

KI23400 / KI27400 SERIES LOSS TEST METER TRAINING MANUAL



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Simac Electronics

- Opgericht in 1971
- Onderdeel van Simac Techniek N.V.
- Al meer dan 45 jaar passie voor techniek
- Ruim 40 hoog opgeleide medewerkers die graag met u samenwerken aan de best passende oplossingen
- Een innovatief en dynamisch team
- Werkgebied is Benelux



Simac Electronics

- Wij verbinden mensen en technologie
- Klantvriendelijke en betrouwbare specialist in verbinden
- Hoogwaardige en innovatieve meet- en verbindingstechnologie
- Onderscheidend in engineering, design en consultancy
- Eigen service afdeling voor kalibratie, reparatie en onderhoud





KI23400 / KI27400 Series Loss Test Meter Training Manual

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Date: Nov 2020

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General Features

- Ease to use, slim & versatile
- Loss, length* tester for high fiber counts
- Real time pass / fail
- Sunlight readable & backlit LCD
- SM, MM (EF Compliant) & quad test options
- Large memory & USB key file dump
- Interchangeable connectors
- Real-time, secure PC reporting software
- Continuity test tone with Multi-Fiber ID
- VFL VisiTester* option
- Long battery life, USB external power
- >25 calibration λ , 1% accuracy
- ISO 17025 traceable calibration
- 3 Year warranty & calibration cycle
- Made in Australia

* Only available on selected model

Instrument Overview & Layout



Getting Started

➔ Select test cord configuration

Identify fibre type required for test cord and configuration required. Instrument supplied with SC connector adaptor as standard.

Standard connector types:



XL connector types:



Note: Unlike light sources, power meters accept both PC and APC connectors.

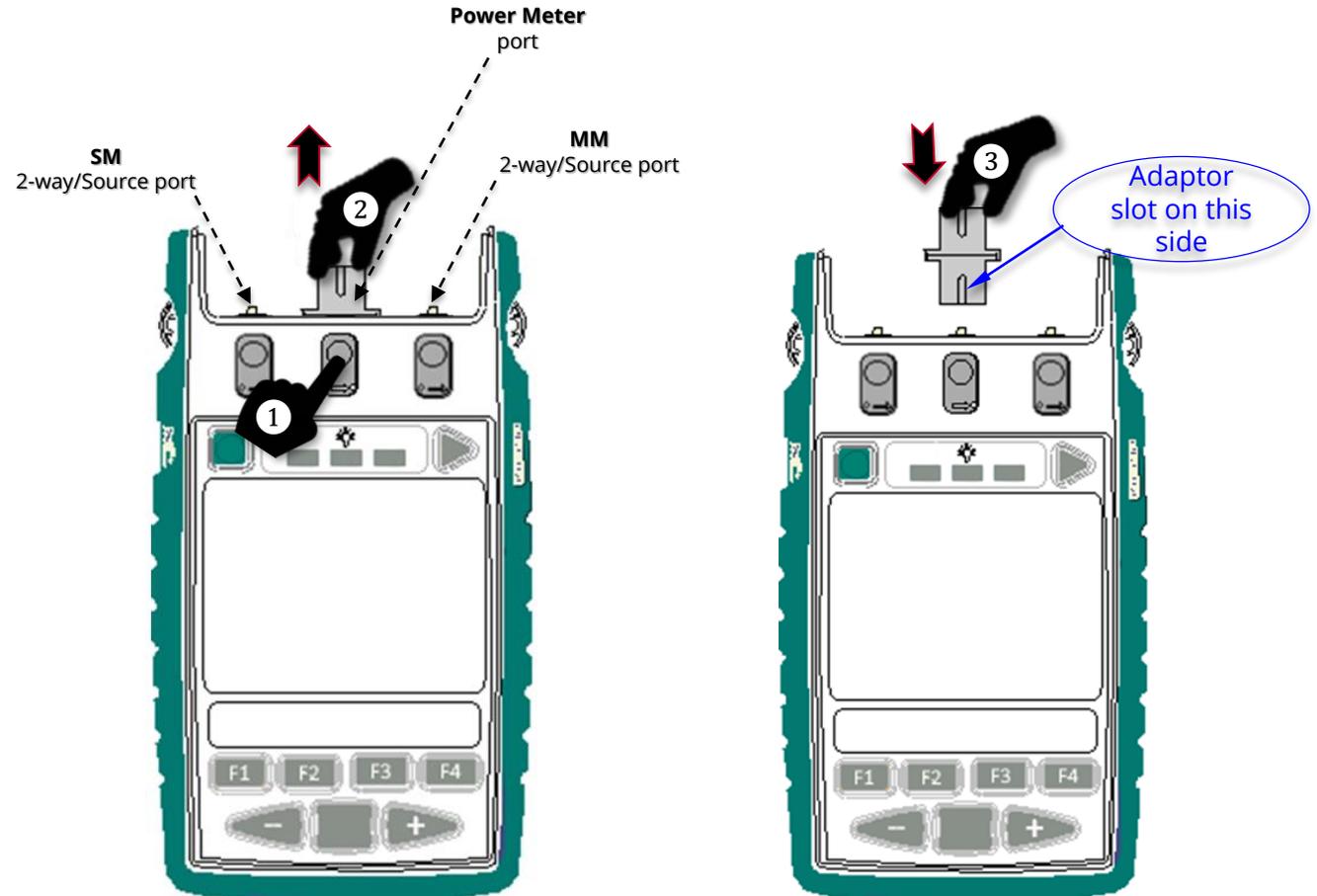
Getting Started

➔ Install / uninstall connector adaptor

The instrument comes with 2 or 3 ports (i.e. 1x or 2x 2-way/Source port/s and 1x Power Meter port) depending on the models. See picture on the right for locations of these ports.

Install and uninstall connector adaptors to these ports as per steps below:

- 1 Press down release button with finger of one hand.
- 2 Pull out existing adaptor with the other hand.
- 3 Push in a new adaptor.



Getting Started

➔ Power

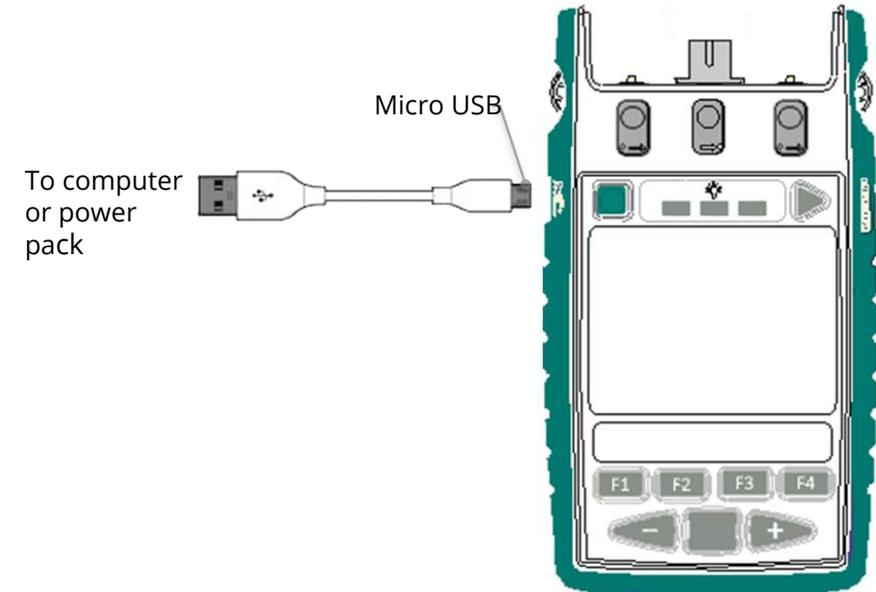
➔ External via USB

Plug in to a computer or an external power pack via the micro-USB connector marked “DC-PWR-IN”.

Caution: When external source is connected, batteries in instrument will be charged if recharging is enabled.

To avoid recharging non-rechargeable batteries which may lead to acid leakage and instrument damage, make sure that recharging is disabled whenever these batteries are used.

See section, “Disable/enable battery charging”.



Getting Started

➔ Power

➔ Batteries

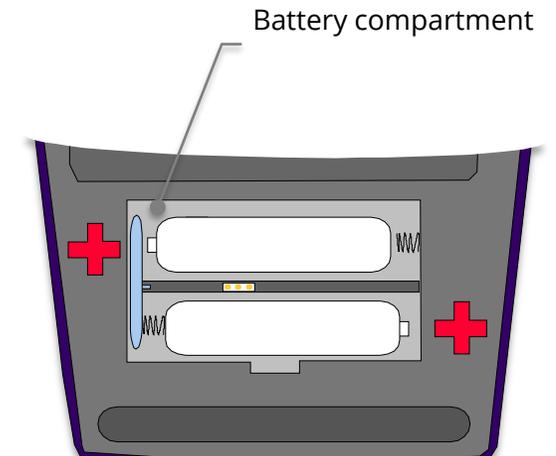
To install / uninstall batteries:

- ① Unclip door of battery compartment at rear of instrument.
- ② Insert / remove batteries. Make sure that batteries are inserted in the correct polarities.

Note:

- Instrument's date / time setting holds for approx. 2 minutes during batteries change over.
- Use 2x Alkaline / Lithium AA cells or 2 x NiMH AA cells.
- Alkaline battery run time up to approx. 1,000 hours.

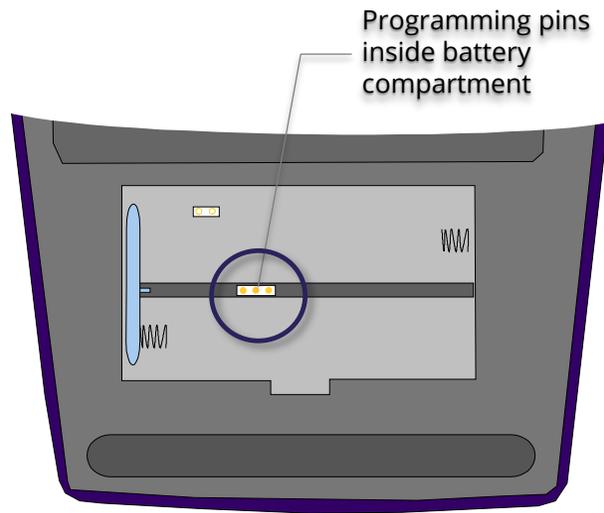
Caution: Battery charging on instrument must first be disabled when using non-rechargeable batteries. See next page for instructions to disable battery charging.



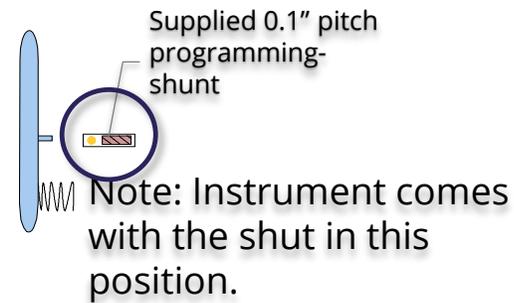
Getting Started

➔ Disable / enable battery charging

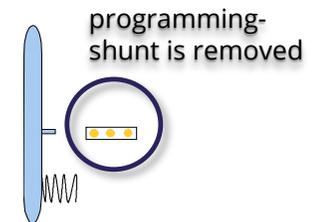
Insert the supplied programming-shunt across the pins inside battery compartment to disable or enable charging as shown below.



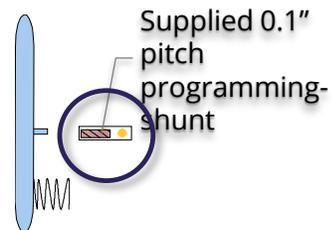
Battery charging *disabled*.



OR



Battery charging *enabled*.



Getting Started

➔ On / off instrument & LCD-backlight

To switch on:

Press the green button.

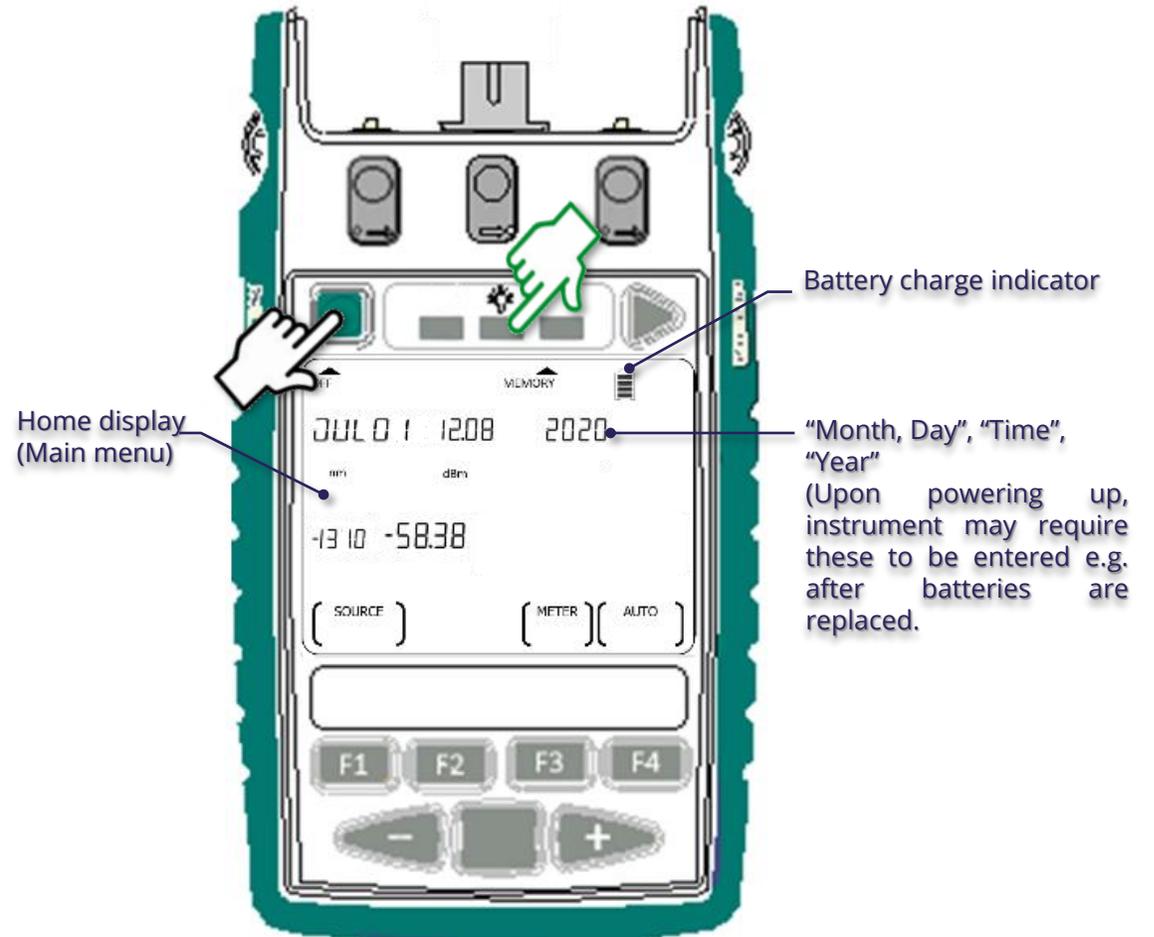
To switch off:

Press the green again.

Auto off feature: Instrument will switch off automatically 10 minutes after it was switched on.

To disable auto power off, press and hold the green button for 3 seconds or until beeping stops. 'Perm' will display on the upper LHS of the LCD.

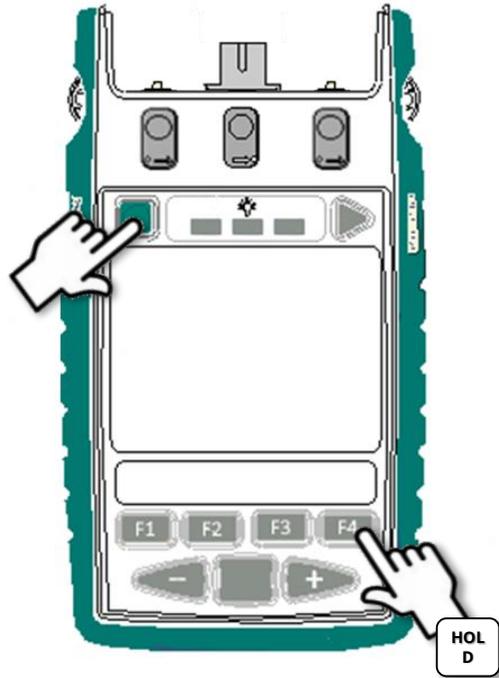
LCD backlight: Press button below the light bulb symbol to turn backlight on or off.



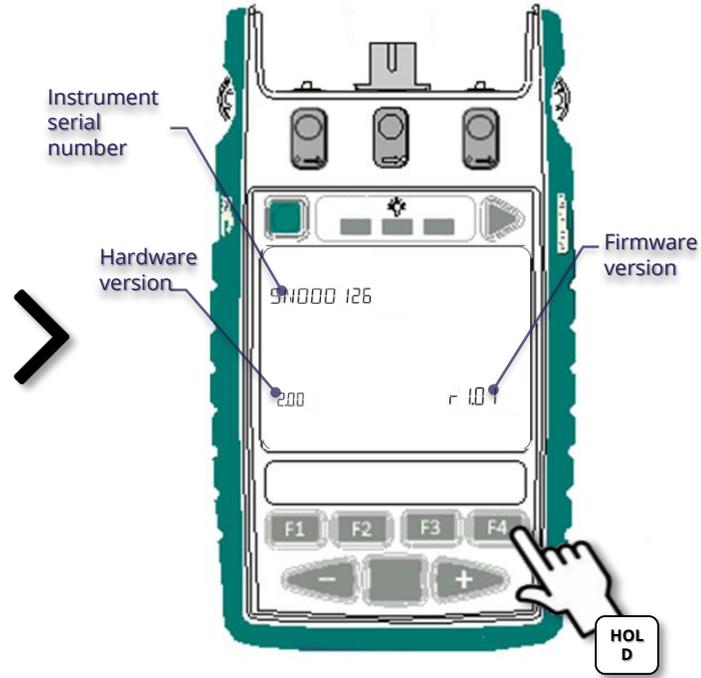
Getting Started

➔ To view firmware version & instrument serial number

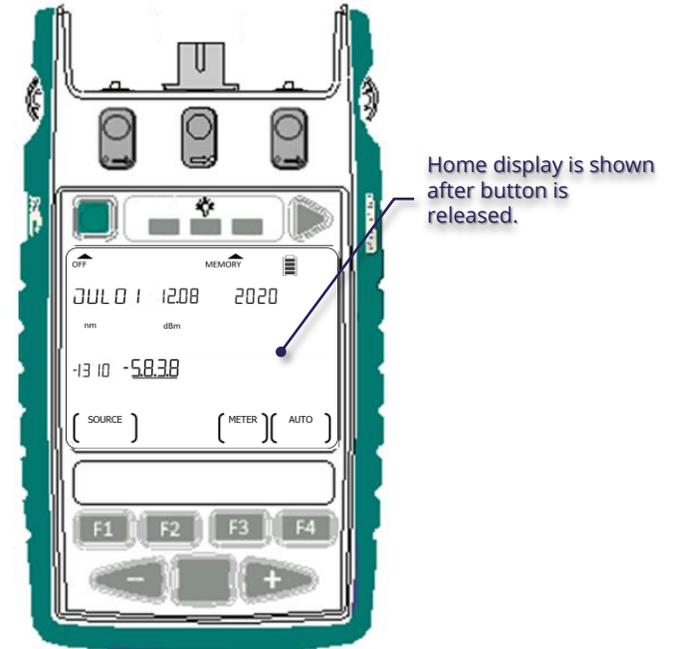
① When instrument is *off*, hold down F4 then press green button



② Continue to hold down F4.



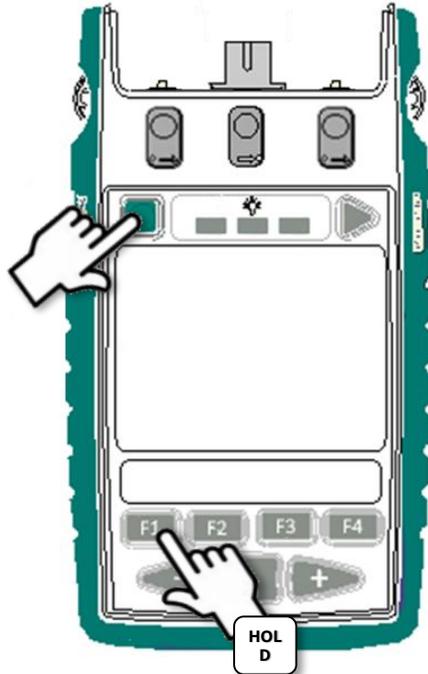
③ Release F4.



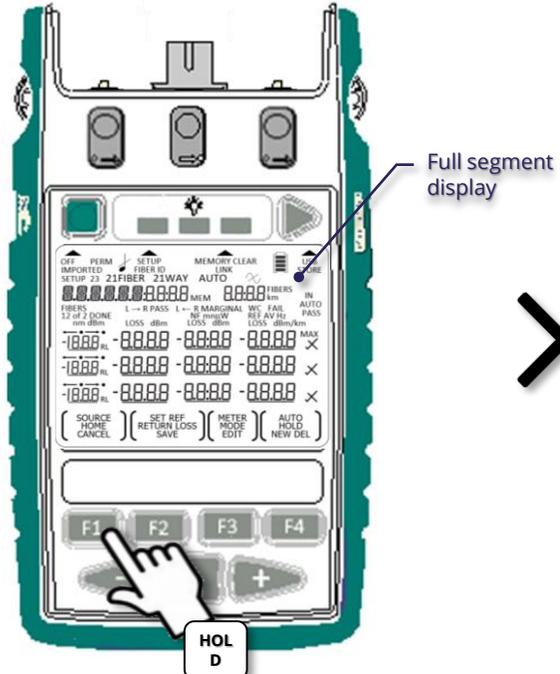
Getting Started

➔ To show all display segments of LCD

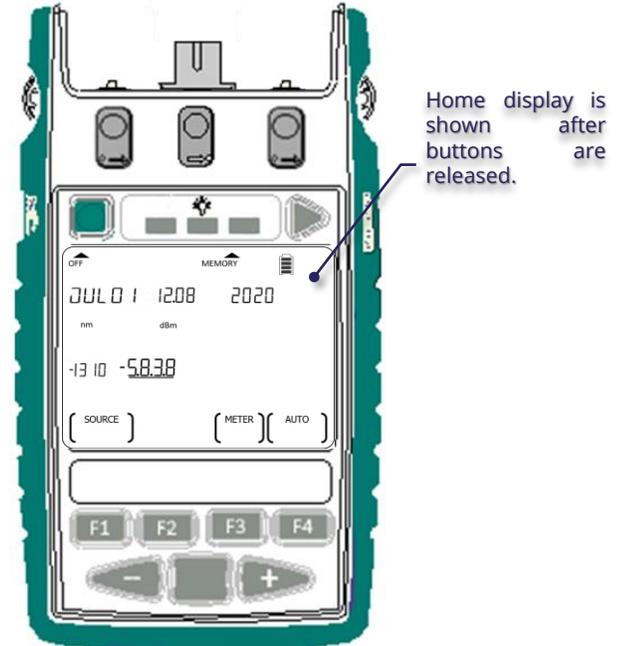
① When instrument is *off*, hold down F1 then press green button.



② Continue to hold down F1.



③ Release F1.



