Fiber Inspection Probe

FIP100

USER GUIDE

CONTENT

1. GENERAL INFORMATION

1.1. General

The Fiber Inspection Probe FIP100 (Probe) connected to a mobile device, is designed to:
- visually characterize the end surface cleanliness of fiber optic connectors,
- visually display the position of defects on the ferrule surface,
- automatically identify ferrule defects,
- evaluation of the ferrule to meet the requirements of existing standards or user criteria.

The probe is a portable meter with a self-powered, plug-in wireless Wi-Fi network to the mobile device (iOS or Android).

Probe allows to store measured data (the image of the optical fiber end face in a digital form) and the analysis results in the internal memory of the mobile device, and transmit stored data report using a mobile communication device application.

Features of this product are protected by the Patents: US9217688B2; GB201016991D0.

Each FIP100 includes:

FIP100 main unit	1 pc
2.5mm Universal UPC Tip (2.5MMUPC)	1 pc
Retractable Lanyard	1 pc
Power Supply with NA, UK and EU adapters	1 pc
Quick Reference Card	1 pc
Soft carrying case	1 pc

Available adapter types:

SCUPC BH	SC/UPC Bulkhead Tip
LCUPC BH	LC/UPC Bulkhead Tip
2.5MMUPC	2.5mm Universal UPC Tip
1.25MMUPC	1.25mm Universal UPC Tip
SCAPC BH	SC/APC Bulkhead Tip
2.5MMAPC	2.5mm Universal APC Tip
1.25MMAPC	1.25mm Universal APC Tip
LCAPC BH	LC/APC Bulkhead Tip

1.2. Conditions of application

0 to 50°C; humidity 90% at 30°C, non-condensing.

1.3. Storage Temperature

-40 to +70°C; humidity non-condensing up to 95% at temperature 35°C.

2. PERFORMANCE SPECIFICATIONS

2.1. Field of View - Live mode and Captured: 612 x 460 µm

2.2. Manual Detection Capability (minimum) - 0.25 µm

2.3. Auto Analysis Resolution <1.0 µm

2.4. Stored Image Size - 2592 x 1944 (5M) pixels

2.5. Maximum Allowable Live Fiber Power Level - +20 dBm (Image cannot be viewed if fiber is live)

2.6. Wi-Fi Characteristics - IEEE 802.11bng

2.7. Button Functionality - Power On/Off (>3 secs); Capture/Analysis/Auto-save/Live

2.8. Main LED Functionality - Blue = Power On, Green = Pass, Red = Fail, Cyan = No Fiber

2.9. Live Image Frames per Second - 15

2.10. Magnification - Variable from 80X to 700X, in Live and Capture modes

2.11. Applications Compatibility - Android ≥4.0.3, iOS ≥8.1

2.12. Image Capture with Pass/Fail Analysis - IEC 61300-3-35 (2015), user-set criteria

2.13. Image File Format - JPEG, GIF

2.14. Image & Pass/Fail Results Storage - Yes

2.15. File Storage Capacity - Remote Device limited

2.16. Result Manager - Storage, rename, delete, transfer

2.17. Reporting - Built-in fillable PDF reporter

2.18. Supported Languages - English, French, German, Japanese, Korean, Russian, Spanish

GENERAL CHARACTERISTICS

2.19. Battery type - Li-Ion, non-field replaceable

2.20. Maximum Charger Current Draw - 1.2A, battery charge current + device consumption current

2.21. Operating Time (typical) - 60 hours; 8 hours continuous

2.22. Recharge Time - ≤4 hours

2.23. Low-Battery Warning - Viewed on smart device

2.24. Charging LED Status –
    Red = Charging, Green = Fully Charged, Blinking Red/Green = Battery Fault.
    Charging status viewed on smart device.

2.25. Power Save Features (Controlled by iOS & Android App) -
    Probe Auto-Off – disabled, 1, 5, 30 minutes;
    Probe Wi-Fi Not Connected – 5 minutes

2.26. AC Charger - 100-240VAC, 50/60Hz, 5VDC, 2A

2.27. Weight / Dimensions - 150 g / diam.40 x 226 mm

3. SAFETY INFORMATION

It is important to always keep the optical sensor window clean and free of debris. Use lint free wipes and an optical cleaning fluid such as 99% isopropyl alcohol to clean the sensor window.

Keep all surfaces of the Probe clean and free of dust and water whenever possible.
Always store the Probe in the provided carry case to avoid exposure to contaminants.

Prior to use, carefully check cleanliness of sensor surface.

Do not use nonstandard optical connectors and plugs with badly polished butt-ends. They can damage the sensor surface.
Scratched or contaminated optical connectors can impact the performance of the device.

ATTENTION!

! Never look directly into the optical outputs of fiber optic network equipment, test equipment, patch cords and jumpers. Laser radiation is harmful to eyes.

! Never inspect connectors with live fiber power level more +20 dBm to avoid a damage device.

! Use only the specified AC adapter. Use of another type of AC adapter can damage the instrument and create the danger of fire and electrical shock.

To avoid the danger of fire and electrical shock:

− Never use a voltage that is different from that for which the AC adapter is rated.

− Do not plug the unit into a power outlet that is shared by other devices.

− Never modify the power cord or excessively bend, twist, or pull it.

− Do not allow the power cord to become damaged. Do not place heavy objects on the power cord or expose it to heat.

− Never touch the AC adapter while your hands are wet.

− Should the power cord become seriously damaged (internal wiring exposed or shorted), contact the manufacturer to request servicing.

4. FIP100 OVERVIEW

4.1. Controls and interfaces

1 – Multifunctional button
Press and release the button to turn the FIP100 probe On. Press and hold button for over 3 seconds to turn the probe OFF.
2 – LED status indicator will display Flashing Blue light
3 – Optical input.

ATTENTION!
It is necessary to protect optical input with dust cover (4) if the device is not used.

4 – Dust cover
5 – Optical adapter
6 – Retractable Lanyard

ATTENTION!
Be sure that there is no optical power in measuring fiber before connecting the device to this fiber.

a) General appearance

b) Marking and recharger's compartment cover

7 – 5 VDC input jack
8 – Recharger's compartment cover
9 – Charging indicator
10 – Label with serial number

4.2. Multifunctional Button Operation -1 (Picture a)

- Powers FIP100 ON / OFF.
- In the Live Image mode, press the Multifunctional button to perform the following:
- Auto Focus image (if the Auto Focus option is enabled)
- Capture the displayed image and enter the Captured Image mode
- Analyze image (if the Pass/Fail option is enabled)
- Save results and in the memory of WiFi connected Smart Device (if Auto Save is enabled)
- In the Captured Image mode, press the Multifunctional button to return to the Live Image mode.

4.3. Multifunctional LED Indicator States

Nr.	Action	State	LED color/Behavior
1	Power ON	Firmware loading	**Blue** blinks 3 times: 1s ON / 1s OFF
2	Press button 3-5 times	Upgrade mode, loading Firmware	**Blue** blinks: 0.5s ON / 0.5s OFF
3	Firmware flashing	Firmware Flashing. After flashing FIP100 enter to Powered ON	**Blue** blinks 0.2s ON / 0.2s OFF
4	Powered ON	Ready to connect, send Wi-Fi SSID beacon	**Blue** blinks: 2s ON / 1s OFF
5	Smart device Wi-Fi connected	Wi-Fi connected, Apps not active	**White** lit steadily
6	Smart device Wi-Fi disconnected	Wi-Fi disconnected, Wi-Fi SSID beacon	**Blue** blinks: 2 s ON / 1s OFF
7	App starts	Live mode	**Blue** lit steadily
8	App closed/standby	Wi-Fi connected, Apps not active	**White** lit steadily
9	Image capture and Analysis	Pass	**Green** lit steadily
10	Image capture and Analysis	Fail	**Red** lit steadily
11	Image capture and Analysis	No Fiber	**Cyan** lit steadily
12	Image capture without Analysis, Menu	Not Analyzed, Menu	**Purple** lit steadily

4.4. Battery Charging and Operation

To charge battery of the FIP100 probe:

1. Plug the included AC Charger into AC outlet.

2. Connect charger plug into 5 VDC jack on the FIP100 probe.

3. Charging indicator displays the battery charging status as follows:

LED color/Behavior	Battery Charging States
Off	AC is not connected
Red	Battery is charging
Green	Battery is fully charged
Red/Green flashing	Charging error: • Verify that correct 5VDC 2A charger is used • Allow the FIP100 probe to cool before charging

4. FIP100 probe charges while operating.

5. FIP100 APP OVERVIEW

5.1. Downloading FIP100 App

Download FIP100 App from Google Play ![Google play] or Apple Store ![App Store]

5.2. Connecting the FIP100 to a Smart Device

On FIP100 probe:

- Press and release the 🔲 / ⏻ button to power On;
- LED status indicator will display Flashing Blue light indicating that FIP100 is in "WiFi Beacon Mode" – ready to connect to your smart device.

