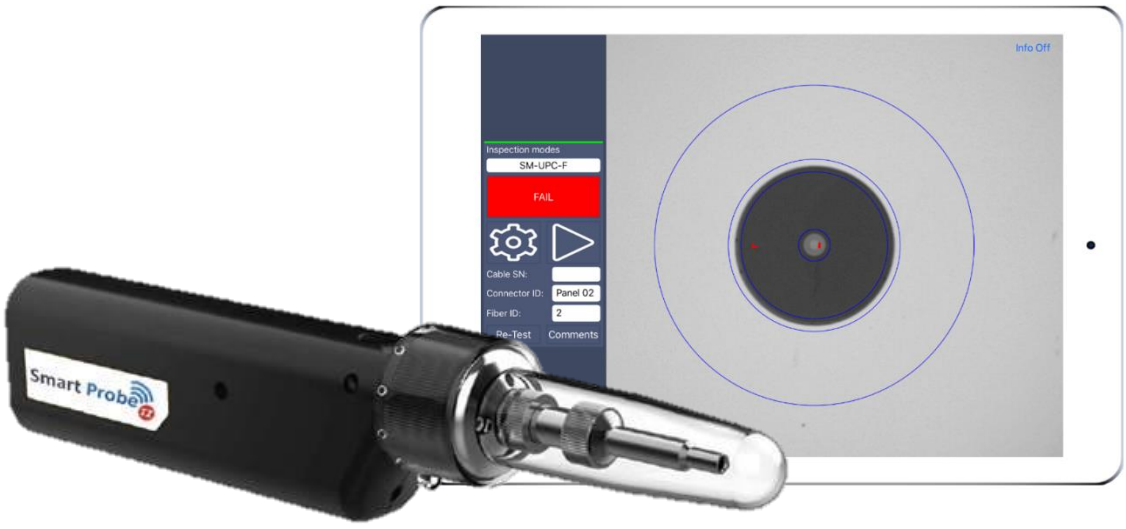
SENKO GROUP® Advanced Components

Date: 08-05-2019
Doc Number: ENG-SP2M-0519-001

Vue3 User Manual

Smart Probe for Fiber Inspection



Your Source for Optical Interconnect Solutions
Design – Test - Manufacture

Contents

1. Read Me First

Thank you for purchasing the SENKO Smart Probe. Please read this manual before using the device to ensure safe and proper use.

2. Safety Information

The following general safety precautions must be observed during all phases of operation, service and repair of the instrument. Failures to comply with these precautions or with specific warnings elsewhere in this manual violate standards of design, manufacture and intended use of the instrument. Always read the manual for safety points before using the instrument. You must follow these to ensure correct and safe operation of the instrument.

WARNING

Do not install or terminate fibers while a light source is active. Never look directly into a live fiber and ensure that your ayes are protected at all times.

Battery CAUTION and WARNING:

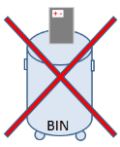
There are no user serviceable parts inside; under no circumstances should you attempt to access the internal parts. For servicing please contact Senko Advanced Components or Senko Distribution partner.

Only use battery and accessories specified by the manufacturer.

Do not immerse battery in water.

Do not short circuit.

Do not put on fire.



Dispose of or Recycle Responsibly.

CAUTION:

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

DISPOSAL

All electrical and electronic products including batteries should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.

3. Certification

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this probe does cause harmful interference to radio or television reception, which can be determined by turning the probe off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the probe and receiver.
- Consult the manufacturer/distributor dealer or an experienced radio/TV technician for help.

Industry Canada

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
CAN ICES-3(B)/NMB-3(B)

Japan

ARIB T66 certified. Registration Number **R210-115178**.
Japanese translation of this user manual will be supplied.

CE

R&TTE:
This device complies with the tests and standards as stipulated in the R&TTE Directive.

- RF: ETSI EN 300 328 V2.1.1 (2016-11)
- EMC: EN 62311:2008
  Draft ETSI EN 301 489-1 V2.2.0 (2017-03)
  Draft ETSI EN 301 489-17 V3.2.0 (2017-03)
- LVD: EN 62368-1:2014

U/NZ

RCM registered.
Certificate Number: RCMP17375 001

EMC Regulations (Battery)

- EN 55032:2015
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 55024:2010 + A1:2015
- EN 61000-4-2:2009
- EN 61000-4-3:2006 + A1:2008 + A2:2010
- EN 61000-4-4:2012
- EN 61000-4-5:2014
- EN 61000-4-6:2014
- EN 61000-4-8:2010
- EN 61000-4-11:2004