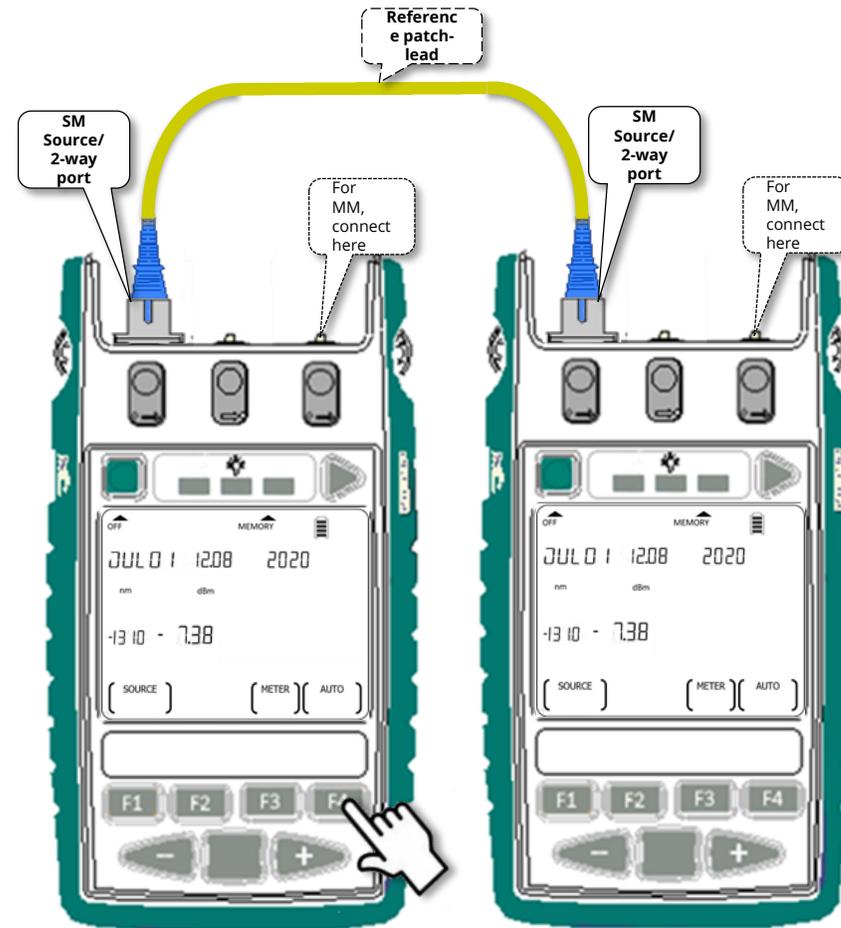
Instrument Operation

➔ 2-way Autotest operation

- Work with a pair of instruments (same model) only
- Performs bidirectional loss, ORL (optional), cable length (optional) measurements
- Displays test result (pass/fail) automatically

① Connect the 2-way ports of both instruments with a reference patch-lead.

② Start Autotest:
Press F4 on *any* of the instruments.



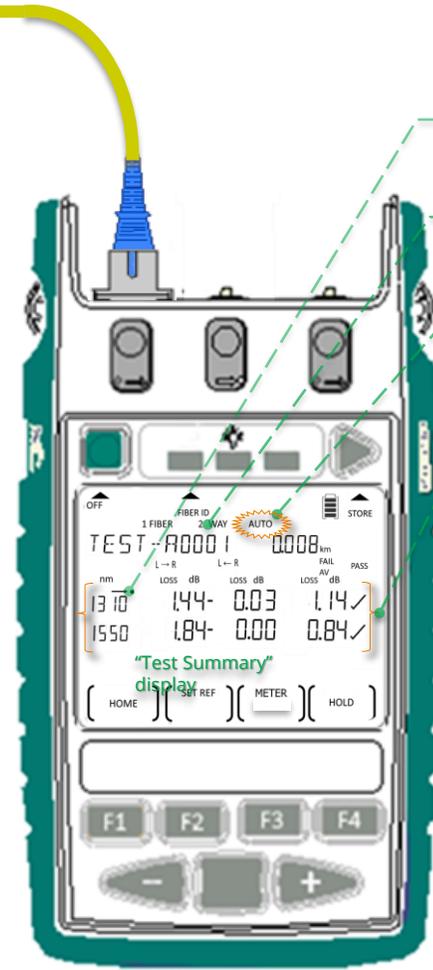
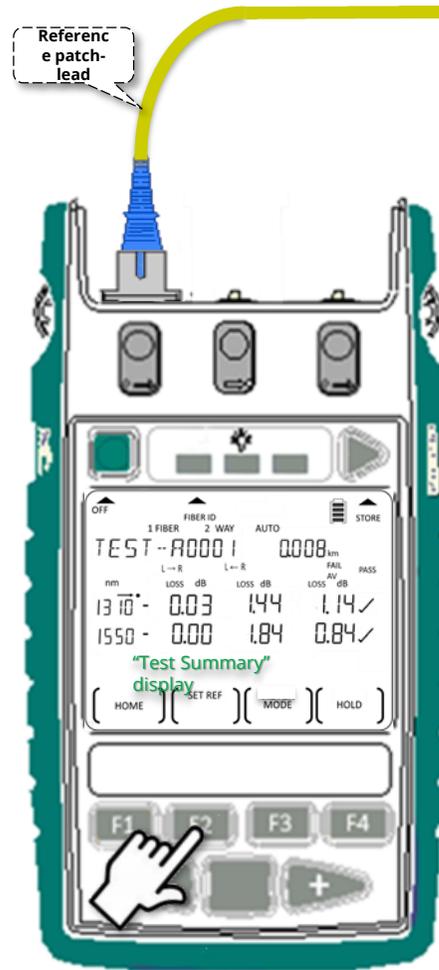
➔ Continue next page

Instrument Operation

➔ 2-way Autotest operation (continue)

When Autotest starts, LCD of both instruments display a "Test Summary" for losses of each direction and their respective averages, for all the active wavelengths.

For restricted wavelength Autotest, refer to slides 28~30.



Arrow sign indicating the data row which is being updated.

Indicating instrument operating in 2-way Autotest mode

Flashing "AUTO" indicating unit operating in Autotest mode

Test data (bidirectional losses & their respective averages) and results,

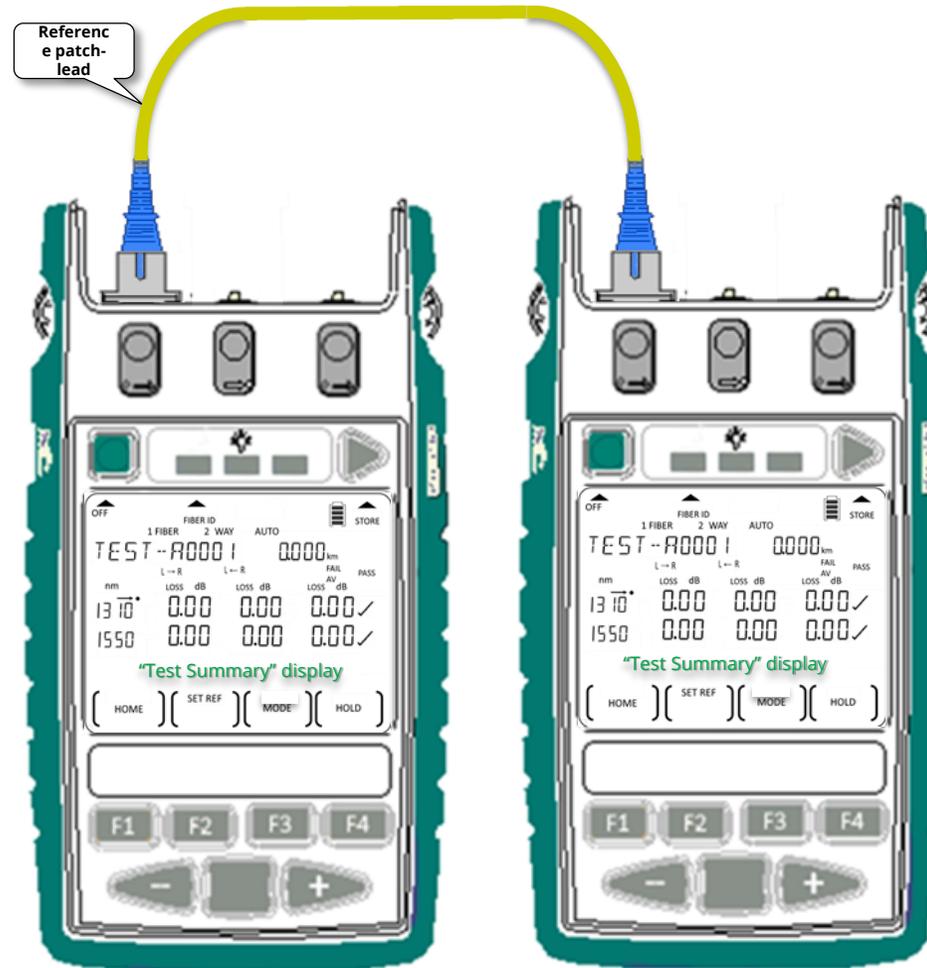
- for all active wavelengths are displayed here.
- for each wavelength are shown in a row.
- 3 wavelengths can be shown simultaneously at a time. If more than 3 wavelengths, screen auto scrolls & cycles to show all wavelengths

➤ Continue next page

③ **Set reference:** Press F2 until beeping stops on *any* of the instrument.

Instrument Operation

↳ 2-way Autotest operation (continue)



④ Reconnect instruments' ports with DUT (Device Under Test) fiber.

➤ Continue next page

Instrument Operation

↳ 2-way Autotest operation (continue)

Measured cable length:
Flashes (fail) if measured value is greater than set threshold.

Average loss (dB) of B▶A & A▶B @ 1310 nm

A▶B loss (dBm) @ 1310 nm

B▶A loss (dBm) @ 1310 nm

Measured cable length, blink(fail) if value is greater that set threshold

Average loss (dB) of A▶B & B▶A @ 1310 nm

Overall test result ("PASS" / "FAIL"):
"PASS": if test result for loss of all wavelengths are "✓" or marginal (blinking "X") and, cable length test passes and ORL test passes.
"FAIL": if any loss or ORL test result is "X" or, length test fails (blinking).

Symbol signifying loss pass/fail against the set thresholds (refer to Pass/fail Threshold Setting, slides 71~72) for each wavelength:

If AV (Average) method is selected:

- "✓": Pass/fail check is disabled (threshold value is set at "0").
or
- "✓" (pass): **Average loss** value (magnitude) is smaller than or equals to PASS threshold.
- Flashing "X" (marginal): **Average loss** value (magnitude) is greater then PASS but, smaller than or equals to MARGINAL thresholds.
- "X" (fail): **Average loss** value (magnitude) is greater than MARGINAL thresholds.

If WC (Worst Case) method is selected:

- "✓": Pass/fail check is disabled (threshold value is set as "0").
- "✓" (pass): **Worst case** loss value (magnitude) is smaller than or equals to PASS threshold.
- Flashing "X" (marginal): **Worst case** loss value (magnitude) is greater then PASS but, smaller than or equals to MARGINAL thresholds.
- "X" (fail): **Worst case** loss value (magnitude) is greater than MARGINAL threshold.

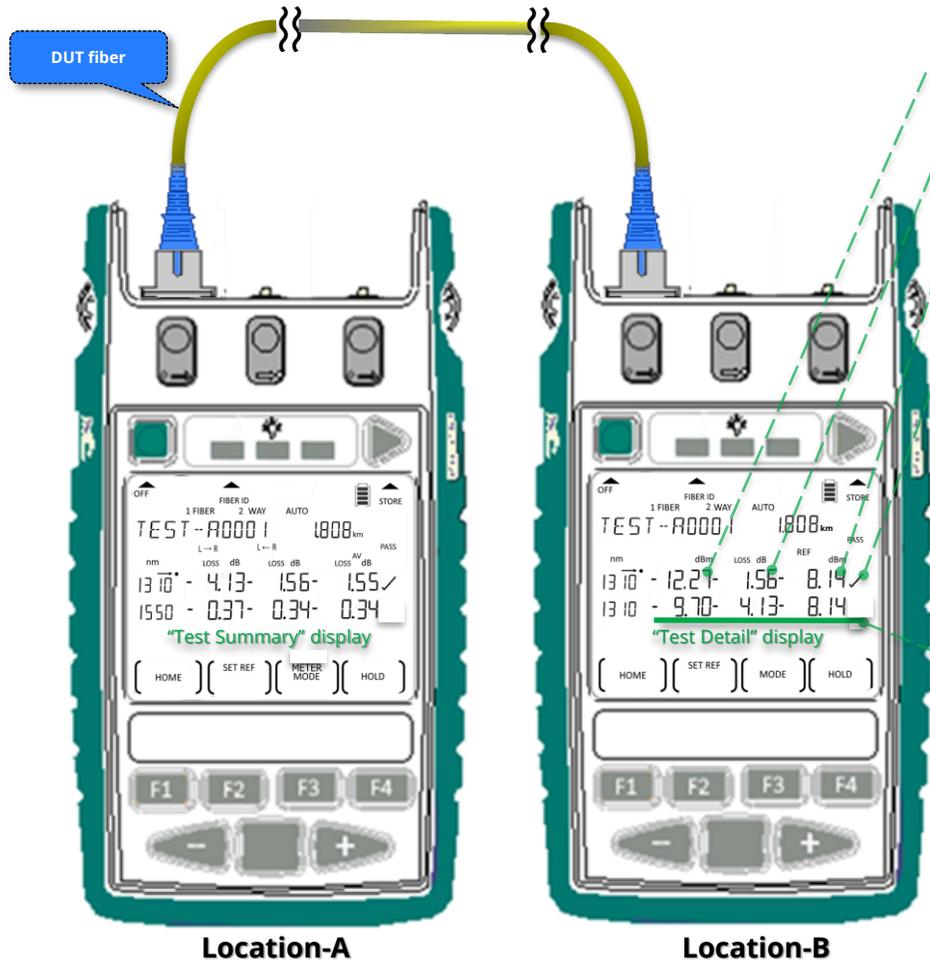
Note: For consistent pass/fail results, ensure the same thresholds are set on both instruments.

⑤ Display "Test Detail": press F3 on one of the instruments.

➤ Continue next page

Instrument Operation

↳ 2-way Autotest operation (continue)



A▶B absolute power @ 1310 nm.

A▶B loss @ 1310 nm.

A▶B stored reference power @ 1310 nm.

Symbol signifying loss pass/fail against set threshold for a wavelength:

- "✓" - Pass/fail check is disabled (threshold value is set as "0").
or
- "✓" (pass) - Loss values (magnitude) for both directions are smaller than or equal to PASS threshold.
- **Flashing "X" (marginal)** - Loss value (magnitude) for either or both direction/s is/are greater than PASS but smaller than or equal to MARGINAL thresholds.
- **"X" (fail)** - Loss value (magnitude) for one or both direction/s is/are greater than MARGINAL threshold.

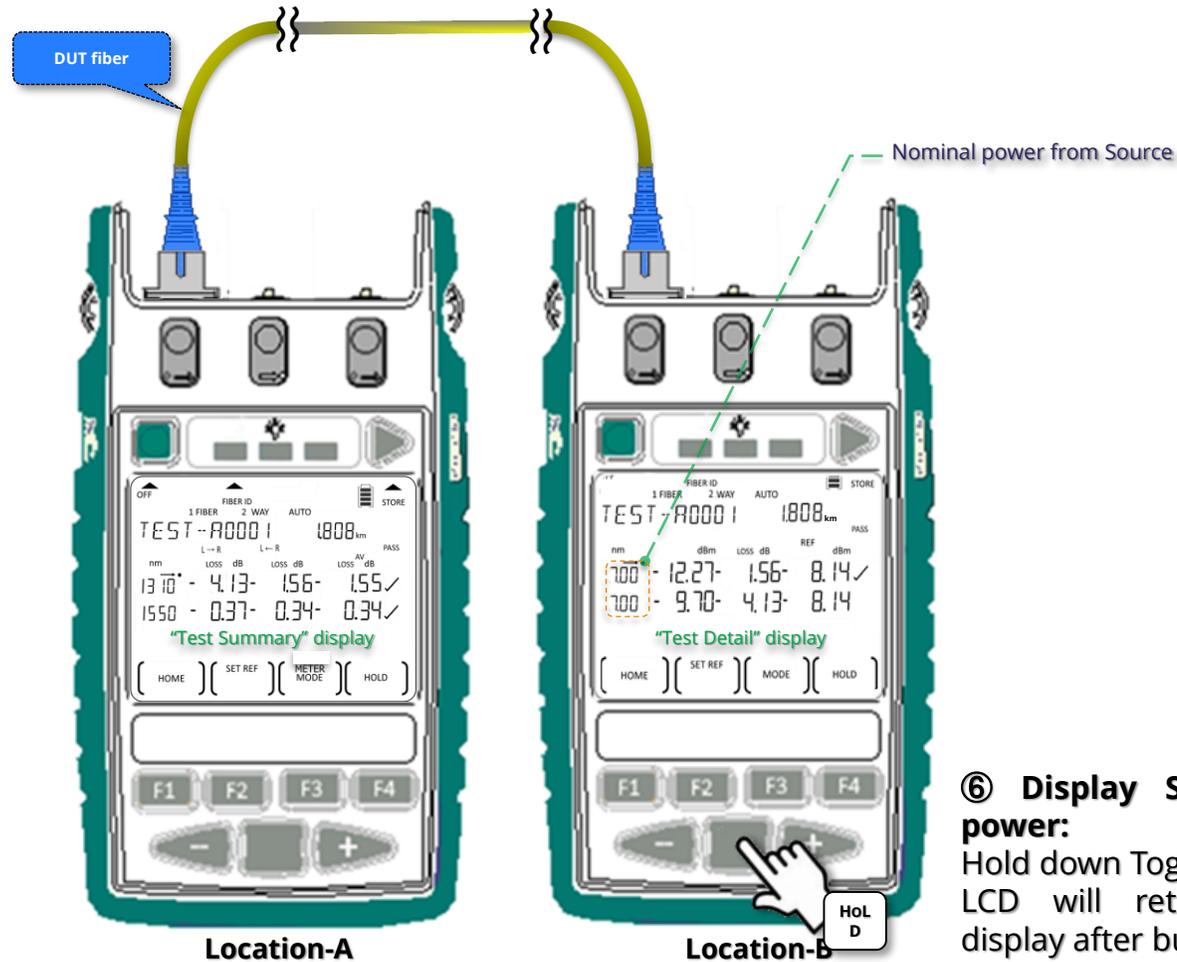
B▶A absolute power, loss, reference power @ 1310 nm.

➤ Continue next page

At this display, press '+' or '-' button to show loss data/result of other active wavelengths.

Instrument Operation

↳ 2-way Autotest operation (continue)



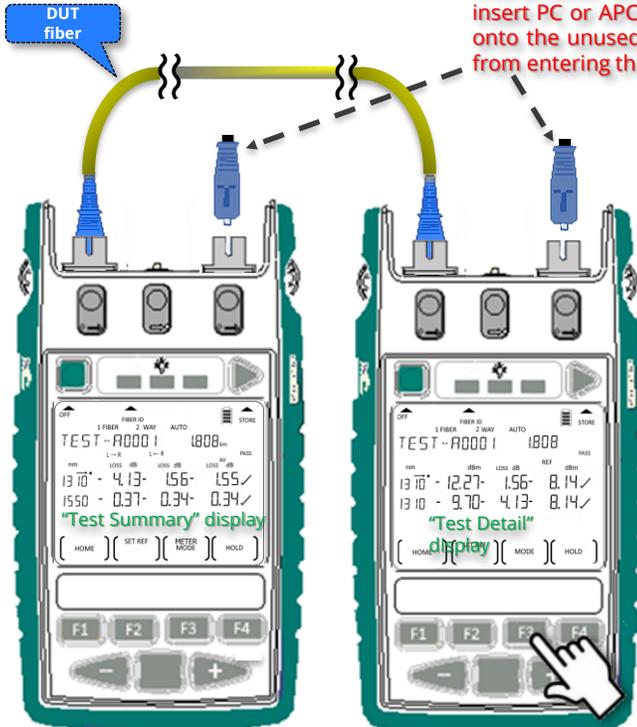
⑥ **Display Source's nominal power:**
 Hold down Toggle Centre.
 LCD will return to previous display after button is released.

- **Continue next pages**
- to display ORL (optional) measurements & test result
 - To stop 2-way Autotest

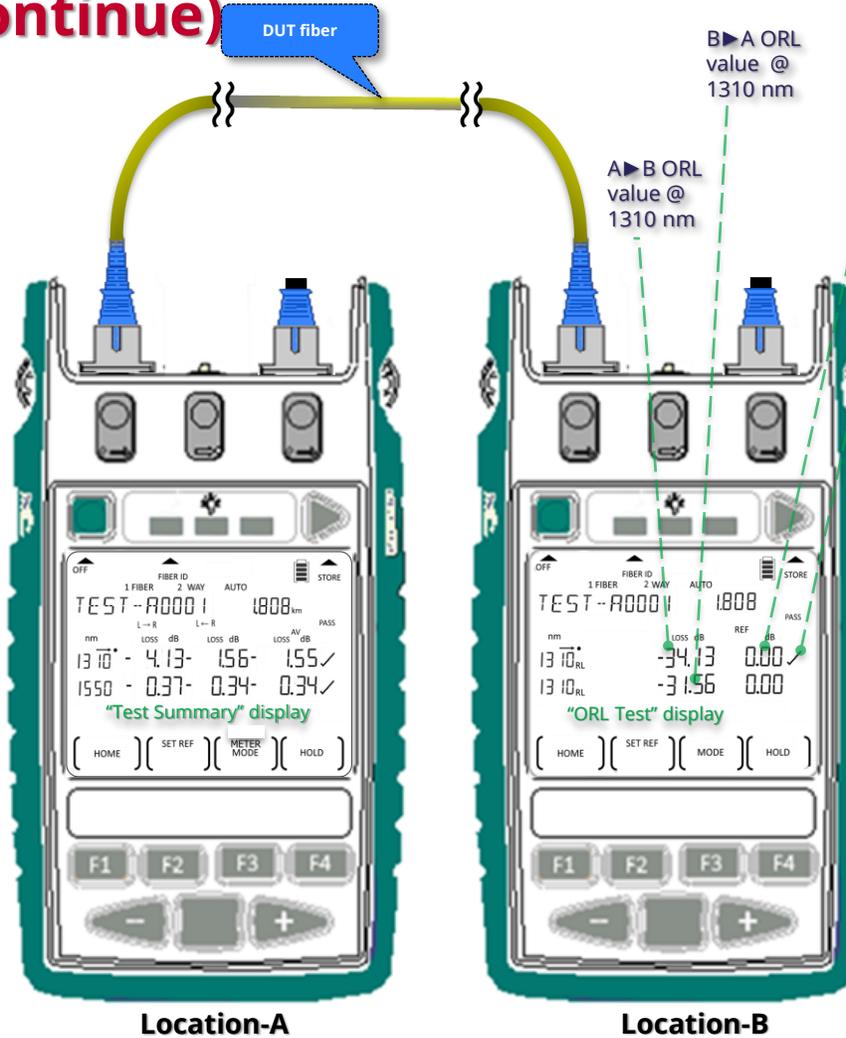
Instrument Operation

➔ 2-way Autotest operation (continue)

NOTE:
For accurate ORL measurement on instruments with two 2-way/source ports, insert PC or APC Terminators as appropriate onto the unused ports to prevent stray light from entering the instrument.



⑦ Enter ORL Test display:
Press F3.



UCAL offset value for 1310 nm (see Slides 77, 78)

Symbol signifying ORL pass/fail against set thresholds for a wavelength:

- "✓" - Pass/fail check is disabled (threshold is set at "0.00").
or
- "✓" (pass) - ORL values (magnitude) for both directions are larger or equal to the set thresholds.
- "X" (fail) - ORL value/s (magnitude) for one or both direction/s is/are smaller than the set thresholds.