On your Smart Device:

- Navigate to Settings;
- Tap Wi-Fi. Make sure Wi-Fi is turned on;
- Locate your FIP100 device (as example screen below) and tap on it;
- Enter password;
- Tap Connect;
- Note the 'Connected' status;
- Your FIP100 probe is now connected to your smart device.
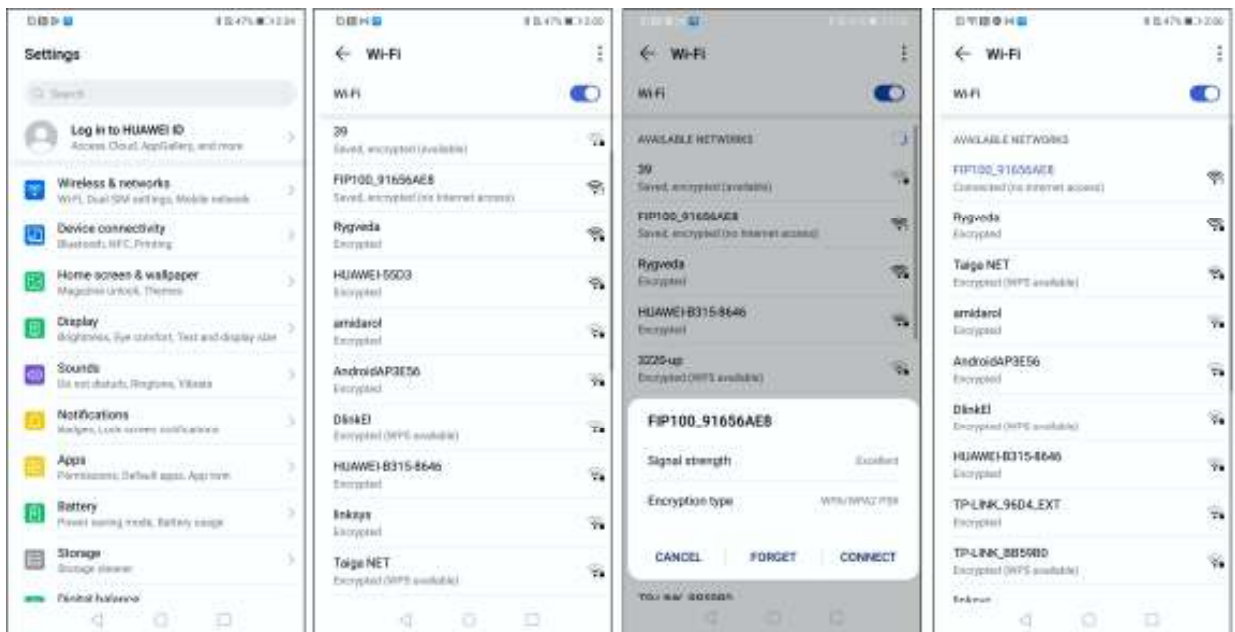
On FIP100 probe:

- Note that LED status indicator changes to White indicating that FIP100 is connected, but FIP100 App is not active;
- Launch the FIP100 App on your smart device;
- Note that LED status indicator changes to Blue indicating that FIP100 is connected and FIP100 App is active in Live Mode.

6. FIP100 APP USER INTERFACE OVERVIEW

6.1. Mobile Device Screen Format
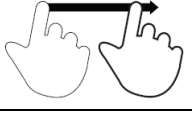
FIP100 App supports vertical and horizontal screen formats. Switching from vertical format to horizontal is performed by turning the mobile device vertically/horizontally.
Note: 'Screen Rotation' feature needs to be enabled in the mobile device Settings menu.
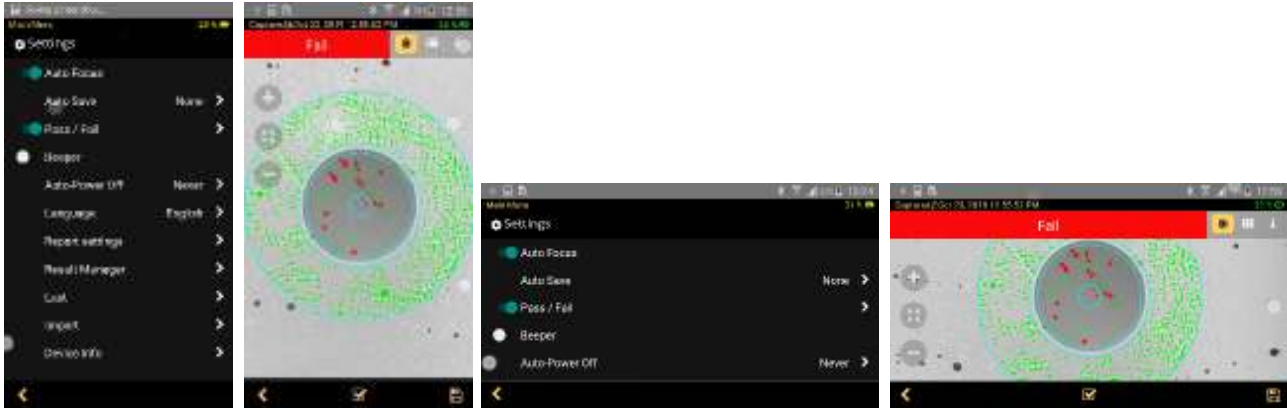

6.2. Supported Touch Screen Gestures

The FIP100 App display is controlled from the touch screen of the mobile device using a supported set of gestures.

Touch Gesture	Description	Function	Screens
	Tap Briefly touch surface with fingertip	Select	All screens
	Double tap Rapidly touch surface twice with fingertip	Enter edit mode	Captured Image,
	Drag Move fingertip over surface without losing contact	Pan, scroll	Live Image, Captured Image
	Flick/Swipe Quickly brush surface with fingertip	Switching modes	Captured Image
	Pinch Touch surface with two fingers and bring them closer together	Zoom out	Live Image, Captured Image
	Spread Touch surface with two fingers and move them apart	Zoom in	Live Image, Captured Image

7. LIVE IMAGE MODE

7.1. Live Image Screen Features

FIP100 App starts in the Live Image mode, which enables the user to view live images of a fiber end-face and perform visual inspection of the displayed fiber end-face image on a mobile device
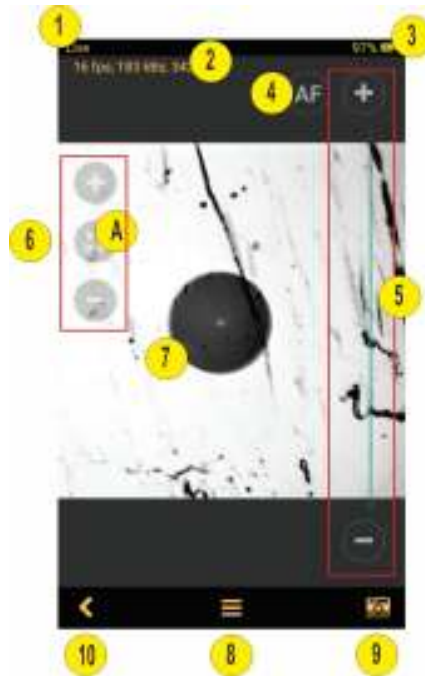
1. **Screen title:** Indicates that FIP100 operates are in the Live image mode.

2. **Live video streaming status:** This row indicates frame per second data and kB/s transfer rate, focus position and signature for auto focusing.

3. **Battery status field:** indicates percentage of battery charge
      - percentage of charge,
      - green color – battery charge >20%,
      - red color – low battery <20% warning,
      - yellow color – battery charging.

4. **AF (auto-focus) control:** Tap to initiate auto-focus.

5. **Focus control slider:** Drag Focus slider or tap (+) / (–) to increase/decrease focal length .

6. **Zoom controls**:
- Tap (+) / (–) for increasing/decreasing the scale of the live fiber-end image .
- Tap **A** to reset the nominal Zoom

7. **Live image** of the fiber that is being inspected.
- The fiber image can be scaled and positioned on the screen by pinching/spreading/dragging the displayed fiber image.
- Tapping on the fiber image will turn ON/Off the Focus and Zoom control buttons.

8. **Menu on-screen button:** Tapping Menu displays the Main Menu that allows the user to set preferences, manage saved test results and perform other non-test functions.

9. **Capture on-screen button:** Tap to initiate Image capture and enter the Capture screen.

10. **Back on-screen button:** Tap to return to the previous screen.

8. MAIN MENU

8.1. Main Menu Overview

The Main Menu is accessed from Live Image mode by tapping the Menu ☰ on-screen button. Main Menu contains various Settings that are used to select user preferences, perform general settings, manage saved test results, and perform other non-test functions.

The Main Menu screen contains the following controls:
- ● ○/ (On/Off) -Tapping this control enables/disables the selected Setting.
- Right arrow ❯ - Tapping this control will either display a pop-up menu or a sub-screen allowing to configure the selected Setting.
- Back ❮ on-screen button - Tap this control to return to the previous screen - Live Image mode. The Main Menu allows configuring Settings as follows

Auto Focus

1. Tap the ● ○/ control to enable / disable auto focus.
- If set to On, then pressing the Capture button will automatically focus before capturing an image.
- When set to Off, the fiber image will be captured at the current focus position.

Auto Save

2. Tap on the Right arrow ❯ to display a pop-up menu
- Choose from the available Auto Save options: All, Pass only, None.
- When Auto Save is enabled, then tapping Capture button from Live Image mode will cause FIP100 to perform the following:
  – Auto Focus (if enabled)
  – Capture image
  – Perform Pass/Fail Analysis (if enabled)
  – Save image and pass/fail results to the configured Job/Cable folder

1	2
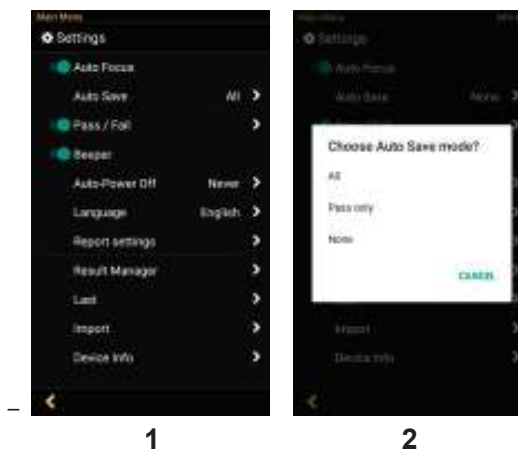
Pass / Fall

3. Tap the ●◐/ control to enable/disable Pass/Fail Analysis.

3. Tap on the Right arrow ▷ to display a sub-screen that allows configuring Pass/Fail Criteria

Beeper

4. Tap the ●◐ / control to enable/disable a sound signal that indicates Pass/Fail Analysis results. When enabled, FIP100 will produce High tone beep for Passed results and Low tone beep for Failed or No Fiber results

Auto-Power Off

5. Tap on the Right arrow ▷ to display a pop-up menu

- Choose from the available Auto-Power options: 1 min, 5 min, 30 min, Never.