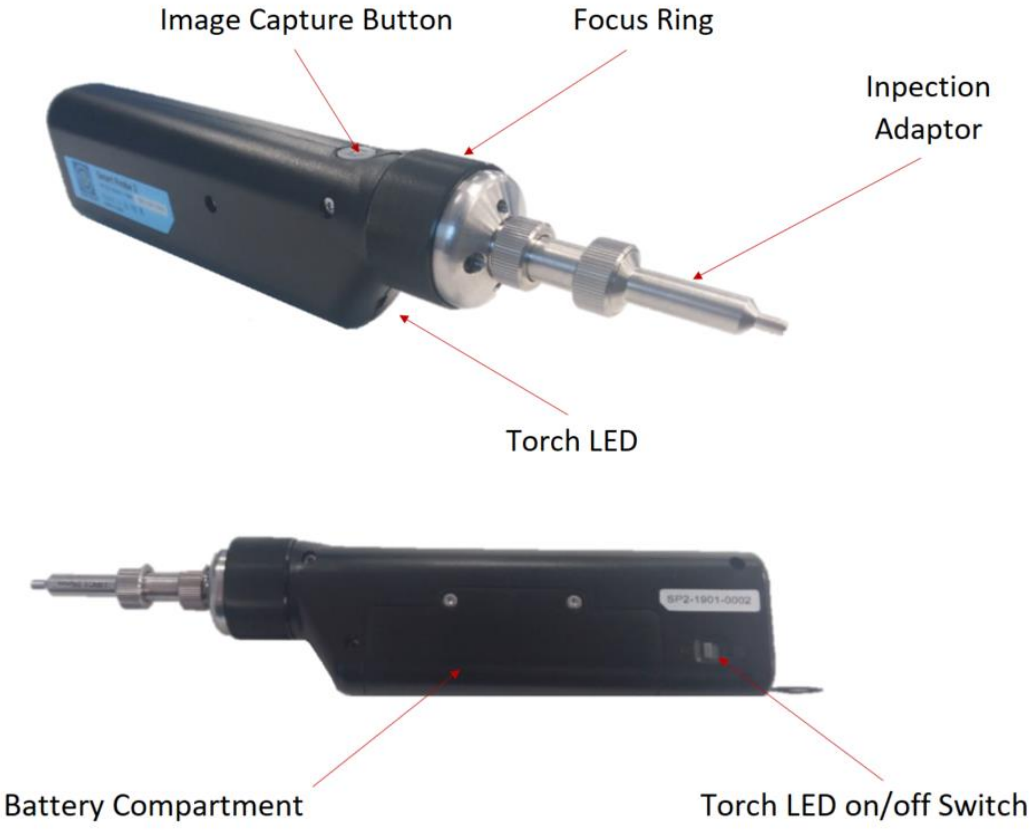
4. Introduction

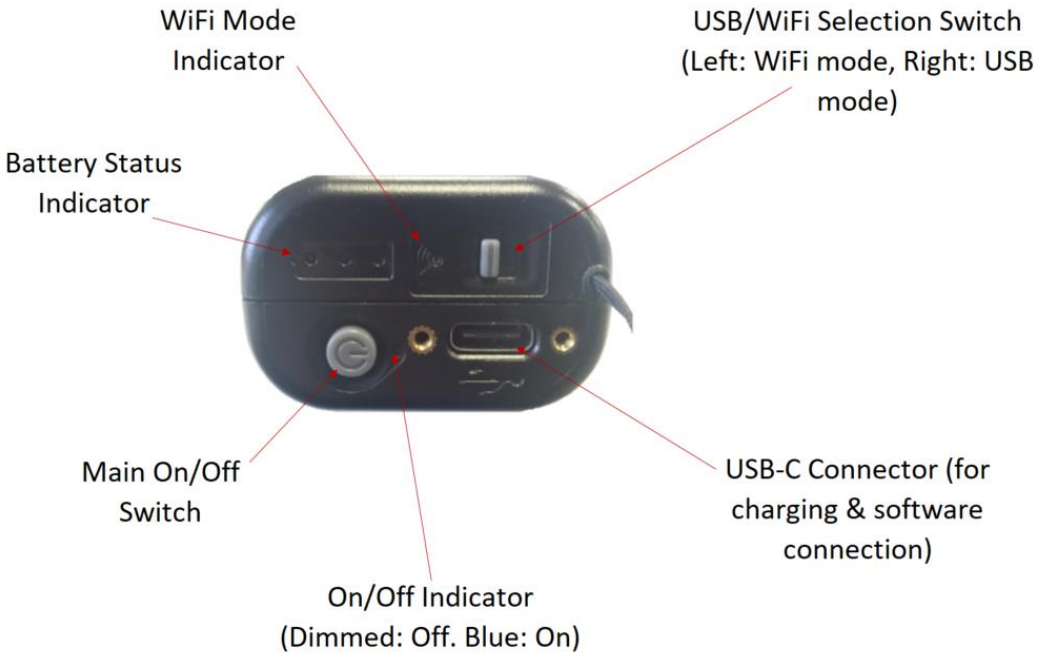
The Smart Probe 2 Inspection Probe is a portable video microscope with an automated IEC 61300-3-35 End-Face Inspection App, used to inspect fiber ends. The microscope can be connected with a WiFi or USB connection to platforms or with a WiFi connection to mobile smart devices (Android or iOS).

5. Hardware Overview

5.1 Features

- Captive dust/protective cap.
- 5h operation from rechargeable battery.
- Wide range of inspection tips.
- Manual Fcous.
- Auto and Manual centering of fiber.
- Capture button.
- LED.





5.2 Specification and Accessories

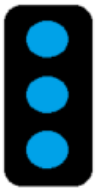
Smart Probe 2	
Magnification	**200x/400x**
Field of View	**512 x 384 um**
Focus method	**Manual**
Communication Interface	**Wifi802.11 / USB 2.0**
Power	**Built in Lithium battery 2hr charge time**
Operating Temp.	**-10℃ ~ 50℃**
Storage Temp.	**-20℃ ~ 50℃**
Relative humidity	**95%**
Weight	**188g inc battery**
Size	**195(L) x 40(W) x 25(H) mm**
Software Platforms	**Android 4.2 & above, iOS 9.3 & above**

Accessories	
Tips	**1.25m male, 2.5mm male**
Wrist strap with protective cap	**1 set**
USB charger with international adaptors	**1 set**
USB cable	**Type A – Type C**
Tip storage case	**Up to 5 tips**
Carrying case with waist strap	**1 set**
QA certificate	**1 set**

6. Basic Operation

6.1 Charging

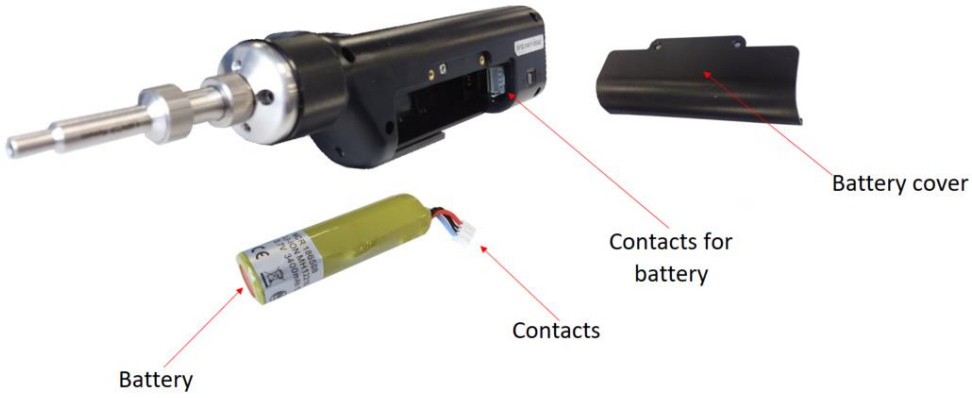
Connect the probe to the supplied USB charger, or to a USB port of a PC using the supplied USB cable. The *Battery Status Indicator* (comprises of 3 white LEDs) shows charging status as below.

Battery Status Indicator Pattern		Meaning
	Only Led # 1 Lights up & blinking	Low battery. Instrument will turn off automatically if not recharged.
	All 3 LEDs light up in running mode	Instrument is being charged. Max charging time needed is 2.5 hrs.
	All 3 LEDs light up continually	Instrument is fully charged.
	All 3 LEDs light up & blinking	Battery connection error.

6.2 Replacing the battery

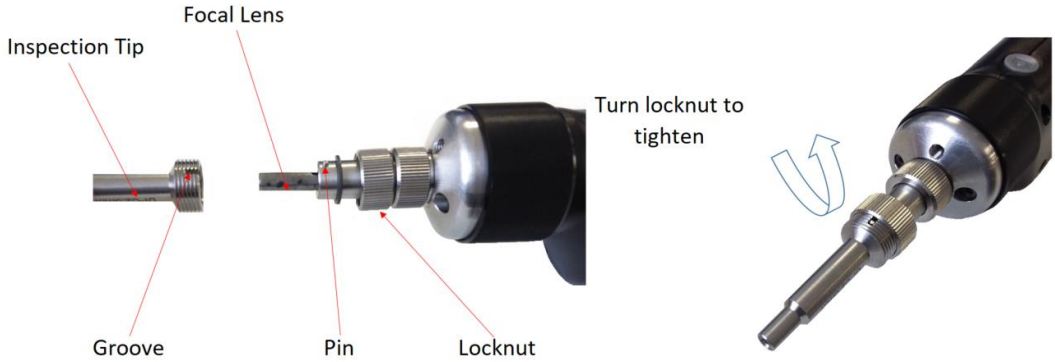
The instrument is powered by a specific built-in Lithium battery which can be replaced as shown below. **Please contact SENKO for replacement battery**.

