

Standards and Assessment Guide

Information Network Cabling

Introduction

Welcome to the Standards and Assessment Guide (SAG), a comprehensive resource designed to support excellence in assessment practices for all skills competitions hosted at the WorldSkills Competition. A key component of the SAG is the commitment to continuous improvement through ongoing review, ensuring that these guides consistently reflect the latest industry innovations and high standards of assessment in an open and transparent manner.

Purpose

The primary purpose of this guide is to provide a structured framework for the consistent and fair assessment of each skill competition. It aims to ensure that all assessments are conducted with a high degree of accuracy, reliability, validity, and reflect global industry standards. By adhering to these guidelines, assessors can maintain the integrity of the competition and uphold the high standards associated with WorldSkills.

Note: this guide is not a replacement for the Marking Scheme and should only be used as a reference when required during the assessment process. Competitors are not allowed to have a copy of this SAG in the workshop in either digital or paper form.

Scope

This document covers general assessment practices applicable to a diverse range of industry sectors including:

- Manufacturing and Engineering Technology
- Information and Communication Technology
- Construction and Building Technology
- Transportation and Logistics
- Social and Personal Services
- Creative Arts and Fashion

Each skill competition has its unique requirements and benchmarks, which are detailed within sections of this guide. The consistency of assessment across each skill is the overarching principle, ensuring a unified approach to evaluating Competitor performance to the highest standards.

Key Components

The guide is structured into several key components, each addressing critical aspects of the assessment process:

Assessment Principles and Objectives

- Emphasis on fairness, transparency, and objectivity in assessments.
- Alignment with global industry standards and best practices.

Assessment Methods and Tools

- Description of various assessment methods in Measurement and Judgement.
- Guidance on the application of appropriate assessment tools and equipment (if applicable).

Criteria and Benchmarks

- Examples of assessment criteria and aspects for each skill, outlining the expected competencies and performance standards.
- Benchmarks for different levels of proficiency i.e. Judgement award range 0, 1, 2, 3 or Yes/No criteria alongside clear measurable descriptors.

Expert assessment requirements

- Completion of the Access Programme.
- Approved Curriculum Vitae (CV).
- Reaching 100% Expert preparedness.
- Full participation of online and in-person Mandatory Assessment Training (MAT).
- Completion of practical assessment testing at the Competition.

Quality Assurance and Improvement

- Monitoring and evaluation: Ensuring assessments are carried out correctly and produce reliable results.
- Continuous improvement: Using feedback from Experts and Skill Competition Managers to enhance future assessments.
- Periodic review: Regularly updating processes to reflect current industry and WorldSkills standards.

Implementation

For effective implementation, this guide should be used for guidance purposes only and in parallel with the Technical Description for each skill. Experts are encouraged to familiarize themselves thoroughly with both the general guidelines and the particular requirements of their respective skill areas. Collaborative efforts between the Skill Management Team, Experts, and Competitors are vital for achieving the ultimate goal of global skills development.

Conclusion

The Standards and Assessment Guide embodies the commitment of the WorldSkills movement to nurturing talent and promoting the highest standards of vocational education and training worldwide. By providing clear and comprehensive guidance, we aim to empower Experts to conduct marking and assessment practices that are not only rigorous and equitable but also inspiring and transformative for all participants.

Thank you for your dedication to upholding these standards and contributing to the success of the WorldSkills Competition. Together, we can continue to champion skills excellence and celebrate the achievements of talented individuals from around the globe.

Skill 02 – Information Network Cabling

Measurement

Measurement is used to assess accuracy, precision, and other performance that can be measured objectively. It is used where ambiguity must be avoided.

The total marks allocated to measurement marking may vary from competition to competition depending on the Test Project.

Measurement Assessment – General Principles for Experts

General Principles

Measurement assessment objectively verifies compliance with the specified requirements. Assessment shall be based on the Test Project, Marking Scheme, and relevant guidelines, **not on the assessor's experience, preference, or overall impression.**

Experts shall:

- Verify whether the specified requirements are satisfied.
- Base all decisions on objective and observable evidence.
- Apply the same criteria consistently to all competitors.
- Assess only the requirements defined for the aspect.

Assessment Principles

Compliance shall be awarded **only when all specified requirements are satisfied**. If the work is incomplete or the required object is not completed, it shall not be considered compliant. If any specified requirement is not satisfied, the aspect shall not be considered compliant. However, where a scoring formula is defined for that aspect, assessment shall follow the applicable formula.

Experts shall not use subjective judgement such as "*almost complete*," "*only a minor omission*," or "*acceptable in practice*" when making Measurement assessments.

Scoring Formula Exceptions

Where one of the following scoring formulas is assigned to an aspect, assessment shall follow the corresponding formula instead of a simple pass/fail judgement

Formula	Assessment Method
(1) Three-Level Compliance Scale	Fully compliant / Partially compliant / Not compliant
(2) 50% Deduction per Failure	Score according to the number of failures (0, 1, or 2+ failures).
(3) 25% Deduction per Failure	Score according to the number of failures (0, 1, 2, 3, or 4+ failures).
(5) Completion Scale	Fully completed / Partially completed / Not completed
(6) Task 1 Final Ranking / (7) Task 1 Elimination Ranking / (8) Task 2 Performance Ranking	Score according to the competitor's ranking.
(9) Compliance Assessment	Compliant / Not compliant

Key Principle

Measurement assessment objectively verifies compliance with the specified requirements. Where a scoring formula is assigned to an aspect, Experts shall apply that formula exactly as defined, without subjective interpretation.

Aspect	WSOS section as per TD	Descriptor
Quality plan & management result report	3	Quality plan & management result report submission. All details of construction plan are described
Tool & equipment maintenance	1	Tool check & maintenance correctly
DTX result	1	All result files submission
Working environment	2	Wastes for recycling correctly
Working process	4	Cabling process correctly
OTDR result	9	Result file submission
Fiber Quality result report	3	All details of construction plan are described.
Functional test	7	Functional A router setting correctly.
Shielded Panel	6	Fundamental installation completely.
Troubleshooting (fibre)	8	Find faults of fibre link correctly.

Aspect: Safety Compliance during Optical Fibre Installation

Extra Aspect Description

This aspect is a Measurement assessment. It objectively verifies whether the specified safety requirements were followed throughout the optical fibre installation work.

Experts shall verify the following:

- Required PPE is correctly used.
- Optical fibre waste is collected and disposed of safely.
- Safe working practices are followed throughout the task.
- The specified safety requirements are complied with at all times.

Compliance shall be awarded when all specified safety requirements are satisfied throughout the work.

Non-compliance shall be awarded when any specified safety requirement is not satisfied.

Notes for Experts

This is a Measurement assessment and shall be evaluated objectively against the specified safety requirements.

Assess only the safety requirements defined in the Test Project and Safety Requirements.

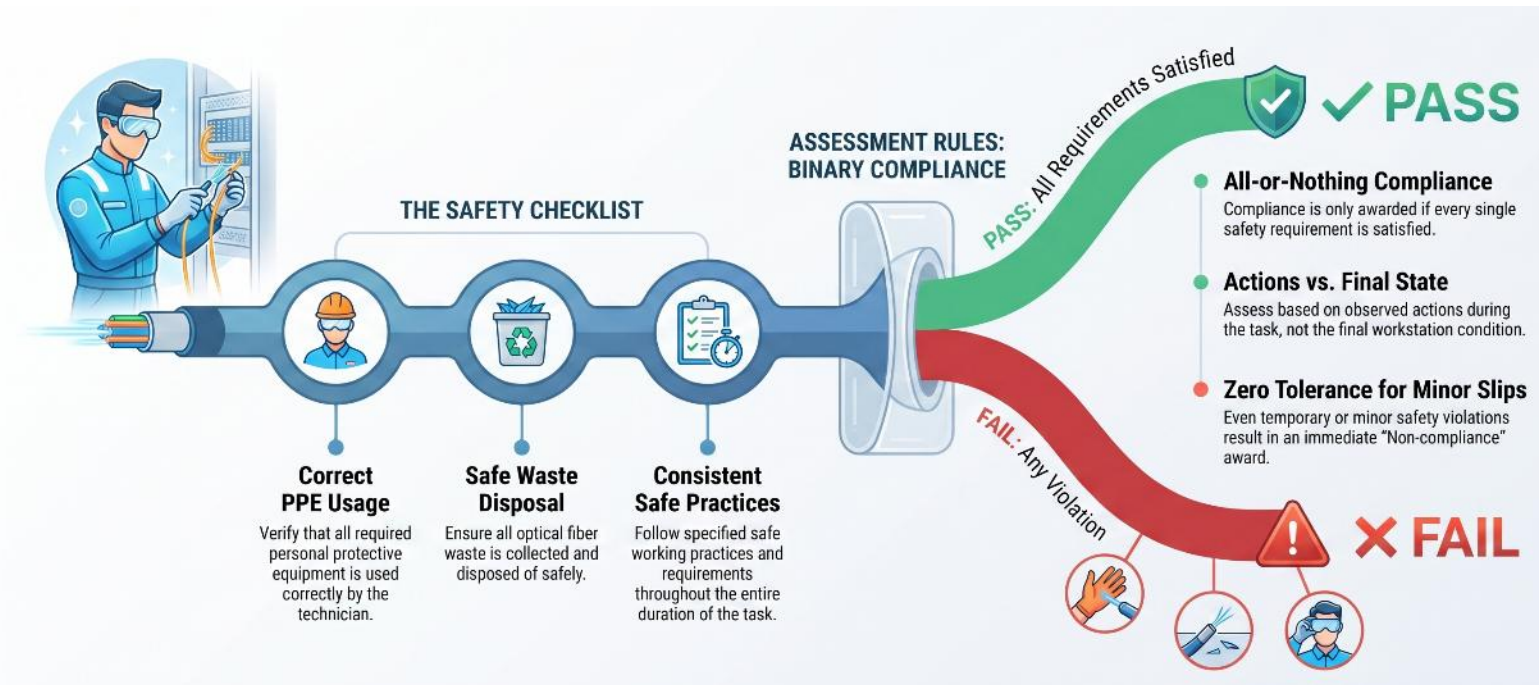
Temporary or minor safety violations shall be considered non-compliance if they violate the specified requirements.

Compliance shall be based on observed actions during the task, not on the final condition of the workstation.

Key Principle: Compliance is achieved only when all specified safety requirements are followed throughout the optical fibre installation work.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor
Safety Compliance during Optical Fibre Installation	1	 THE SAFETY CHECKLIST Correct PPE Usage Verify that all required personal protective equipment is used correctly by the technician. Safe Waste Disposal Ensure all optical fiber waste is collected and disposed of safely. Consistent Safe Practices Follow specified safe working practices and requirements throughout the entire duration of the task. ASSESSMENT RULES: BINARY COMPLIANCE PASS: All Requirements Satisfied FAIL: Any Violation All-or-Nothing Compliance Compliance is only awarded if every single safety requirement is satisfied. Actions vs. Final State Assess based on observed actions during the task, not the final workstation condition. Zero Tolerance for Minor Slips Even temporary or minor safety violations result in an immediate "Non-compliance" award.

Aspect: Compliance with the Specified Working Process

Extra Aspect Description

This aspect is a Measurement assessment. It objectively verifies whether the competitor follows the specified working process throughout the task.

Experts shall verify the following:

- The specified working process is followed.
- Required work steps are completed in the prescribed sequence.
- Mandatory procedures are not omitted or bypassed.
- The working process complies with the specified requirements.

Compliance shall be awarded when the specified working process is followed throughout the task.