Language

6. Select the desired Language option from the list of available options.

Report Settings

7. Configure reports by adding various data: Customer, Company, Location, Operator, and Comments. These report settings will be applied to all saved result.

Result Manager

8. Tap on the Right arrow ![>] to display the Result Manager, which allows the user to manage stored results.

Last Image

9. Tap on the Right arrow ![>] to recall the most recently viewed fiber end-face image.

Import

10. Allows the user to import saved fiber images from the Photo Gallery.

Device Info

11. Tap on the Right arrow ![>] to view Application, WiFi SSID and Device information.

9. CAPTURED IMAGE MODE

9.1. Captured Image Views

Once a fiber end-face image has been captured and analyzed (if enabled), inspection test results will be displayed in the Captured Image screen. Tapping on the displayed fiber end-face image allows the user to switch the display modes sequentially, as follows:

1 - Image of the inspected fiber end-face with Pass/Fail Analysis overlay (default display mode)

2 - Pass/Fail Analysis results only

3 - Image of a fiber end-face only
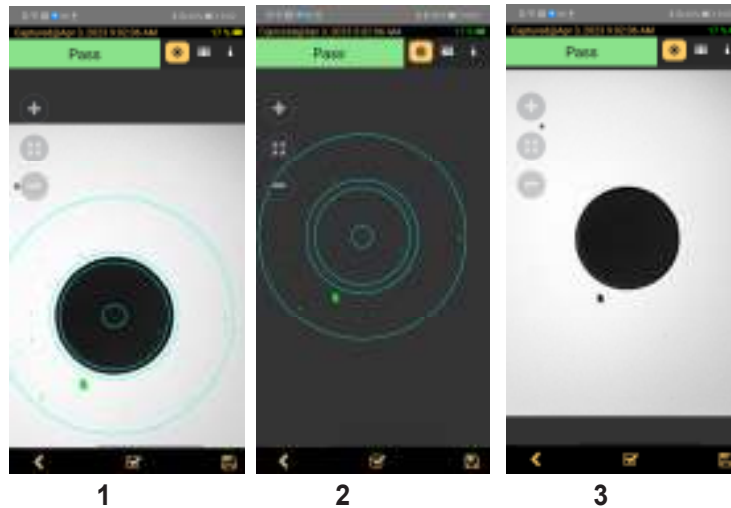
Captured Image screen features three Display Views Identified by View Tabs:

1 - Fiber Image View identified by Fiber Image Tab

2 - Pass/Fail Results Table View identified by Pass/Fail Results Table Tab

3 - Image Information View identified by Image Information Tab

Switching between Display Views is done by tapping on the View Tab icon or by swiping the screen to the left or right. The active Tab icon is displayed on a highlighted in Orange color background –

9.2. Fiber Image View

1 - **Screen title**: Indicates date and time of the test - [Captured @ hh:mm:ss]

2 - **Pass/Fail Analysis indication**: Shown only if Pass/Fail `Analysis` option is enabled in the Main Menu. Depending on performed analysis, this field will display:

`Pass` for Passing fiber,

`Fail` for Failing fiber,

`No fiber` No fiber if No Fiber detected during Pass/Fail Analysis

3 - **Display Tabs icons** with the Image tab selected (the active tab icon will is displayed on a highlighted in Orange color background **A**. Switching between views is done by swiping the screen to the left or right or by directly taping on the tab icon.

◎ – Fiber End-face Image;

▦ – Pass/Fail Results Table;

ℹ – Image Information.

4 - **Zoom controls**:

• Tap (+) / (–) for increasing/decreasing the scale of the live fiber-end image .

• Tap **B** to reset the nominal Zoom

5 - **End-face image**: displays end-face image with Pass/Fail overlay (if enabled)
- Passing scratches/defects highlighted in GREEN **C**
- Failing scratches/defects highlighted in RED **D**
- Analyzed zones represented by BLUE circles **E**

6 - **Analyze on-screen button**: Tap to perform analysis of defects / scratches.

7 - **Save on-screen button**: Only displayed is Auto Save is disabled in Main Menu. Tap to manually save captured image and Pass/Fail results (if performed).

8 - **Back on-screen button**: Tap to return to the Live Image mode.
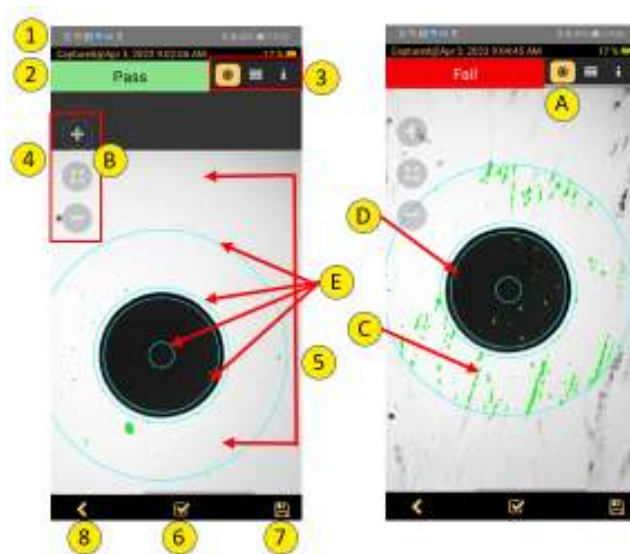
9.3. Pass / Fall Results Table View

1 - **Screen title**: Indicates date and time of the test - [Captured @ hh:mm:ss]

2 - **Pass/Fail Analysis indication**: Shown only if Pass/Fail Analysis option is enabled in the Main Menu. Depending on performed analysis, this field will display:

`Pass` for Passing fiber,

`Fail` for Failing fiber,

`No fiber` No fiber if No Fiber detected during Pass/Fail Analysis

3 - **Display Tabs icons** with the Pass/Fail display tab selected (the active tab icon will is displayed on

a highlighted in Orange color background **A**. Switching between views is done by swiping the screen to the left or right or by directly taping on the tab icon.

◎ – Fiber End-face Image;

⊞ – Pass/Fail Results Table;

ℹ – Image Information.

4 - **Analysis Rule** applied to determine Pass/Fail

5 - **Analysis Zones** (if enabled): A - core, B - cladding, C - adhesive, D - contact area.

6 - **Scratch analysis results** for each zone:
- Reports the number of detected scratches exceeding limit for each region.
- Highlights failed rules in RED.

7 - **Defect analysis results** for each zone:
- Reports the number of detected defects exceeding limit for each region.
- Highlights failed rules in RED.

8 - **Analyze on-screen button**: Tap to perform analysis of defects/scratches.

9 - **Save on-screen button**: Only displayed is Auto Save is disabled in Main Menu. Tap to manually save captured image and Pass/Fail results (if performed).

**10** - **Back on-screen button**: Tap to return to the Live Image mode.
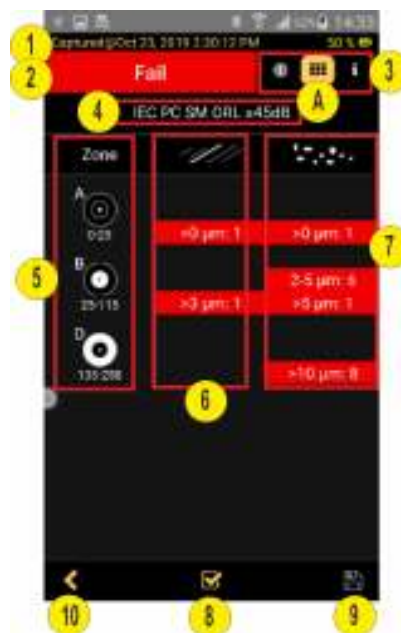
9.4. Image Information View

1 - **Screen title**: Indicates date and time of the test - [Captured @ hh:mm:ss]

2 - **Pass/Fail Analysis indication**: Shown only if Pass/Fail Analysis option is enabled in the Main Menu. Depending on performed analysis, this field will display:

`Pass` for Passing fiber, `Fail` for Failing fiber, `No fiber` No fiber if No Fiber detected during Pass/Fail Analysis

3 - **Display Tabs icons** with the Pass/Fail display tab selected (the active tab icon will is displayed on a highlighted in Orange color background **A**. Switching between views is done by swiping the screen to the left or right or by directly taping on the tab icon.

◎ – Fiber End-face Image; ▦ – Pass/Fail Results Table; **i** – Image Information.

4 - **Results ID field**: Parameters displayed in this field **Job, Scope End, Far End, Cable, Fiber** identify the directory (Job/Cable/Fiber) into which the inspected fiber end-face image and Pass/Fail Analysis results will be saved.

Tapping on ❯ icon of any parameter in this field will display the Result Manager screen, which allows the user to view/change/edit details as needed
Tapping on **Swap Ends B** will swap test ends.

5 - **Time & Date field**: indicates Time & Date of the displayed captured image.

6 - **Rule field**: indicates the applied Pass/Fail Analysis rule. Tapping on ❯ icon displays the Pass/Fail Rules screen, which allows the user to view/change/edit Rules.

7 - **Report Settings**: Tap on ❯ icon to customize reports by adding Customer/Company/Location/Operator information. Customized report information will be applied to the currently captured image only. For next captured image, will be used report information defined in the Menu > Report settings

8 - **Analyze on-screen button**: Tap to perform analysis of defects/scratches

9 - **Save on-screen button**: Only displayed is Auto Save is disabled in Main Menu. Tap to manually save captured image and Pass/Fail results (if performed).