1. Remove 2 screws, using a special screw driver to open battery cover.
2. Pull out battery from the battery compartment.
3. Insert new battery at an angle and plug the contacts of the battery into the connector in the correct orientation.
4. Place battery cover and screws back on the probe.
5. Charge battery.



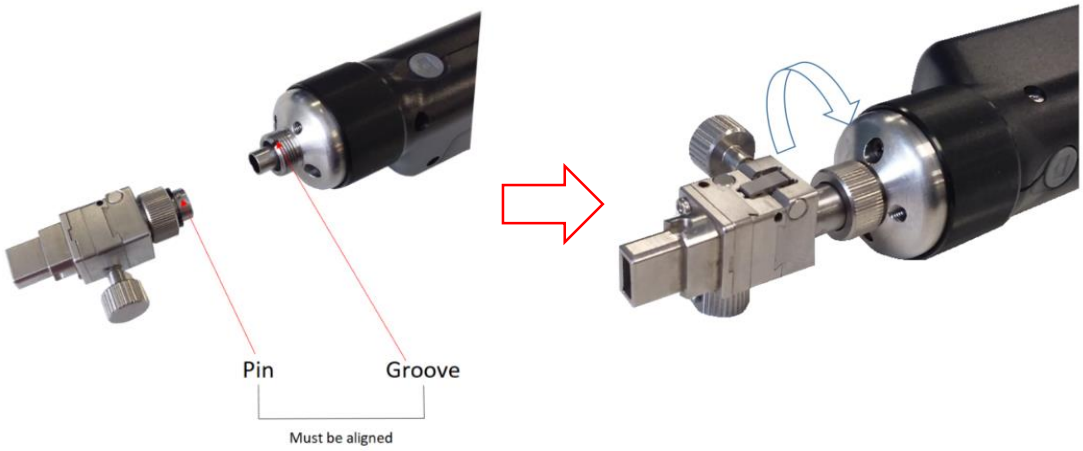
6.3 Installing Inspection Tips

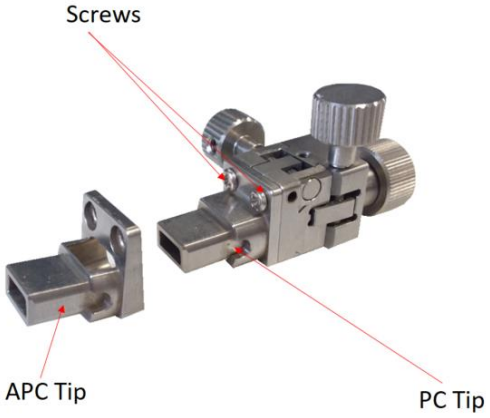
Place inspection tip over focal lens, make sure that the pin is aligned into the grove, tighten locknut by turning it ANTI-CLOCKWISE as shown below.



MPO Inspection Tips

Remove focal lens holder. Place MPO inspection tip on the probe, make sure that pin on the inspection tip is aligned into the groove. Tighten locknut by turning it CLOCKWISE as shown below.





Please note: *MPO inspection tip come with both PC and an APC tips which are interchangeable by loosening/tightening 2 screws as shown above.*

6.4 Optional Interchangeable Inspection Tips

Description	Part Number
1.25mm PC Male Universal Tip	SCK-SPT2-PC125-M
2.5mm PC Male Universal Tip	SCK-SPT2-PC250-M
1.25mm APC Male Universal Tip	SCK-SPT2-APC125-M
2.5mm APC Male Universal Tip	SCK-SPT2-APC250-M
SC APC In Adapter Tip	SCK-SPT2-SC-APC-F
SC UPC In Adapter Tip	SCK-SPT2-SC-UPC-F
FC APC In Adapter Tip	SCK-SPT2-FC-APC-F
FC UPC In Adapter Tip	SCK-SPT2-FC-UPC-F
LC UPC In Adapter Tip	SCK-SPT2-LC-UPC-F
MU UPC In Adapter Tip	SCK-SPT2-MU-UPC-F
ST UPC In Adapter Tip	SCK-SPT2-ST-PC-F
MPO APC Female Tip,12/24	SCK-SPT2-MPO-APC-F
MPO PC Female Tip, 12/24	SCK-SPT2-MPO-PC-F
E2000 UPC Female Tip	SCK-SPT2-E2000-UPC-F
E2000 UPC Male Tip	SCK-SPT2-E2000-UPC-M
E2000 APC Female Tip	SCK-SPT2-E2000-APC-F
E2000 APC Male Tip	SCK-SPT2-E2000-APC-M

6.5 Torch LED

The built-in Torch LED can be turned on to assist works in dark or low light conditions. To turn light on, flip Torch LED **on/off** Switch to ✱.

7.0 Software Download and Initial Set Up

7.1 Required Operating System

- Android Lollipop 4.2 & above.
- iOS 9.3 & above.

7.2 Getting Started

- Download Vue3 App from the Google Play (Android), App Store (iOS).
- Download Adobe Acrobat Reader.

7.3 WiFi Set-up

All SENKO probes are identified by their serial numbers (prefixed ***SSID*** "SP2-XXXX-XXXX")

Example: "SP2-1901-0002"

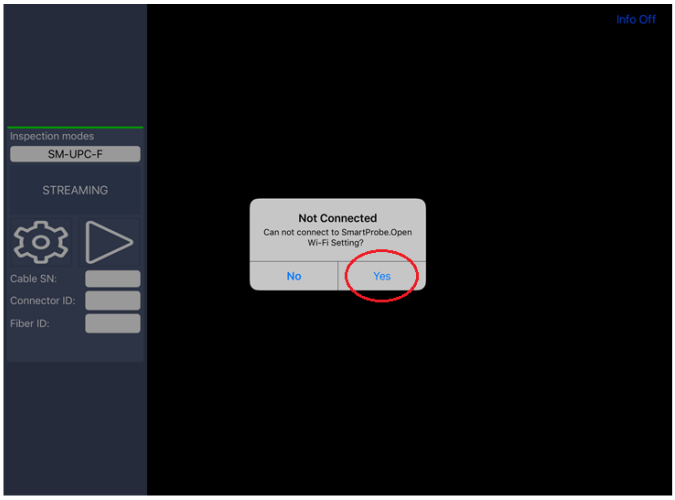
- **SP2**= Smart Probe 2.
- **1901**= Manufacturing 'Year' and 'Month'.
- **0002**= Identification Number.

To connect the wireless probe:

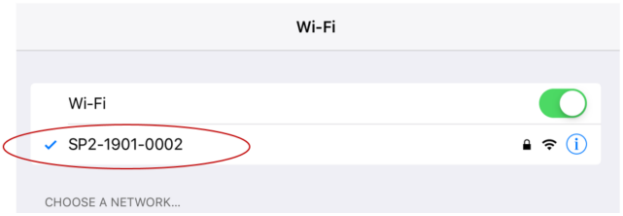
1. Turn on the probe by pressing down the Main **On/Off** Switch. The blue LED near the switch will light up.