Non-compliance shall be awarded when the competitor omits, changes, or bypasses any required work step, or does not comply with the specified working process.

Notes for Experts

- This is a Measurement assessment and shall be evaluated objectively against the specified working process.
- Assess only the work steps and procedures defined in the Test Project or Marking Scheme.
- Do not evaluate the speed, workmanship, or quality of the completed installation unless explicitly required by the aspect.
- Compliance shall be based on observed actions during the working process.

Key Principle: Compliance is achieved when the competitor follows the specified working process without omitting or altering the required procedures.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect: Working Environment

Extra Aspect Description

This aspect is a Measurement assessment. It objectively verifies whether the competitor complies with the specified working environment requirements throughout the task.

Experts shall verify the following:

- Only a stepladder is used as a working platform.
- Toolboxes or chairs are not used as working platforms, except for the toolbox specifically designed for the fusion splicer.
- Products, accessories, and tools are not placed directly on the floor.

Compliance shall be awarded when all specified working environment requirements are satisfied throughout the task.

Non-compliance shall be awarded when any specified working environment requirement is not satisfied.

Notes for Experts

This is a Measurement assessment and shall be based on observed actions during the task.

Assess compliance with the specified requirements, not the competitor's working style.

Evaluate the working process rather than the final workstation condition.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor
Working Environment	7	

Aspect: Cable Installation Process

Extra Aspect Description

This aspect is a Measurement assessment. It objectively verifies whether the competitor follows the specified cable installation process.

Experts shall verify the following:

- Cables are first placed on the cable rack before measuring, cutting, or managing them.
- Cable lengths are confirmed before cutting when the required length is not already known.
- No more than six cables are pulled simultaneously.
- The specified installation method (Method A or Method B) is followed.
- Cables are only temporarily managed before termination or splicing.
- Cables are not managed on the floor before installation on the cable rack.

Compliance shall be awarded when all specified cable installation procedures are followed.

Non-compliance shall be awarded when any specified cable installation procedure is not followed.

Notes for Experts

- This is a Measurement assessment and shall be based on observed actions during the task.
- Assess compliance with the specified installation process, not the quality of the completed installation.
- Evaluate the competitor's working process throughout the task.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here:

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor
Cable Installation Process	1	

Aspect: Optical Fibre Handling

Extra Aspect Description

This aspect is a Measurement assessment. It objectively verifies whether the competitor follows the specified optical fibre handling procedures.

Experts shall verify the following:

- Fibre connector end faces are cleaned before every connection.
- Optical fibres are cleaned using alcohol wipes at least three times.
- A new cleaning wipe is used for each cleaning operation.

Compliance shall be awarded when all specified optical fibre handling procedures are followed.

Non-compliance shall be awarded when any specified procedure is not followed.

Notes for Experts

- This is a Measurement assessment and shall be based on observed actions during the task.
- Assess compliance with the specified procedures, not the quality of the completed installation.
- Evaluate the competitor's working process throughout the task.

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Aspect	WSOS section as per TD	Descriptor
Optical Fibre Handling	3	

Aspect: Cable Sheath Opening Length and Fibre Protection

Extra Aspect Description

This aspect evaluates whether the cable sheath opening length and fibre exposure comply with the specified requirement, and whether the fibres are adequately protected after the sheath opening.

Experts shall consider the following:

- Cable sheath opening length
- Position of the sheath end
- Length of exposed fibres
- Fibre protection after sheath removal
- Compliance with the specified opening method

Higher scores shall be awarded when the sheath is opened to the specified length, the sheath end is positioned correctly, and exposed fibres are properly protected without unnecessary stress or bending.

Lower scores shall be awarded when the sheath opening length is too short or too long, the sheath end is incorrectly positioned, or exposed fibres are insufficiently protected.

Notes for Experts

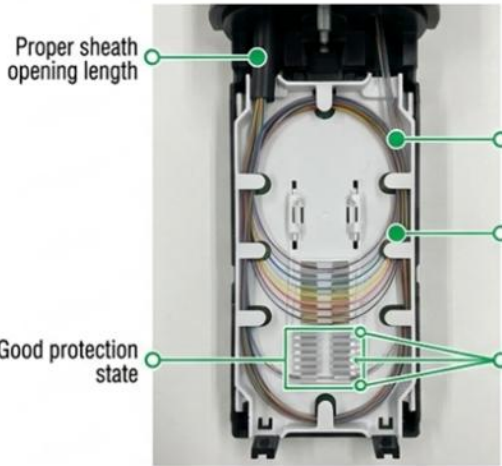
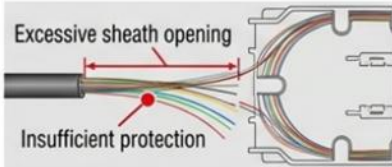
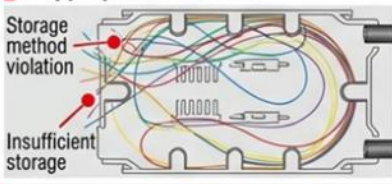
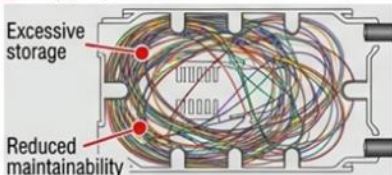
- Do not evaluate tray storage quality in this aspect; it is assessed separately.
- Focus on the sheath opening length, sheath-end position, and protection of exposed fibres.
- Minor positional differences may be acceptable if the requirement is met and fibre protection is not affected.
- Exposed fibres shall not be under excessive tension, sharp bending, or risk of damage.

Key Principle:

A high-quality installation keeps the sheath opening within the specified range and ensures that exposed fibres are properly protected from stress, bending, and damage.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor
Cable Sheath Opening Length and Fibre Protection	4	Appropriate Execution  ✓ Sheath opening length is within the specified range ✓ Fibers are properly protected ✓ Stored with the specified number of loops ✓ No excessive stress on fibers ✓ Storage condition can be easily checked during maintenance Inappropriate Execution 1  ✗ Sheath opening length is too long ✗ Unprotected fiber section is too long Inappropriate Execution 2  ✗ Has not reached the specified number of loops ✗ Deviated from the specified storage route Inappropriate Execution 3  ✗ Looping more than specified ✗ Reduced maintainability Basic Evaluation Principles ⚠ This item does not evaluate the beauty of storage. Evaluation Targets: Sheath opening length Fiber protection Storage condition Compliance with specified storage method Standard: Full marks are awarded strictly for meeting the specified storage method and storage conditions.

Aspect: UGC Integration Quality

Extra Aspect Description

This aspect evaluates the overall quality of UGC integration, including connection protection, fibre routing, tray organization, accessibility, and workmanship.

Experts shall consider the following:

- UGC installation and fixing
- Protection of connections and fibres
- Fibre routing and tray organization
- Accessibility, maintainability, and overall workmanship

Higher scores shall be awarded when the UGC is properly installed, connections and fibres are well protected, fibre routing and tray organization are systematic, and the overall installation supports easy inspection and maintenance.

Lower scores shall be awarded when installation, protection, routing, tray organization, or workmanship reduces accessibility, maintainability, or overall installation quality.

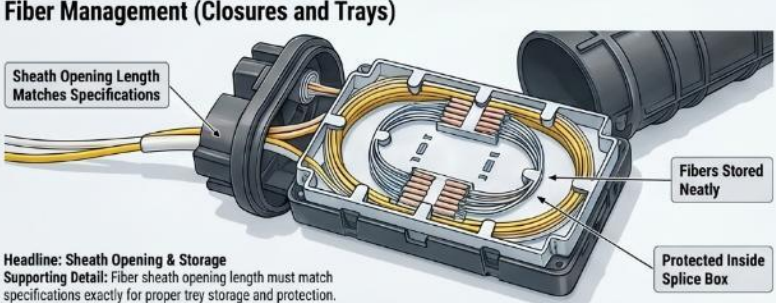
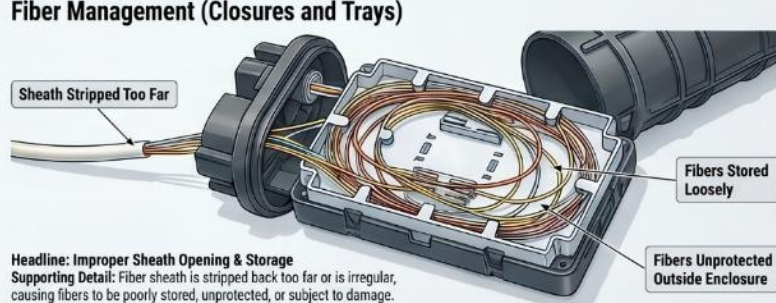
Notes for Experts

- Evaluate the overall quality of the integrated UGC, not individual components in isolation.
- Confirm that connections, fibres, and tray organization work together without unnecessary interference.
- Ensure that accessibility for inspection and future maintenance is maintained.
- Evaluate compliance with the specified installation and storage requirements.

Key Principle: A high-quality UGC installation integrates all components into a well-protected, organized, accessible, and maintainable system.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor
UGC Integration Quality	4	Proper Installation Example  Fiber Management (Closures and Trays) Sheath Opening Length Matches Specifications Fibers Stored Neatly Protected Inside Splice Box Headline: Sheath Opening & Storage Supporting Detail: Fiber sheath opening length must match specifications exactly for proper tray storage and protection. Headline: Connector Hygiene & Polarity Supporting Detail: Visual inspection and cleaning of fiber connectors are mandatory before termination and storage. Headline: Evaluation Focus: Stability over Aesthetics Supporting Detail: Scoring prioritizes long-term safety, stability, and adherence to technical standards over "cable art." Improper Installation Example  Fiber Management (Closures and Trays) Sheath Stripped Too Far Fibers Stored Loosely Fibers Unprotected Outside Enclosure Headline: Improper Sheath Opening & Storage Supporting Detail: Fiber sheath is stripped back too far or is irregular, causing fibers to be poorly stored, unprotected, or subject to damage. Headline: Lack of Connector Hygiene & Polarity Supporting Detail: Failure to visually inspect and clean fiber connectors before termination and storage compromises signal integrity. Headline: Evaluation Focus: Failure to Meet Standards Basic Principles of Assessment: This item does not evaluate 'cable art' or aesthetics. Assessment targets: Routing, Support, Fixing, Protection, and Maintainability. Full marks are awarded for installations ensuring long-term safety.  NotebookLM

Aspect: Cable Fixing and Organization on Cable Ladder

Extra Aspect Description

This aspect verifies whether cables are correctly fixed to the cable ladder and properly organized in accordance with the specified installation requirements.

Experts shall verify the following:

- Cables are fixed at the specified locations on the cable ladder.
- Cable fixing devices are correctly installed.
- Cables are properly organized without excessive disorder.
- Cable fixing and organization comply with the specified installation requirements.

Assessment shall be based on the presence and correctness of cable fixing and organization, not on subjective appearance.