10 - **Back on-screen button**: Tap to return to the Live Image mode.

10. PASS/FAIL CRITERIA

10.1. Pass/Fail Screen Features

Configuring Pass/Fail criteria is done in the Pass/Fail screen, which is accessed from Live Image mode > Main Menu screen.

A From the Live Image screen, tap Menu

B In the Main Menu, tap on the Right arrow next to the Pass/Fail option to display a sub-screen that allows the user to enable, select and configure Rules for Pass/Fail Analysis.
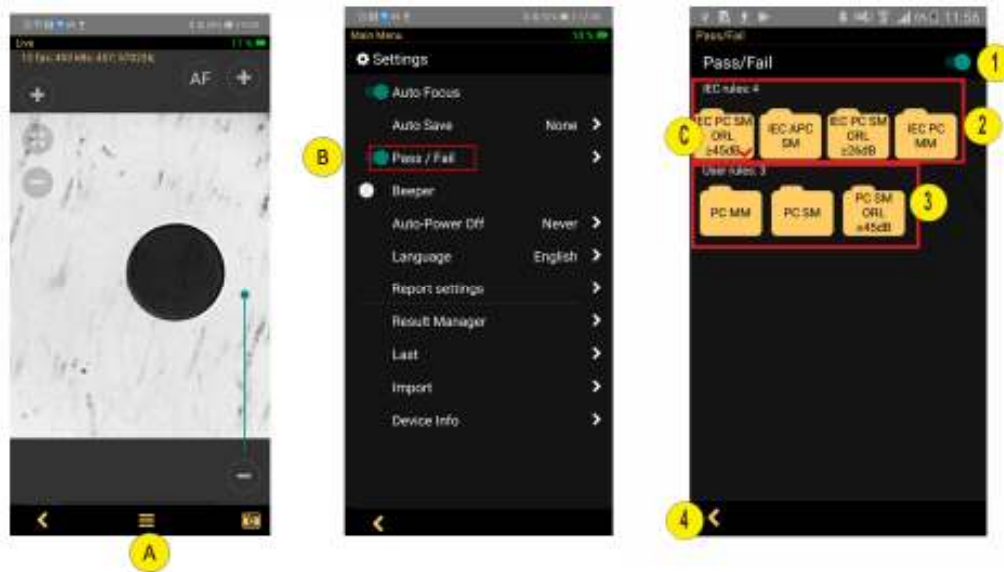
    1 - On/Off / control - Tap the to enable/disable Pass/Fail Analysis.

    • If enabled, then tapping on the Capture button in the Live Image screen will automatically start

    analysis of the fiber end-face image according to the selected Rule.

    • If disabled, then no analysis will be performed on the Capture button press.

    2 - IEC Rules: a set of Rules per IEC 61300-3-35 standard. These Rules are not editable.

    • Tap the desired IEC Rule (shown as Folder image) to select.

    • The selected Rule will be marked with Red check mark (as in screen example - **C**

    • Double tap the desired IEC Rule to view.

    3 - User Rules: a set of Rules created by users. These Rules are editable.

    • Tap the desired Rule (shown as Folder image) to select.

    • The selected Rule will be marked with Red check mark.

    • Double tap the desired Rule to view and/or edit criteria.

    4 - Tap Back button to return to the previous screen.

10.2. IEC Pass/Fail Analysis

IEC 61300-3-35 defines connector inspection Pass/Fail criteria.
Pass/Fail criteria depends on:
• Fiber type (SMF or MMF)
• Connector end-face Zones
— A: Core
— B: Cladding
— C: Adhesive (between cladding and ferrule)
— D: Physical contact area
• Type of end face flaw:
— Scratches
— Defects (contamination, particles, chips)
• Size of flaw
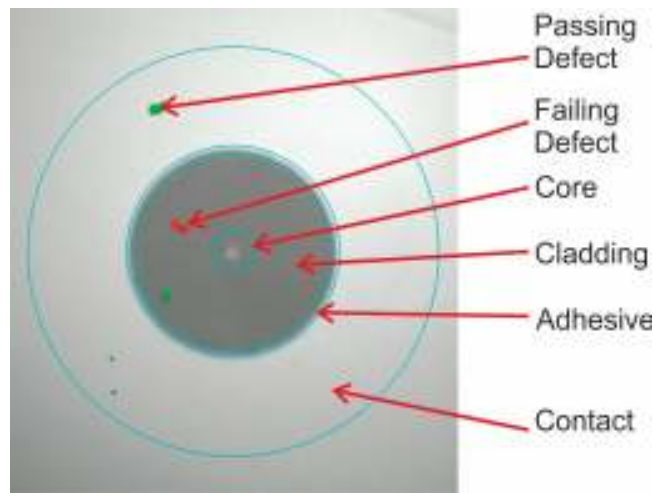
10.3. Example IEC Rule

Shown below is the display when the IEC rule for single-mode PC connector with return loss ≥ 45 dB is selected. The table identifies the number of scratches or defects of a certain size, which may be allowed in each of the core, cladding, and contact regions.

Zone	Scratch	Defect	
A: Core 0-25 microns	>0 µm: 0 No scratches >0 µm allowed	>0 µm: 0 No defects >0 µm allowed	
B: Cladding 25-115 microns	>3 µm: 0 No scratches >3 µm allowed	2-5 µm: 5 Up to 5 defects 2-5 µm diameter allowed	
		>5 µm: 0 No defects >5 µm allowed	
D: Contact 135-250 microns	Blank No limitations on scratches	>10 µm;0 No defects >10 µm allowed	

10.4. Configuration Pass/Fail Criteria

Enable/Disable Pass/Fail Analysis
• Access the Main Menu screen.
• Tap the ●◯/ control **A** to enable/disable Pass/Fail Analysis.

Select Rule
• Tap on the Right arrow **>** to display a list of available Rules
(preset IEC and user-set rules).
• Tap the desired Rule (shown as Folder image) to select.
• Note that selected Rule will be marked with Red check mark **B**.

View Rule
• To view Rule details double tap on the desired Rule folder.
• Settings for Zone, Scratches and Defects will be displayed **C**.
• Tap on desired field to view settings.

— **Zone settings D**
Displays enabled for analyses zones (A, B, C, D) and inner and outer diameters of zones.

— **Scratches settings E**
Displays configured rules for scratches for appropriate zone, scratches size and numbers.

— **Defects settings F**
Displays configured rules for defects for appropriate zone, defects size and numbers.

• When done viewing, tap Back **<** button to return to the previous screen.

Main Menu screen

Rules screen

C Rule View screen

D Zone settings

E Scratches settings
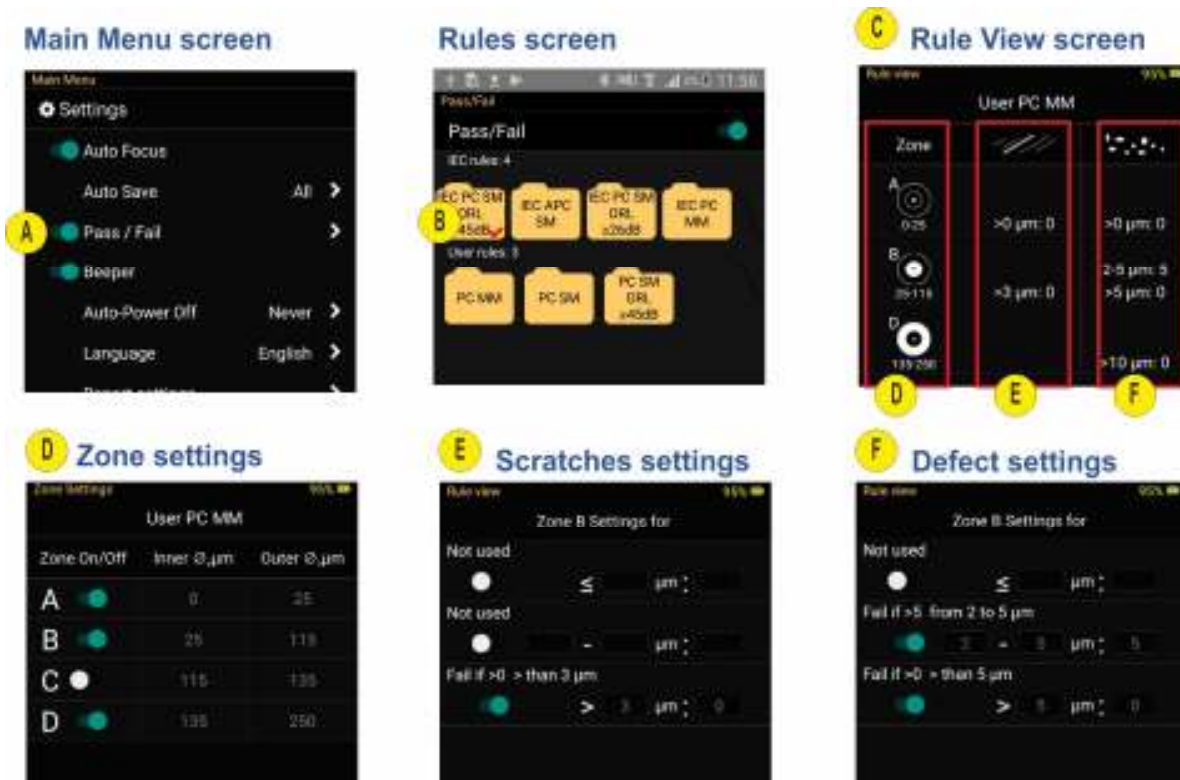
F Defect settings

Edit User Rule:

• To edit User Rule double tap on the desired User Rule **A** or similar Standard Rule **B** (any available rule).

• Settings for Zone, Scratches and Defects will be shown.

• Tap on desired field to view and edit settings.

— **Rule name C:** allows to change Rule name. Standard rule name or selected User Rule name will be replaced by new User Rule name.