2. Flip WiFi/USB Switch to . Wait until the green LED has lights up continually.

3. Start the Vue3 application and open WiFi Setting (see below).



4. Select the wireless probe you want to work with. Once connected go back to the Vue3 app.

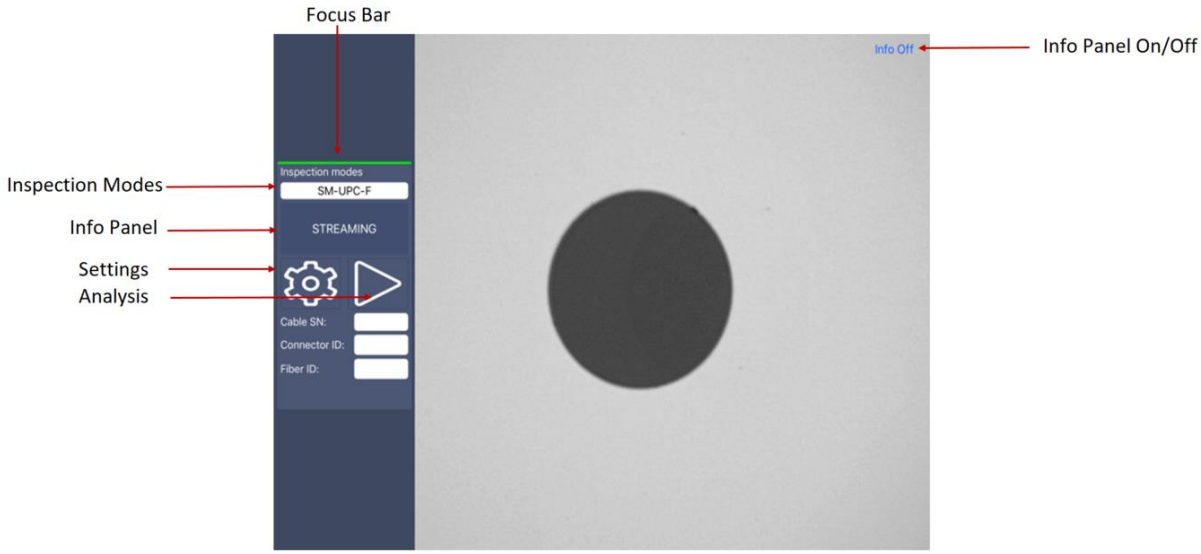


Wi-Fi Password

(12345678)

8.0 Software Overview

8.1 Functionality Diagram



Inspection Modes:

There are 6 inspection modes covering various connector types. Select correct inspection mode corresponding to connector type (**see below**).

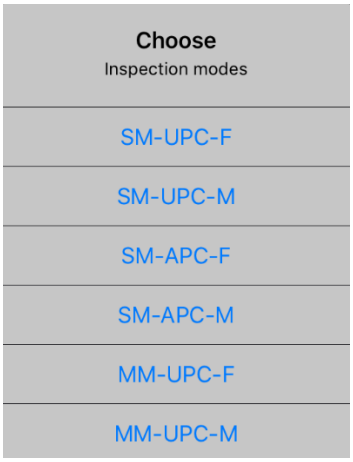
Inspection Mode	Connector Types
SM-APC-M (Patchcord)	SC, FC, ST, LC, MU, DIN, CS, E-2000
SM-APC-F (In-adapter)	SC, FC, ST, MU, DIN, E-2000
SM-UPC-M (Patchcord)	SC, FC, ST, LC, MU, DIN, CS, E-2000
SM-UPC-F (In-adapter)	SC, FC, ST, LC, MU, DIN, E-2000, CS

MM-UPC-M (Patchcord)	SC, FC, ST, LC, MU, DIN, CS, E-2000
MM-UPC-F (In-adapter)	SC, FC, ST, LC, MU, DIN, CS, E-2000

Please note: *all 6 inspection modes have specially optimized algorithm settings, tuned to accommodate various inspection tips. It's important to select correct inspection mode for analysis.*

To select inspection mode:

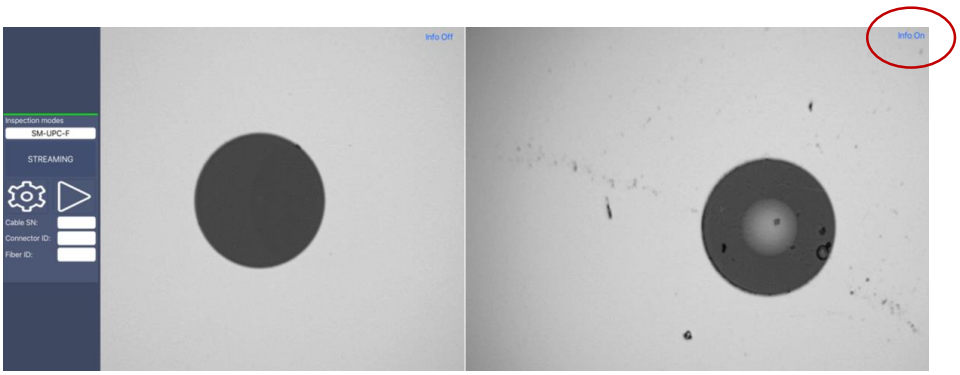
1. From the main screen, tap **Inspection Mode** button.
2. Popup Menu will appear in the middle of the screen. Select correct inspection mode.



<u>Info Panel On/Off:</u>

To hide info panel:

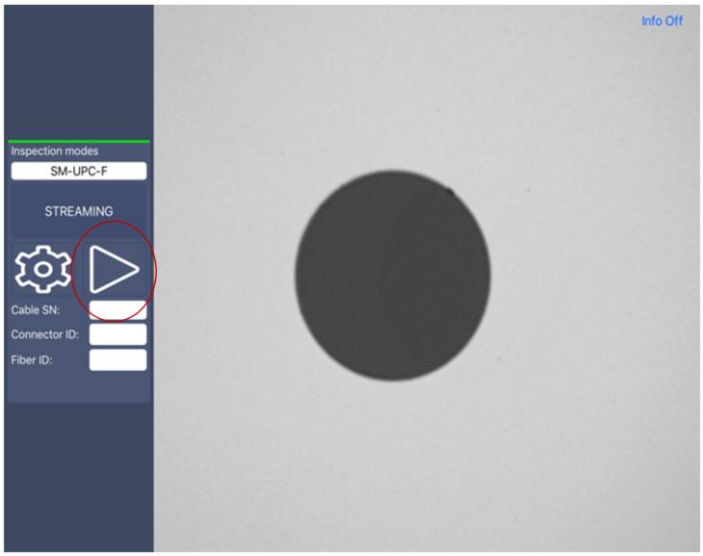
1. Tap **on/off** button in the top right corner of the screen.