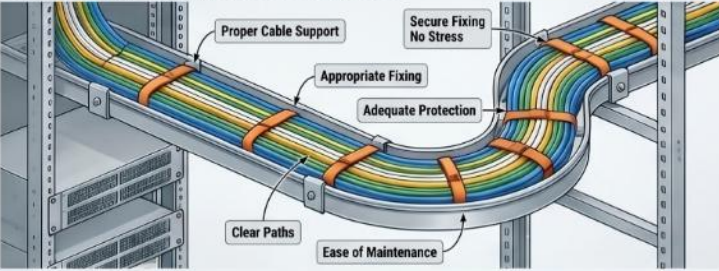
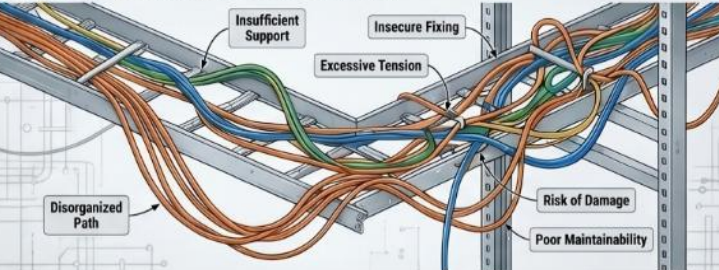
Notes for Experts

- This aspect evaluates the presence and correctness of cable fixing and organization, not the aesthetic appearance of the installation.
- If cables are not fixed or are clearly fixed in the wrong location, the installation shall be considered non-compliant.
- Simply placing cables on the cable ladder without proper fixing does not satisfy the requirement.
- Minor visual differences are acceptable provided the specified fixing and organization requirements are met.

Key Principle: Cables shall be securely fixed to the cable ladder and properly organized in accordance with the specified installation requirements.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor
Cable Fixing and Organization on Cable Ladder	4	Proper Installation Example Cable Routing & Fixing (Ladders and Trays)  Headline: Proper Routing Supporting Detail: Proper routing features clear paths, regular support, and secure fixing without excessive cable tension. Headline: Maintainability & Protection Supporting Detail: Cables must be accessible for future work and protected from external physical damage. Improper Installation Example Cable Routing & Fixing (Ladders and Trays)  Headline: Improper Routing Supporting Detail: Improper routing features inadequate support, insecure fixing, and excessive cable tension, creating maintenance issues. Headline: Poor Maintainability & Protection Supporting Detail: Cables are inaccessible, poorly supported, and exposed to potential physical damage, violating long-term safety standards.

Aspect: Label and Record Traceability

Extra Aspect Description

This aspect is a Measurement assessment. It objectively verifies whether the physical labels and recorded information are complete, consistent, and fully traceable. Assessment shall be based on compliance with the specified requirements, not on subjective judgement.

Experts shall verify the following:

- Consistency between the Physical Label ID and the corresponding records
- Correct relationship between Physical Label ID, From-To information, and measurement records
- Completeness of all required records
- End-to-end traceability from the physical labels to the measurement records

Compliance shall be awarded when all required information is complete, mutually consistent, and fully traceable from the installed components to the corresponding measurement records.

Non-compliance shall be awarded when inconsistencies, omissions, or incorrect relationships prevent the required traceability.

Notes for Experts

- This is a Measurement assessment and shall be evaluated objectively against the specified requirements, not by subjective judgement.
- Verify that the Physical Label ID complies with the rules defined in the marking guideline.
- Evidence ID is assigned by the competitor; assess its consistency and traceability rather than the numbering itself.
- Verify that the Measurement Target complies with the Test Project requirements.

Key Principle: Compliance is achieved when the physical labels and all related records are complete, consistent, and fully traceable from the installed components to the measurement records.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor
Label and Record Traceability	3	Optical Cables on Cable Ladders  Scope: Focus on wrap alignment, legible text orientation regardless of cable twist, and unobstructed visibility within the ladder tray. Optical Fibre Cores in Splice Boxes  Scope: Focus on logical core identification spacing inside the enclosure, ensuring internal routing does not obscure printed flags. FTBs within 19-Inch Racks  Scope: Focus on frontal accessibility of the FTB enclosure labels. Assessors must verify these without pulling the drawer or displacing adjacent rack equipment.  Baseline Prerequisite: ANSI/TIA-606-C Logical ID Structure Evaluators must confirm logical consistency before grading physical accessibility.  Specimen 1 Labels: Rack ID (e.g., A007), U-Space Position (e.g., 15), Port Designation (e.g., 01)  Specimen 2 Labels: Forward slash dictates Near-End / Far-End termination points.

Aspect: UGC Installation Condition

Extra Aspect Description

This aspect is a Measurement assessment. It objectively verifies whether the UGC has been completely installed in accordance with the specified requirements.

Experts shall verify the following:

- The UGC is installed in the specified location and is complete.
- The optical cable is correctly secured to the UGC.
- The fibre connections comply with the specified requirements.
- The fibres are stored inside the UGC as specified.

Compliance shall be awarded when the UGC is fully installed and all specified requirements for completion, optical cable fixing, fibre connections, and fibre storage are satisfied.

Non-compliance shall be awarded when the UGC is incomplete, the optical cable is not secured to the UGC, or the connection or fibre storage requirements are not satisfied.

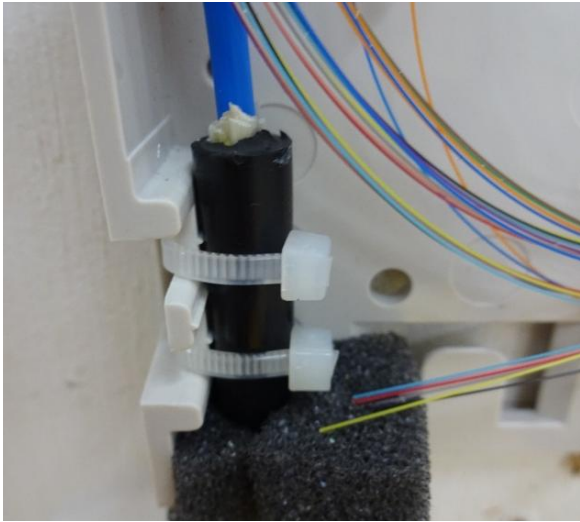
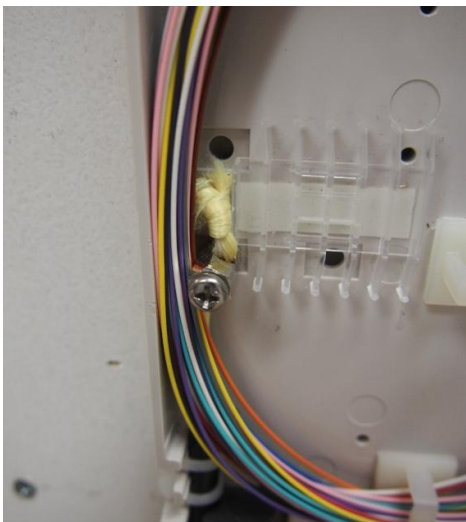
Notes for Experts

- This is a Measurement assessment and shall be evaluated objectively against the specified requirements.
- Do not evaluate the appearance or workmanship beyond the specified requirements.
- Verify that the optical cable is securely fixed to the UGC.
- Confirm that the UGC is fully completed and that the fibres are stored as specified.

Key Principle: Compliance is achieved when the UGC is fully completed and the optical cable fixing, fibre connections, and fibre storage all comply with the specified requirements.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor	
UGC Installation Condition	2	   	

Aspect: Fibre Tray Fibre Storage

Extra Aspect Description

This aspect is a Measurement assessment. It objectively verifies whether fibres are stored in the fibre tray in accordance with the specified storage requirements.

Experts shall verify the following:

- Fibres are stored in the designated fibre tray.
- All required fibres are completely stored.
- Fibres are protected from damage during storage.
- Fibre storage complies with the specified requirements.

Compliance shall be awarded when all fibres are stored in the designated fibre tray in accordance with the specified requirements.

Non-compliance shall be awarded when fibres are missing from the tray, improperly stored, exposed to damage, or do not comply with the specified storage requirements.

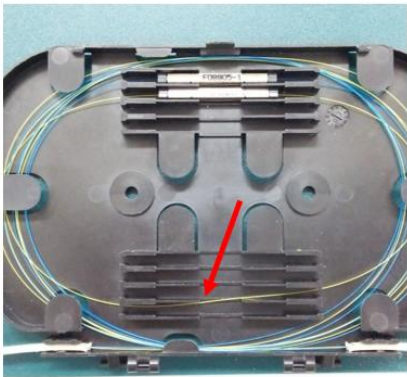
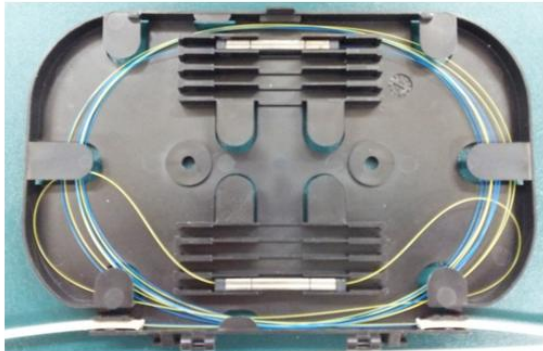
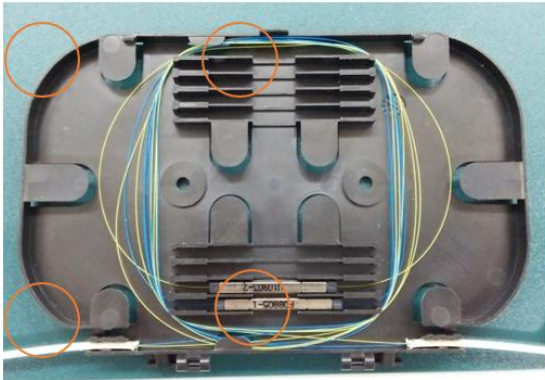
Notes for Experts

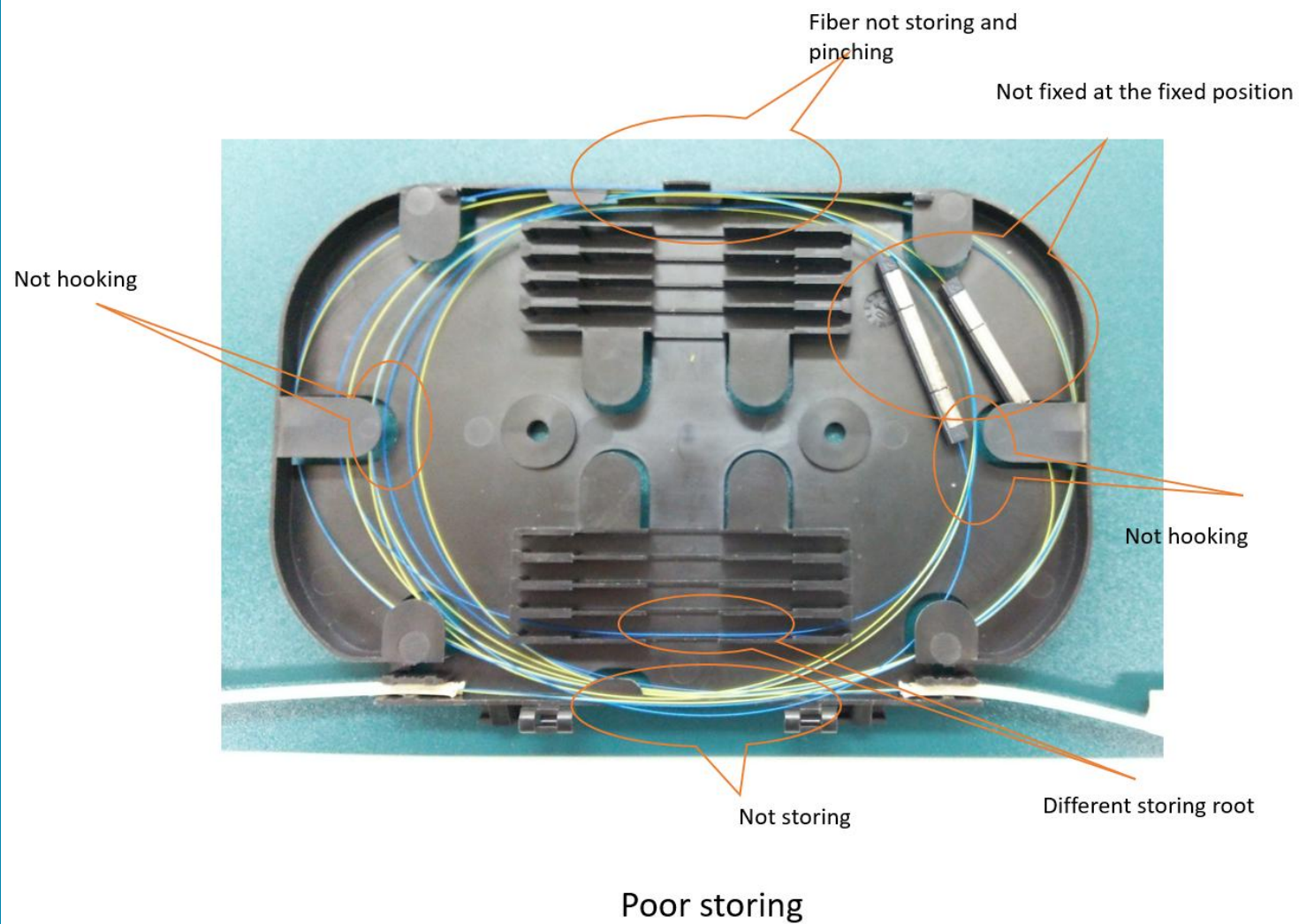
- This is a Measurement assessment and shall be evaluated objectively against the specified requirements.
- Assess whether the fibres are stored correctly, not how neatly they are arranged.
- Do not evaluate appearance or workmanship unless explicitly required by the aspect.
- Confirm that all required fibres are present, protected, and stored in the correct location.

