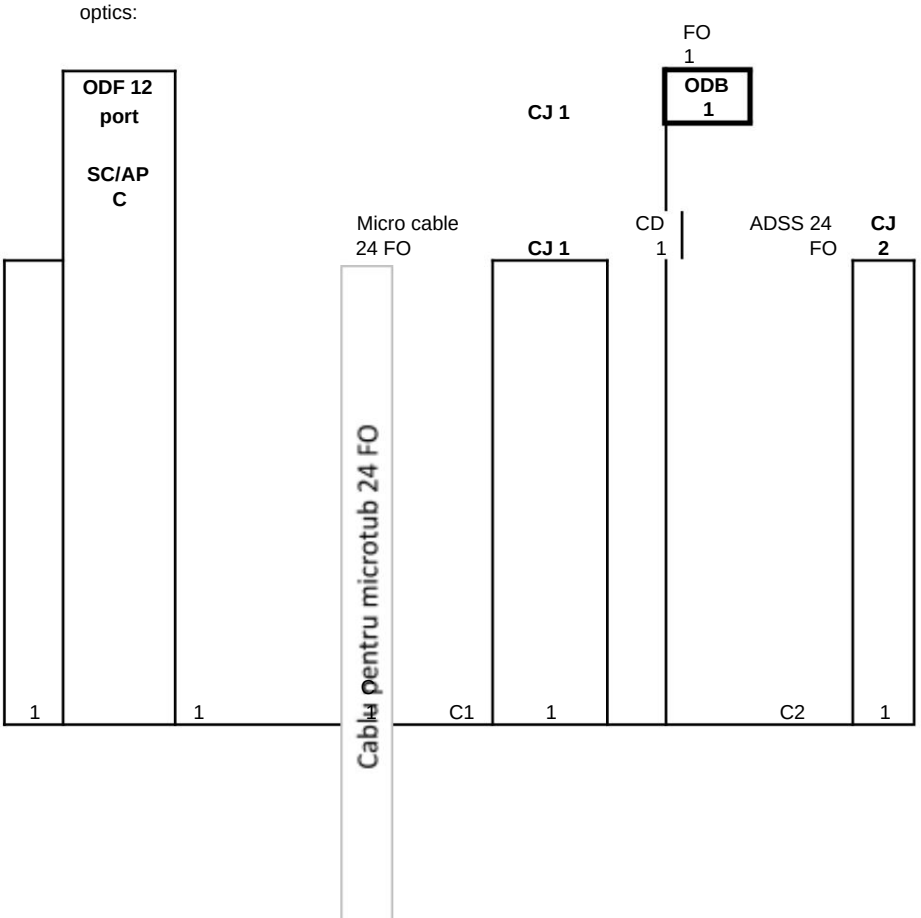
ODF junction configuration:

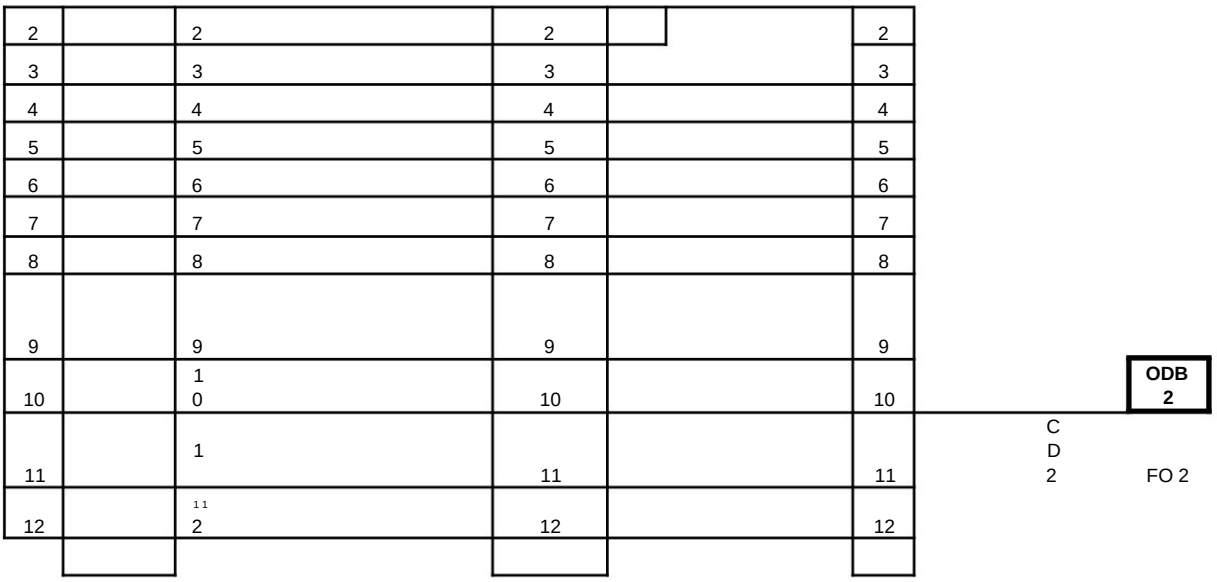
ODF 12 FO - port 1-12

	Tube	Fiber	No. fiber	Port ODF	STATUS connection	Landmark Connection		customers
That BL you 1 - 24 FO	Red	red	1	1	NC			
		green 2		2	connected	Pigtails 1	ODB 1	house
		blue	3	3	NC			
		yellow 4 white 5		4	NC			
				5	NC			
		gray	6	6	NC			
		brown 7		7	NC			
		turquoise	8	8	NC			
		purple it is	9	9	NC			

		black		10	connected	Pigtails 1	ODB 2	Block
		orange 11	pink	11	NC			
			12	12	NC			

Junction configuration for fiber network optics:





Junction box exterior of the room	CJ 1
Junction box exterior pole	CJ 2
The box of house subscriber	ODB 1
The box of block subscriber	OBD 2

Annex 6: MODULE 2

1. Preparing the necessary materials
    a. Identify and separate 4 SC/APC-SC/APC patchcords, 3 m long
    b. Place the 4 required Media Converters on the workbench
    c. Identify the working sockets for powering all 4 MCs

2. Connecting the patchcords and MCs according to the given topic a. Connect the 4 patchcords b. Connect the 4 powered MCs to the working sockets c. Check the operation of the 4 MCs

Annex 7: MODULE 3

1. Cable preparation.

Prepare the 2 ends of the cable from Module 1 of 48 or 96 Optical Fibers for splicing (minimum 2 buffers of 12 optical fibers each from each end of the cable) and secure them firmly to the work table.

Place the SC/APC pigtail on the work table along with a minimum of 20 heat shrink sleeves.

2. Junction.

Prepare and then splice the pigtail with fiber no. 1 at one end of the cable.

Fiber no. 1 from the other end of the given cable is spliced with fiber no. 2, fiber no. 2 with fiber no. 3, and so on within the given time interval.