Process Button:

To trigger PASS/FAIL analysis:

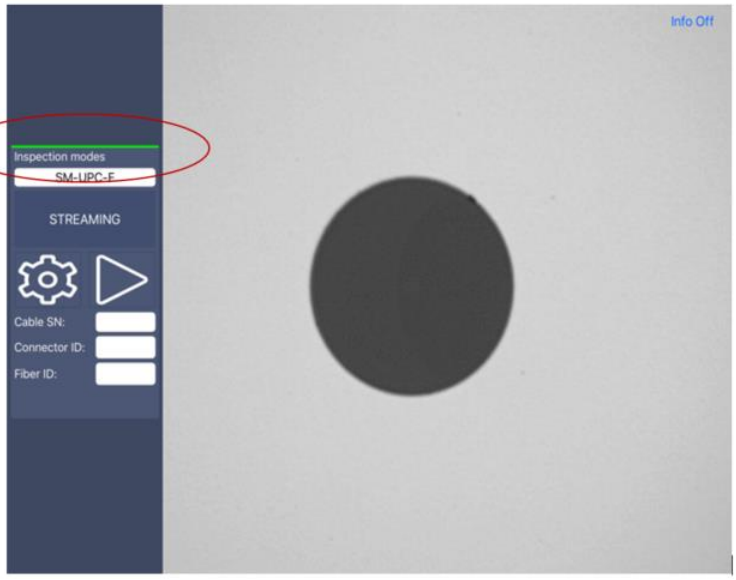
1. From the **Main Screen**, tap process button.



Please note: *PASS/FAIL analysis can also be triggered by pressing the '**capture button**' on the top of the probe.*

Focus Indicator:

The focus indicator is displayed in the upper left part of the main window. The focus bar shows whether the current view is optimized for a capture. A green indicator shows image that can be captured and analyzed. Analysis will be impossible with a red indicator.



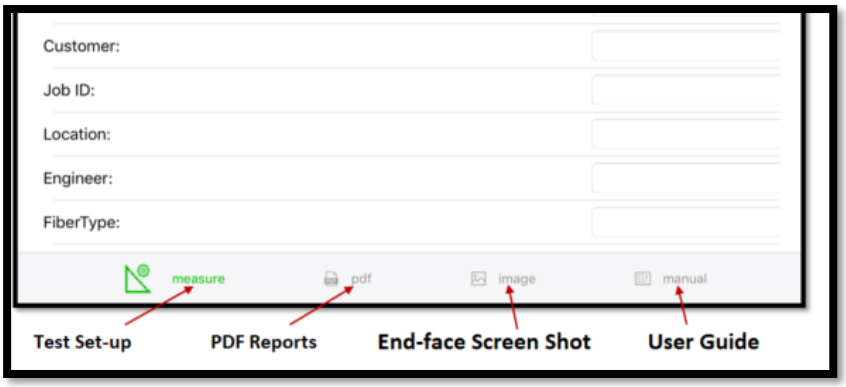
***Info Panel*:**

To access 'Inspection Results Summary':

1. From the **Main Screen**, tap PASS/FAIL button.

Results					
Zone	Zone Diameter	Criteria	Threshold	Count	Result
A:Core	0µm to 25µm	0 ≤ size < 0	0	0	Pass
B:Cladding	25µm to 115µm	0 ≤ size <2	No Limit	0	Pass
		2 ≤ size ≤ 5	5	0	Pass
		> 5	0	0	Pass
C:Adhesive	115µm to 135µm	No Limit	No Limit	0	Pass
D:Contact	135µm to 250µm	0 ≤ size < 10	No Limit	0	Pass
		> 10	0	0	Pass

***Settings Menu*:**



Test Set-up:

In this section you can create test configurations as per inspection requirements.

PDF Reports:

In this section you can access all standard & consolidated PDF reports.

Images:

In this section you can access all end-face screen shots.

User Guide:

In this section you can access 'User Guide' and support.

9.0 Customizing the Software:

Vue3 can be customized in various ways to suite your inspection requirements. You can set the application to generate an inspection report automatically or manually. either a **single page** report or **consolidated report** (consolidating multiple reports merged into a single report). During testing you can also add '**comments**' to your reports and review them later on.

9.1 Standard Report

A standard report is a single page PDF report. The report contains a summary of end-face inspection.

To activate standard report:

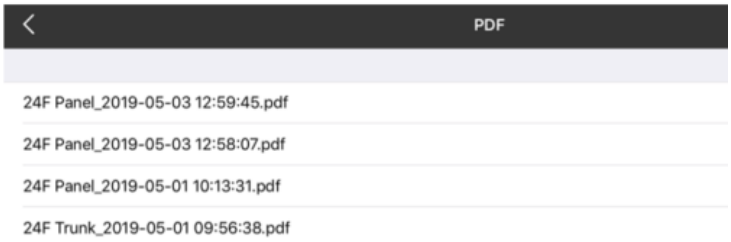
1. From the **Main Menu**, tap 'Settings' button.
2. Select **Standard** in 'Report Layout'.

3. Under heading '***Standard Single Report***' within the **Test Set-up Menu**. Start filling information which you want to include in your test report.

Please note:

(a) *As a minimum requirement,* ***'Cable SN, Connector ID & Fiber ID'*** *information MUST to be provided. The application won't proceed with inspection if one of the information is incomplete.*

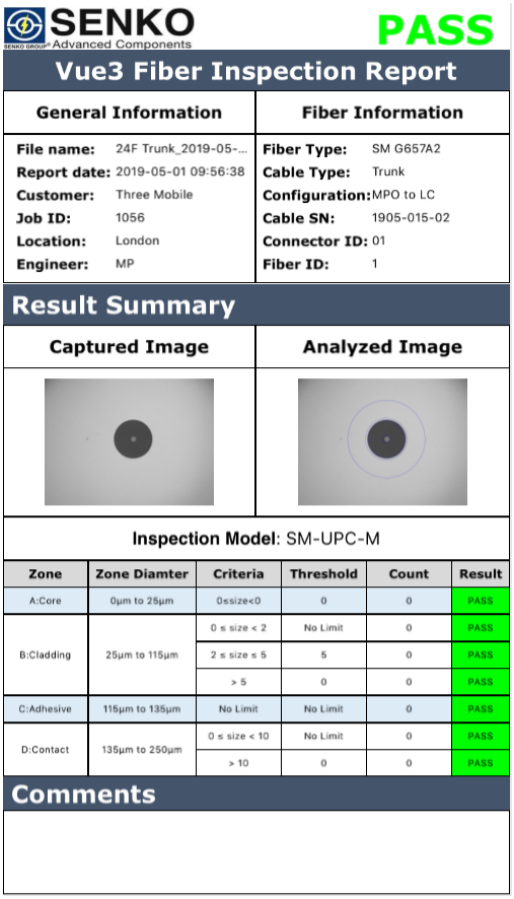
(b) ***File name****: this will become a '****title'*** *of the PDF report, followed by date and time (****see below****).*



Standard Report Template: (Example)

The standard report structure:

1. **General & Fiber information**.
   This section of the report provides a summary of the test 'Set-up' configuration.
2. **Captured & Analyzed Image**.
   The application provides two screen shots of the inspected end-face in the standard report. First image is a screen shot of the end-face without software analysis. Second image highlights debris on the fiber surface. On
3. **Test Summary Table**.
   Contains inspection result summary as per IEC 61300-3-35 standard.
4. **Comments**.
   This section contains 'comments' entered during testing.