Key Principle: Compliance is achieved when all required fibres are stored in the designated fibre tray, protected, and in accordance with the specified storage requirements.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

Aspect	WSOS section as per TD	Descriptor
Fibre Tray Fibre Storage	4	   Fiber storing at wrong position Bending radius < 30mm Bending radius < 30mm   Stress Bending radius < 30mm; Yellow fiber



Judgement

Judgement is used to assess the quality of performance about which there may be small differences of view when applying the external benchmarks.

The Resources column in the table below may include all kinds/formats of resources such as: a link to a YouTube video, a website link, an illustration, a photo, a reference to a book, and so on. It needs to be as detailed as possible to show the differentiation between 0, 1, 2, 3.

Generic rules:

The assessment group comprises three Experts plus one Expert who acts as the supervisor. The supervising Expert will replace an Expert in the marking group to prevent compatriot marking.

The difference of the three Experts' scores may not exceed 1. If this is the situation the Experts must re-score until there is a maximum difference of 1. As long as the three Experts judge within 1, the result can be entered into the CIS.

The total marks allocated to judgement marking may vary from competition to competition depending on the Test Project.

Aspect: Patch Cord Cable Art

Judgement Score Description

This aspect evaluates the visual organization and overall presentation of patch cord routing (Cable Art). However, it is not intended to assess appearance alone or the assessor's personal preference. The visual arrangement shall be evaluated in terms of how effectively it supports identification, verification, and future maintenance activities.

- Experts shall consider the following:
- Consistency of routing patterns
- Visual organization and neatness
- Ease of cable identification
- Ease of connection verification
- Ease of maintenance
- Presence of unnecessary crossing, twisting, or congestion

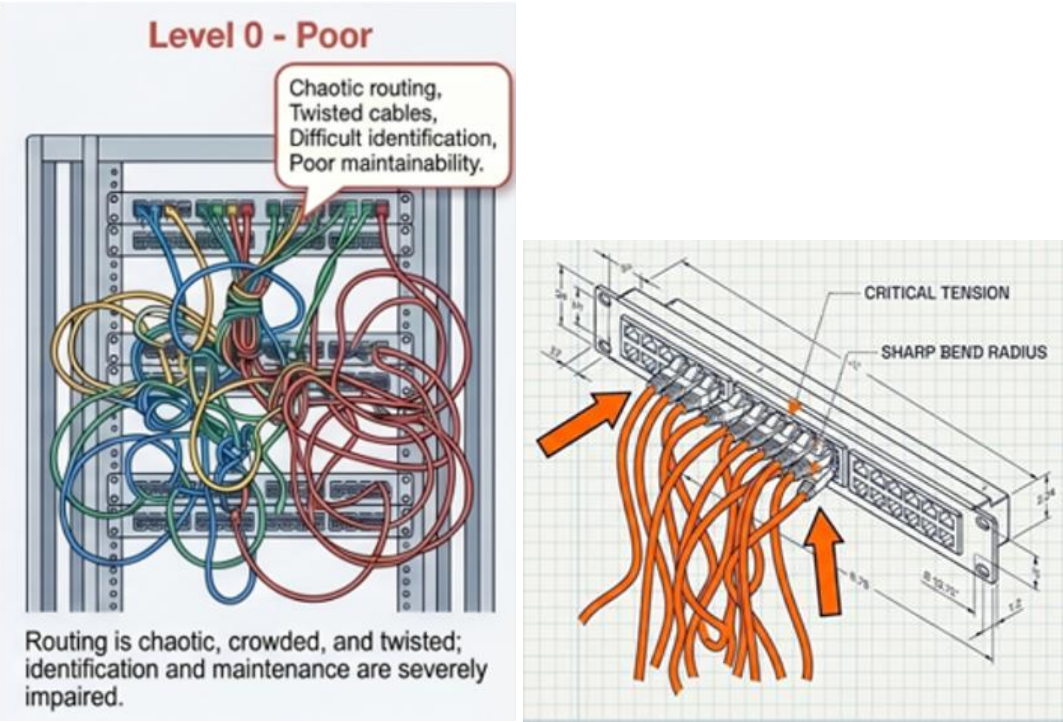
Higher scores shall be awarded when patch cords are visually well organized, routed consistently, and allow easy identification, verification, and maintenance without affecting adjacent connections.

- Lower scores shall be awarded when crossing, twisting, congestion, or irregular routing reduces visibility, traceability, or maintainability.
- Experts should note that:
- Minor differences in cable length should not be penalized.
- Assessment shall not be based on a preferred routing style or personal aesthetic preference.
- Visual appearance is important, but it shall be evaluated together with identification, verification, and maintainability.
- Arrangements that allow individual patch cords to be easily traced, verified, and replaced should be rewarded.

Key Principle : A high-quality patch cord installation is not only visually organized, but also supports efficient identification, verification, and maintenance throughout the lifecycle of the installation.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

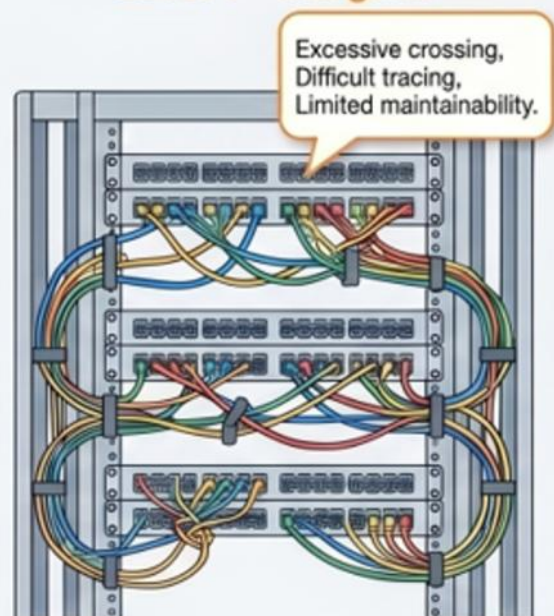
<https://www.skill02worldskills.online/>

WSOS section	Score	Descriptor	Resource
4	0	Patch cord routing is disorganized, and maintainability is seriously impaired by crossing, twisting, congestion or difficulty in identification.	 Level 0 - Poor Chaotic routing, Twisted cables, Difficult identification, Poor maintainability. Routing is chaotic, crowded, and twisted; identification and maintenance are severely impaired. CRITICAL TENSION SHARP BEND RADIUS

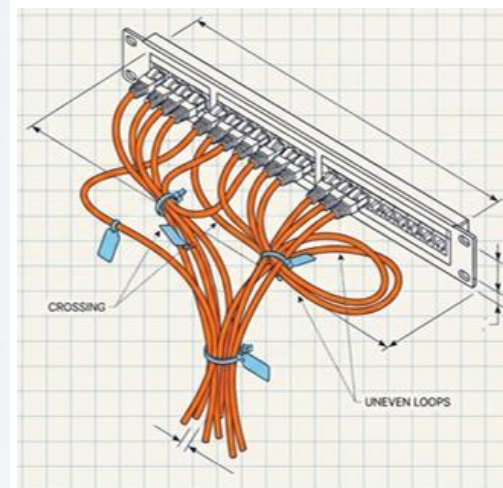
1

There is some disorder or inefficient routing in the patch cords, but connection verification and maintenance are still possible.

Level 1 - Marginal

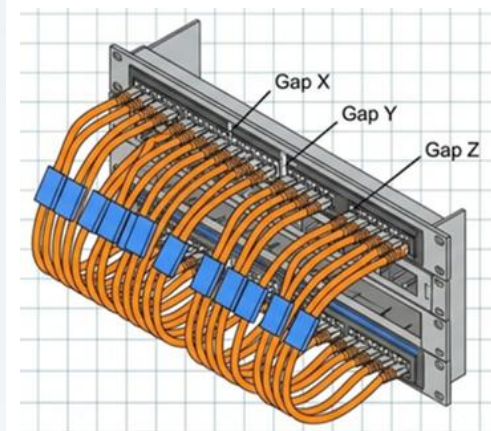
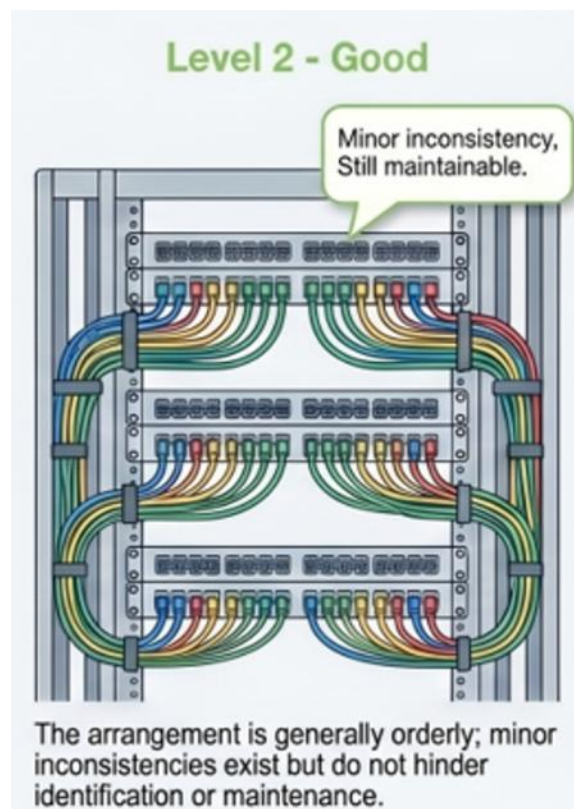


Excessive crossing and inconsistent routing paths make cable tracing difficult and limit overall system maintainability.