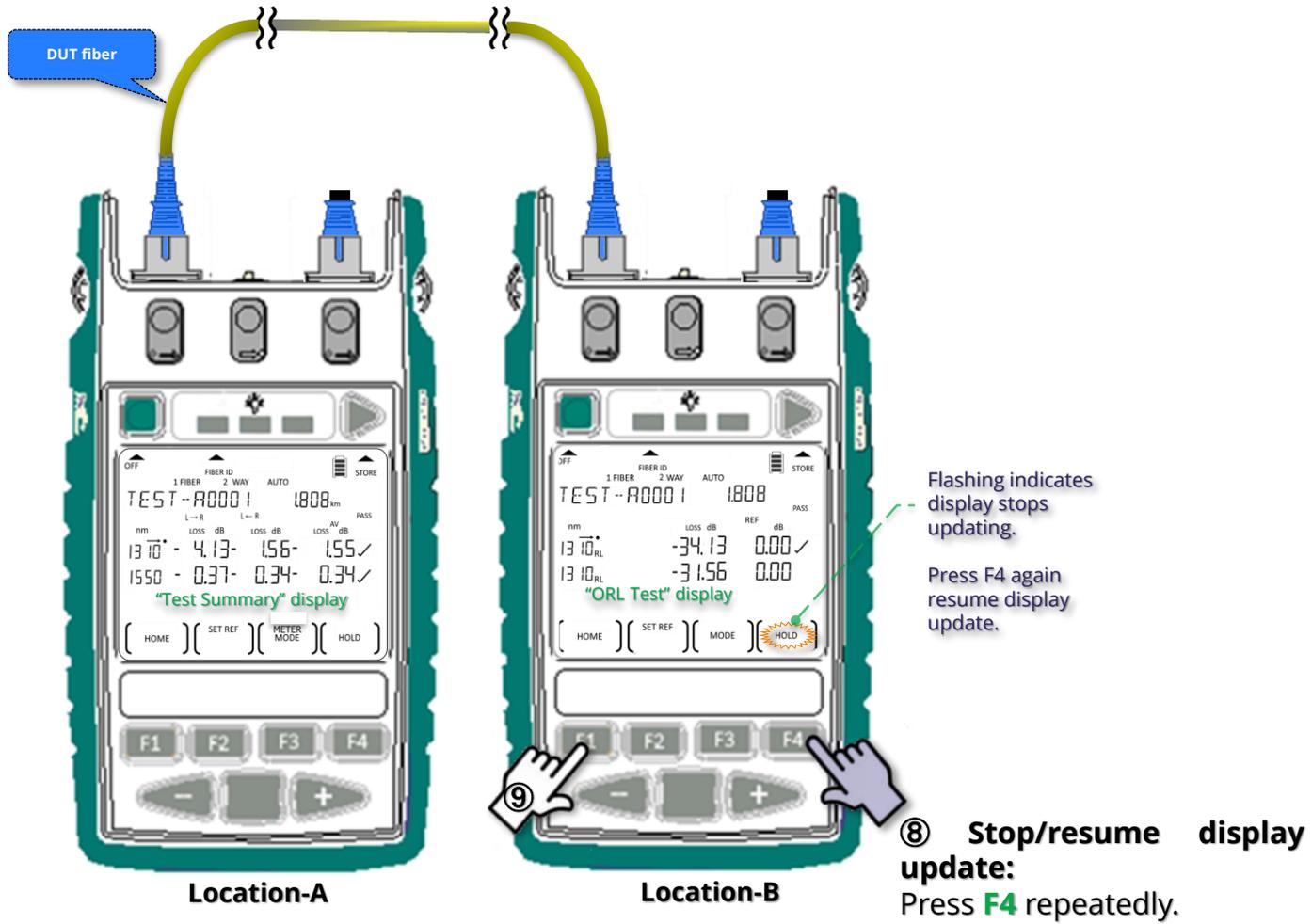
At this display,

- press '+' or '-' button to show ORL data/result of other active wavelengths.
- Press F3 continuously to toggle between ORL Test, Test Summary, Test Detail displays.

➔ Continue next page

Instrument Operation

➔ 2-way Autotest operation (continue)



Note:

DUT change-over can be done without stopping Autotest, if done within the 8-second timeout window.

Allow approx. 10 seconds for the instruments' displays to be updated with test data for the newly connected fiber.

⑨ **Stop Autotest:** Press **F1** on any of the instruments or, disconnect fiber from the ports of instruments for more than 8 seconds.

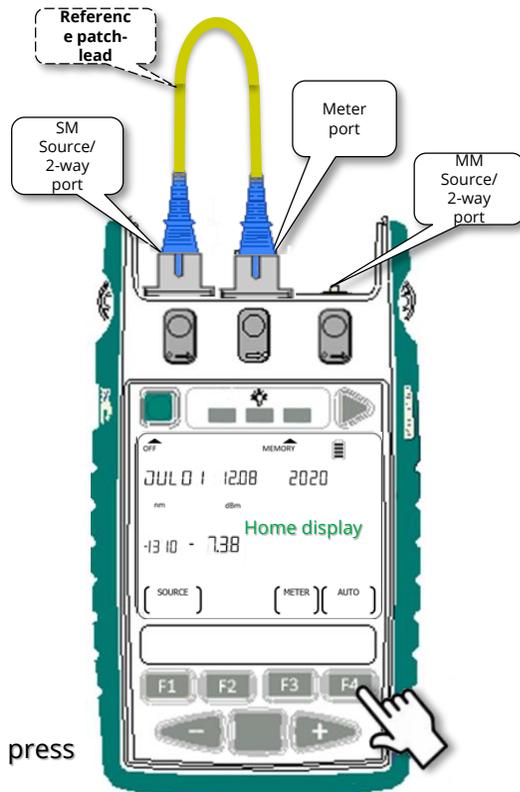
Instrument Operation

➔ 1-way Autotest operation

Performs 1-direction loss. Work with a single instrument or a pair of instruments.

Single Instrument

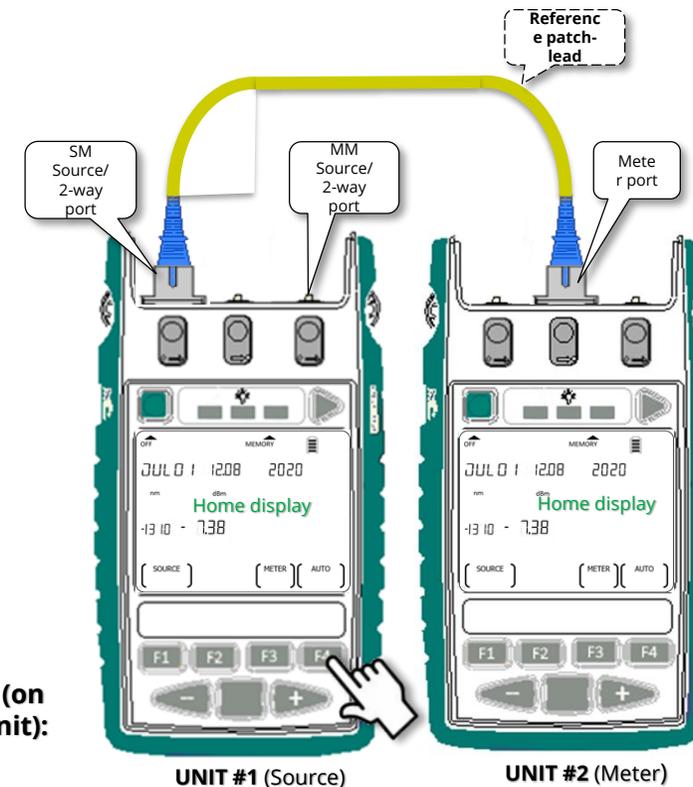
① Connect ports on the same instrument with a reference patch-lead as shown below.



➤ Continue next page

A pair of Instruments

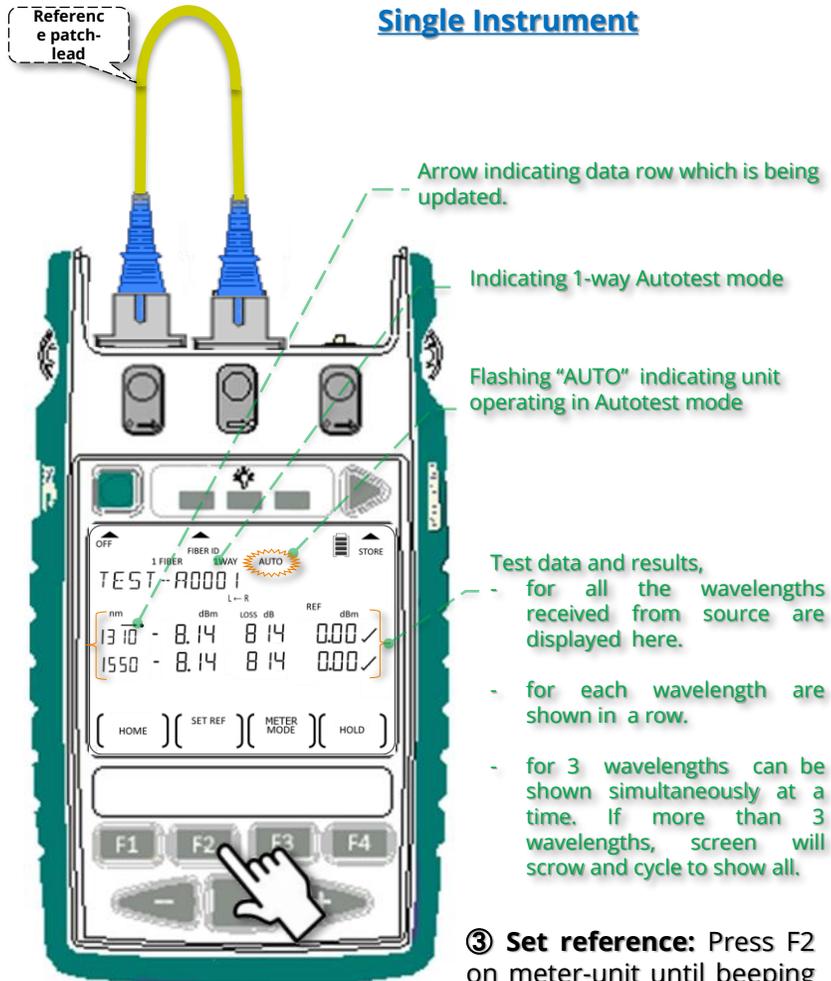
① Connect ports of the 2 instruments with a reference patch-lead as shown below.



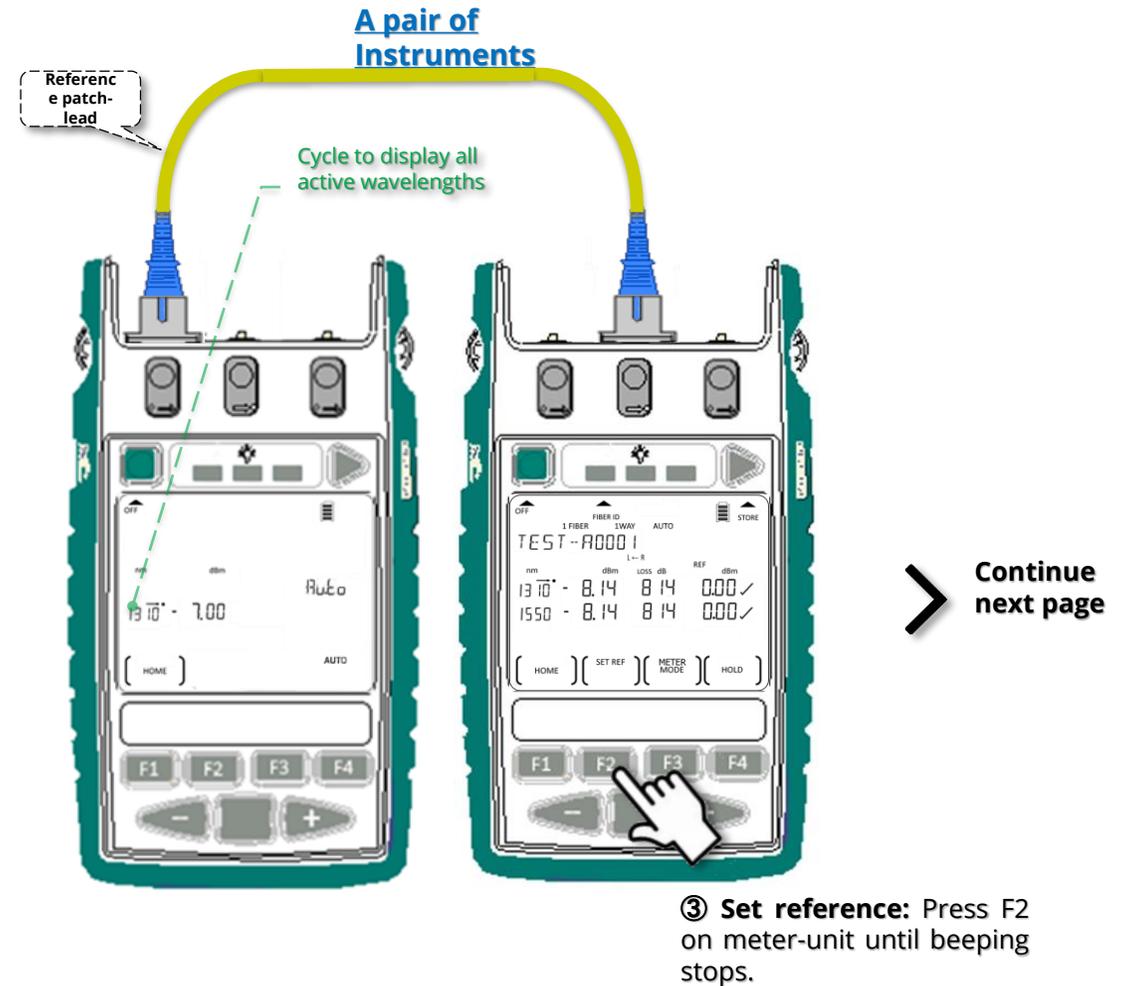
➤ Continue next page

Instrument Operation

➔ 1-way Autotest operation (continue)

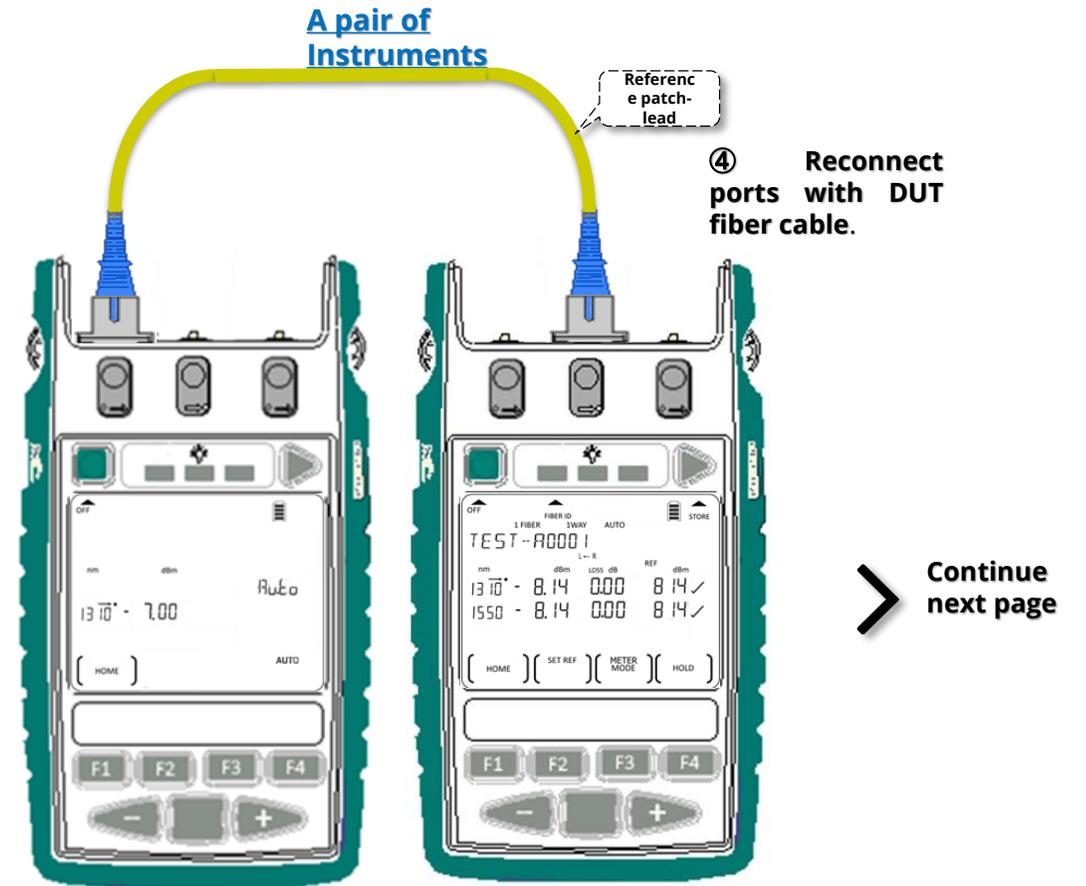
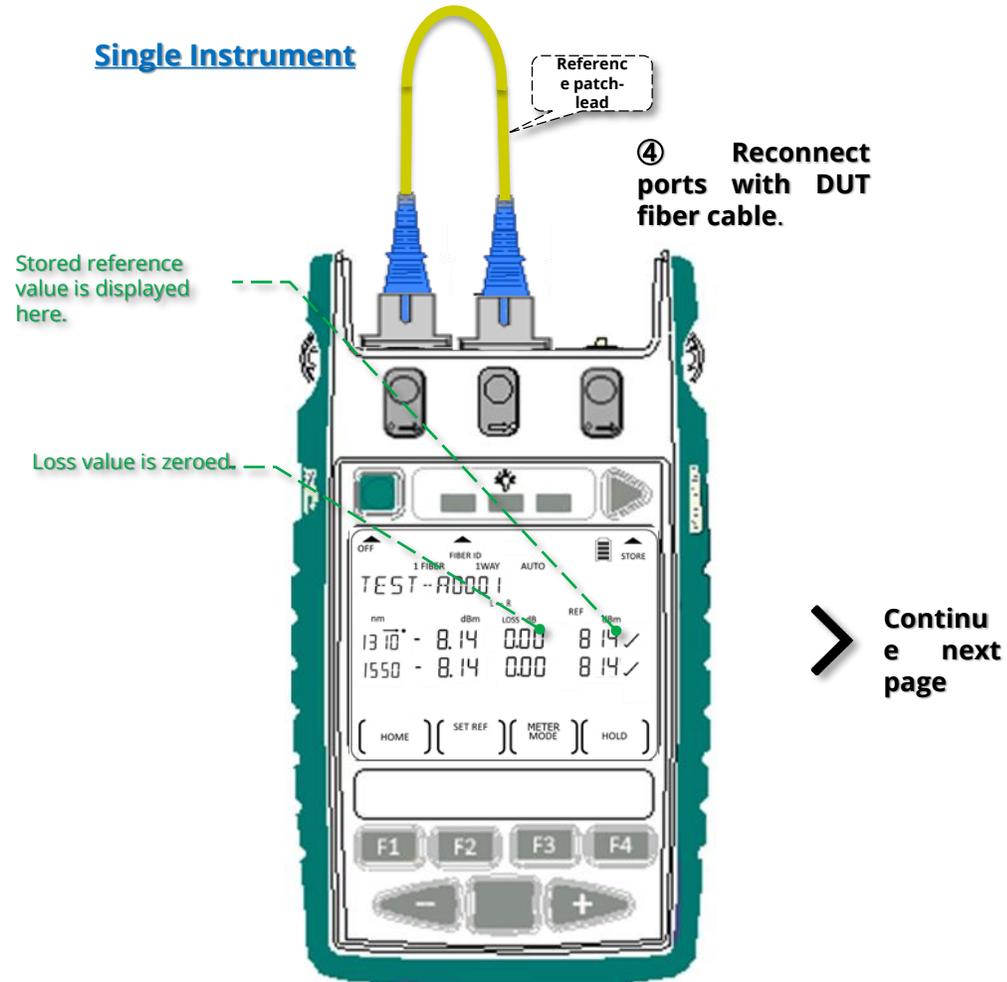


➔ **Continue next page**



Instrument Operation

➔ 1-way Autotest operation (continue)



Instrument Operation

➔ 1-way Autotest operation (continue)

Single Instrument

DUT fiber

Absolute power (dBm)

Loss in dB

Overall test result:
 "PASS": if test results for all wavelengths are "✓" or marginal (blinking "X").
 "FAIL": if test result of 1 or more wavelength fails.

Reference power in dBm

Symbol signifying loss pass/fail against the set thresholds (refer to Slides 71~72 for Pass/fail Threshold Setting) for each wavelength:

- "✓": Pass/fail check is disabled (threshold value is set as "0").
or
- "✓" (pass): loss value (magnitude) smaller than or equals to PASS threshold.
- Flashing "X" (marginal): loss value (magnitude) greater than PASS threshold but smaller than or equals to MARGINAL threshold.
- "X" (fail): loss value (magnitude) greater than MARGINAL threshold.

⑤ Display absolute power in watt: Press F3 on meter-unit.

➤ Continue next page

A pair of Instruments

DUT fiber

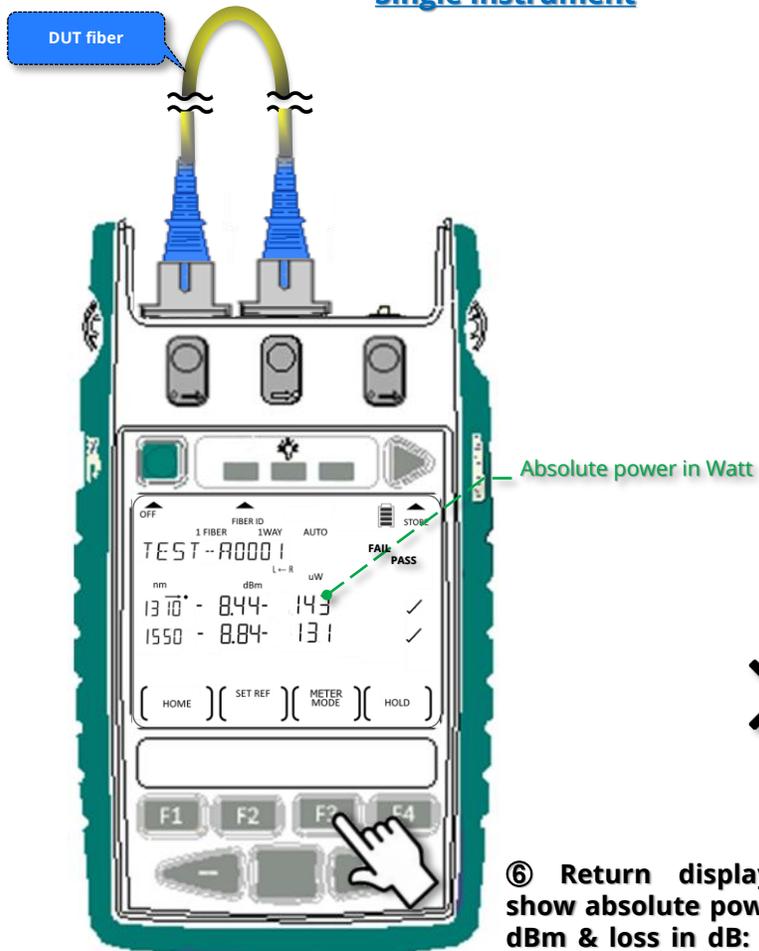
⑤ Display absolute power in watt: Press F3 on meter-unit.

➤ Continue next page

Instrument Operation

➔ 1-way Autotest operation (continue)

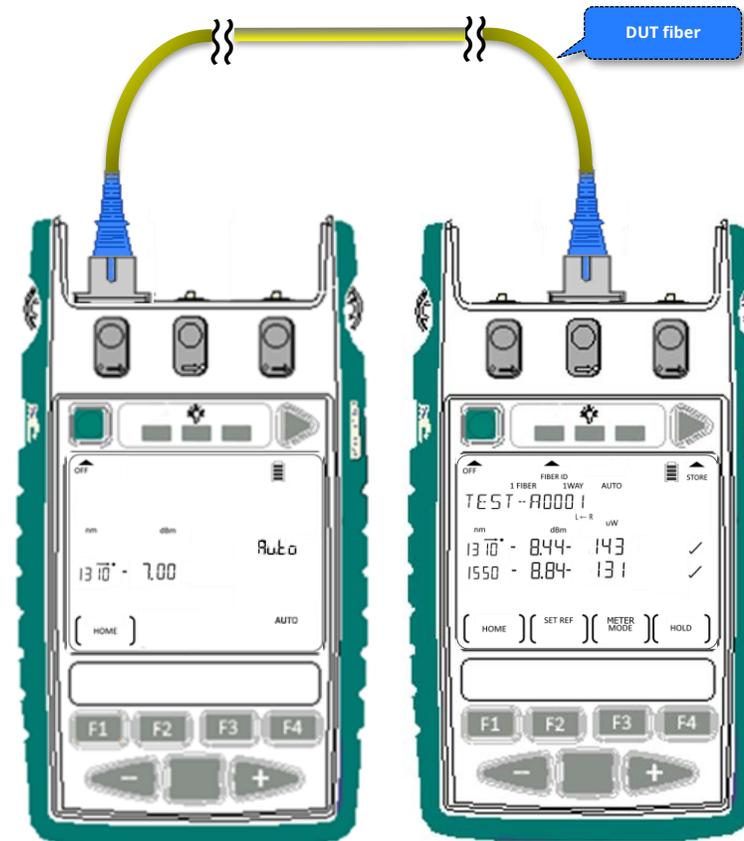
Single Instrument



➤ Continue next page

⑥ Return display to show absolute power in dBm & loss in dB: Press F3 again.