SENKO Advanced Components — PASS

Vue3 Fiber Inspection Report

General Information		Fiber Information	
File name:	24F Trunk_2019-05-...	**Fiber Type:**	SM G657A2
Report date:	2019-05-01 09:56:38	**Cable Type:**	Trunk
Customer:	Three Mobile	**Configuration:**	MPO to LC
Job ID:	1056	**Cable SN:**	1905-015-02
Location:	London	**Connector ID:**	01
Engineer:	MP	**Fiber ID:**	1

Result Summary

Captured Image	Analyzed Image

Inspection Model: SM-UPC-M

Zone	Zone Diamter	Criteria	Threshold	Count	Result
A:Core	0μm to 25μm	0≤size<0	0	0	PASS
B:Cladding	25μm to 115μm	0 ≤ size < 2	No Limit	0	PASS
		2 ≤ size ≤ 5	5	0	PASS
		> 5	0	0	PASS
C:Adhesive	115μm to 135μm	No Limit	No Limit	0	PASS
D:Contact	135μm to 250μm	0 ≤ size < 10	No Limit	0	PASS
		> 10	0	0	PASS

Comments

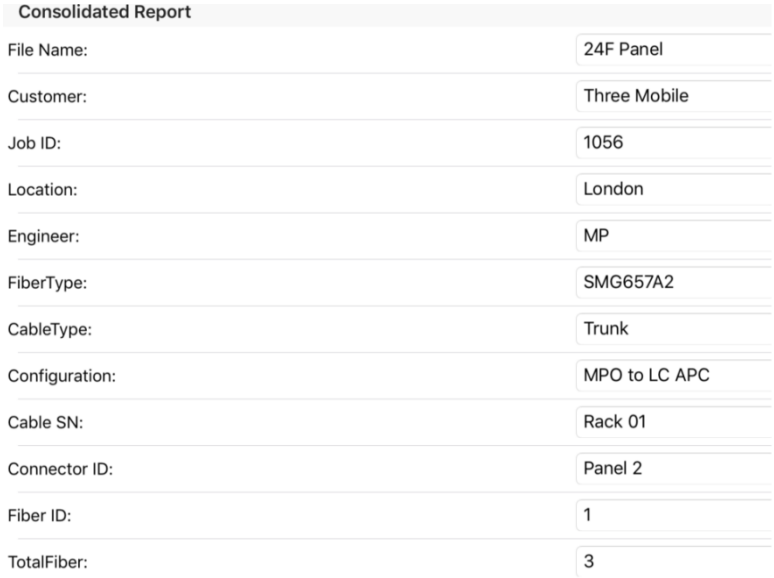
9.2 Consolidated Reporting

This feature allows combining multiple reports into a single PDF file. This feature is useful when inspecting cable assemblies with a high number of ports e.g (144F trunks).

To activate consolidated report:

1. From the **Main Menu**, tap 'Settings' button.
2. Select Consolidated in the '**Report Layout'**.

3. Under heading '***Consolidated Report***' within the **Test Set-up Menu**. Start filling information which you want to include in your consolidated report.



Please note:

(a) *As a minimum requirement,* ***'Cable SN, Connector ID, Fiber ID & Total Fibers'*** *information MUST to be provided. The application won't proceed with inspection if information is incomplete.*

(b) ***Total Fibers****: this number determines how many fibers will be inspected. If you want to inspect 144 fibers, enter '144'. The application will generate a consolidated report for 144 individual fibers.*

(c) ***File name****: this will become a '**title'** of the PDF report, followed by date and time.*

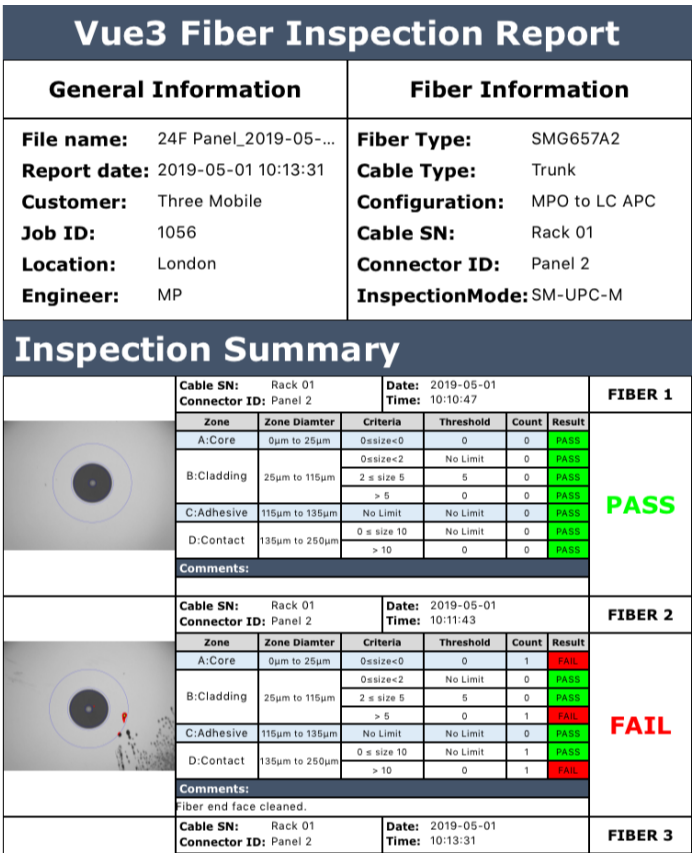
Consolidated Report Template: (Example)

Consolidated report structure:

1. **General & Fiber information**.
   This section of the report provides a summary of the test 'Set-up' configuration.
2. **Inspection Summary**.

   Contains the following information:

   1. **Fiber ID**.
   2. **Cable SN and Connector ID**.
   3. **Date and Time**.
   4. **Test Results Table** (As per IEC 61300-3-35)
   5. **Inspection Result** (PASS/FAIL)
   6. **Comments Section**.



Vue3 Fiber Inspection Report

General Information		Fiber Information	
File name:	24F Panel_2019-05-...	**Fiber Type:**	SMG657A2
Report date:	2019-05-01 10:13:31	**Cable Type:**	Trunk
Customer:	Three Mobile	**Configuration:**	MPO to LC APC
Job ID:	1056	**Cable SN:**	Rack 01
Location:	London	**Connector ID:**	Panel 2
Engineer:	MP	**InspectionMode:**	SM-UPC-M

Inspection Summary

Cable SN: Rack 01 **Connector ID:** Panel 2 **Date:** 2019-05-01 **Time:** 10:10:47 — **FIBER 1**

Zone	Zone Diamter	Criteria	Threshold	Count	Result
A:Core	0µm to 25µm	0≤size<0	0	0	PASS
B:Cladding	25µm to 115µm	0≤size<2	No Limit	0	PASS
		2 ≤ size 5	5	0	PASS
		> 5	0	0	PASS
C:Adhesive	115µm to 135µm	No Limit	No Limit	0	PASS
D:Contact	135µm to 250µm	0 ≤ size 10	No Limit	0	PASS
		> 10	0	0	PASS

PASS

Comments:

Cable SN: Rack 01 **Connector ID:** Panel 2 **Date:** 2019-05-01 **Time:** 10:11:43 — **FIBER 2**