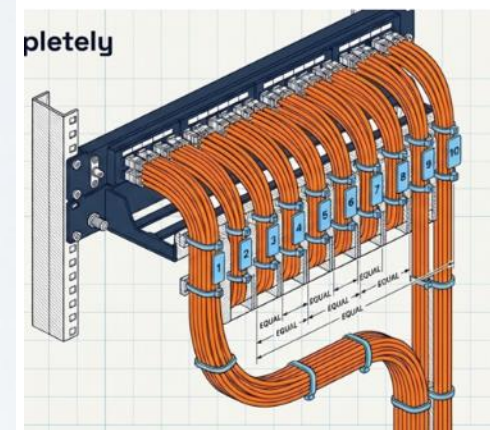
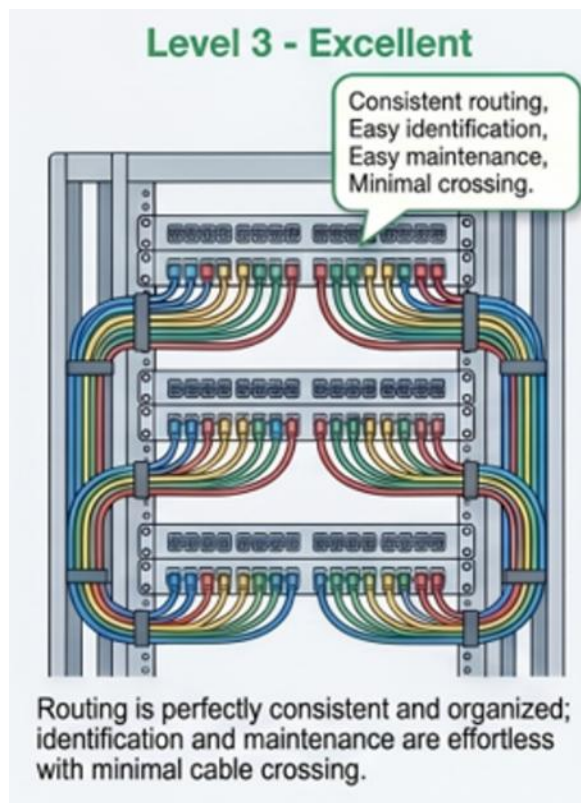
2

Patch cords are generally arranged in an orderly manner, with no major obstacle to identification or maintenance.



3

Patch cords are visually organized, routing is consistent, and identification, verification and maintenance are easy.



Aspect: Quality of Label Identification and Accessibility: Optical cables, Fiber, Enclosure

Judgement Score Description

This aspect evaluates whether labels are installed in a manner that supports efficient identification, verification, maintenance, and rework throughout the lifecycle of the installation. Assessment shall consider not only the presence of labels, but also their visibility, consistency, orientation, logical structure, and accessibility.

- Experts shall consider the following:
- Visibility and readability of labels
- Consistency of labelling format and placement
- Orientation of labels for easy reading
- Logical and systematic label structure
- Accessibility for inspection and maintenance

Ease of identifying and tracing the corresponding connection

Higher scores shall be awarded when labels are systematically placed, clearly visible, consistently formatted, logically organized, and can be easily accessed without moving cables or equipment. The label arrangement should support efficient verification, maintenance, and rework activities.

Lower scores shall be awarded when labels are missing, unclear, inconsistently applied, difficult to read, obstructed, or difficult to access, resulting in reduced identification, verification, or maintainability.

Experts should note

- Minor differences in label position should not be penalized if visibility and accessibility are maintained.
- Assessment shall focus on usability rather than appearance alone.
- Labels should be evaluated from the perspective of a technician performing inspection, maintenance, or troubleshooting.
- A label that exists but cannot be easily read or accessed should not be considered fully compliant.

Key Principle: A high-quality labelling system enables a technician to quickly identify, verify, maintain, and rework the installation without ambiguity or unnecessary disturbance to other components.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

WSOS section	Score	Descriptor	Resource
4	0	Labels are missing, unclear, inconsistent or difficult to access, making identification, verification or maintenance difficult.	 0 Points (Poor) - Missing labels - Illegible text - Inconsistent IDs - Hard to verify - Poor maintainability - Labels missing or unclear - IDs are inconsistent - Hidden behind equipment - Verification is difficult

	1	There are some issues in label visibility, consistency, orientation or accessibility, but identification and verification are still possible.	1 Point (Marginal)  Hard-to-read labels Inconsistent orientation Hard to access Still identifiable • Some labels difficult to read • Inconsistencies in positioning • Requires effort to verify • Identification still possible
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	2	Labels are generally visible, consistent, identifiable and accessible, with no major obstacle to maintenance or verification.	2 Points (Good)  Minor inconsistencies Identifiable Verifiable • Labels generally readable • Consistency generally maintained • No major obstacles to verification • Minor misalignments exist
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	3	Labels are systematically positioned, clearly visible, logically structured and easily accessible for verification, maintenance and rework.	3 Points (Excellent)  Clear visibility Consistent orientation Logical ID structure Easy access Maintenance-friendly - Labels systematically positioned - All labels clearly legible - Uniform orientation - Verifiable without moving cables
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Aspect: UGC tray maintainability, accessibility and scalability

Judgement Score Description

This aspect evaluates whether used fibres, spliced fibres, spare fibres, and fibres belonging to different routes within the shared UGC tray are properly separated, identifiable, accessible, and maintainable.

Experts shall consider the following:

- Separation of different routes
- Identification of used, spliced, and spare fibres
- Accessibility of spare fibres
- Ease of inspection, measurement, and rework
- Readiness for future expansion

Higher scores shall be awarded when multiple routes are clearly separated and identifiable, allowing maintenance, measurement, rework, and future additions without disturbing other fibres.

Lower scores shall be awarded when routes or fibre types are mixed or congested, making identification, maintenance, measurement, or rework difficult.

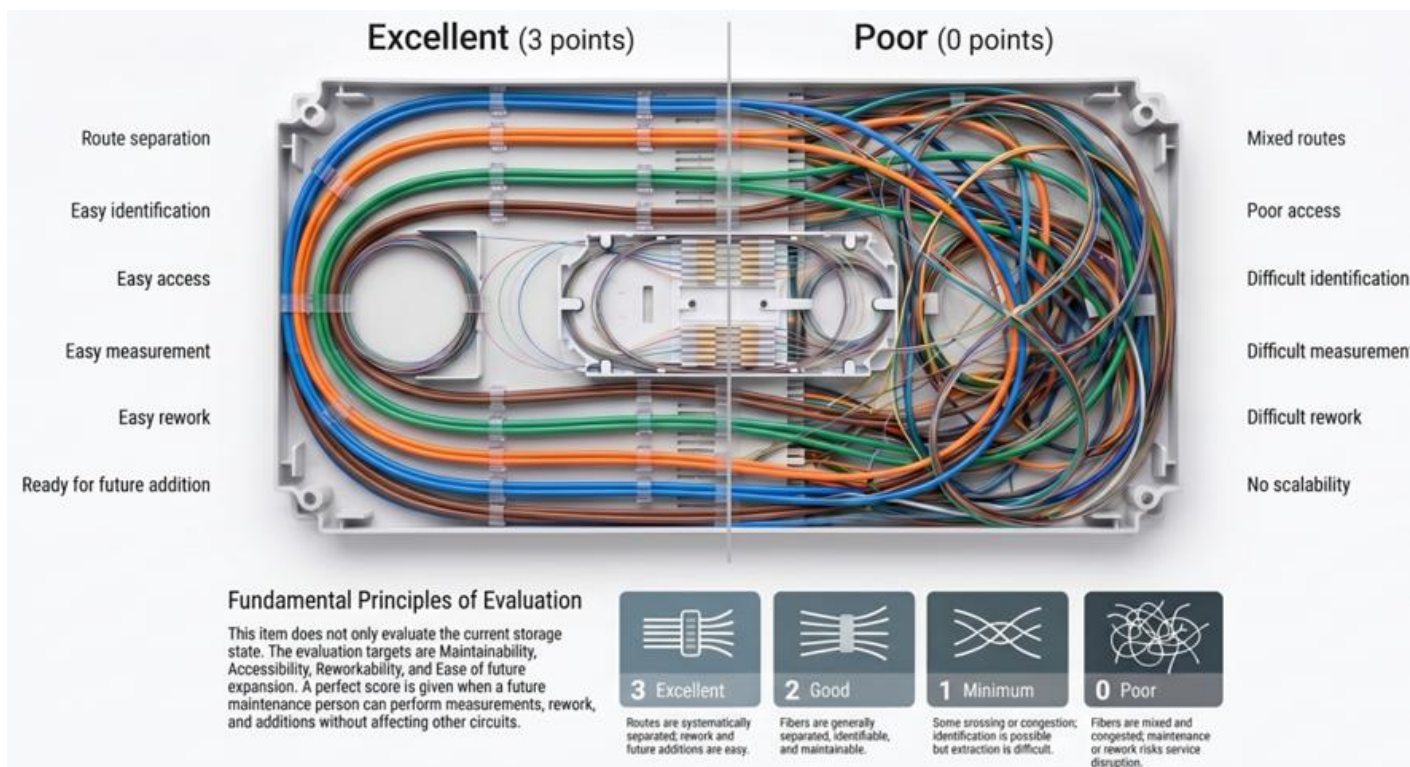
Notes for Experts

- A neat appearance alone does not justify a high score.
- If accessing spare fibres requires disturbing other routes or fibres, the installation should not receive the highest score.
- Minor crossing or congestion may be acceptable if identification, maintenance, and measurement remain possible.
- A score of 3 should reflect not only good current organization, but also readiness for future maintenance, modification, and expansion.
- Route separation, identification, and accessibility shall be considered together.

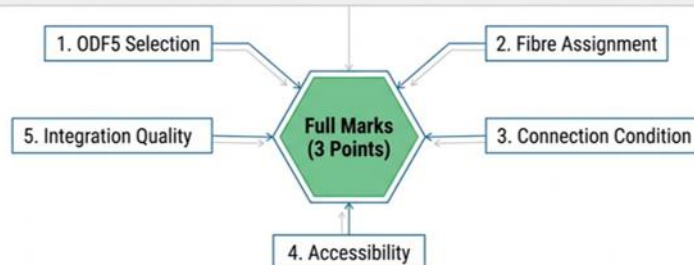
Key Principle: A high-quality shared UGC tray allows identification, measurement, maintenance, rework, and future expansion without disturbing unrelated fibres.

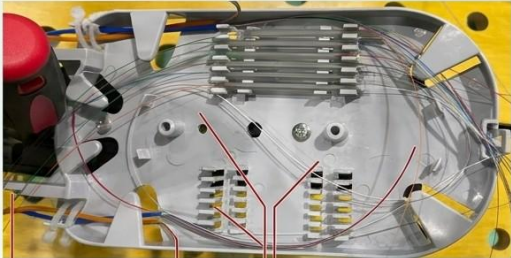
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This item does not merely evaluate the presence or absence of a connection.