— **Zone settings D:** allows to turn On/Off zones **A, B, C, D** for analyses and change inner and outer diameters of zones.

— **Scratches settings E:** allows to set rules for scratches for appropriate zone, scratches size and numbers.

— **Defects settings F:** allows to set rules for defects for appropriate zone, defects size and numbers.

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• While in any of Settings screen, Zone/Scratches/Defects:

— Tap the On/Off - ●○/ control to enable/disable the desired
Rule parameter.

— Once enabled, tap on the desired field to edit the parameter value.

— Using on screen Editor, change the selected value as needed.

— Tap Done **G**.

• Tap Back **< H** to return to the previous screen.

• Tap Save **💾 J** to save edits.

D Zone settings

E Scratches settings

F Defect settings
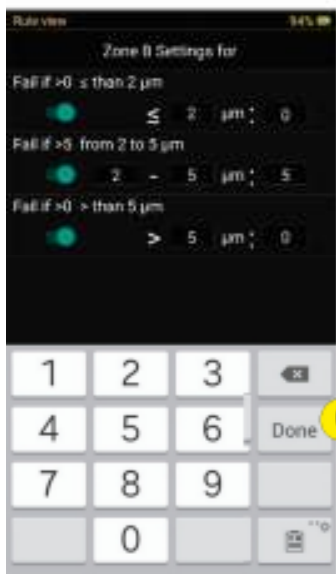
11. RESULT MANAGER

11.1. Result Manager Screen

To access the Result Manager

• From the Live Image mode, tap Menu ☰ to display the Main Menu.

• Tap on the Right arrow ❯ next to the Result Manager option.

• Result Manager screen displays saved test results organized into Jobs, Cables, Fibers.

Screen Features

1 - Jobs field: Displays a list of saved Jobs (folders).

• Drag Jobs field horizontally to navigate in Job folders.

• Field title **A** indicates the number of Jobs saved and the name/or number of Job(s) selected.

2 - Cables field: Displays a list of saved Cables (folders).

• Drag Cables field horizontally to navigate in Cables folders.

• Field title **B** indicates the number of Cables saved and the name/or number of Cable(s) selected.

3 - Fibers field: Displays a list of saved fiber end-face inspection results.

• Drag Fiber field vertically to navigate in the Fibers.

• Field title **C** indicates the number of Fibers saved and the name/or number of Fiber(s) selected.

4 - Add button: Double tap this button to create new Job or Cable.

5 - Group button: Tapping on this button enables multi-select functionality

6 - Share button: Tap on this button to display a pop-up menu that allows the user to Rename (Single Item Selection only), Send to, Send Report, or Delete operations.

7 - Back button: Tap this button to return to the previous screen.
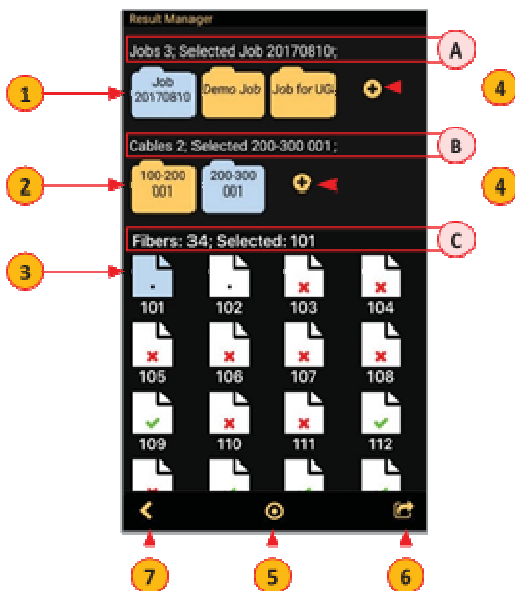
11.2. Creating a New Job/Cable Folder

1 - In the Result Manager screen, double tap Add ⊕ in the Jobs field.

2 - In the Job Editor screen, note that new Job is created with a default name format: Job YYYMMDD

3 - Edit the default Job name as needed, then tap Accept <mark>A</mark> or Done <mark>B</mark>.

4 - When back in the Result Manager screen, note that the new Job folder is created and selected (displayed in Blue color).

5 - In the Cables field, double tap Add ⊕.

6 - In the Cable Editor screen, you may either change numbers for Scope End/Far End/Cable or accept

default numbers, then tap Accept <mark>C</mark> or Done <mark>D</mark>.

7 - When back in the Result Manager screen, note that the new Job folder is created and selected (displayed in Blue color).

Note: The selected Job/Cable folder will become current and all following tests will be saved to this currently selected Job/Cable folder.
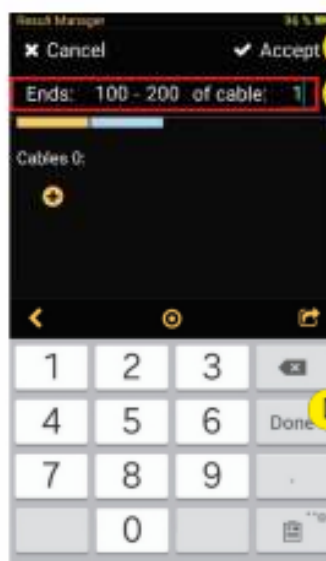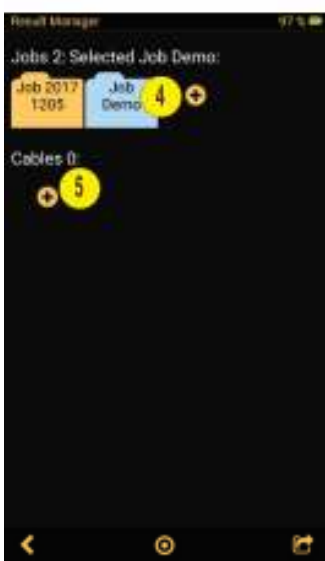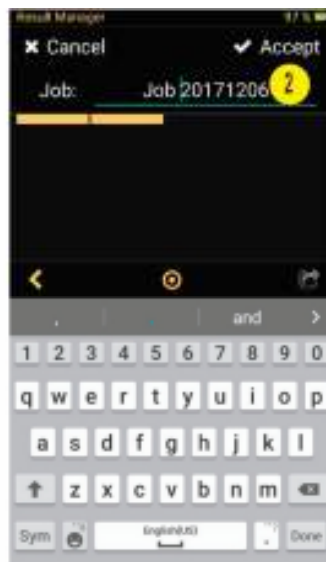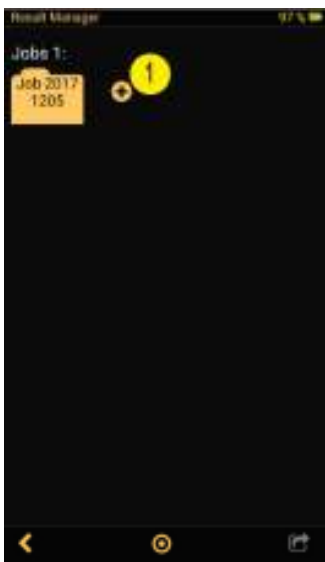
11.3. Renaming a Job/Cable/Fiber

To Rename Saved Test Results

1 - Navigate to the desired item, Job/Cable/Fiber; tap to select.

2 - Tap on the Share button.

3 - Tap RENAME.

4 - Using the Editor displayed on screen, make changes as needed.

5 - Once done editing, tap Accept **A** or Done **B** .to save changes.
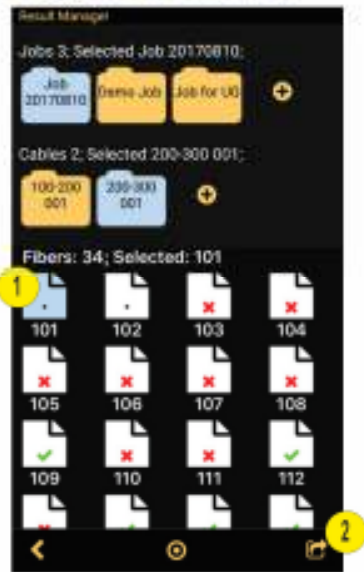
11.4. Saving Test Results

Saving Test Results for the First Time

If test results are saved for the first time and no Job/Cable folder previously created in the Result Manager, then default settings for Job/Scope End/Far End/Cable/Fiber will be used, where:

1 - Job Folder name = YYYYMMDD; 2 - Scope End = 100

3 - Far End = 200; 4 - Cable number = 001; 5 - Fiber number = 1

The default settings for Job/Scope End/Far End/Cable/Fiber may be changed as needed.

• When the captured fiber end image is displayed, tap on the Information tab to display the Information Details screen.

• Tap on the Right arrow [>] in the desired parameter line.

• Double tap on the desired Job/Cable/Fiber.

• Make edits as needed using the on-screen Editor.

• When done, tap Accept **A** or Done **B**.

• Tap Check [✓] to save changes.