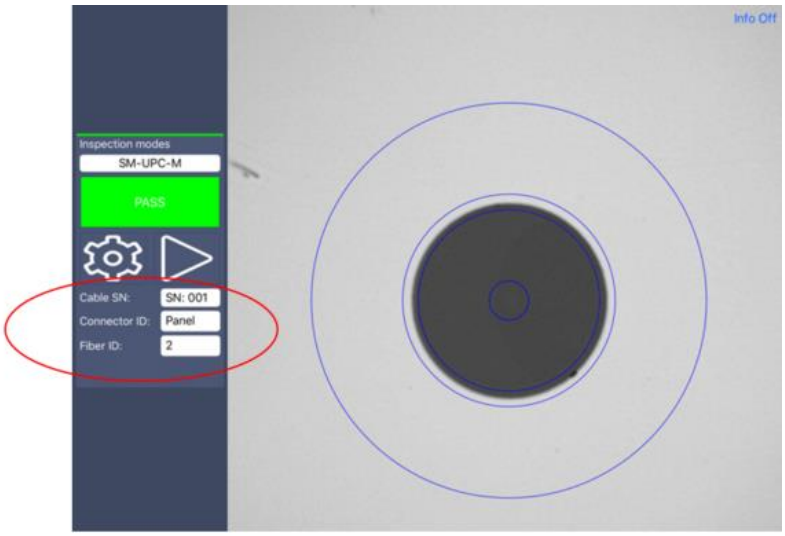
Zone	Zone Diamter	Criteria	Threshold	Count	Result
A:Core	0µm to 25µm	0≤size<0	0	1	FAIL
B:Cladding	25µm to 115µm	0≤size<2	No Limit	0	PASS
		2 ≤ size 5	5	0	PASS
		> 5	0	1	FAIL
C:Adhesive	115µm to 135µm	No Limit	No Limit	0	PASS
D:Contact	135µm to 250µm	0 ≤ size 10	No Limit	1	PASS
		> 10	0	1	FAIL

FAIL

Comments:
Fiber end face cleaned.

Cable SN: Rack 01 **Connector ID:** Panel 2 **Date:** 2019-05-01 **Time:** 10:13:31 — **FIBER 3**

***Please note**: when you change **Cable SN** or **Connector ID** information during testing, this will be recorder on the consolidated PDF report. The 'Fiber ID' will automatically go back to '1'. This can be adjusted manually from the main screen (**see below**).*



9.3 Create a Report Manually

To save files manually:

1. From the **Main Menu**, tap 'Settings' button.
2. Select '**Manual**' in Archiving Method.

9.4 Activate Automated Report Creation

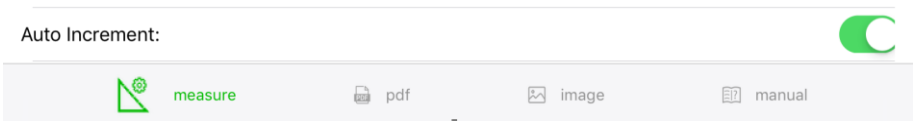
To save files automatically:

1. From the **Main Menu**, tap 'Settings' button.
2. Select '**Auto**' in Archiving Method.

9.5 Activate Auto Increment

To enable auto increment:

1. From the **Main Menu**, tap "**Settings**" button.
2. At the bottom of the Main Menu, tap "**Auto**".

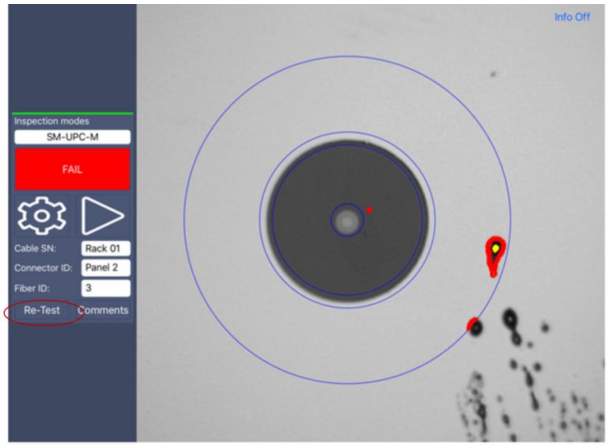


9.6 Re-Test Function

The application allows for retesting of fibers that have failed testing after results are displayed.
When re-test future is enabled the fiber can be re-inspected up to 3 times. During this time, the 'Fiber ID' will not increase until you get a 'PASS' result and save the report. On the third inspection, you have an option to add & save 'comments' on the report. Once saved, you can continue with your testing.

To retest a fiber:

1. Remove connector and clean fiber end face.
2. Plug in connector back into the probe, tap "**Re-Test**" button.
3. If you get a PASS result, you can continue with your testing.
4. If you get a FAIL result, repeat first two steps again.



Please note: *on the 3rd inspection, the application will ask you to add & save comment on the PDF report (Optional). You can save comment and continue with your testing. Alternatively, if you are dealing with a stubborn contamination, you can continue re-testing fiber until you get a PASS result.*

9.7 Comments

When you get a 'FAIL' test result, the application allows you to save comments in the PDF report.

To add comments: *(FAIL Result)*

1. From the **Main Screen**, tap 'Comments' button.
2. Popup menu will appear in the middle of the screen. Put your comments in the 'Comments Section'.
3. Select '**Yes**' to save the report or '**Cancel**'.

10. Inspecting Fiber Ends and Analyzing Captures

To inspect fiber end face:

1. Install inspection tip on the probe.
2. Insert connector into the probe tip.
3. Turn on the probe and start Vue3 application.
4. Once connected, adjust focus to optimize live image for a capture. Use the '**focus bar**' as reference point. A green indicator shows that the image can be captured and analyzed.
5. Choose correct '**Inspection Mode'** for analysis (*see section 8.0 Software Overview 'Inspection Mode' pages 14-15*)
6. Optimize test configuration for your test, from the main menu, tap '**Settings**' followed by '**Test Set-up'**.
7. In the 'Test Set-Up' menu, pre-select '**Report Layout**' and '**Archiving Method**' (*see section 9.3 & 9.4 page 22*).
8. Depending on your test set-up (**Standard** or **Consolidated report**), start filling in the information that you want to include in your PDF report e.g. **File Name**, **Customer Name**, **Job ID**, **Location**, **Engineer**, **Fiber Type**, **Cable Type**, **Configuration**, **Cable SN**, **Connector ID**, **Fiber ID**, **Total Fibers**.
9. Activate or Disable **'Auto Increment**' according to your preference.
10. Return to the '**Main Menu'**.
11. Press the '**Capture Button**' on the probe or tap '**Analysis Button**' to trigger PASS/FAIL analysis.
12. If the fiber is dirty, remove it from the probe, clean it and re-inspect it. You might want to use '**Re-Test**' function or add '**Comments**' on the PDF report (*see section 9.6 and 9.7 pages 23*).