WSOS section	Score	Descriptor	Resource
4	0	Routes, used fibres, spliced fibres, spare fibres or fibres belonging to different routes are mixed or congested, making identification, maintenance, measurement or rework difficult.	Score 0 (Poor)  Routes, used fibres, spliced fibres, spare fibres or fibres belonging to different routes are mixed or congested, making identification, maintenance, measurement or rework difficult. Poor (0 points)  - Routes are mixed. - Used and spare fibres are mixed. - Difficult to identify, extract, measure, and rework. - Expansion is difficult. [Mixed routes] [Difficult measurement] [Poor access] [Difficult rework] [Difficult identification] [No scalability]

	1	There is some crossing, congestion or difficulty in taking out fibres, but identification, maintenance and measurement are still possible.	Score 1 (Minimum)  There is some crossing, congestion or difficulty in taking out fibres, but identification, maintenance and measurement are still possible.
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	2	Used fibres, spliced fibres, spare fibres and different routes are generally separated, identifiable, accessible and maintainable.	Score 2 (Good)  Used fibres, spliced fibres, spare fibres and different routes are generally separated, identifiable, accessible and maintainable.
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3

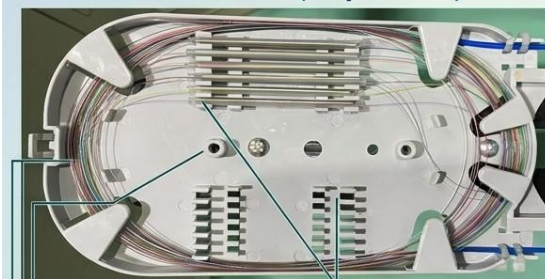
Multiple routes are systematically separated and identified, and spare fibre access, rework, inspection, measurement and future addition are easy.

Score 3 (Excellent)



Multiple routes are systematically separated and identified, and spare fibre access, rework, inspection, measurement and future addition are easy.

Excellent (3 points)



- Used, spliced, spare, and different routes are clearly separated.
- Each route is identifiable.
- Individual fibres are easy to extract.
- Measurement and rework are easy.
- Space for future addition is secured.

[Route separation]	[Easy identification]	[Easy access]
[Easy measurement]	[Easy rework]	[Ready for future addition]

EVALUATION PRINCIPLES: This assessment does not only evaluate the current state of the fibre optic network, but also the future state of the network when a future maintenance worker can measure, rework, and add new fibres.

Aspect: Fibre Storage Quality within UGC Tray

Judgement Score Description

This aspect evaluates the quality of fibre storage within the UGC tray, including route separation, fibre protection, accessibility, and reworkability.

Experts shall consider the following:

- Separation of used and spare fibres
- Separation of different routes
- Fibre protection within the tray
- Accessibility to the target fibres
- Ease of inspection, measurement, and rework
- Ability to restore the tray to an organized condition after rework

Higher scores shall be awarded when used fibres, spare fibres, and different routes are well organized and separated, allowing fibres to be identified, accessed, measured, and reworked without disturbing unrelated fibres.

Lower scores shall be awarded when fibres are mixed, congested, insufficiently protected, or difficult to access, making identification, measurement, maintenance, or rework difficult.

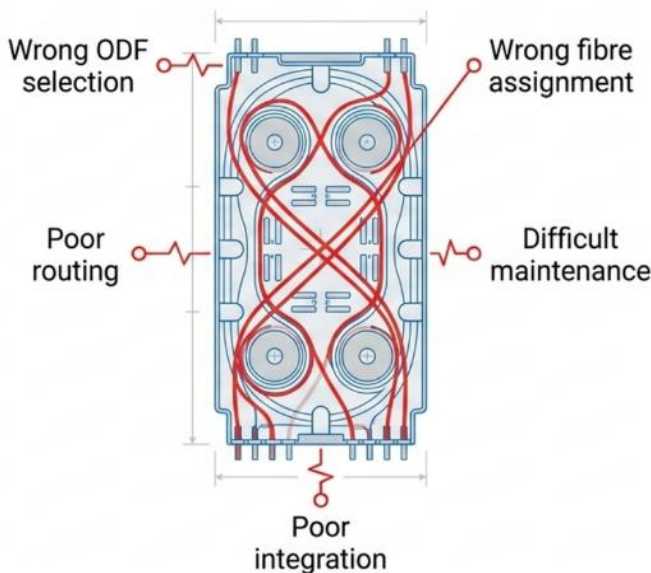
Notes for Experts:

- A neat appearance alone does not justify a high score.
- If measurement or rework requires significant disturbance of other fibres, the installation should not receive the highest score.
- Spare fibres should be properly protected and readily accessible when needed.
- Minor crossing or congestion may be acceptable if accessibility and reworkability are not affected.
- This aspect focuses primarily on current maintainability and reworkability rather than future scalability.

Key Principle: A high-quality UGC tray allows fibres to be properly stored, protected, identified, accessed, measured, and reworked efficiently without disturbing unrelated fibres.

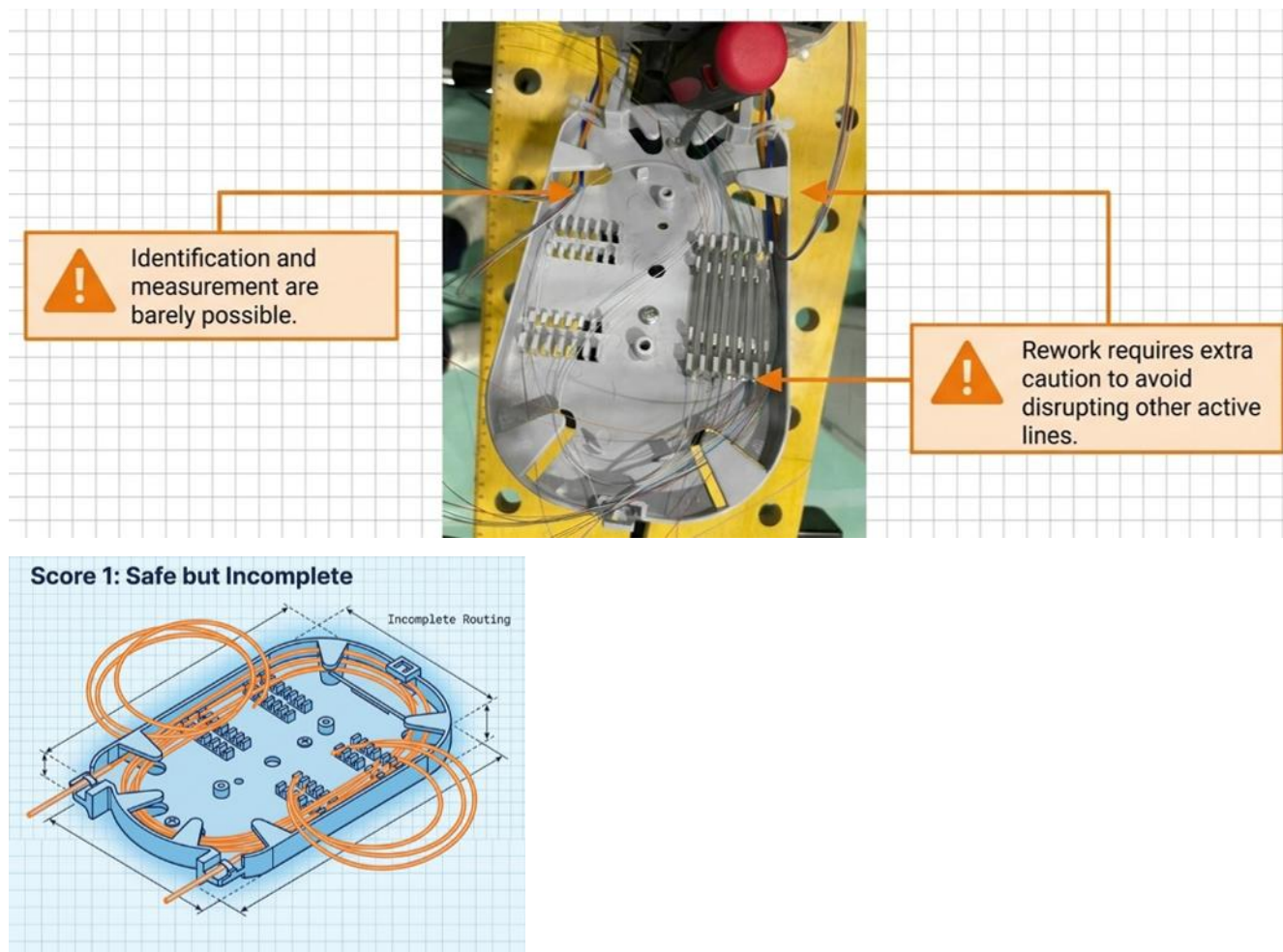
For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

WSOS section	Score	Descriptor	Resource
4	0	Used fibres, spare fibres, and fibres from different routes are mixed, congested, insufficiently protected, or difficult to identify, making maintenance, measurement, or rework difficult.	[0 Points: Poor]  Wrong ODF selection Wrong fibre assignment Poor routing Difficult maintenance Poor integration  Score 0: Critical Failure (Unmanaged) Bend Radius Violation

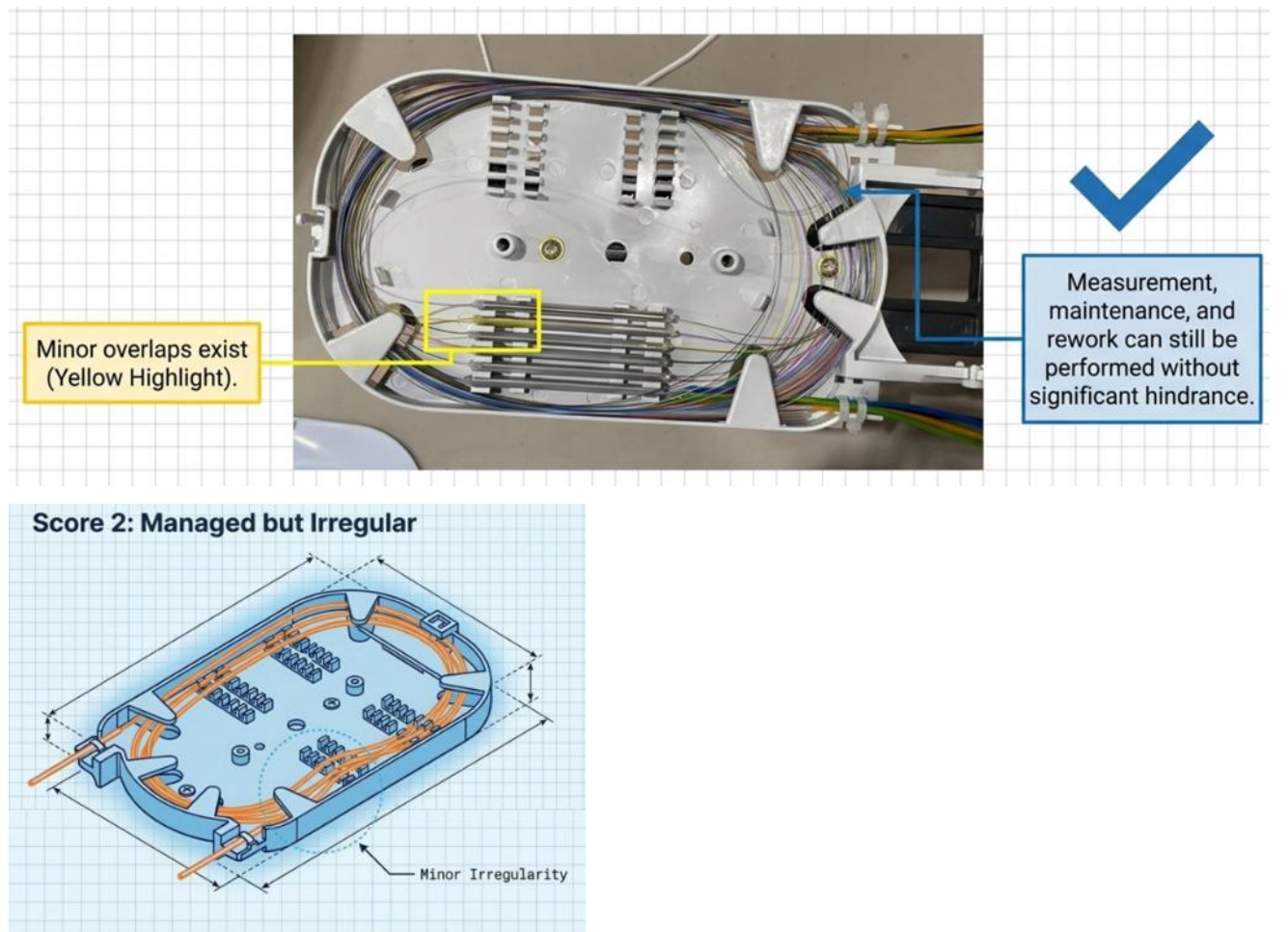
1

Route separation, fibre storage, protection, or accessibility is partially unclear or insufficient, but identification, maintenance, and measurement are still possible.