• Tap On Report Settings if need to change Customer, Company, Location, Operator or Comments for this result

• Tap Save [💾] to save test results.
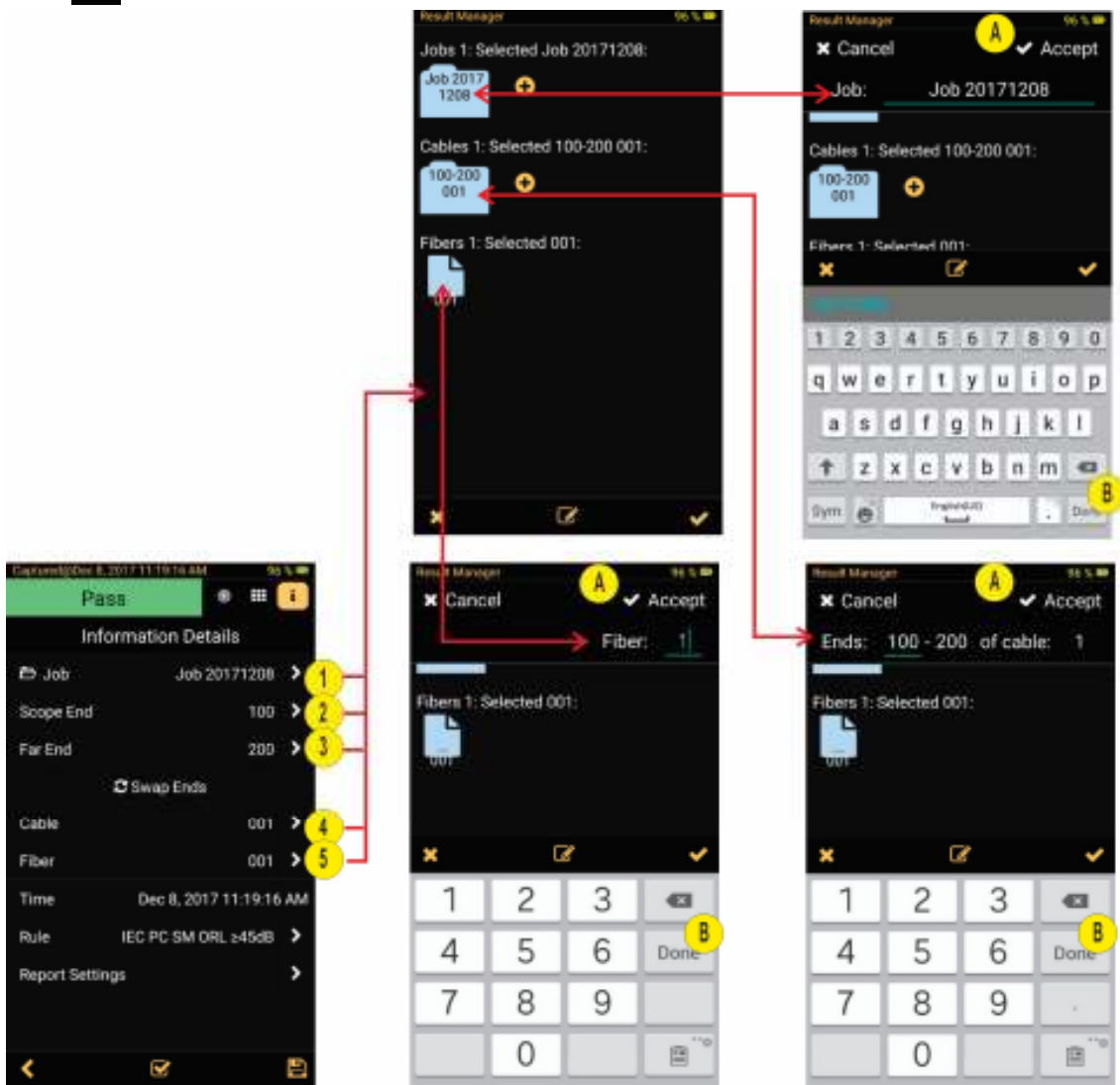
11.5. Saving Test Results to a New Job/Cable/Folder

To save test results to a new Job/Cable folder

1 - Capture an image. Once the captured image is displayed, tap on the Information tab.

2 - In the Information Details screen, tap on the Right Arrow in the Job line.

3 - Double tap Add ⊕.

4 - Note that new Job name is displayed in the default format - YYYYMMDD.

5 - Edit Job name as needed. Tap Accept or Done.

6 - The new Job folder is created and selected (displayed in Blue color).

7 - Tap Check ✔ to save changes.

8 - Note that newly created Job folder is now current.

— If needed, you may change Scope End, Far End, Cable, and Fiber.

— Make sure to tap Check ✔ to save changes.

— If needed, you may change Report Settings - Customer, Company, Location, Operator or Comments for this result

9 - When done, tap Save 💾 to save test results in the newly created folder.

Note: this will make the newly created Job/Cable folder current and all following test results will be saved to this Job/Cable folder.
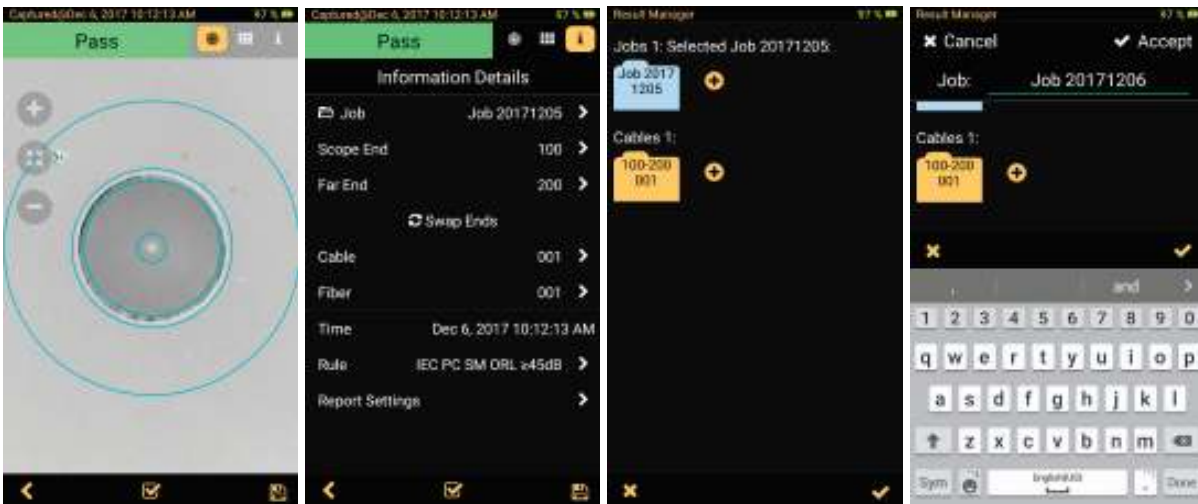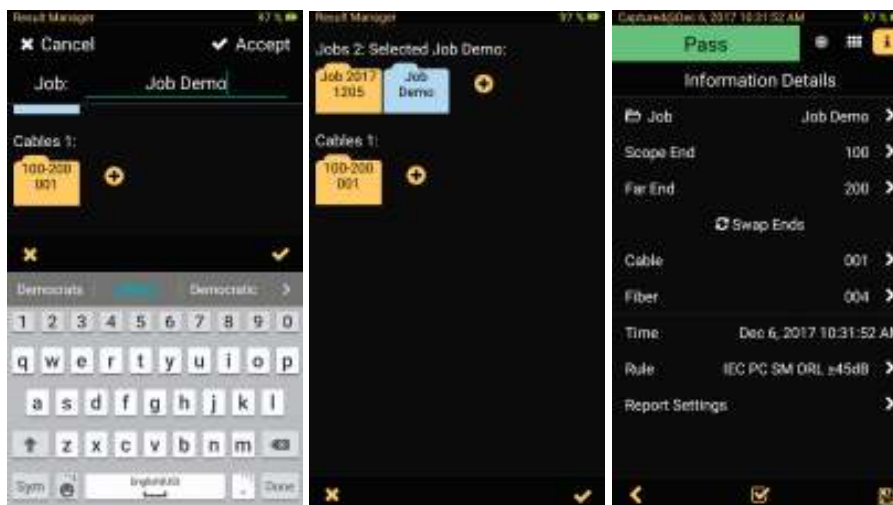
| 1 | 2 | 3 | 4 |

| 5 | 6, 7 | 8, 9 |

11.6. Saving Test Results to an Existing Job/Cable/Folder

**To save test results to an existing Job/Cable folder**

1 - Capture an image. Once the captured image is displayed, tap on the Information tab.

2 - In the Information Details screen, look at the Job Folder name - this is the current folder where the test result will be saved.

3 - To select a different destination Job folder, tap on the Right Arrow ▶ .

4 - Note that the current Job folder is displayed in Blue color.

5 - Locate the desired destination Job folder and tap on it to make it current.

6 - Tap Check ✔ .

7 - When back in the Information Details screen, note that the Job line is now displays the selected folder as current.

8 - If needed, you may change Report Settings - Customer, Company, Location, Operator or Comments for this result

9 - Tap Save 💾 to save test results in the selected Job folder.

Note: all following test results will be saved to the selected Job/Cable folder.
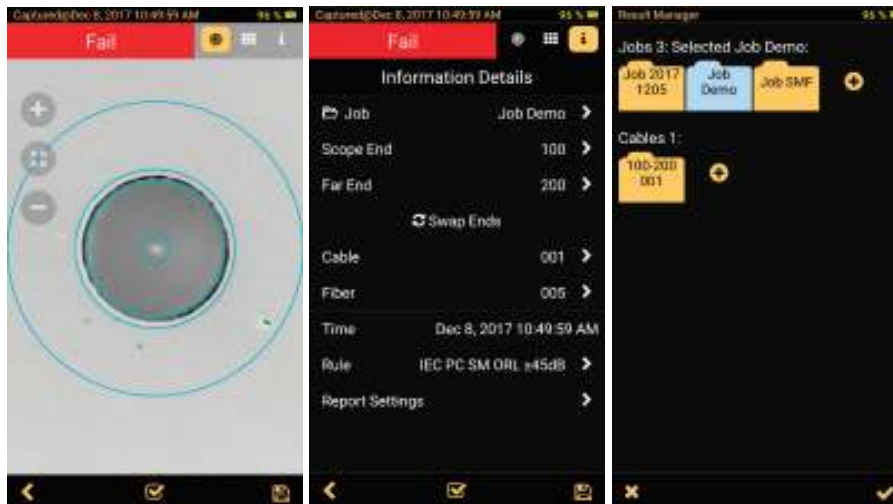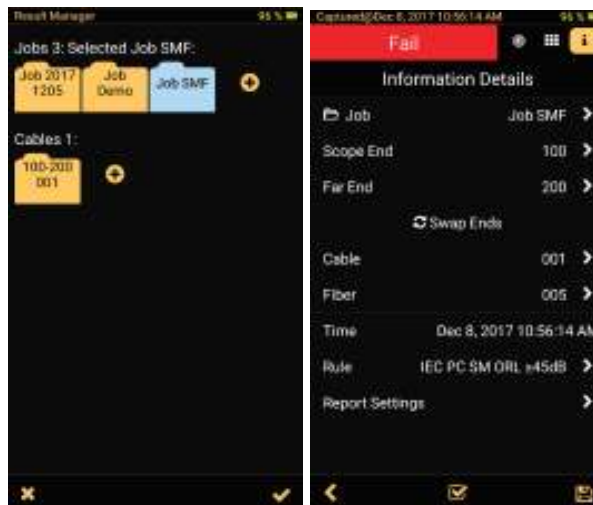
| 1 | 2, 3 | 4 |

| 5, 6 | 7, 8, 9 |

11.7. Result Manager Functionality

To Select a Single Item - Job/Cable/Fiber
• Tap on the desired Job/Cable/Fiber icon to select it. If a Job (Cable) folder contains Cables (Fibers) then tapping on that folder will expand it to show contents.
• Note that color of the selected item changes from Yellow (folder) / White (fiber) to Blue.