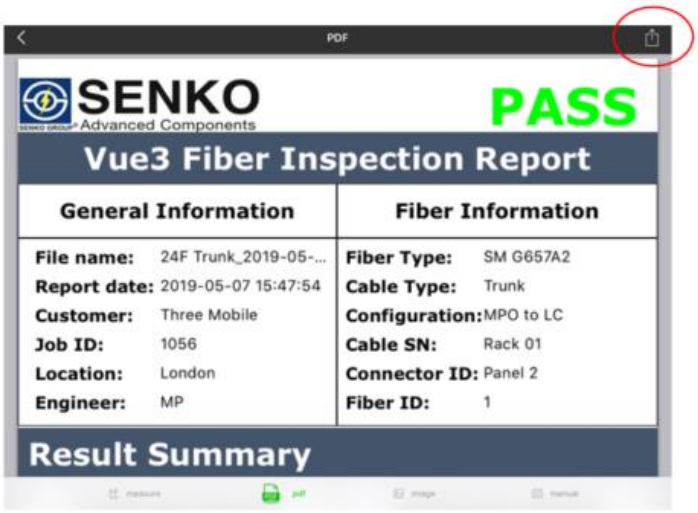
13. Once you are satisfied with the inspection, move on to the next connector.
14. To view & analyze PDF reports, tap '**Setting Button**' followed by '**PDF Reports'**.

11. Extracting Files

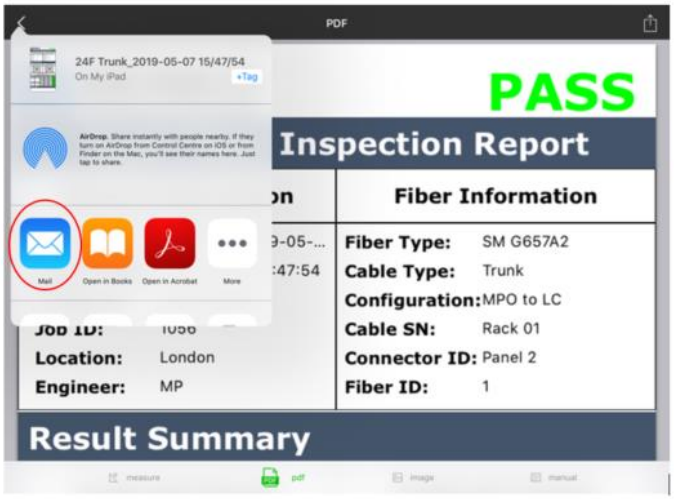
***To extract PDF reports or images*.**

Email: (PDF Reports)

1. From the **Main Menu**, tap 'Settings'.
2. In Main Settings Menu, select '**PDF Reports**'.
3. Select report which you wish to extract from the app.
4. Once you open PDF report, tap the icon in the top right corner (**see below**).

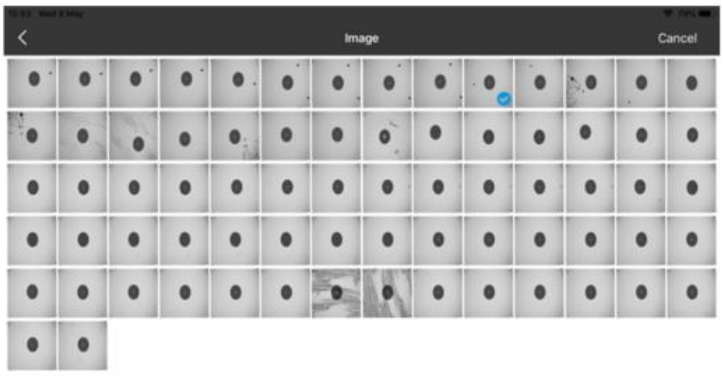


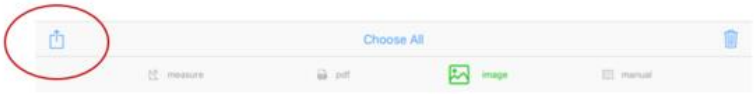
5. Select '**Mail**' option. The application will automatically upload your report/image onto you '**Email App'**.



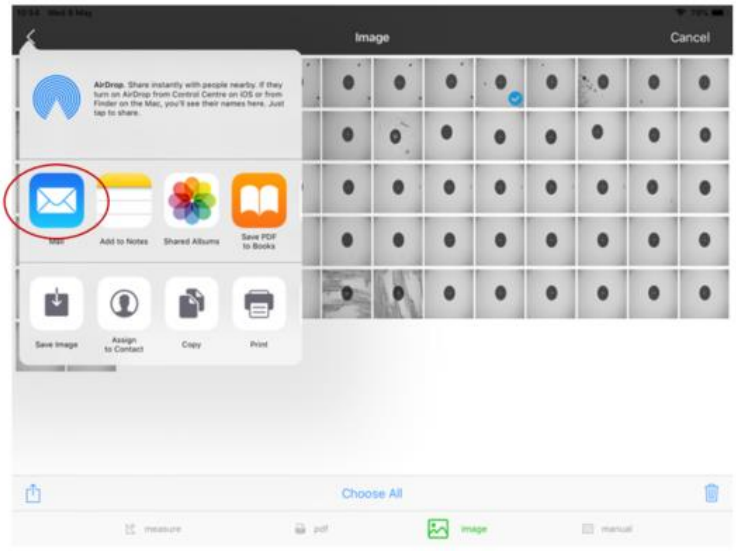
Email: (Images)

1. From the **Main Menu**, tap 'Settings'.
2. In the Main Settings Menu, tap '**Images**'.
3. Select the image you wish to send from the app.





6. Select '**Mail**' option. The application will automatically upload your report/image onto you '**Email App'**.



USB: (PDF Reports & Images)

1. Insert the USB cable into the USB port on the computer.
2. From your computer, select '**Smart Probe'** folder.
    a. PDF Reports (**Reports Folder**)
    b. Images (within the **Smart Probe Folder**)
3. When files are selected, right click and select '**Copy**'.

4. Navigate to the USB drive, then right-click and select '**Paste**'.

12. Warranty

Senko Advanced Components. ("Senko") warrants its Smart Probe range of products free from defects in material and workmanship under normal use, for of one year from the date of purchase. Subject to the conditions and limitations set forth below, Senko will at its discretion, either repair or replace any part of its products that prove defective by reason of improper workmanship or materials. The warranty becomes effective from the date of shipment.

Limitations of Warranty

This warranty does not include non-Senko installed components. This limited warranty does not cover any damage to the product that results from abnormal mechanical or environmental conditions, abuse, accident, improper installation, misuse, insufficient or excessive electrical supply, natural disaster, or any unauthorized disassembly, repair, or modification.

This limited warranty also does not apply to any product on which the original product label has been altered, obliterated or removed, has not been handled or packaged correctly or has been sold as second-hand. This limited warranty covers only replacements for defective Senko products, as described above.

Senko does not cover under warranty and is not liable for any loss of data or any costs associated with diagnosing the source of system problems or installing, removing or servicing Senko products. This warranty excludes 3rd party software, connected equipment or stored data. In the event of a claim, Senko's sole obligation shall be to repair or replace our product with its equivalent or the best possible substitute.

Under no circumstances shall Senko be liable in any way to the user for damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use, the Senko products.

Senko reserves the right to revise or update its products, software, or documentation in keeping with technological advances without obligation to notify any individual or entity.

13. Service and Support

To send equipment for service or repair:

1. Contact your distributor or SENKO directly. Support personnel will determine if the equipment requires repair.

2. If equipment must be returned to SENKO, support personnel will issue a Return Material Authorization form (RMA) and provide an address to return.
3. Pack the equipment in its original shipping material. Include a report fully detailing the problem.
4. Return the equipment to the address provided on the RMA document. Please include RMA document with the Smart Probe.