A pair of Instruments

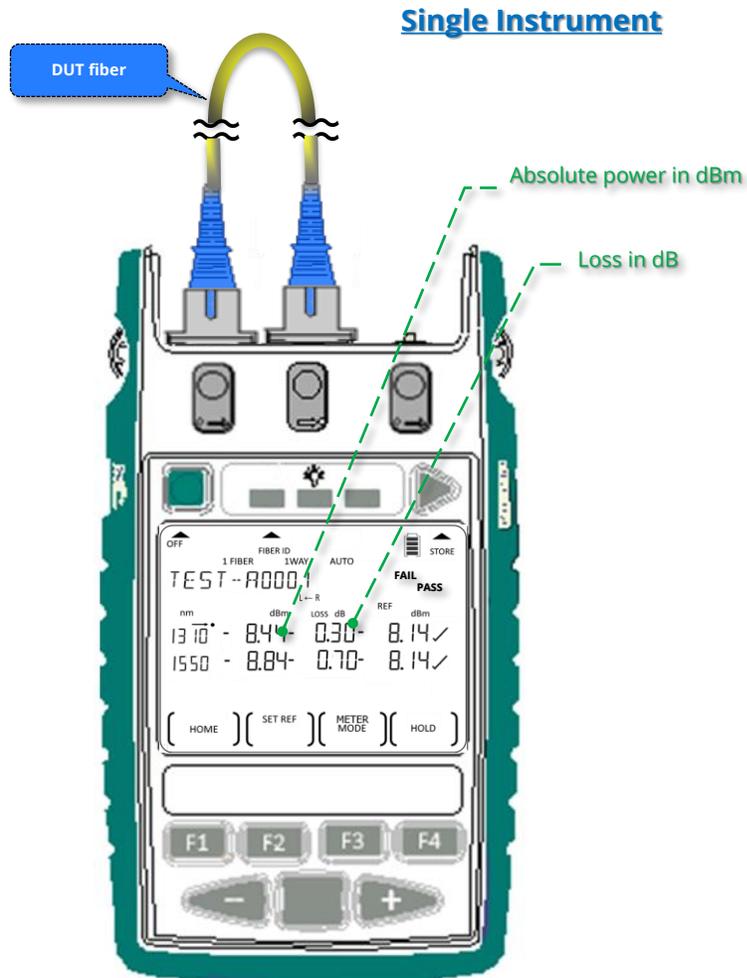


➤ Continue next page

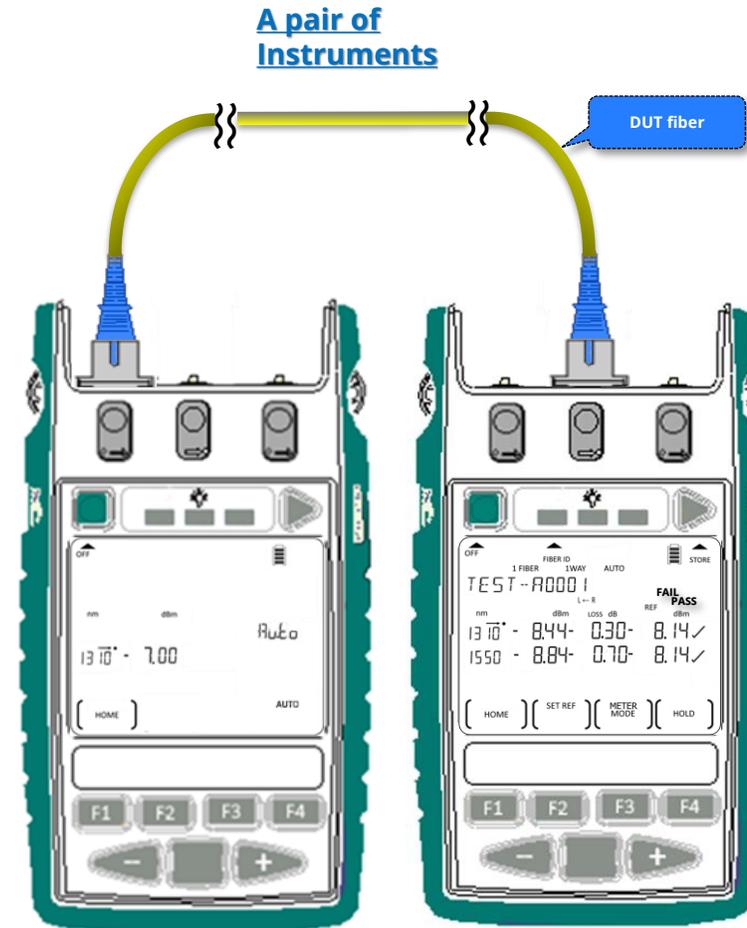
⑥ Return display to show absolute power in dBm & loss in dB: Press F3 again.

Instrument Operation

➔ 1-way Autotest operation (continue)



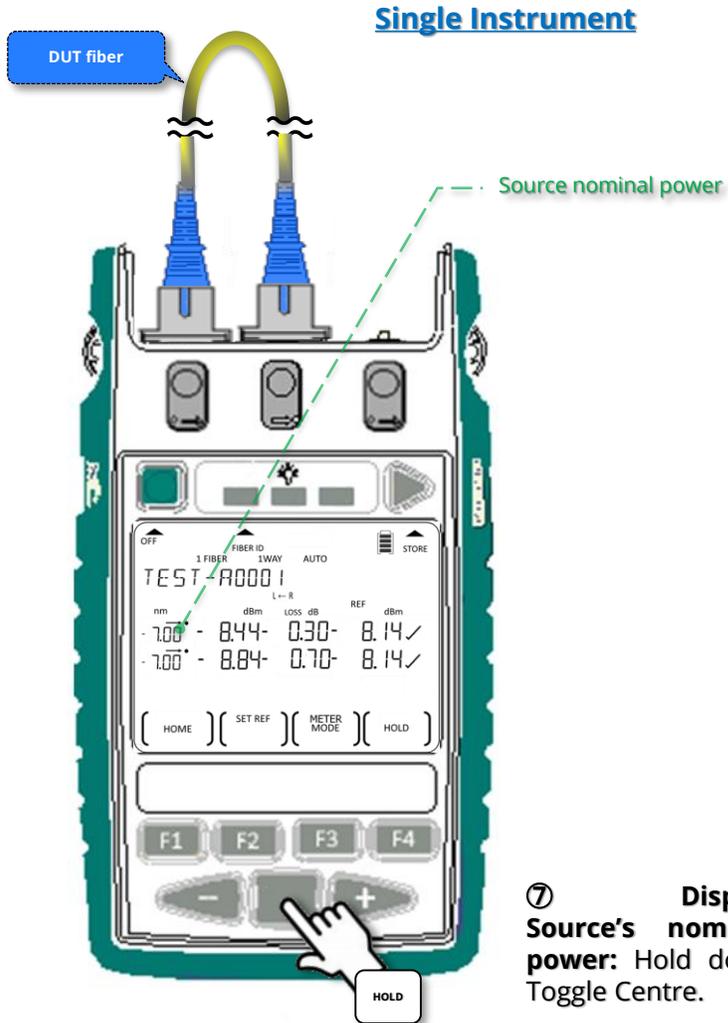
➔ Continue next page



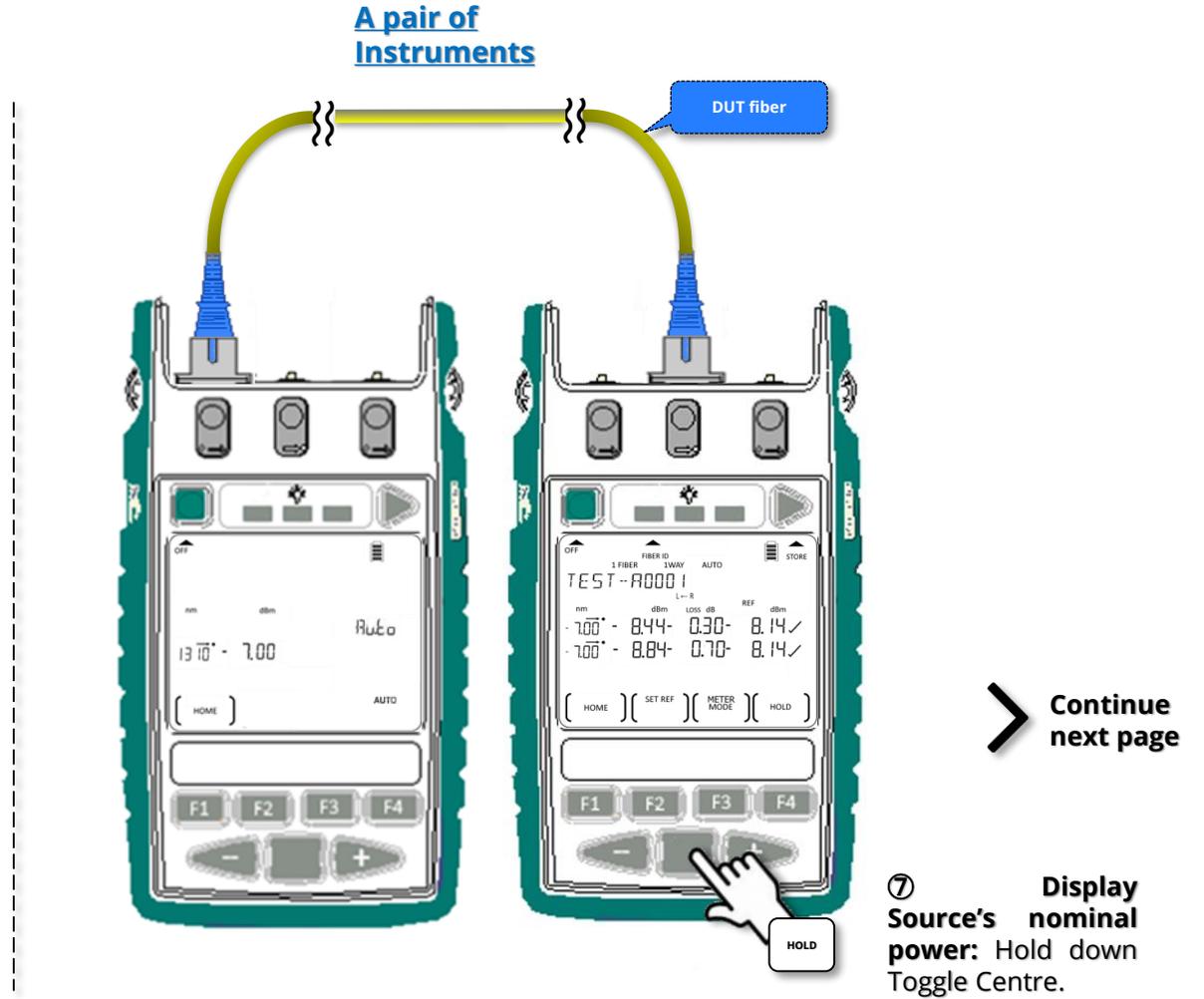
➔ Continue next page

Instrument Operation

➔ 1-way Autotest operation (continue)



➔ Continue next page

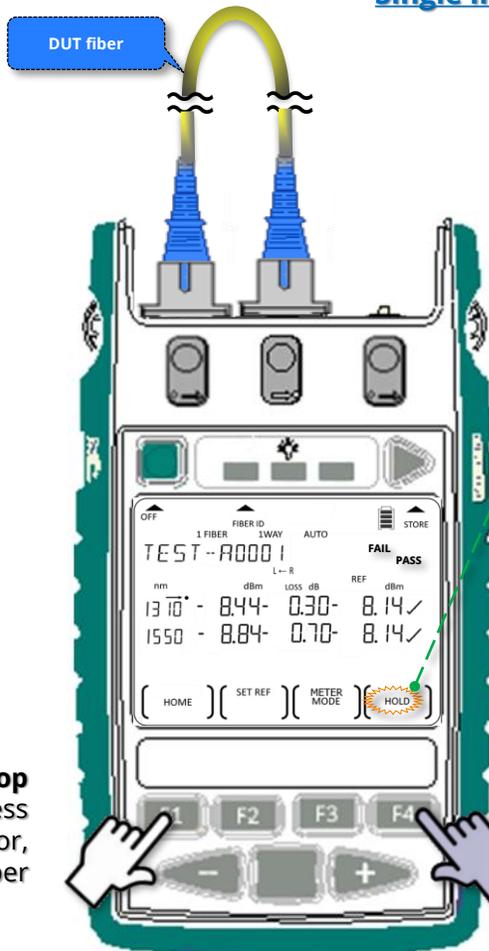


➔ Continue next page

Instrument Operation

➔ 1-way Autotest operation (continue)

Single Instrument



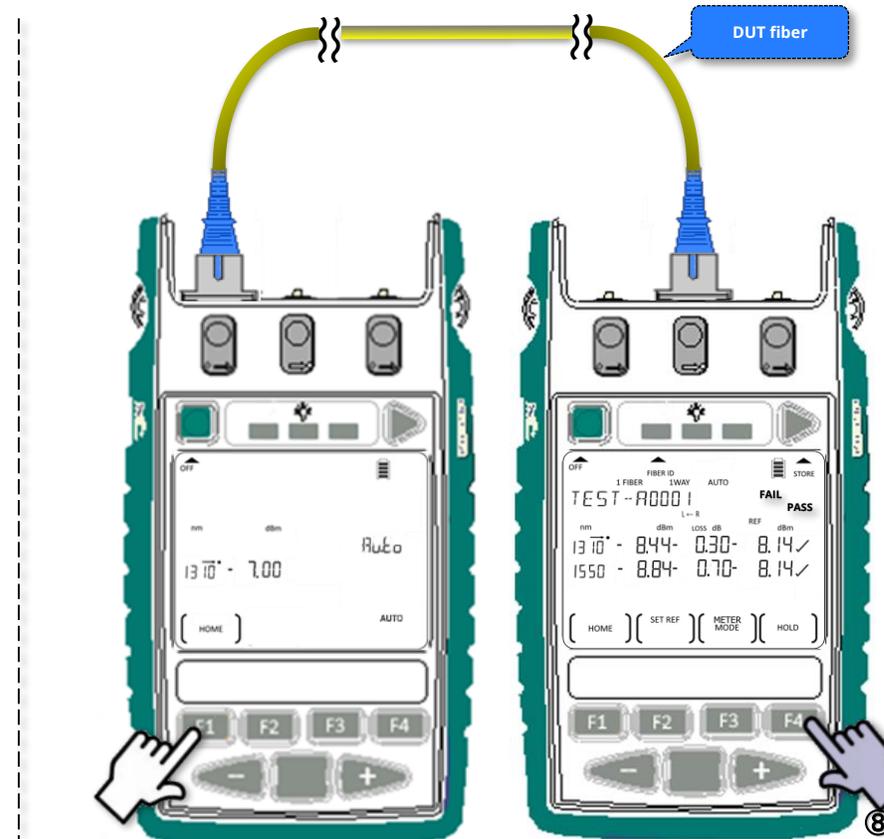
Note:
After the next fiber is connected during DUT change-over (without stopping Autotest), allow approx. 10 seconds for the instruments' displays to be updated with test data for that newly connected fiber.

Flashing "HOLD" indicates update has stopped.

⑧ **Stop / resume display update:** Press **F4** repeatedly.

⑨ **Stop Autotest:** Press **F1** or, disconnect fiber from instrument's ports for more than 8 seconds.

A pair of Instruments



Note:
After the next fiber is connected during DUT change-over (without stopping Autotest), allow approx. 10 seconds for the instruments' displays to be updated with test data for that newly connected fiber.

⑨ **Stop Autotest:** Press **F1** on Source-unit or, disconnect fiber from instruments' ports for more than 8 seconds.

⑧ **Stop / resume display update:** Press **F4** repeatedly.

Instrument Operation

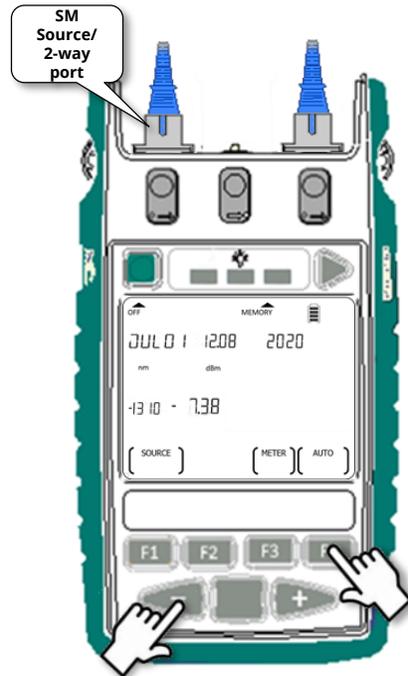
➔ Restricted wavelength Autotest operation

There are two different ways (Method 1 & Method 2) to restrict the number of active λ in an Autotest.

Method 1 (only applicable to instrument with 2 source/2-way ports):

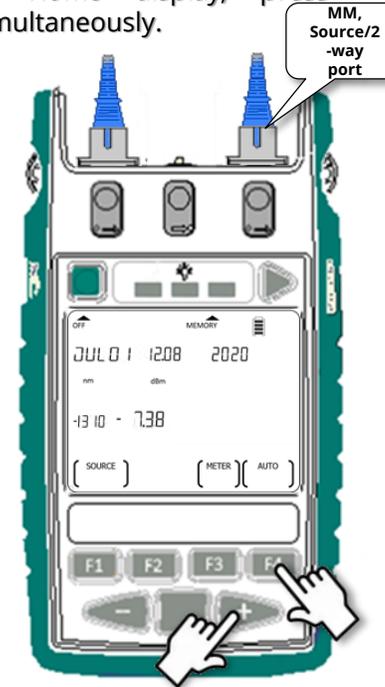
a. To start λ -restricted Autotest: for SM port only (e.g. 1310-1550 nm on a Quad instrument):

At Home display, press '+' and F4 simultaneously.



b. To start λ -restricted Autotest: for MM port only (e.g. 850-1300 nm on a Quad-instrument):

At Home display, press '+' and F4 simultaneously.



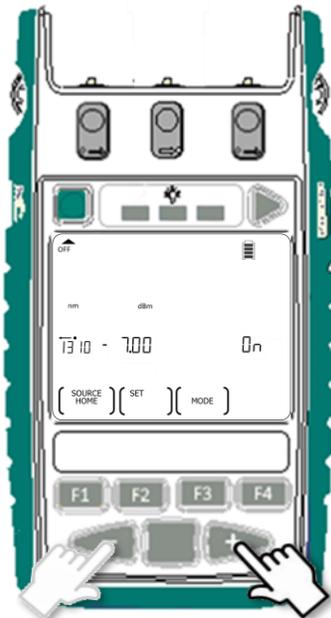
Instrument Operation

➔ Restricted-wavelength Autotest operation (continue)

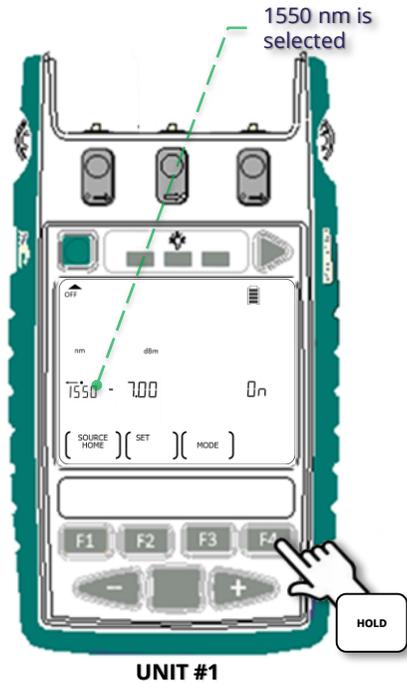
Method 2:

① Excluding (deactivating) wavelength for Autotest:

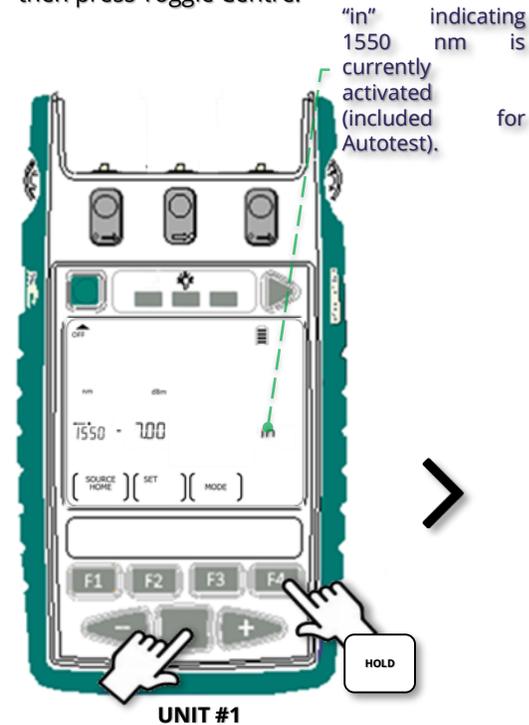
① At Source mode, select the wavelength to be included from Autotest e.g. 1550 nm: press '+' or '-'.



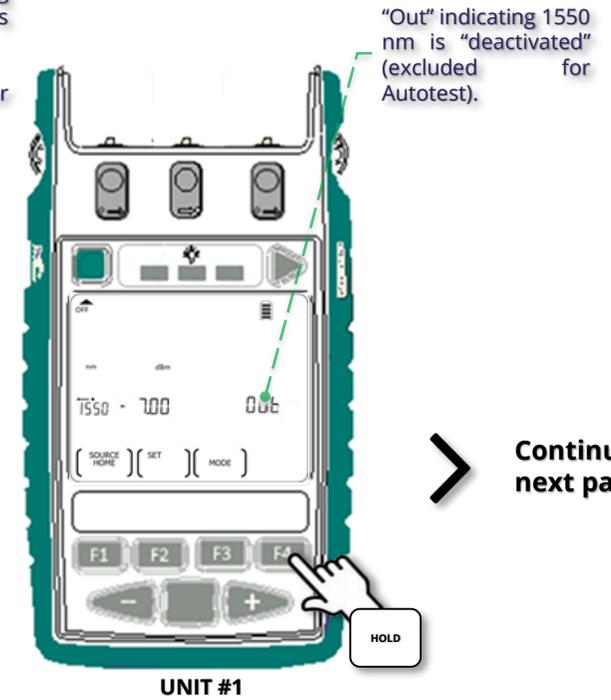
② View status of selected wavelength: hold down F4.



③ "Deactivate" the selected wavelength: continue to hold down F4 then press Toggle Centre.



④ Release F4.



➔ Continue next page

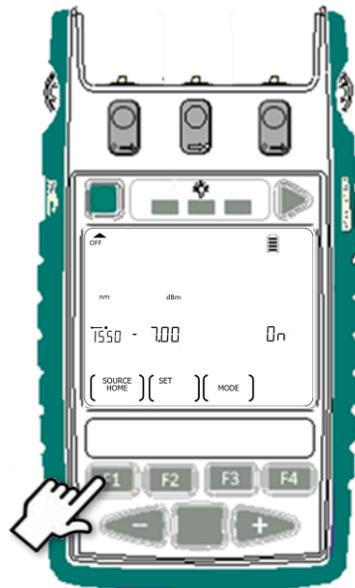
Instrument Operation

➔ Restricted-wavelength Autotest operation (continue)

Method 2 (continue):

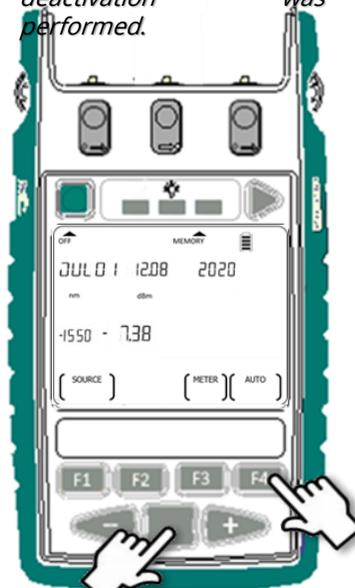
② Start restricted-λ Autotest (with the selected wavelength excluded)

⑤ Exit Source mode: press F1

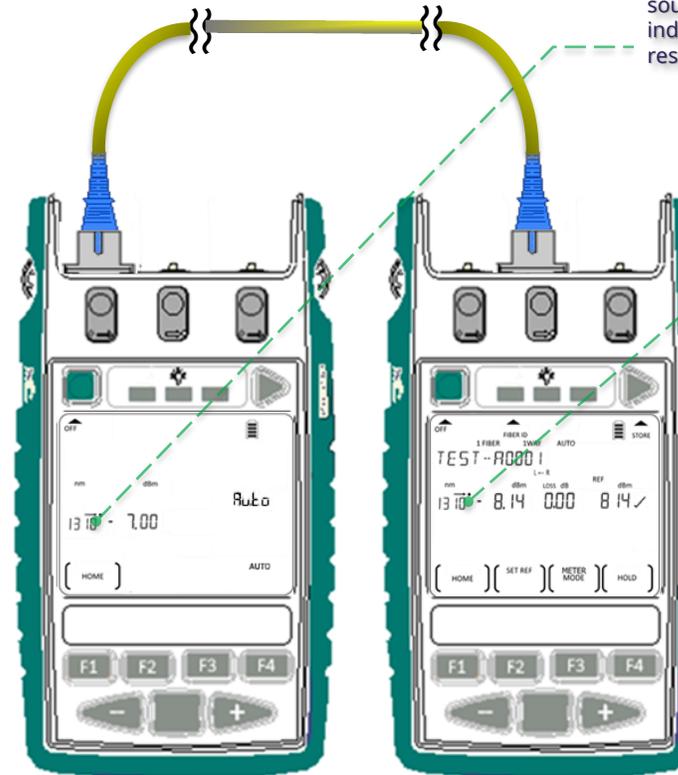


UNIT #1

⑥ Start restricted-wavelength Autotest: press Toggle Centre and F4 simultaneously, *on the unit which wavelength deactivation was performed.*



UNIT #1



UNIT #1

UNIT #2

E.g. If the Source-instrument is a 2 wavelengths models with 1310-1550 nm sources, only "1310" displays here indicating that Autotest is running in restricted mode with only 1310 nm.