2

Used fibres, spare fibres, and different routes are generally separated, properly stored, protected, identifiable, accessible, and maintainable, with no major obstacle to inspection or rework.



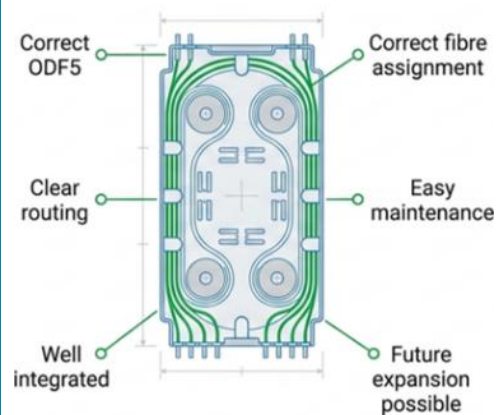
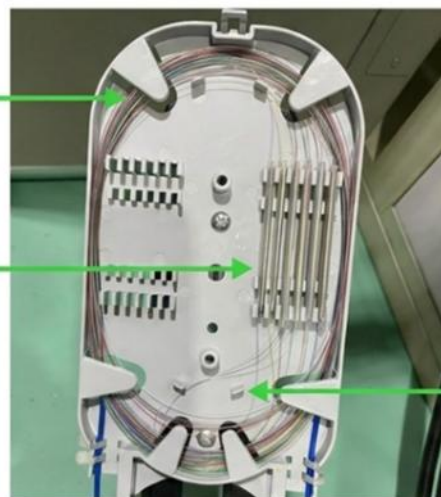
3

Fibre storage, route separation, fibre protection, spare fibre accessibility, measurement access, and reworkability are excellent, allowing future modifications with minimal disturbance.

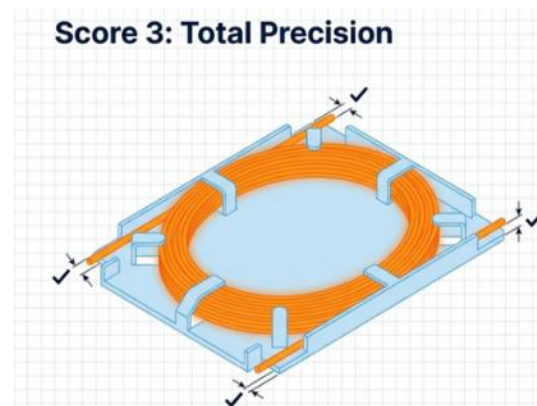
EFFORTLESS IDENTIFICATION & MEASUREMENT ACCESS.

REWORKABILITY ENSURED WITHOUT DISRUPTING OTHER CIRCUITS.

THOROUGHLY PREPARED FOR FUTURE EXPANSIONS.



Score 3: Total Precision



Aspect: Rack Cable Bend Radius, Fixing and Protection Quality

Judgement Score Description

This aspect evaluates the quality of cable installation inside the 19-inch rack, focusing on bend radius, fixing, protection, and stress management to ensure cable performance and future maintainability.

Experts shall consider the following:

- Bend radius of cables inside the rack
- Cable fixing method and fixing force
- Protection of cables and cable sheaths
- Absence of unnecessary tension, compression, or twisting
- Cable routing that supports future maintenance

Higher scores shall be awarded when cables are installed with the correct bend radius, securely but not excessively fixed, properly protected, and free from unnecessary mechanical stress.

Lower scores shall be awarded when insufficient bend radius, excessive fixing, cable or sheath damage, inadequate protection, or unnecessary tension or compression is observed.

Notes for Experts

- Verify compliance with the specified minimum bend radius for the cable type or Test Project requirements.
- Cable ties or other fixing methods shall secure the cable without causing deformation or damage.
- Ensure that cables are free from excessive tension, compression, twisting, or sharp bends.
- Evaluate the installation from the perspective of long-term reliability and maintainability rather than appearance alone.

Key Principle: A high-quality rack installation maintains the correct bend radius, appropriate fixing, and adequate protection, ensuring long-term cable performance and maintainability.

For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

<https://www.skill02worldskills.online/>

WSOS section	Score	Descriptor
4	0	There is insufficient bend radius, excessive fixing, sheath damage, or insufficient protection.
	1	There are minor defects, but no major impact on performance is confirmed.
	2	Bend radius, fixing, and protection are generally appropriate.
	3	Bend radius, fixing, protection, and cable stress management are consistently appropriate.

Aspect: Connection and Fibre Storage Quality inside ODF

Judgement Score Description

This aspect evaluates the quality of connections and fibre storage inside the ODF, focusing on fibre routing, connection condition, storage condition, bend radius, accessibility, and maintainability.

Experts shall consider the following:

- Condition of installed fibre connections
- Routing of used and spare fibres
- Fibre storage condition inside the ODF
- Compliance with the minimum bend radius
- Accessibility for inspection and maintenance
- Ease of maintenance without disturbing other fibres

Higher scores shall be awarded when fibre connections are properly arranged, used and spare fibres are neatly stored, bend radius is maintained, and inspection or maintenance can be performed easily.

Lower scores shall be awarded when connections or stored fibres are poorly organized, excessively bent, difficult to access, or arranged in a way that reduces maintainability.

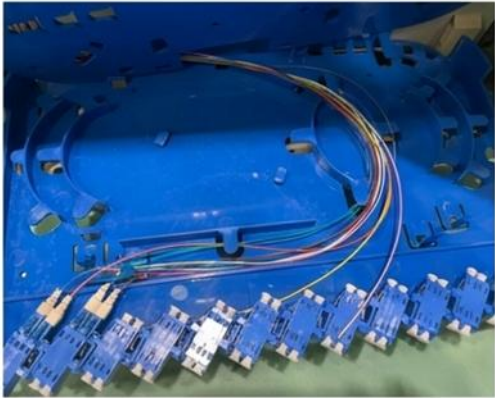
Notes for Experts

- Neat appearance alone does not justify a high score.
- Verify that the minimum bend radius is maintained throughout the storage area.
- Used and spare fibres should be stored in an orderly manner without excessive congestion.
- Fibre storage should allow inspection and maintenance without unnecessarily disturbing adjacent fibres.
- Evaluate the installation from the perspective of future maintenance activities.

Key Principle: High-quality ODF work ensures that fibre connections and stored fibres are orderly, protected, accessible, and maintainable while keeping the required bend radius.

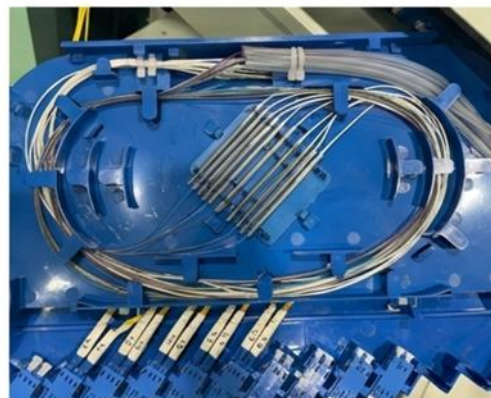
For video explanations, enlarged views of the diagrams, and photographs from the actual WorldSkills Competition, please refer to here.

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WSOS section	Score	Descriptor	Resource
4	0	Fibre connections or stored fibres are disorganized, excessively bent, insufficiently protected, or difficult to access, making inspection or maintenance difficult.	Poor Alert Red Zero Points Risk  Fibres crossing over existing paths; lack of structured routing.

	1	There are minor issues with connection arrangement, fibre storage, bend radius, or accessibility, but inspection and maintenance are still possible.	Marginal Yellow Deduction Risk  Chaotic overlapping; 'bird's nest' effect creates high maintenance risk.
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	2	Fibre connections and stored fibres are generally well organized, protected, accessible, and compliant with the required bend radius, with no major obstacle to inspection or maintenance.	
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	3	Fibre connections and stored fibres are systematically organized, well protected, easily accessible, maintain the required bend radius, and fully support efficient inspection, maintenance, and future rework.	Excellent Precision Green 3 Points Target  Perfect parallel loops; clear visual separation of splices.
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Aspect: Cable management in Cable Ladder

Judgement Score Description

This aspect evaluates whether cable routing and cable organization are appropriate, traceable, and maintainable.

Experts shall consider the following:

- Clarity of cable routing
- Cable organization and separation
- Absence of unnecessary crossing, congestion, or tension
- Ease of tracing cables during maintenance

Higher scores shall be awarded when cable routes, organization, branching points, and fixing positions are clearly defined and easy to trace during maintenance.

Lower scores shall be awarded when cable routing is unclear, disorganized, congested, under excessive tension, or difficult to maintain.

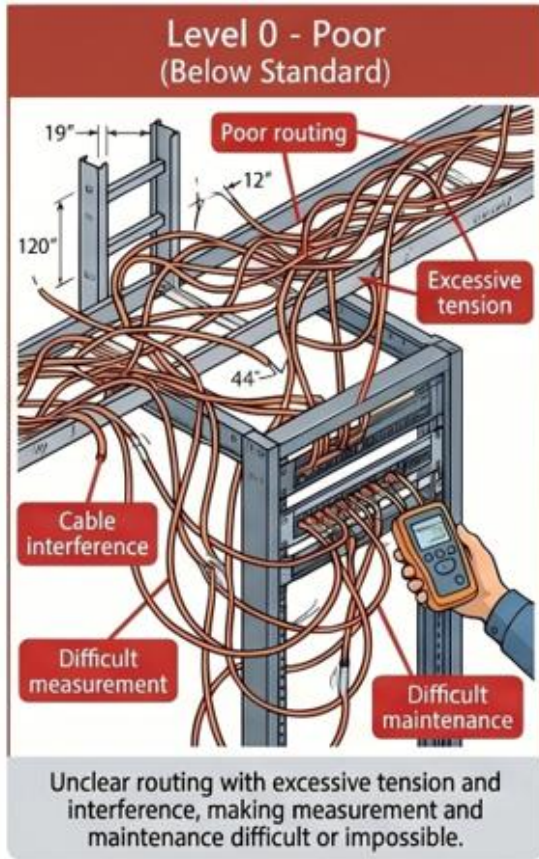
Notes for Experts

- Do not evaluate appearance alone; focus on routing clarity and maintainability.
- Minor disorder may be acceptable if installation function and maintenance are not affected.
- Excessive crossing, congestion, or tension should be penalized.
- Cables should be easy to trace without disturbing unrelated cables.