 / - Item is not selected

 / - Item is selected
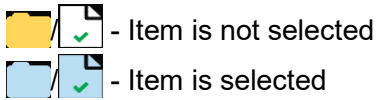
To View Saved Test Result
• Navigate to the desired fiber.
• Note that fiber icons indicate results as follows:

 - Passing fiber;

 - Failing fiber

 - Fiber is not analyzed
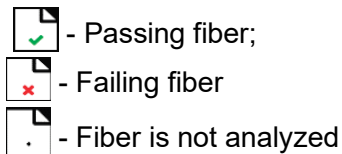
• Double tap on the desired Fiber to view saved fiber end-face image.

To Select Multiple Items - Jobs, Cables, Fibers
• Tap on the Group button - **A** to enable multi-select functionality.
• Note that button color changes to Blue - **B**.
• Tap on as many items as needed to multi-select them.
• Note that color of the selected items changes to Blue - **C**.
• Note that name of the selected group changes to reflect the number of selected items - **D**.
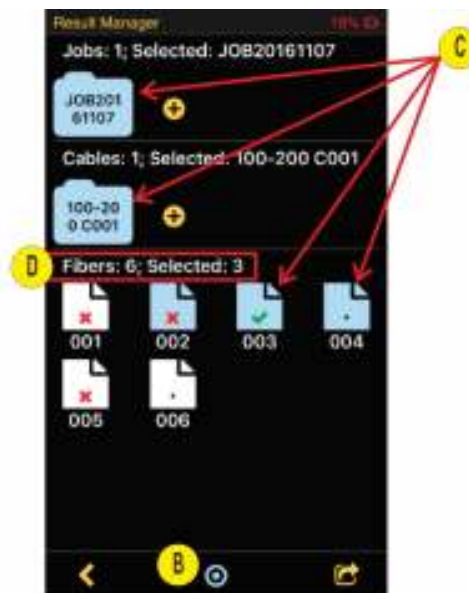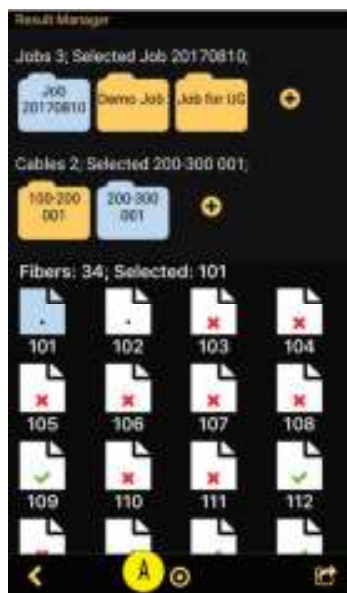
To Delete Saved Test Results

1 - Select a single item or multiple items for deletion.

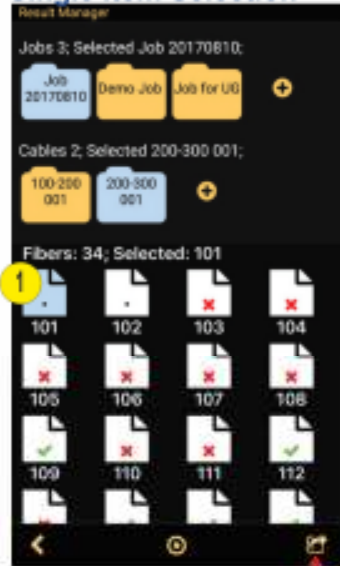— To select a single item, navigate to the desired item (Job/Cable/Fiber), and then tap on it to select.

— To select multiple items, tap on the Group ⊙ button to enable multi-select functionality, and then tap on as many items as needed to multi-select.
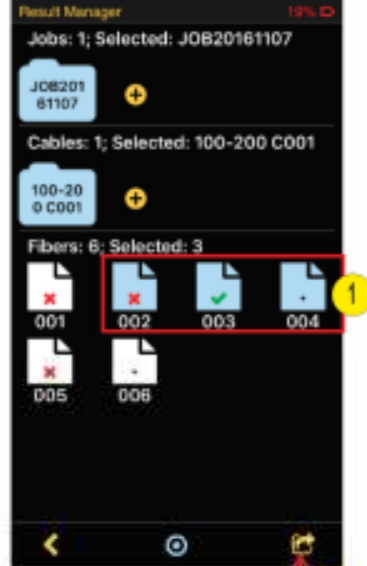
2 - Tap on the Share 🔗 button.

3 - From the displayed pop-up menu, select DELETE.

4 - When prompted, confirm deletion.

Sharing Captured Test Results

Saved test results may be transferred to another location using your mobile device applications that support transfer functionality.

Note: Prior to transferring, make sure your mobile device is connected to the Internet.

1 - Select a single item or multiple items for transfer.

— To select a single item, navigate to the desired item (Job/Cable/Fiber), and then tap on it to select.

— To select multiple items, tap on the Group ⊙ button to enable multi-select functionality, and then tap on as many items as needed to multi-select.

2 - Tap on the Share ⤷ button.

3 - From the displayed pop-up menu select:

      - SEND TO to share captured test results, or

      - SEND REPORT to share .pdf reports.

4 – FIP100 will generate zipped file with Job-Cable-Fiber path.

5 - From the displayed list, select the desired transferring option. Follow on-screen instructions.