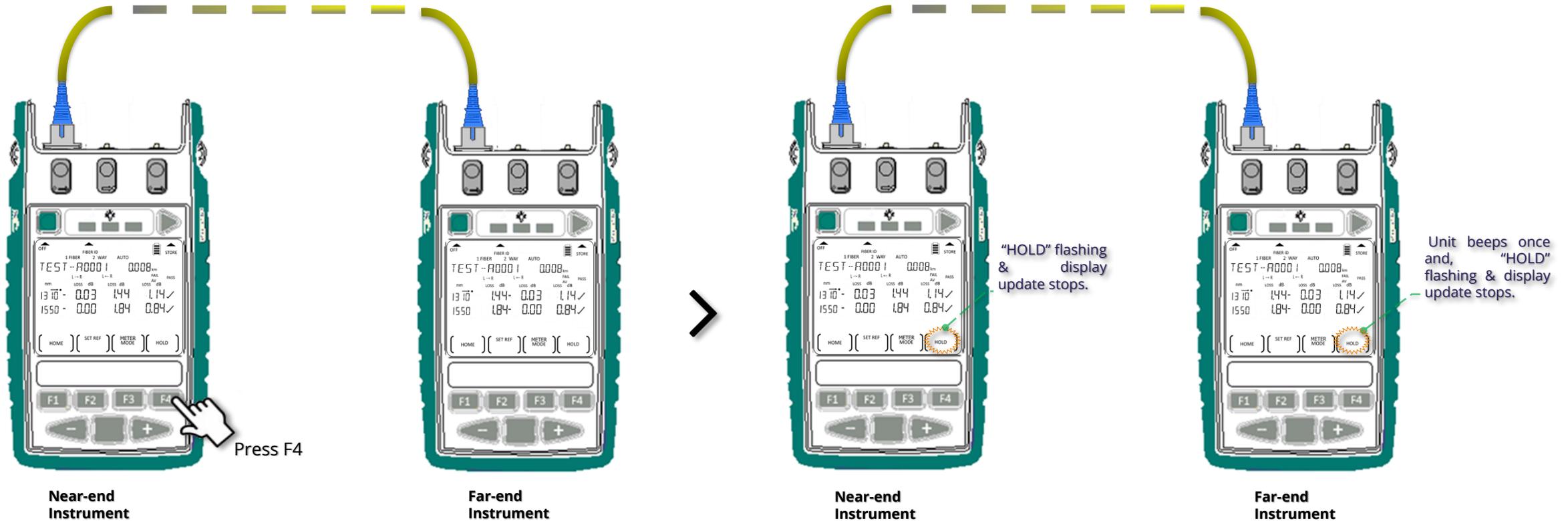
E.g. In a 1-way Autotest operation, only test data and result for 1310 nm will be displayed. on Meter-instrument.

Instrument Operation

➔ Autotest user-to-user communication operation

Apply to 2-way Autotest only.

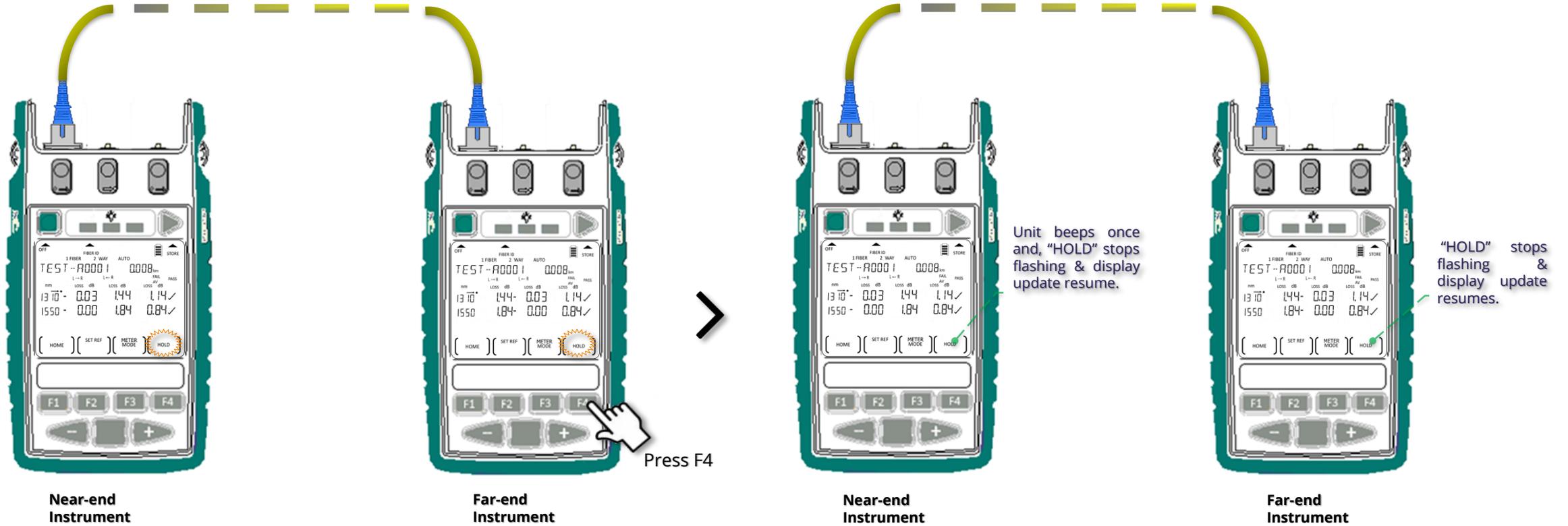
Near-end unit to signal Far-end unit during 2-way Autotest:



Instrument Operation

➔ Autotest user-to-user communication operation (continue)

Far-end unit to respond to Near-end unit during 2-way Autotest :

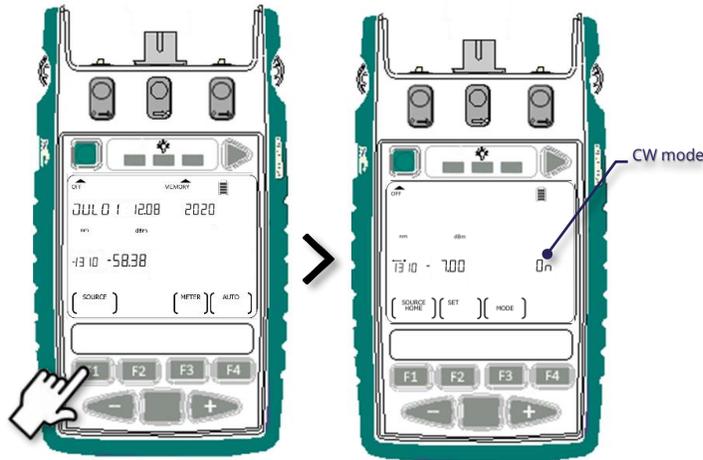


Instrument Operation

➔ Light source manual operation

Enter Source mode:

At Main menu (Home display), press F1.



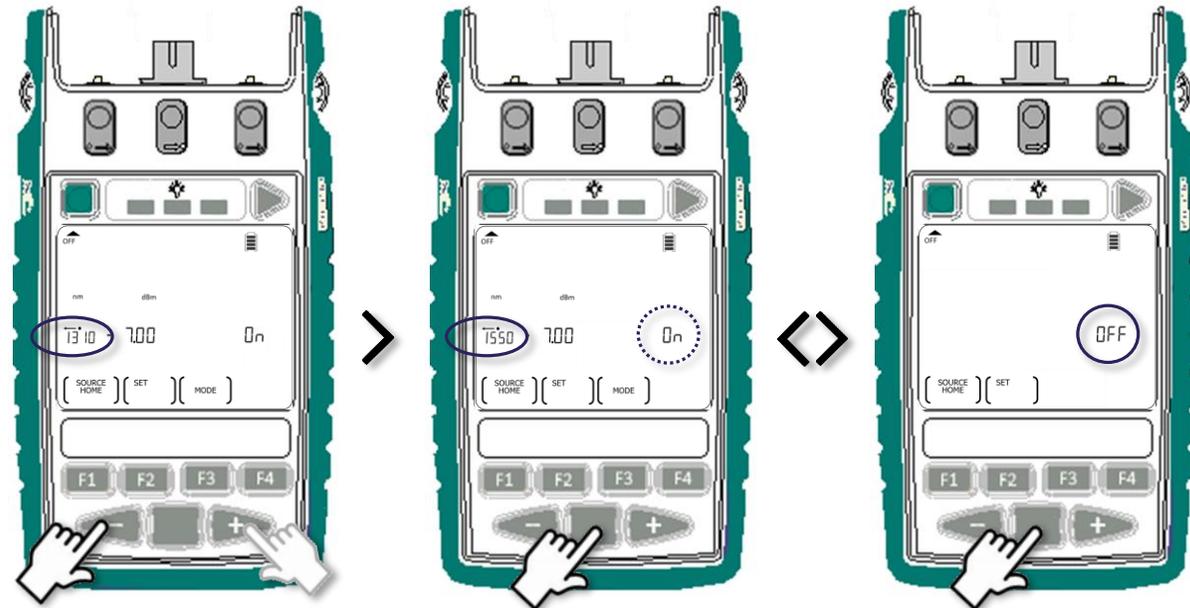
Available functions:

- Select wavelength or on/off output
- Adjust output power of selected wavelength
- Select between CW (Continuous Wave) or Tone (modulation) output mode
- Exit Source mode

a. Select wavelength or on/off output:

① Press '+' or '-' to cycle through & select an operating wavelength or, turn the output on/off.

② Press Toggle Centre will turn output on or off.



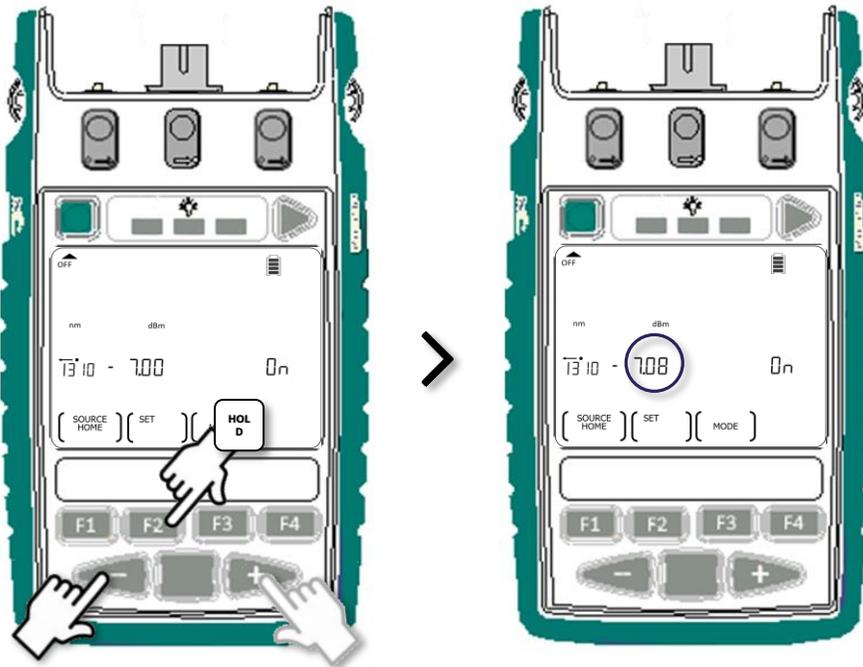
Continue next page

Instrument Operation

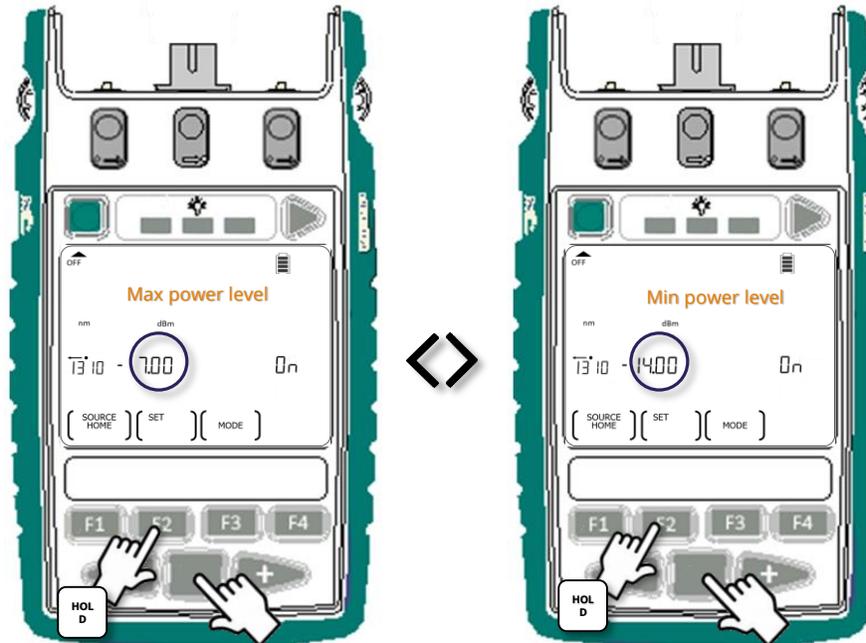
➔ Light source manual operation (continue)

- b. Adjust output power of the selected wavelength:
- for laser source only
 - output power can be adjusted in 0.01 dB steps for 7 dB.

❶ To adjust power level: hold down F2, then press '+' or '-'.
Holding down '+' or '-' too speeds up incremental or decremental of power levels.



❷ To toggle between max and min power levels: hold down F2 then, press Toggle Centre.



Continue next page

Instrument Operation

➔ Light source manual operation (continue)

C. Select between CW (Continuous Wave) or Tone (modulation) output mode:

Available test tones/id tones selectable in this sequence: **On (CW)**, 270 Hz, 1000 Hz, 2000 Hz, id1 (300 Hz), id2 (400 Hz), id3 (500 Hz), id4 (600 Hz), id5 (700 Hz), id6 (800 Hz), id7 (900 Hz), id8 (1100 Hz), id9 (1200 Hz), id10 (1300 Hz), id11 (1400 Hz), id12 (1500 Hz).

✓ To start test/id tone mode:

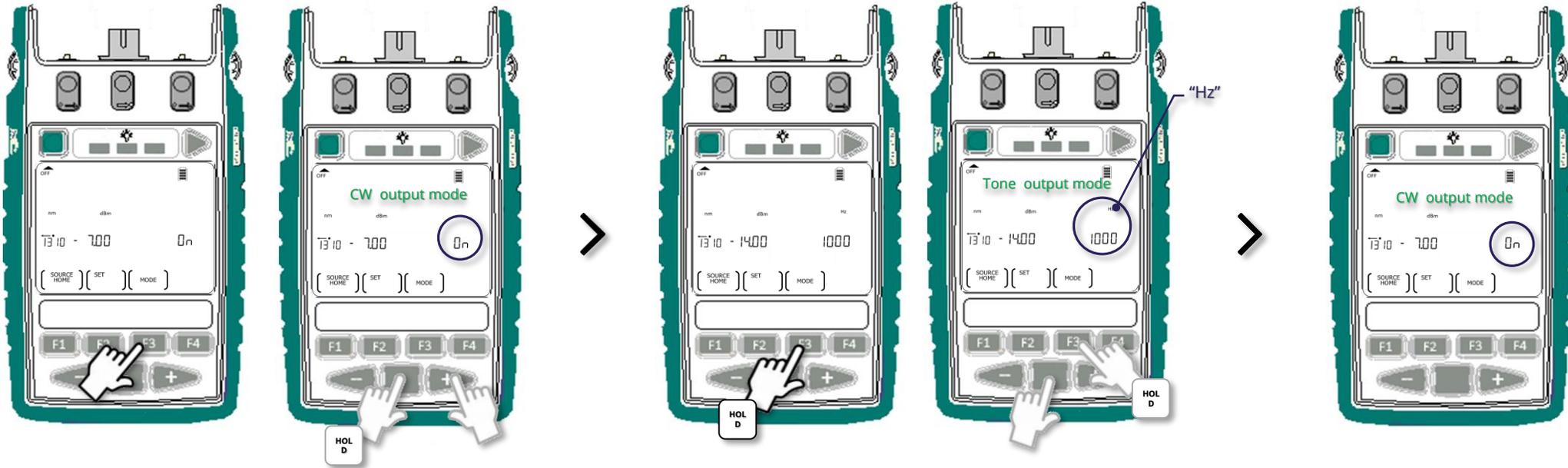
At CW output mode, press F3 repeatedly to scroll through & select one from the available test/id tones.

Alternatively, hold down F3 and then press '+' or '-'.

✓ To end tone (modulation) output mode:

Hold down F3 for 3 seconds.

Alternatively, hold down F3 then, press Toggle Centre.



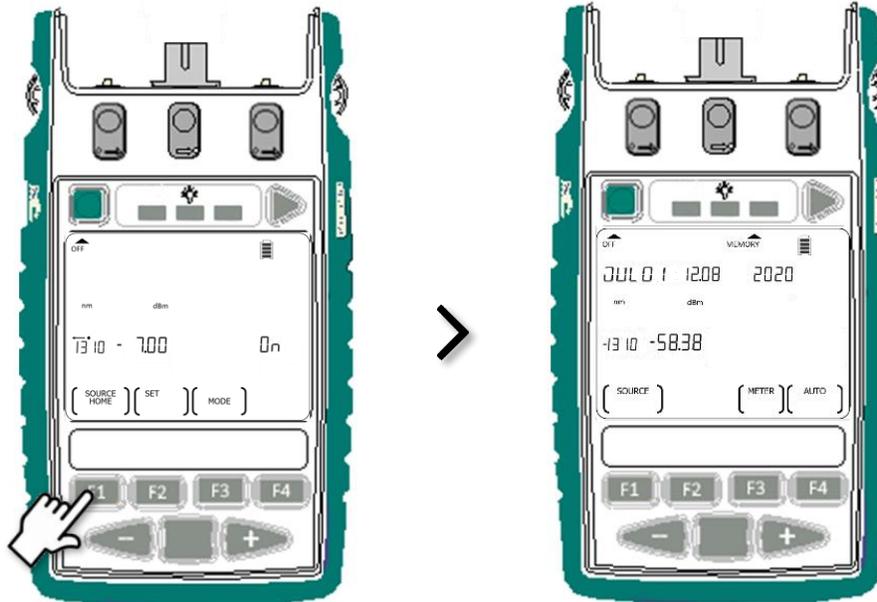
Continue next page

Instrument Operation

↳ Light source manual operation (continue)

d. Exit Source mode:

Press F1 to exit Source mode & return to Home display (Main menu).



Note:

The output remains 'on' at the mode (i.e. CW mode in this example) before F1 was pressed.

To ensure that output is off after exiting Source mode, turn off output as per the instructions on slide 18, before F1 is pressed.

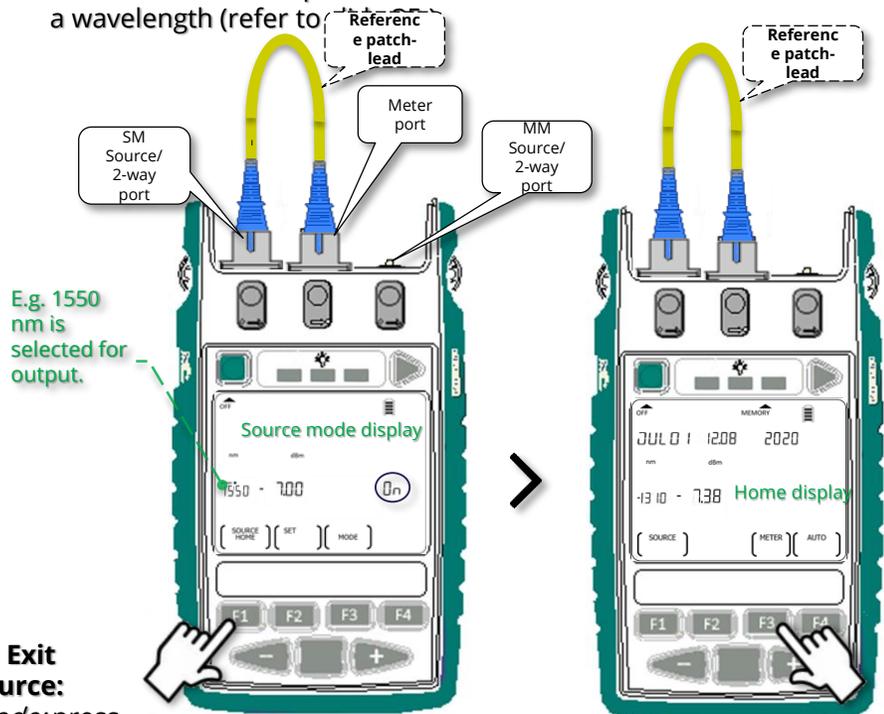
Instrument Operation

➔ Power meter manual operation

Measure power with a single instrument or a pair of instruments

Single Instrument

- ① Connect ports on the same instrument with a reference patch-lead &, select Source to output at CW mode at a wavelength (refer to



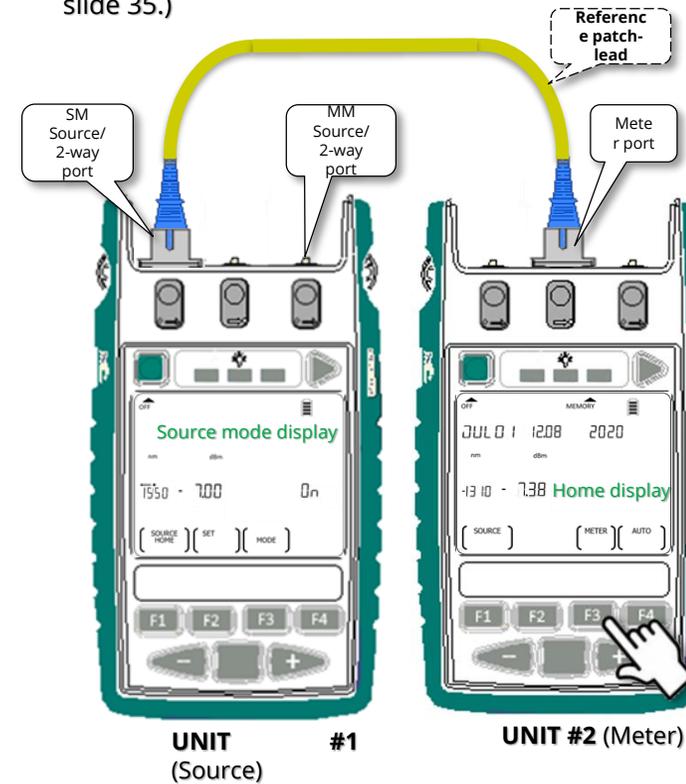
- ② Exit Source mode: press F1.

- ③ Enter Meter mode: press F3.

➔ Continue next page

A pair of Instruments

- ① Connect ports of 2 instruments &, select source-instrument to output at CW mode at a wavelength (refer to slide 35.)