Key Principle: High-quality cable routing allows cables to be clearly organized, safely routed, and easily traced during future maintenance.

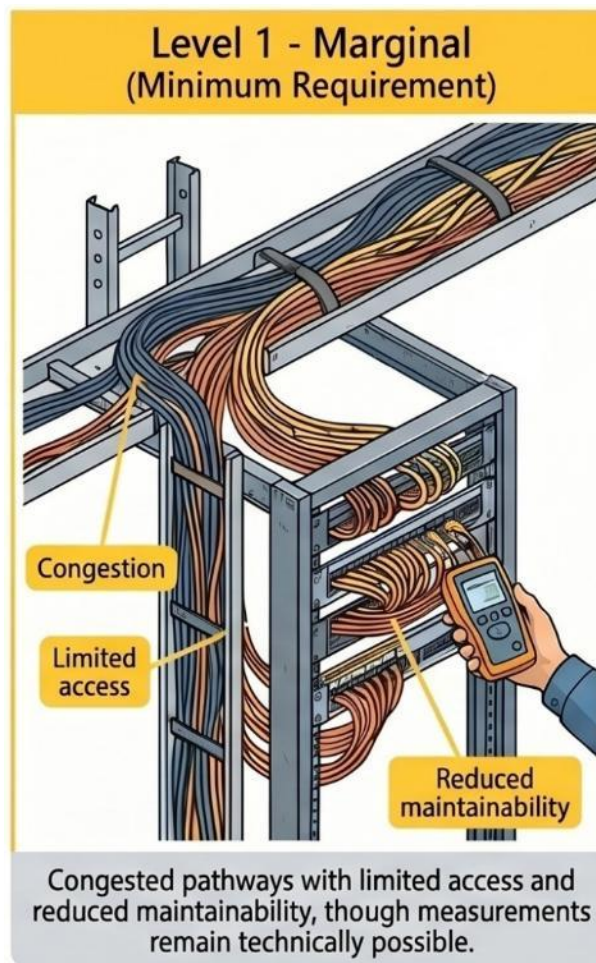
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WSOS section	Score	Descriptor	Resource
4	0	The cable routing is inappropriate, with crossing, confusion, excessive tension, or poor maintainability.	   The diagram, titled "Level 0 - Poor (Below Standard)", illustrates several issues with cable routing. It shows a chaotic arrangement of red cables in a rack. Labels point to "Poor routing", "Excessive tension", "Cable interference", "Difficult measurement", and "Difficult maintenance". Dimensions are noted: 19" for the rack width, 120" for the cable length, 12" for the cable spacing, and 44" for the rack depth. A hand is shown holding a multimeter, indicating measurement difficulty. The text at the bottom states: "Unclear routing with excessive tension and interference, making measurement and maintenance difficult or impossible." The two photographs show real-world examples of poor cable routing. The top photo shows blue cables bundled together and running haphazardly in a rack. The bottom photo shows a dense, disorganized mass of white cables in a rack, making it difficult to identify and manage individual connections.

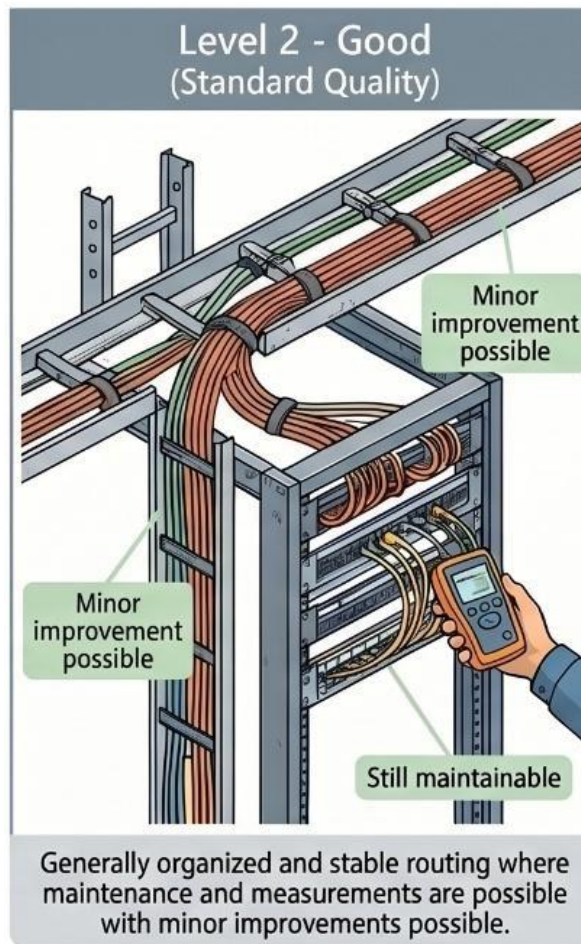
1

There is some minor disorder, but the impact on installation function and maintainability is limited.



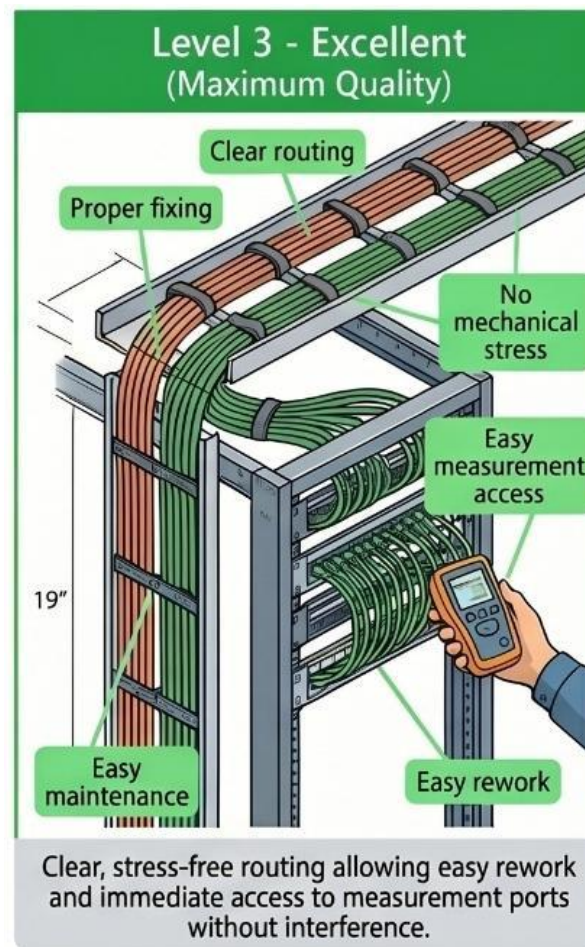
2

The cable routing is generally appropriate, and cable organization is practically acceptable.

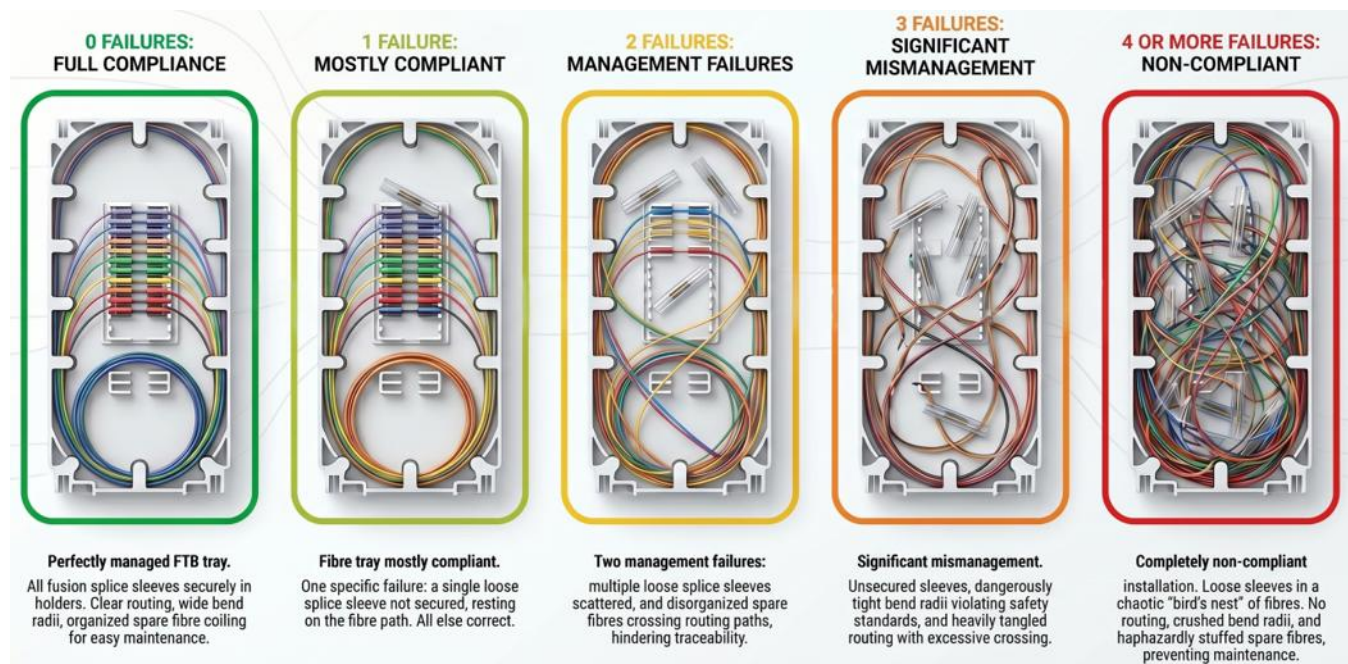


3

The cable routing, dressing, branching, and fixing positions are clearly defined and easily traceable during maintenance.

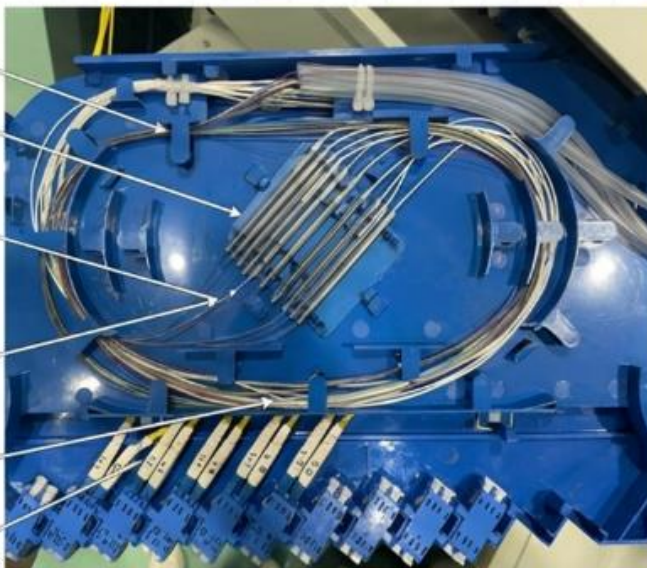


Further guidance



Full Compliance

- Proper fusion splice protection
- Clear and logical routing paths
- Appropriate minimum bend radius maintained
- Spare fibres systematically sorted and stored
- Fully traceable fibre paths
- Optimized for future maintenance



Non-Compliant

- Poor fusion splice protection
- Complex and excessive tangling/crossing
- Insufficient bend radius
- Chaotic and disorderly spare fibre storage
- Untraceable routing paths
- Storage condition actively obstructs maintenance



Assessment Focus: Function Over Aesthetics

This criterion does not evaluate visual beauty. Assessors must evaluate strictly based on whether future maintenance personnel can:
1. Identify connections easily | 2. Access components safely | 3. Perform maintenance without disrupting other circuits.