-
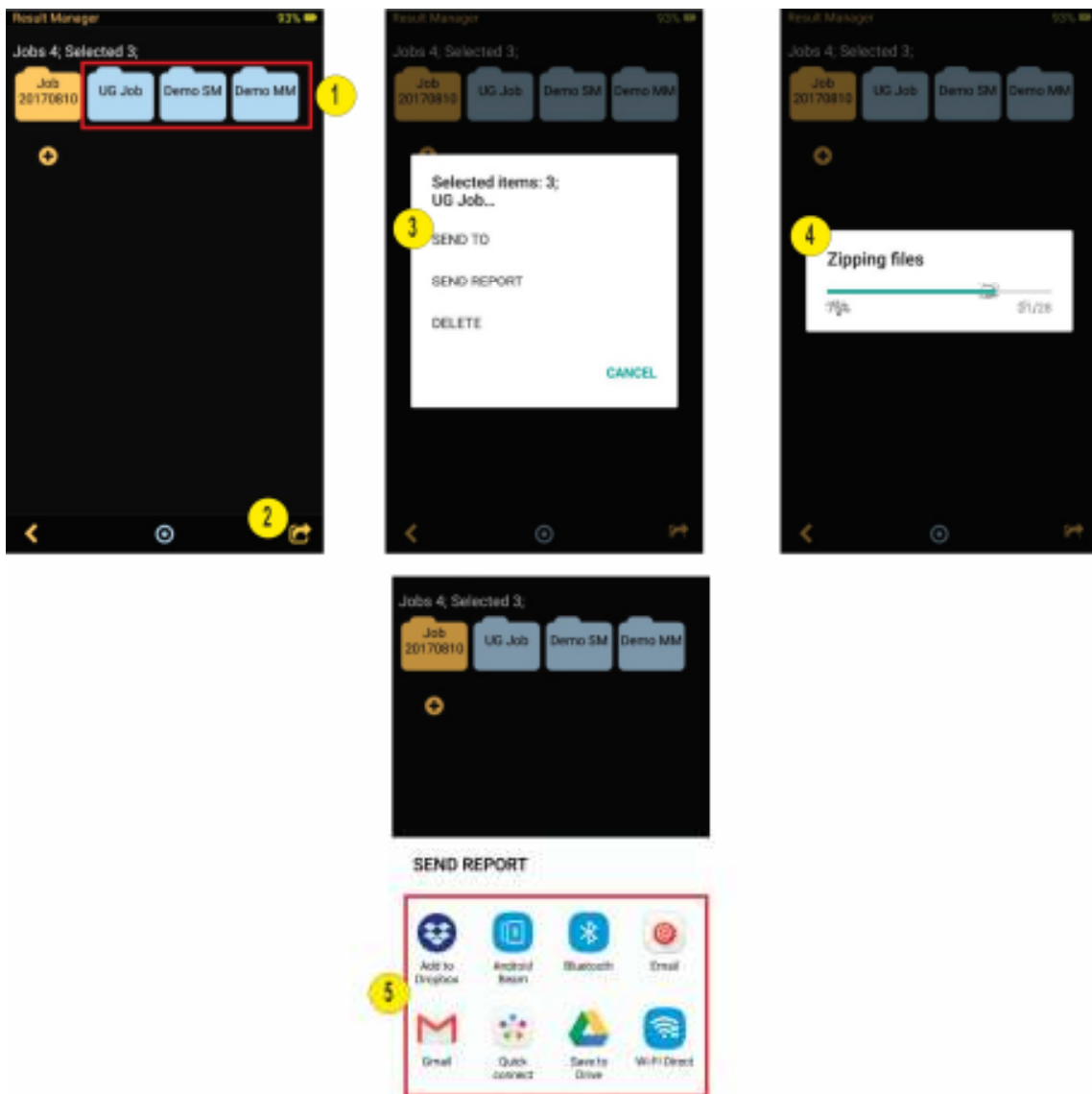
Shared Test Results and Reports

Results or reports zip file contains appropriate Job>Cables>Fibers folder structure for all selected Job/Cables/Files. This allows easy to add new fibers result into existed folders on PC/Database.
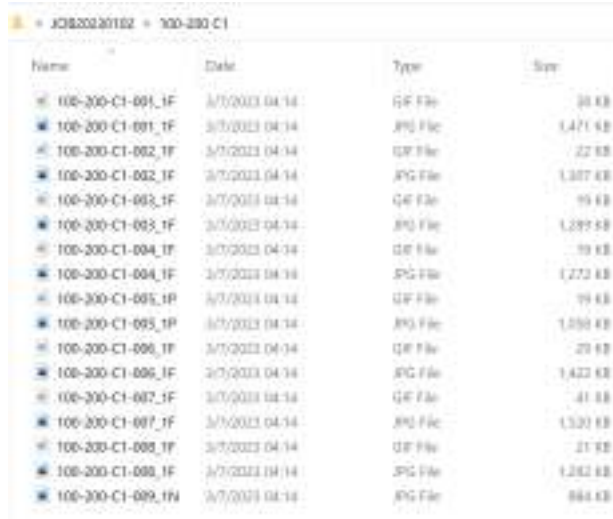
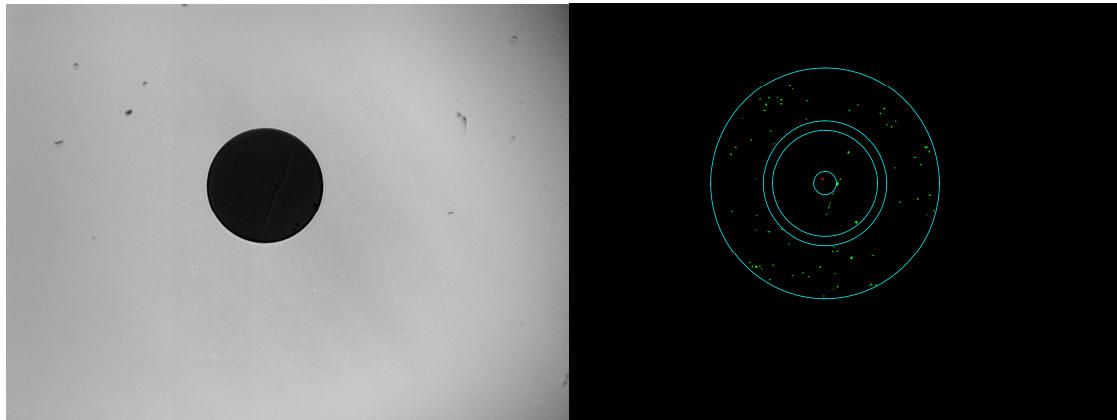Job folder of shared results contain at least one Cable folder:

Cable folder of shared results contain:

1   at least one jpg file of captured 2592x1944 pixels image;

2   at least one gif file with analysis data of captured 2592x1944 pixels image

1	2

In addition to <Cable>-<Fiber> each file name tagged by:

- _1N for not analyzed results;
- _1P for passed results:
- _1F for failed results.

Each Job folder of shared reports contain at least one Cable folder.
A summary.pdf file also included to Job folder, if multiply results pdf report was generated:
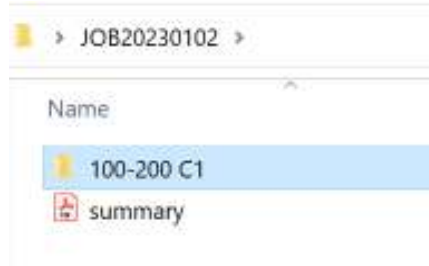
The summary.pdf file contain this Job Summary Report with Pass/Fail status, names and Data/Time for result files:

JOB20230102 Summary Report

N	Folder	File	Date/time	Status
1	100-200 1	100-200-C1-002_1F	2023-01-02 09:51:37	Fail
2	100-200 1	100-200-C1-001_1F	2023-01-02 09:49:46	Fail
3	100-200 1	100-200-C1-007_1F	2023-01-02 09:56:10	Fail
4	100-200 1	100-200-C1-006_1F	2023-01-02 09:55:09	Fail
5	100-200 1	100-200-C1-005_1P	2023-01-02 09:54:12	Pass
6	100-200 1	100-200-C1-004_1F	2023-01-02 09:52:48	Fail
7	100-200 1	100-200-C1-008_1F	2023-02-23 14:39:16	Fail
8	100-200 1	100-200-C1-009_1N	2023-02-27 13:01:33	
9	100-200 1	100-200-C1-003_1F	2023-01-02 09:52:19	Fail

Report generated
2023-03-07 04:15:21
App version 1.7.0.1

Cable folder of shared report contain at least one pdf report:
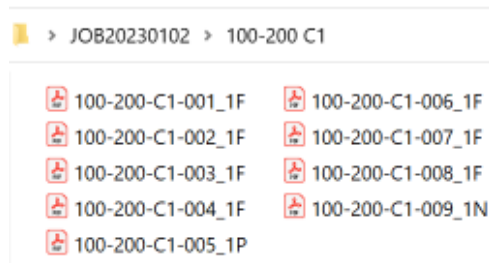
In addition to <Cable>-<Fiber> each file name of pdf report tagged by:
- _1N for not analyzed results;
- _1P for passed results:
- _1F for failed results.

Fiber .pdf report include:

- Global Pass/Fail verdict;
- General Information with fillable fields. Fields marked blue contain Report Settings information of saved result and may be changed later by user;
- Graphics images with and without Analysis;
- Analyzes Results sheet;
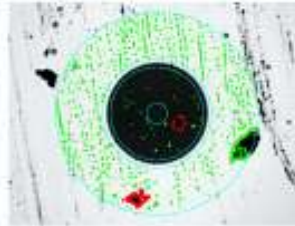- Device info with device model, SN, FW version and App version information.

12. Operations with adapter tips

Select Adapter Tip for connector to be inspected

| Description	TEMPO CAT NO	Tip	Connector
SC/UPC Bulkhead Tip	SCUPC BH		
LC/UPC Bulkhead Tip	LCUPC BH		
2.5mm Universal UPC Tip	2.5MMUPC		
1.25mm Universal UPC Tip	1.25MMUPC		
SC/APC Bulkhead Tip	SCAPC BH		
2.5mm Universal APC Tip	2.5MMAPC		
1.25mm Universal APC Tip	1.25MMAPC		
LC/APC Bulkhead Tip	LCAPC BH		

Installing Adapter Tips
- While holding adapter tip in place, raise captive nut engages with adapter tip threads
- Turn captive nut counter-clockwise (viewed from front/top)
- Hand-tighten (do not over-tighten)
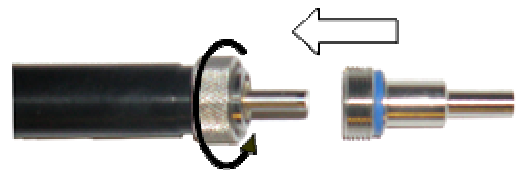
Removing Adapter Tips
- Probe tips are held in place with a captive nut
- Turn captive nut clockwise (viewed from front/top)
- Continue until captive nut is free of adapter tip
- Remove adapter tip by pulling it gently straight off the probe base
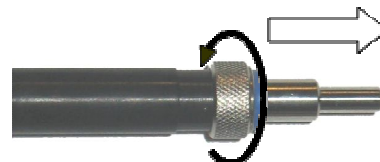
Recommendation on use Universal APC patchcord tips
- Insert ferule of connector to be inspected to Universal patchcord tip

- Set focus position in the middle of scale
- Slow rotate ferule of connector in tip to get contrast image
- Press AF to focus at ferule end-face

Recommendation on use APC bulkhead tips
- Align keys on tip and bulkhead
- Insert tip into bulkhead
- ferule of connector to be inspected to Universal patchcord tip

13. Inspecting fibers with FIP100 solution

1. Get your FIP100 Probe ready.
- Make sure battery is fully charged.
- Make sure that optical port is equipped with the appropriated adapter tip.

2. Connect FIP100 probe to the FIP100 App installed on your mobile device.

3. Insert the fiber under test into adapter tip.

4. On your FIP100 App you should see Live video of the fiber being inspected. You may perform visual inspection of the displayed fiber end-face image.

5. From the Live Image Screen display Main Menu. Configure test options as needed.

6. Tab Back button to return to the Live Image mode.

7. When back in the Live Image mode, initiate test by either pressing the Multifunctional button on the FIP100 Probe or tapping the Capture on-screen button on the Live Image screen.

8. According to test configurations set in the Main Menu (Auto Focus, Pass/Fail, Auto Save). FIP100 will capture, inspect and save the fiber end-face image and Pass/Fail Analysis.

14. WARRANTY

The device is guaranteed for two years from the date of original sale. The manufacturer will repair or replace the device free of charge if it fails because of a manufacturing defect. This warranty is valid if the device is used for its intended purposes only (as described in the Instruction manual) and is not damaged or misused.

Address:
TEMPO COMMUNICATIONS, INC
1390 ASPEN WAY
VISTA CALIFORNIA 92081
United States

Fiber Inspection Probe FIP100

S/N _____

Date: _____