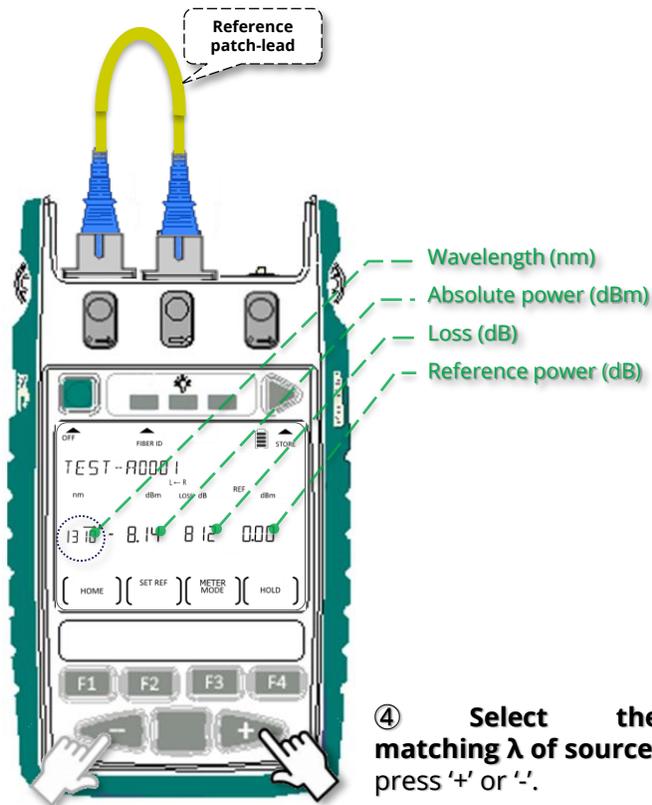
- ② Enter Meter mode: Press F3

➔ Continue next page

Instrument Operation

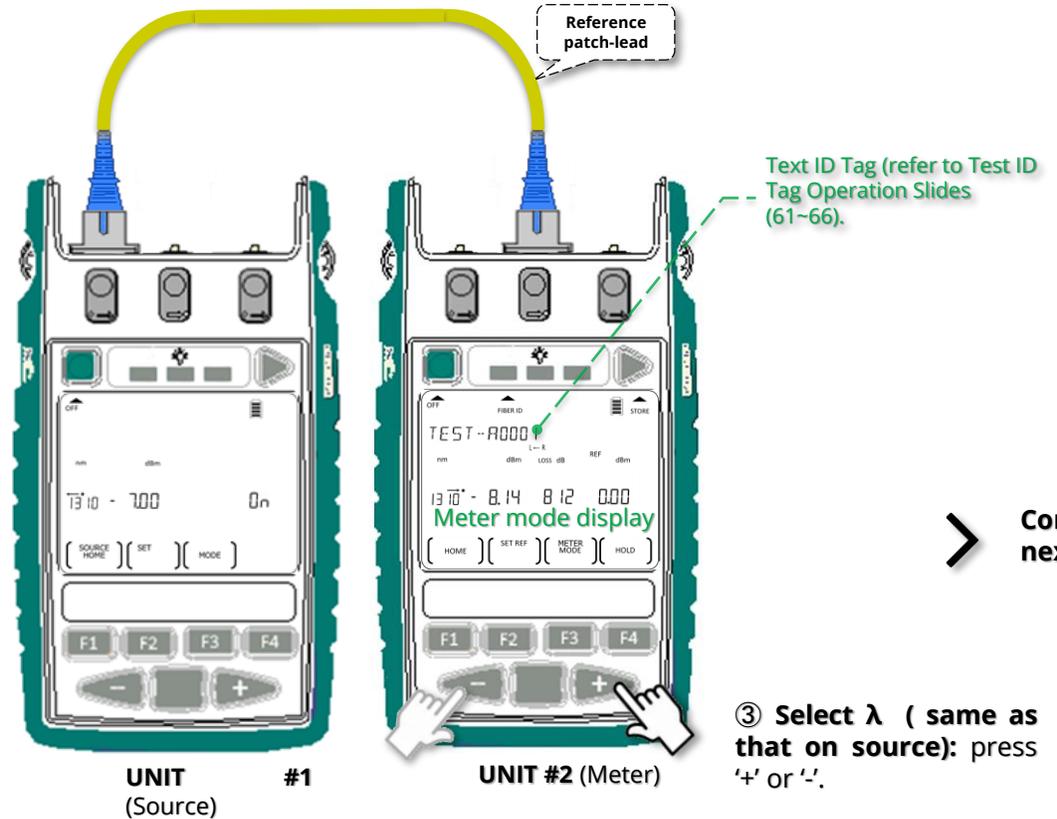
➔ Power meter manual operation (continue)

Single Instrument



➔ Continue next page

A pair of Instruments

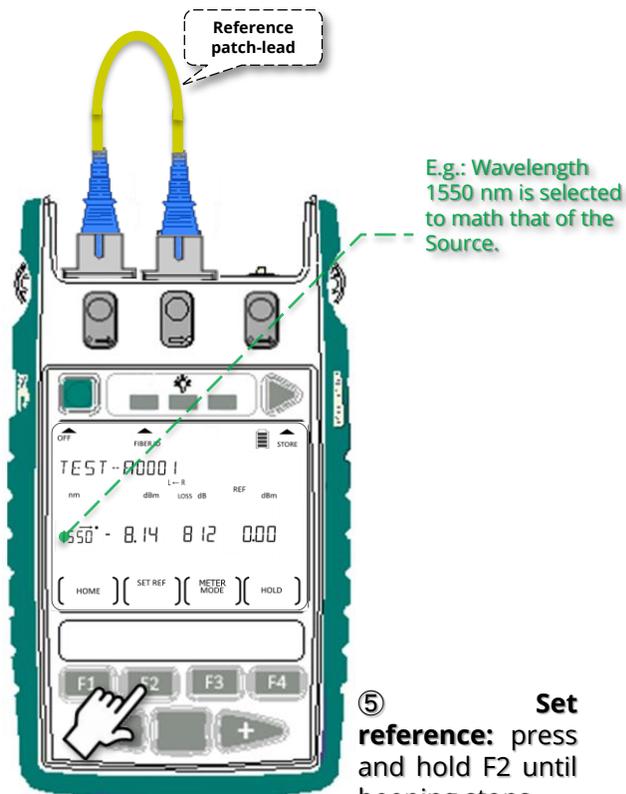


➔ Continue next page

Instrument Operation

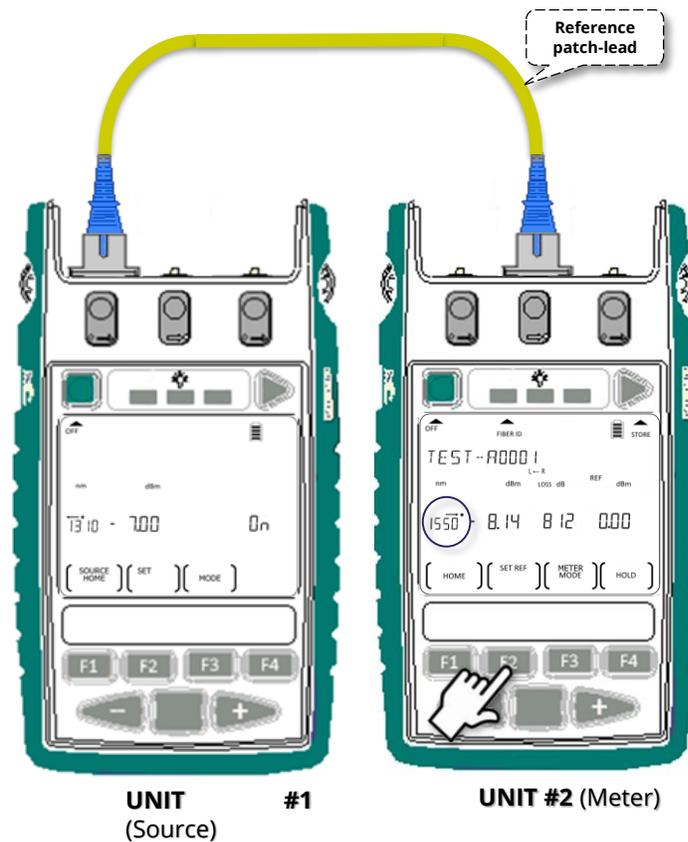
➔ Power meter manual operation (continue)

Single Instrument



➔ Continue next page

A pair of Instruments

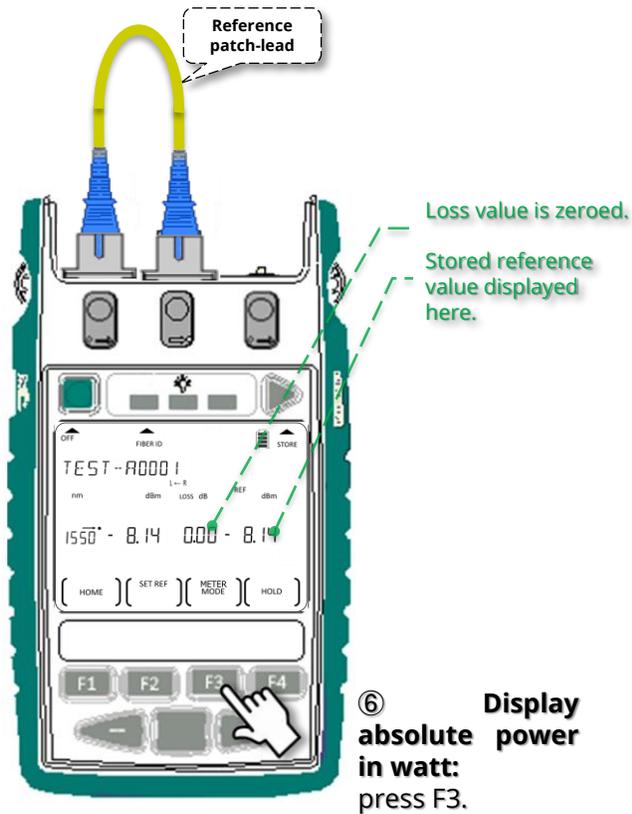


➔ Continue next page

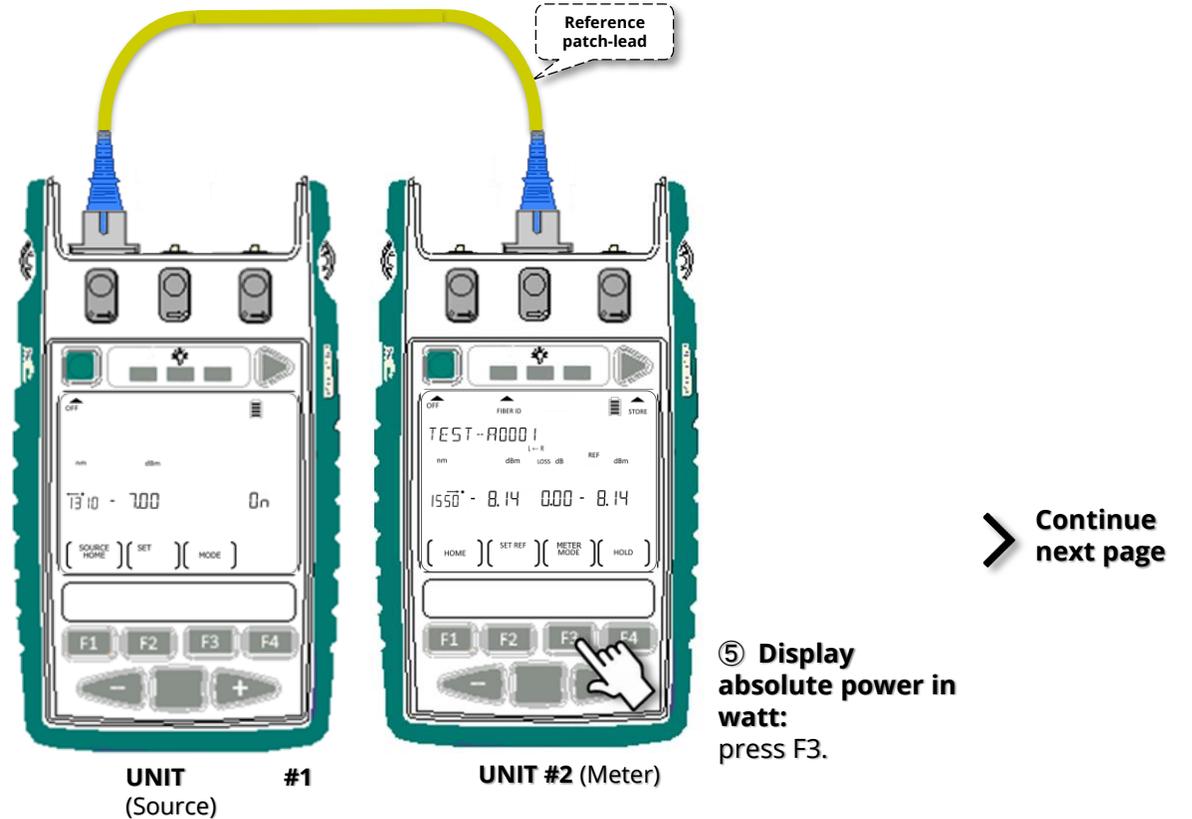
Instrument Operation

➔ Power meter manual operation (continue)

Single Instrument



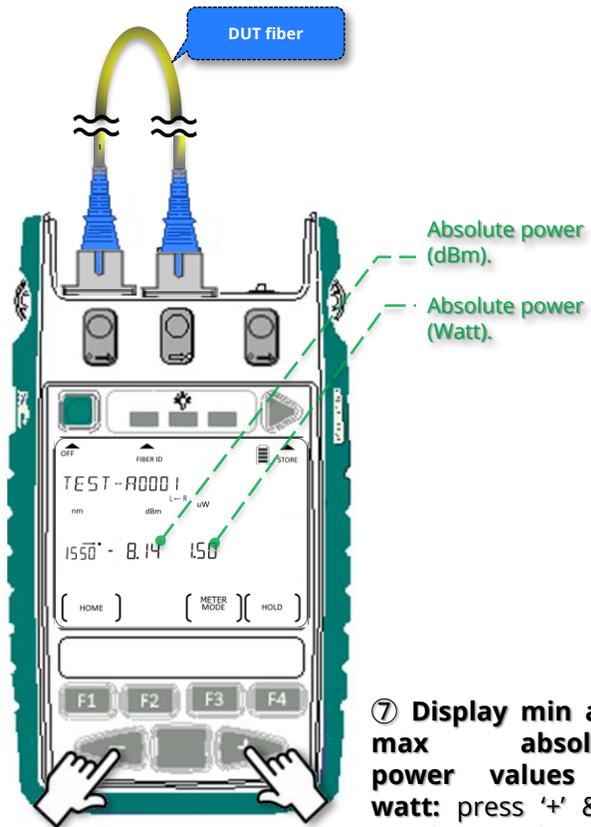
A pair of Instruments



Instrument Operation

➔ Power meter manual operation (continue)

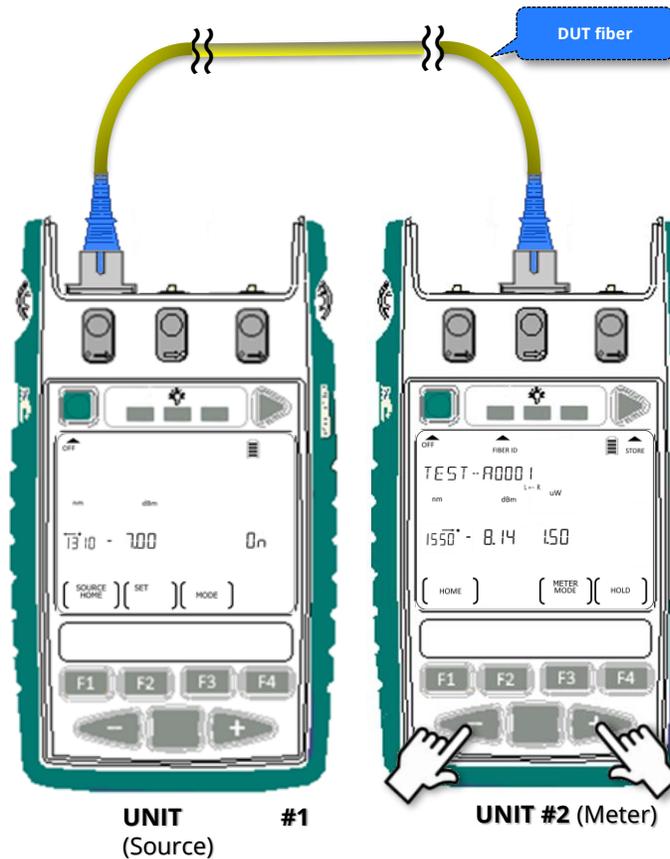
Single Instrument



⑦ Display min and max absolute power values in watt: press '+' & '-' simultaneously.

➔ Continue next page

A pair of Instruments



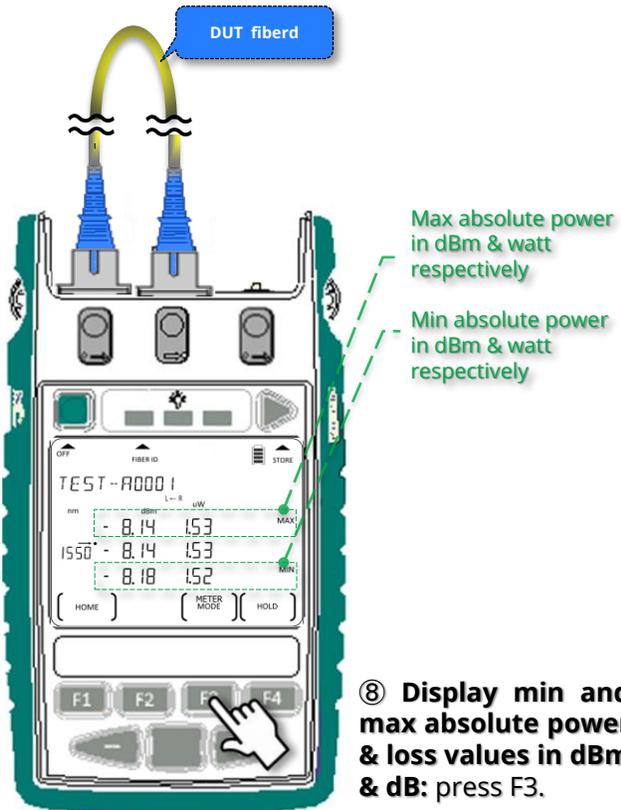
⑥ Display min and max absolute power values in watt: press '+' & '-' simultaneously.

➔ Continue next page

Instrument Operation

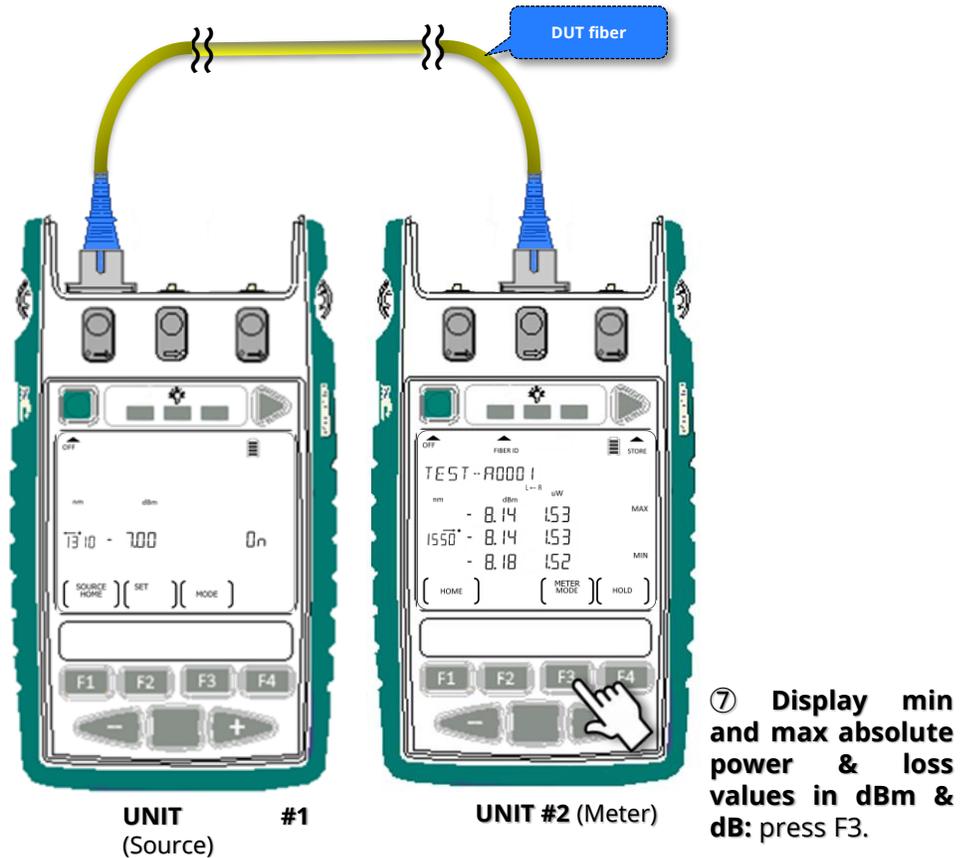
➔ Power meter manual operation (continue)

Single Instrument



➔ Continue next page

A pair of Instruments

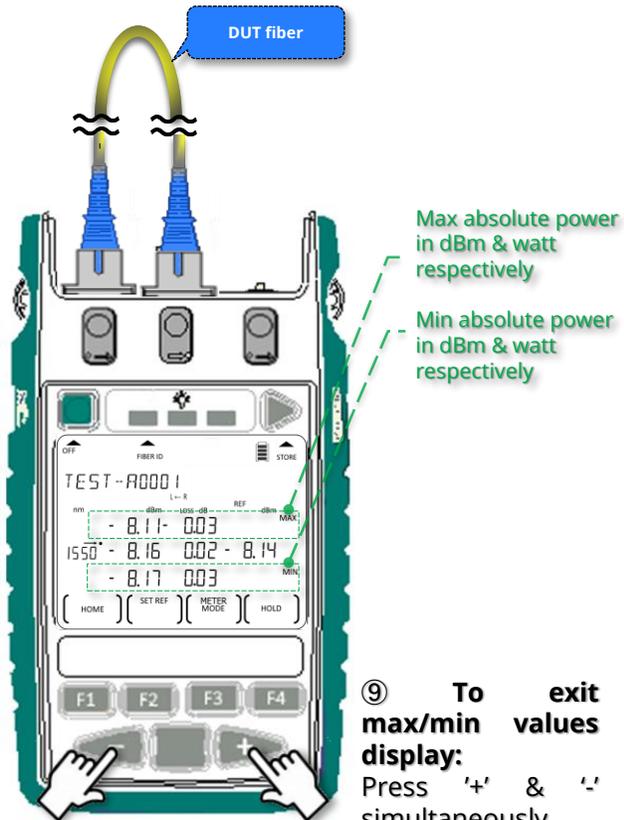


➔ Continue next page

Instrument Operation

➔ Power meter manual operation (continue)

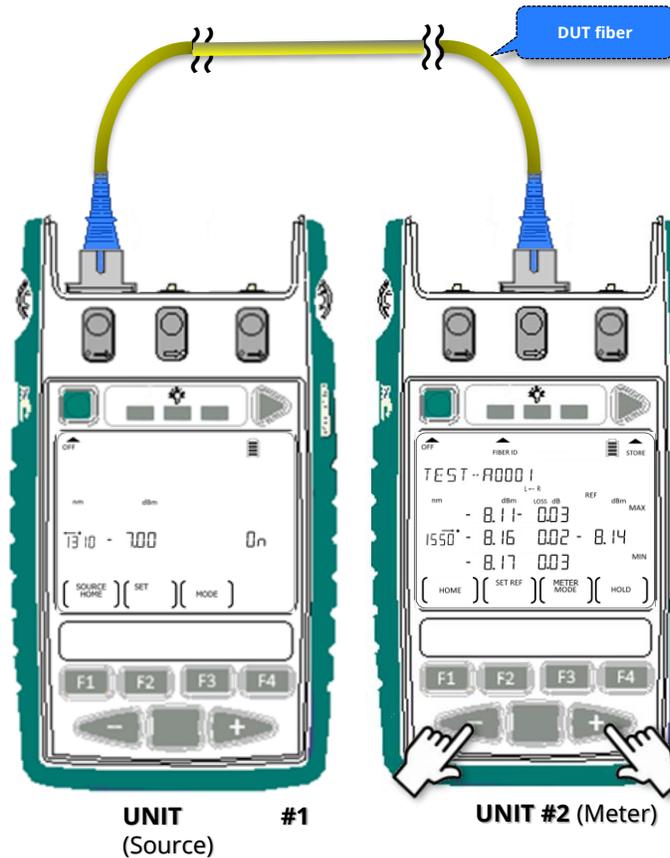
Single Instrument



➔ Continue next page

⑨ To exit max/min values display: Press '+' & '-' simultaneously again.

A pair of Instruments



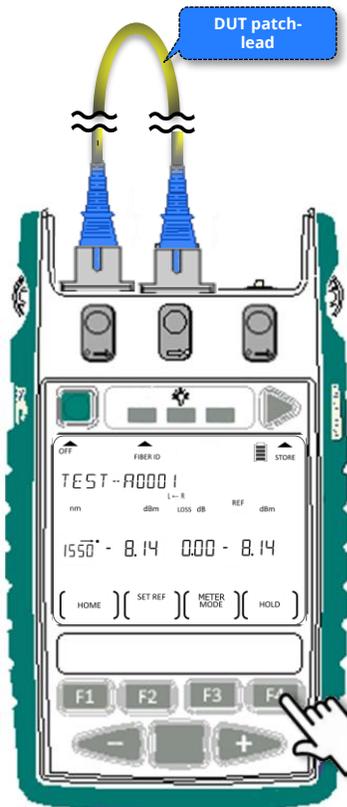
➔ Continue next page

⑧ To exit max/min values display: Press '+' & '-' simultaneously again.

Instrument Operation

➔ Power meter manual operation (continue)

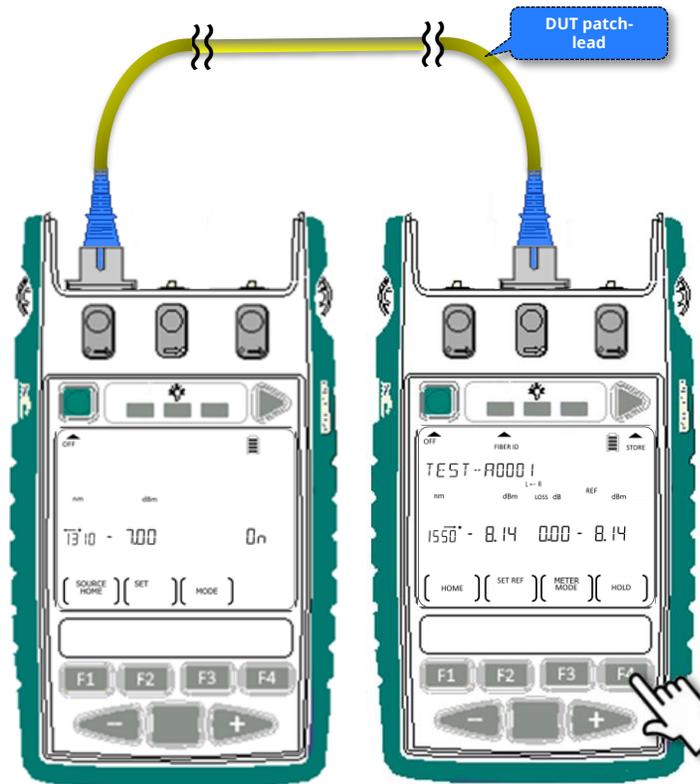
Single Instrument



⑩ To stop / resume display update: press F4 repeatedly.

➔ Continue next page

A pair of Instruments



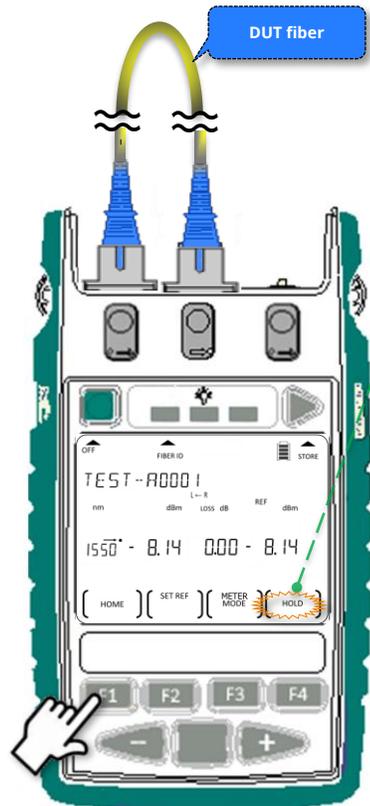
⑨ To stop / start display update: press F4.

➔ Continue next page

Instrument Operation

➔ Power meter manual operation (continue)

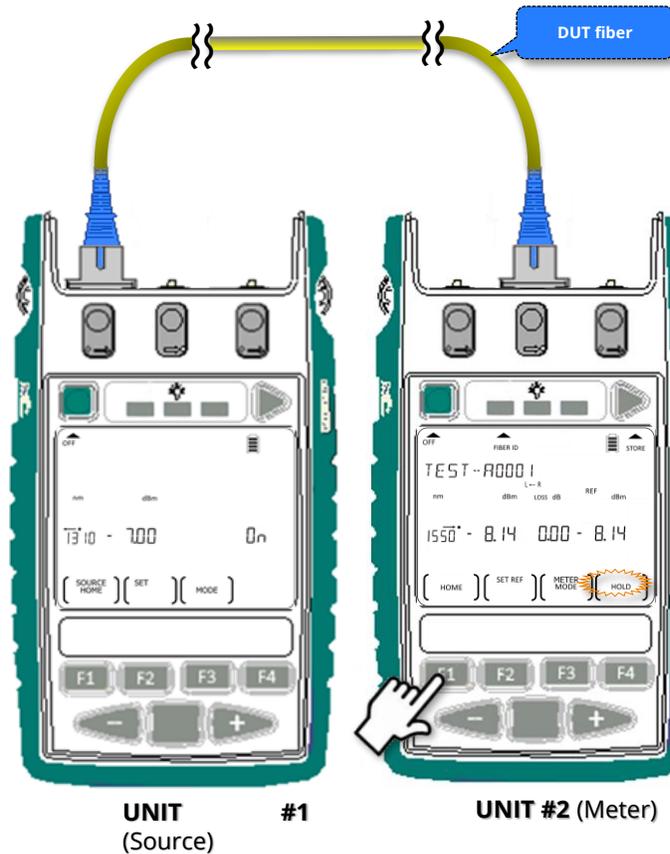
Single Instrument



"HOLD" flashes indicating display update stops.
To resume display update, press F4 again.

⑪ To exit Meter mode:
Press F1
(LCD will return to Home display).

A pair of Instruments

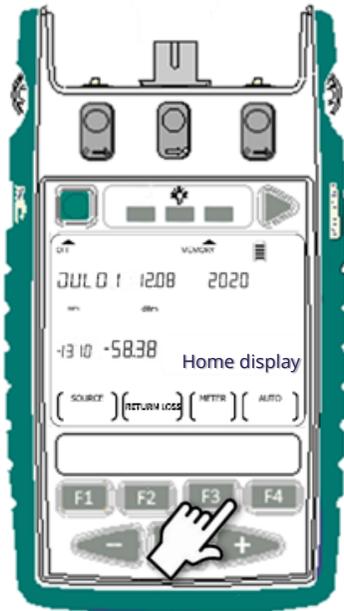


⑩ To exit Meter mode:
Press F1
(LCD will return to Home display).

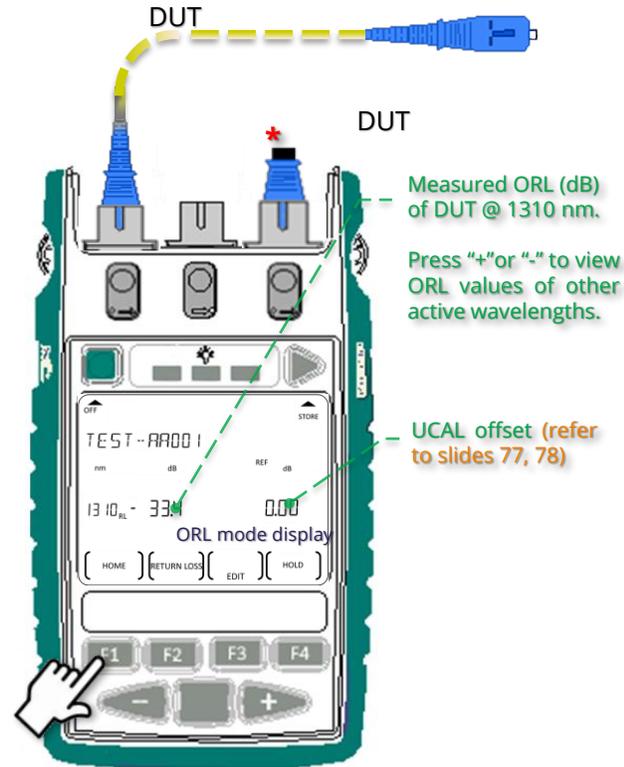
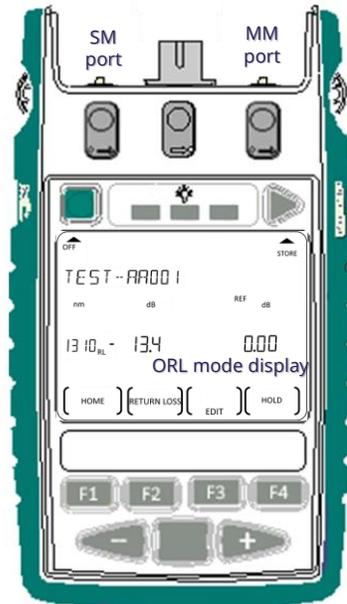
Instrument Operation

➔ ORL Meter (optional) manual operation

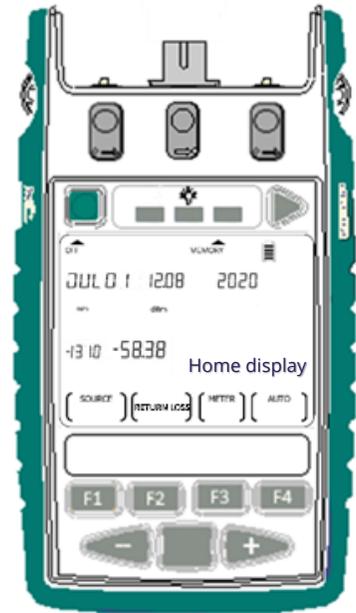
① Enter ORL measurement mode:
At Home Display, press F2



② Connect DUT onto the appropriate 2-way/source port



③ Exit ORL measurement mode:
Press F1 to return to Home Display.



*** NOTE:**
For accurate ORL measurement on instruments with two 2-way/source ports, insert PC or APC Terminators as appropriate onto the unused ports to prevent stray light from entering the instrument.

Instrument Operation

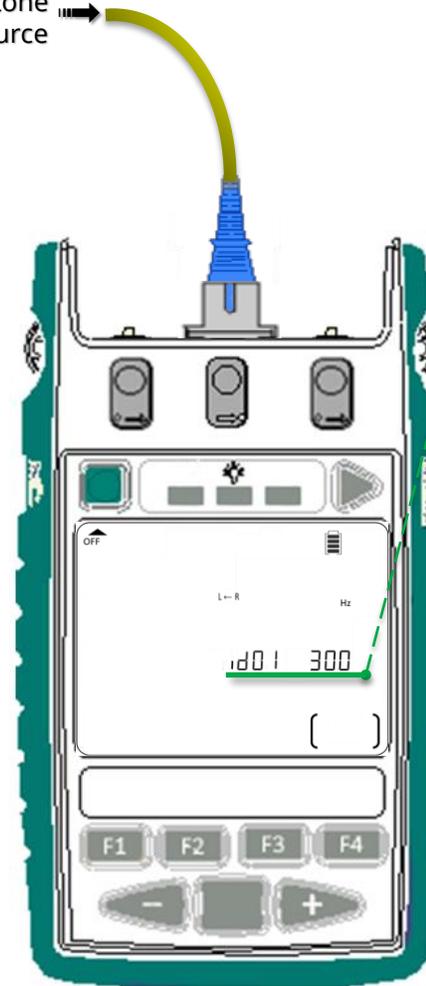
➔ Tone detection operation

Tone detection starts automatically when,

- Instrument's Meter port is connected to Source port of the same or a different instrument.
- &
- The output of the Source port is a standard test tone or Id tone.
- &
- Instrument is at Home display (Main menu) or in Meter mode.

This feature is useful for quick continuity/polarity checking of fibers.

Test or Id tone from a source port



Upon detecting a tone:

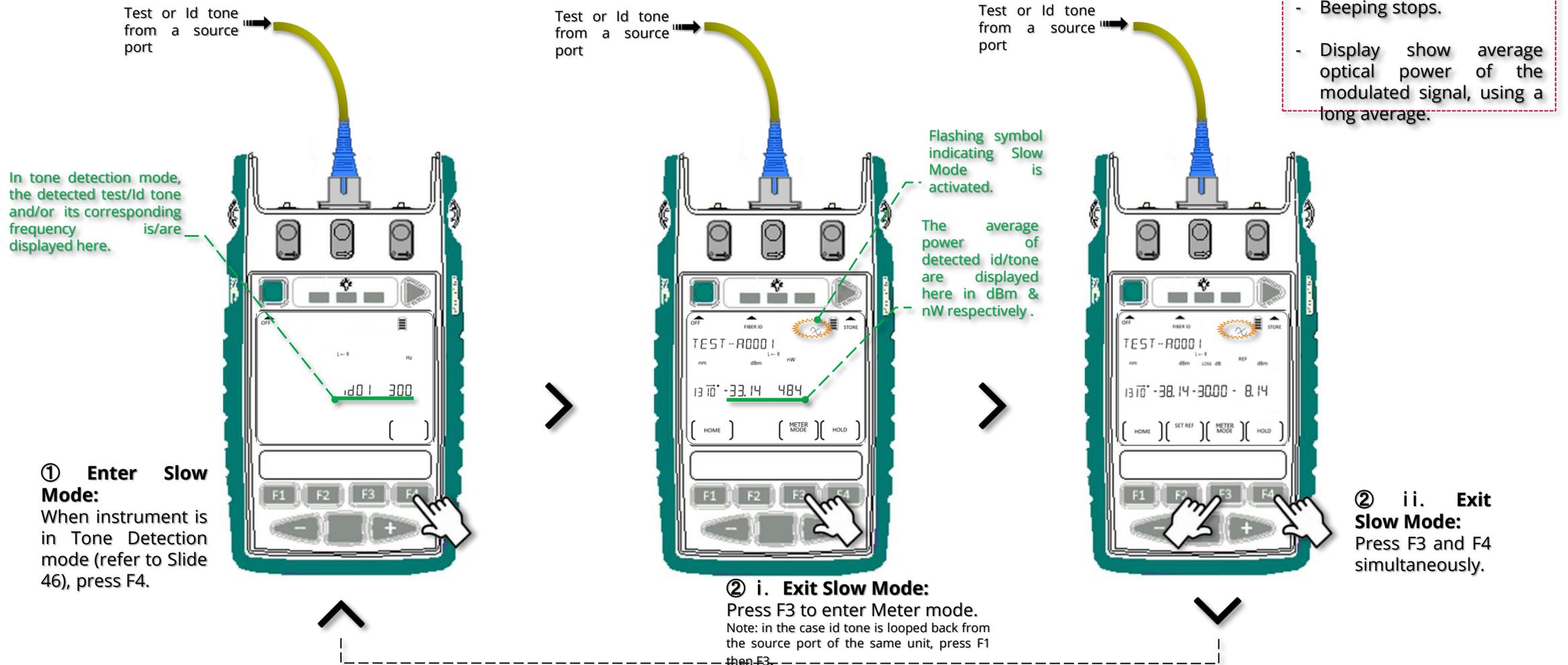
- for standard test/Id tone: the frequency and/or Id is displayed here.
- for non-standard tone: the actual measured frequency in Hz is displayed here (150 ~ 9999 Hz.)
- Instrument beeps to signify continuity.

To stop tone detection:

- Turn off Test/Id Tone mode of the Source (refer to Slide 35).
- or
- Turn on Slow Mode (refer to slide 47).

Instrument Operation

➔ Slow Mode operation

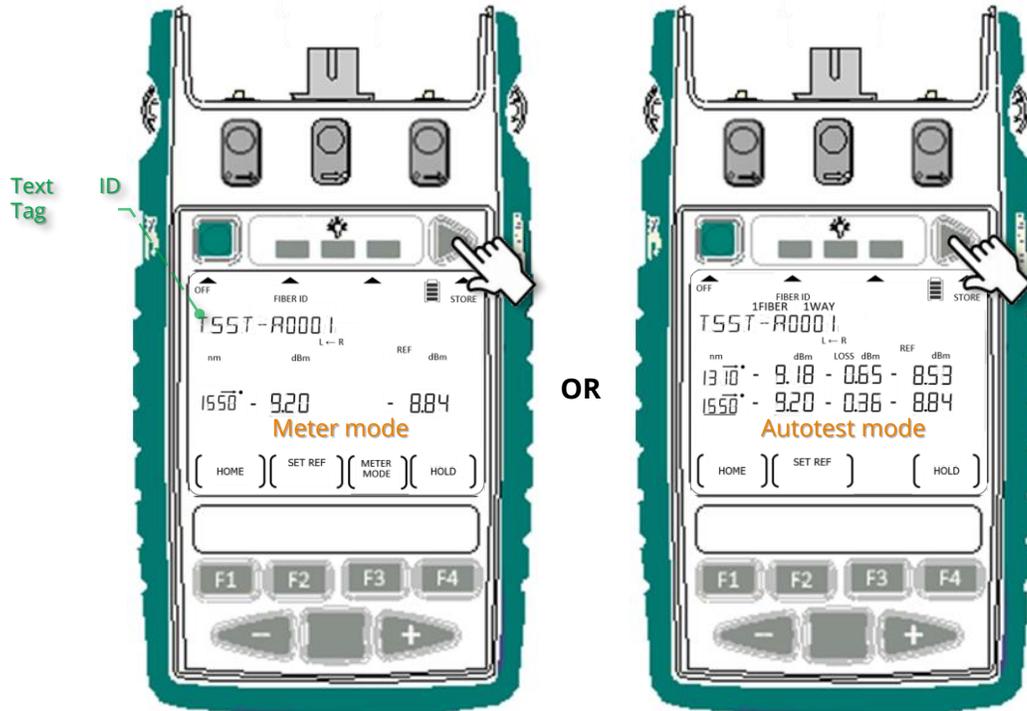


Instrument Operation

Memory operation

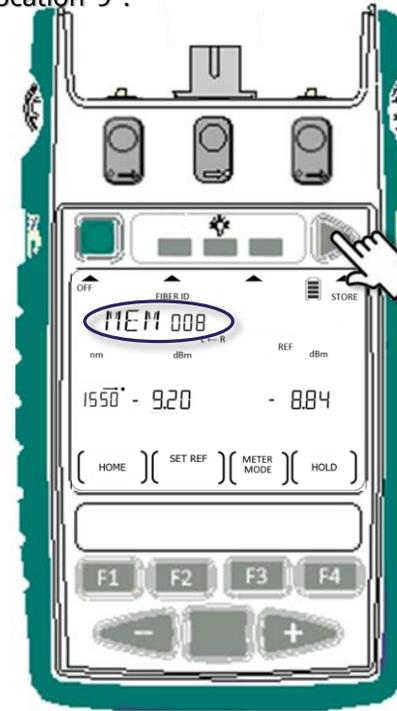
Store data into internal memory

When instrument is operating in Meter or Autotest mode, press triangular button above "STORE" to save current measurement data in internal memory.



E.g. Data in Meter mode is saved along with the Text ID Tag, "TSST-A0001" in memory location '8'.

The memory location-pointer and the Text ID Tag are incremented after each save operation. In this example, the next data will be saved along with Text ID Tag "TSST-A0002" in location '9'.



Internal memory capacity:
8,000 fibers for one-way loss tests
4,000 fibers for two-way loss tests

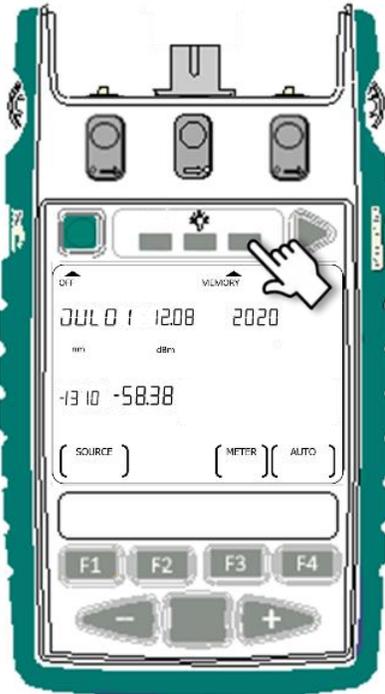
Once button is released, display will return to the last operation mode.

Instrument Operation

➤ Memory operation

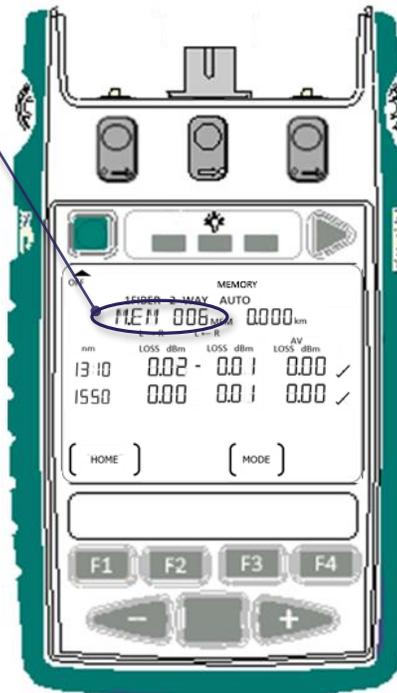
➤ Recall stored data from internal memory

At Home display (Main menu), press button above "MEMORY" to enter Memory mode.



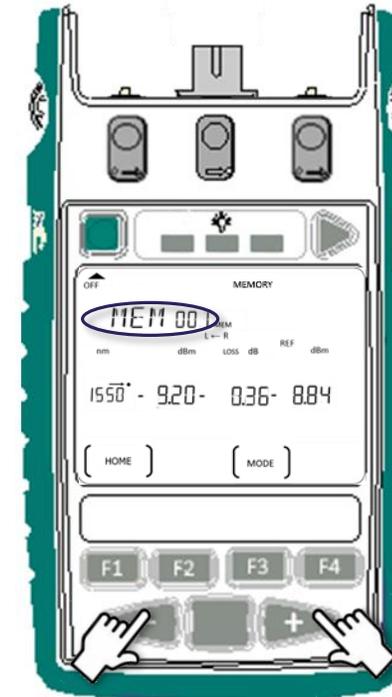
The content of the last memory location stored with data will be recalled and displayed i.e. location '6' in this example.

Alternately displaying memory location & the Text ID Tag (if any) associated with the data.



Press - or + to select the memory location to display data.

Location '1' has been selected in this example.



➤ Continue next page for viewing options for data saved in Meter mode.

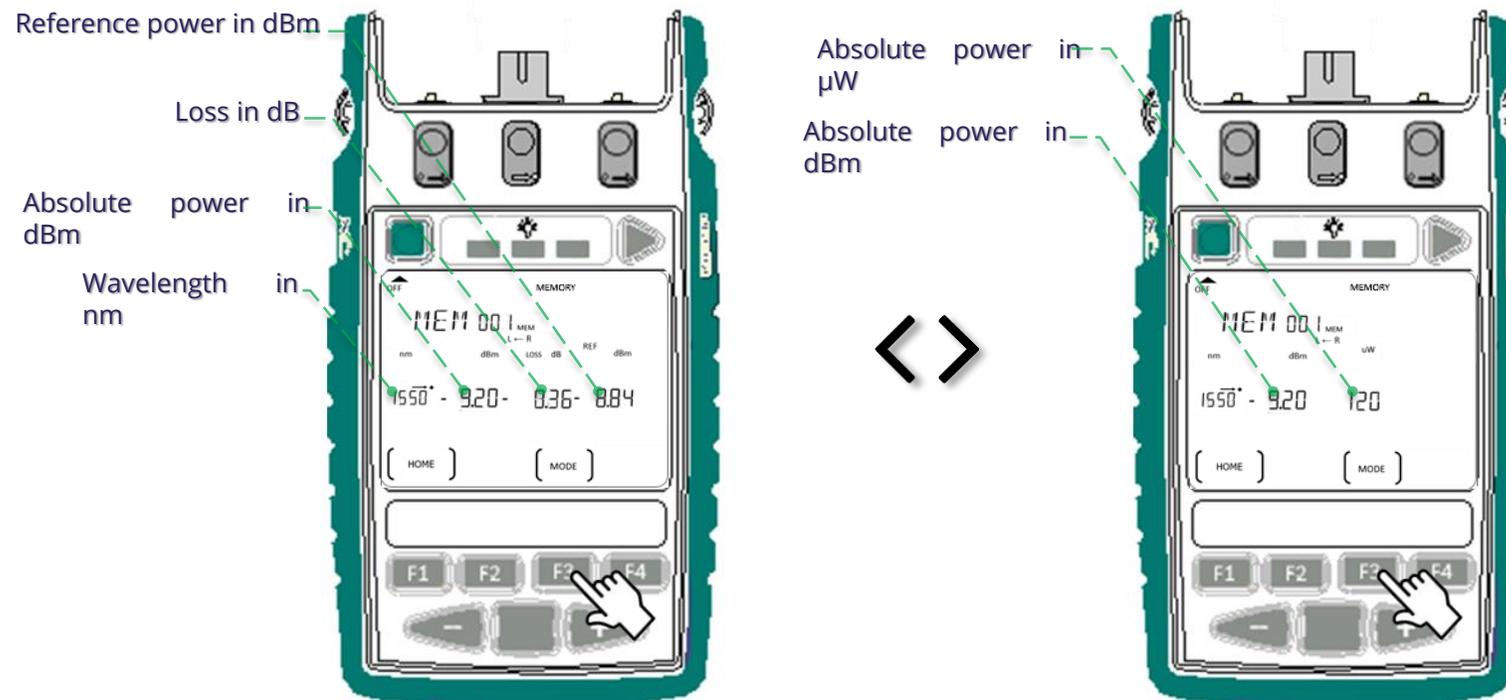
Instrument Operation

➤ Memory operation

➤ Recall stored data from internal memory (continue)

Viewing options for data saved in Meter mode:

Press F3 to toggle display to show absolute power in watt only or, in both dBm and watt.



Continue next page for viewing options for data saved in 1-way Autotest mode.

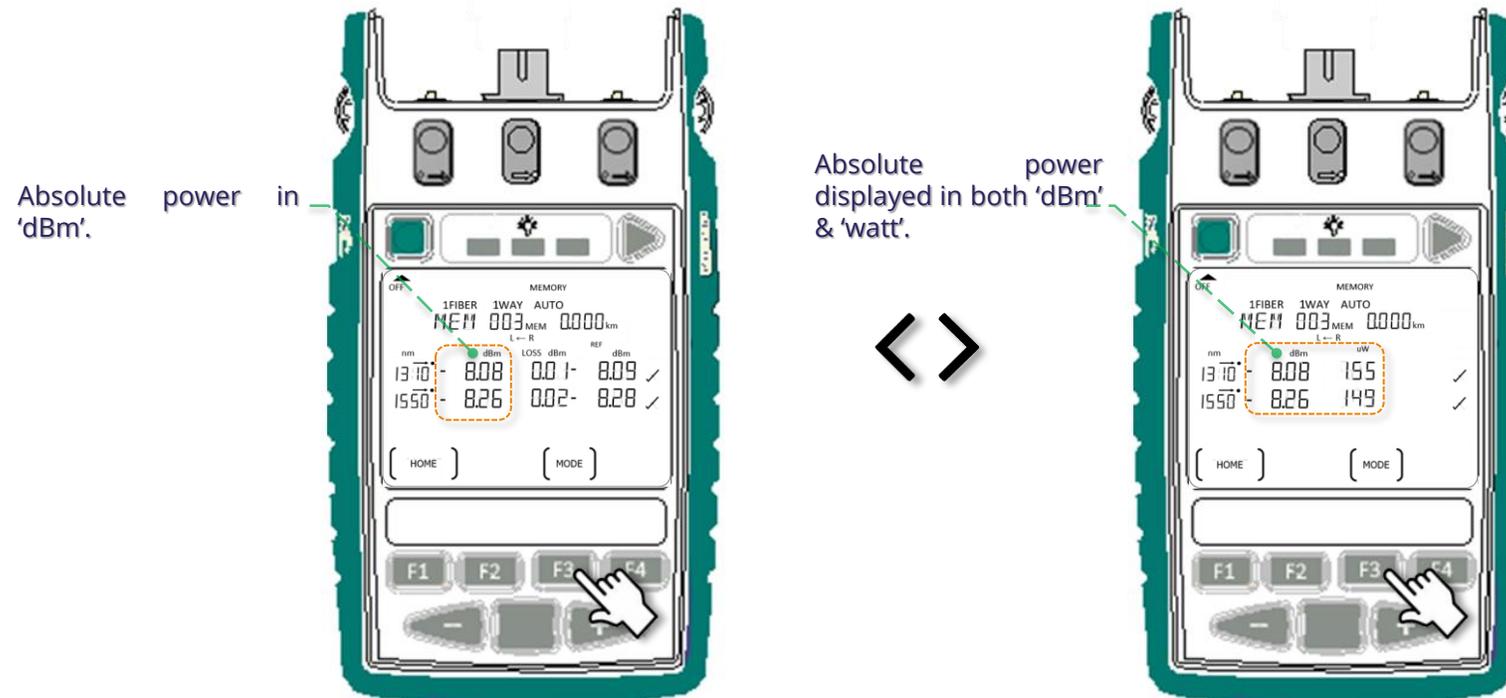
Instrument Operation

➔ Memory operation

➔ Recall stored data from internal memory (continue)

Viewing options for data saved in 1-way Autotest mode:

Press F3 to toggle display to show absolute power in watt only or, in both dBm and watt.



Continue next page for viewing options for *data saved in 2-way Autotest mode.*

Instrument Operation

➔ Memory operation

➔ Recall stored data from internal memory (continue)

Viewing options for data saved in 2-way Autotest mode:

Press F3 to toggle display to show between,

- Test summary (showing loss of each direction & their average by wavelength)
- Test detail (showing absolute power, loss, reference power for each direction by wavelength)
- ORL values (only for instrument models built with this option)

Loss value (dB) measured on remote unit @ 1310 nm

Loss value (dB) measured on local unit @ 1310 nm

Measured cable length (Km)

Average loss (dB) @ 1310 nm

Symbol signifying loss test results (refer to Slide 16)

Absolute power (dB) measured on local unit @ 1310 nm

Loss (dB) value measured on local unit @ 1310 nm

Test direction: remote-to-local

Test direction & data for local-to-remote unit.

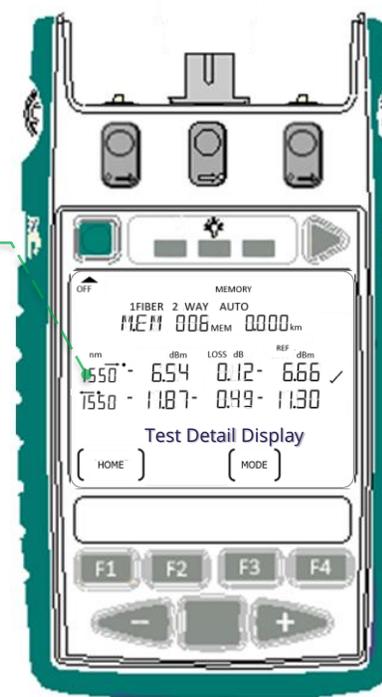
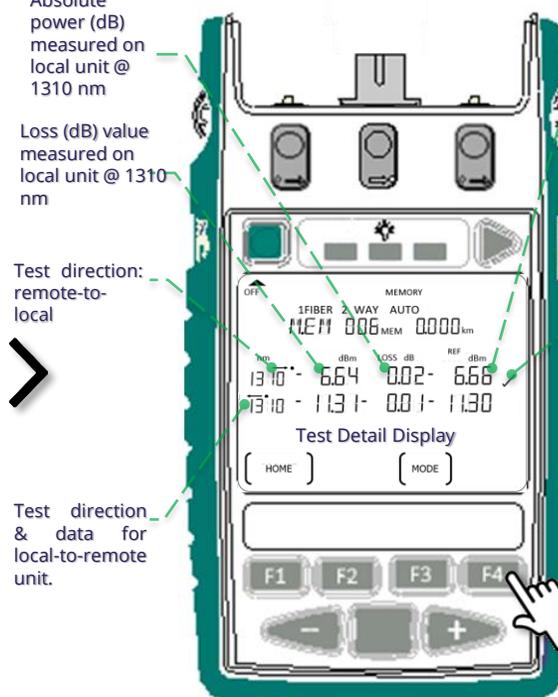
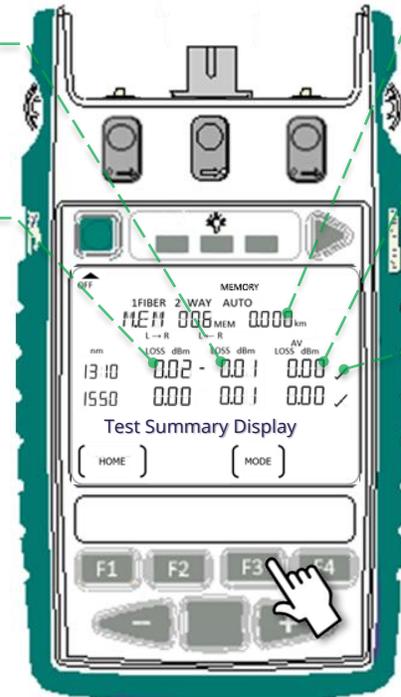
Reference power (dB) of local unit @ 1310 nm

Symbol signifying loss test results (refer to Slide 17)

Press F4 continuously to show data of all active wavelengths.

Data @ 1550 nm

If ORL option is available, press F3 to view relevant data.



Instrument Operation

➔ Memory operation

➔ Recall stored data from internal memory (continue)

Viewing options for data saved in 2-way Autotest mode: ORL data

Continue from last slide ➔

ORL value (dB) measured on local unit @ 1550 nm

ORL value (dB) measured on remote unit @ 1550 nm

UCAL offset values for 1550 nm set on local unit (refer to slides 77, 78)

UCAL offset values for 1550 nm set on remote unit (refer to slides 77, 78)

Symbol signifying ORL test result for a wavelength:

- "✓" - Pass/fail check is disabled (threshold is set at "0.00" or
- "✓" (pass) - passed ORL test
- "X" (fail) - failed ORL test fails.

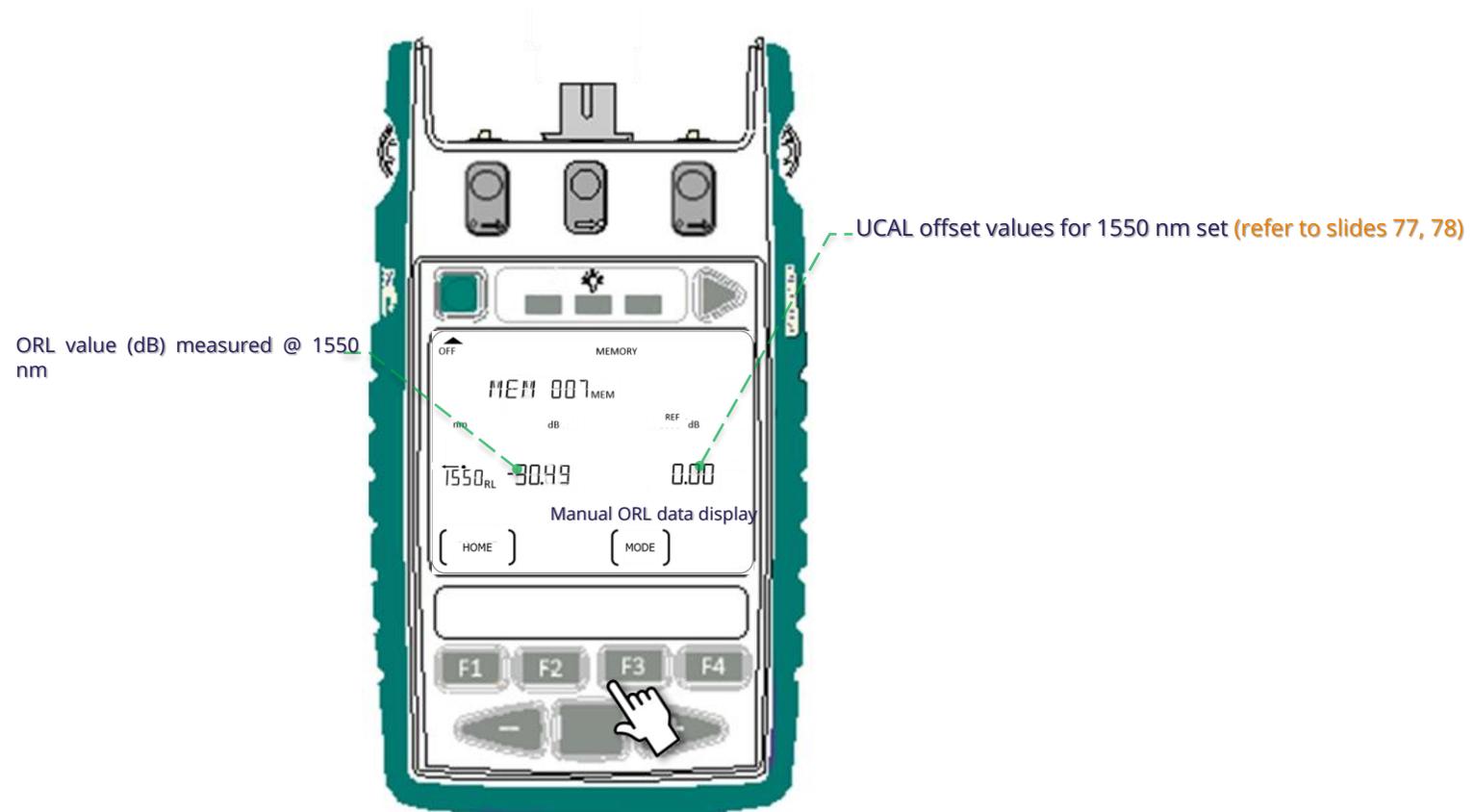
nm	LOSS dB	REF dBm
1550 _{RL}	-33.12	0.00
7550 _{RL}	-30.49	0.00

Instrument Operation

➤ Memory operation

➤ Recall stored data from internal memory (continue)

Viewing ORL data saved in manual ORL mode:



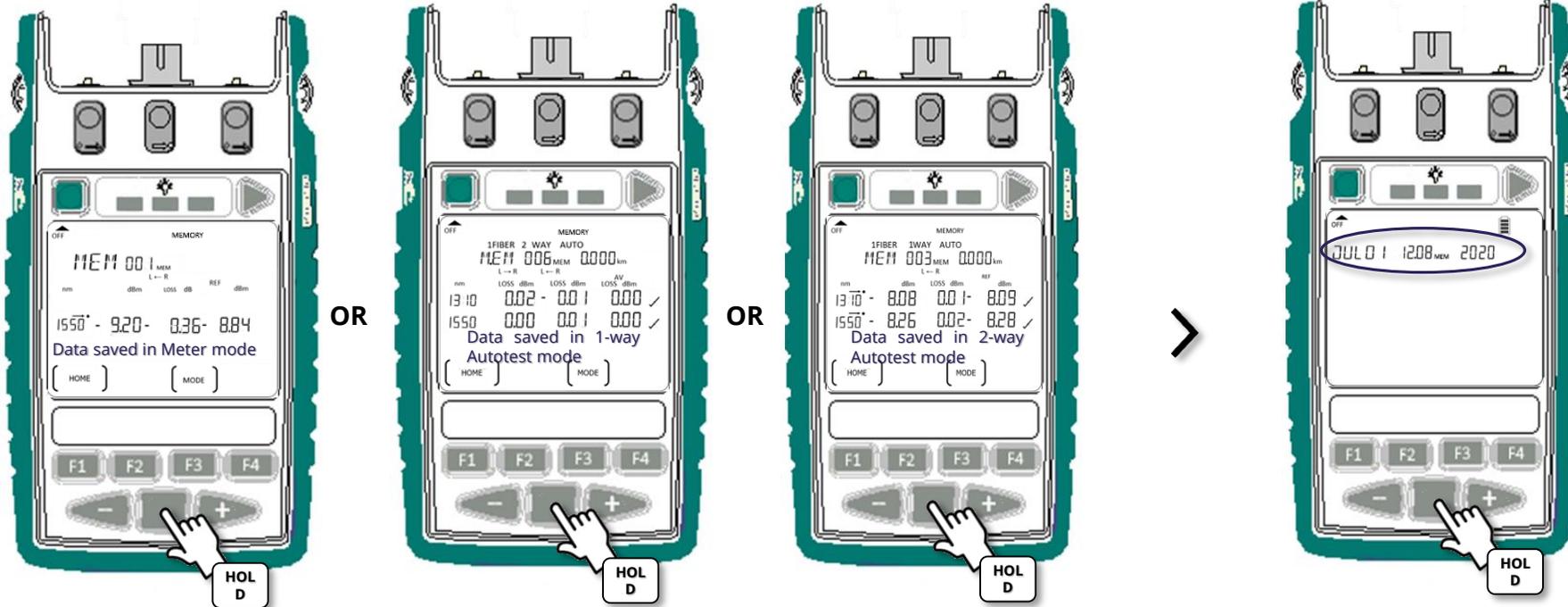
Instrument Operation

➤ Memory operation

➤ Recall stored data from internal memory (continue)

Viewing time stamp of saved data:

While viewing data saved in any of the 3 modes (Meter, 1-way Autotest, 2-way Autotest), hold down Toggle Centre.



Continue next page for viewing nominal source power.

Release Toggle Centre now will return to the previous memory viewing display.

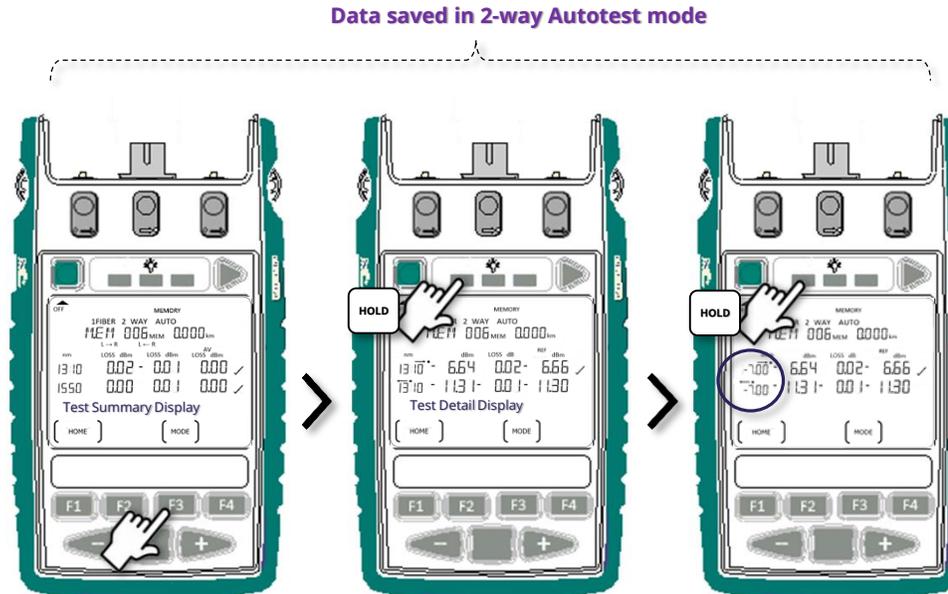
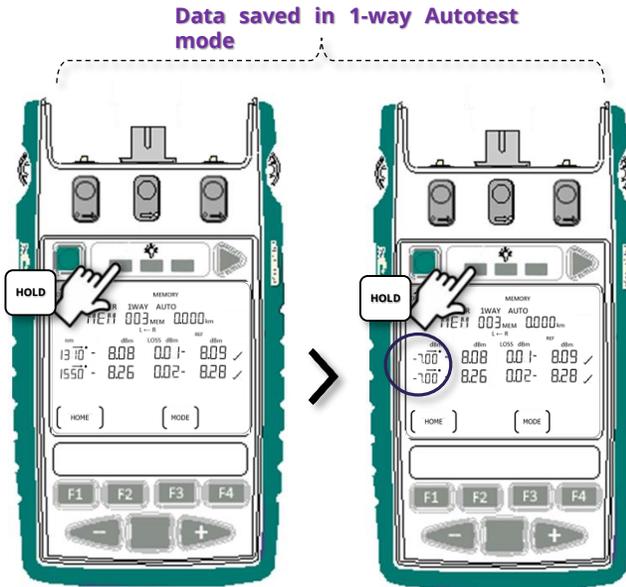
Instrument Operation

Memory operation

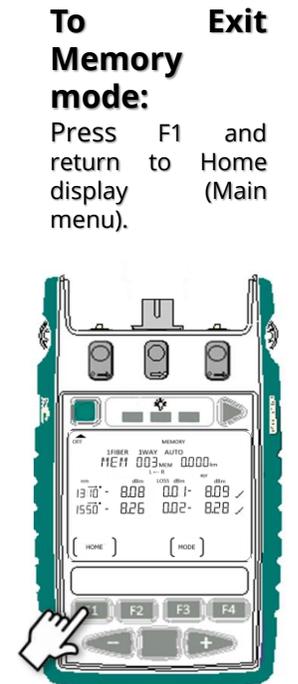
Recall stored data from internal memory (continue)

Viewing nominal source power:

While viewing data saved in 1-way Autotest or 2-way Autotest, hold down the left most rectangular button (above LCD).



Press F3 to show result in Test Detail Display.



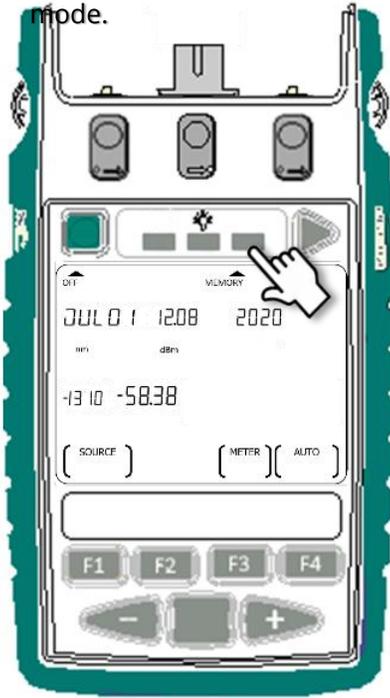
Instrument Operation

➔ Memory operation

➔ Retest or overwrite results

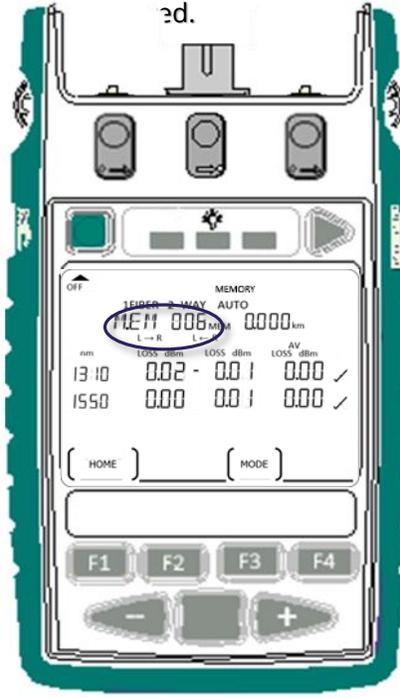
① Note current memory location

① **Enter Memory mode:**
At Home display (Main menu), press button above "MEMORY" to enter memory mode.



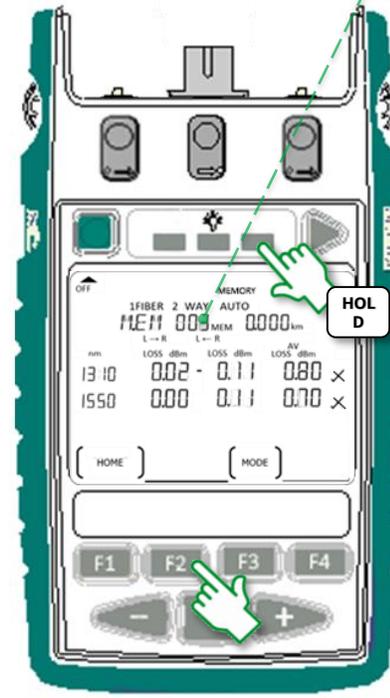
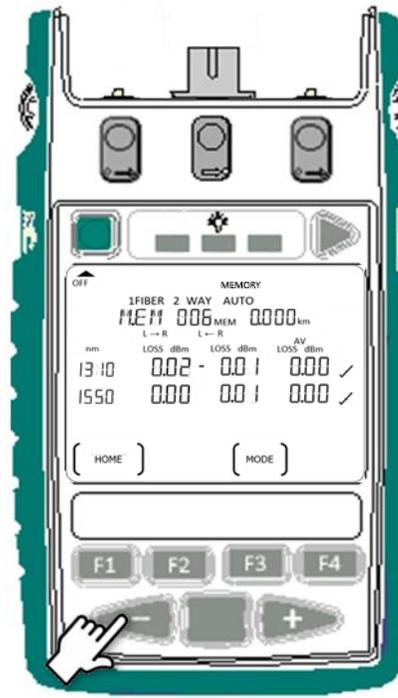
② Note currently displayed location:

E.g. the current location is '6'



② Go to memory location to retest (overwrite data)

③ **Select memory location to overwrite data:**
Press '-' to go the location, then hold down button above "MEMORY" and press F2 for three seconds or until it stops beeping.



E.g. Memory location '3' has been selected for retest (data overwriting).

➔ Continue next page

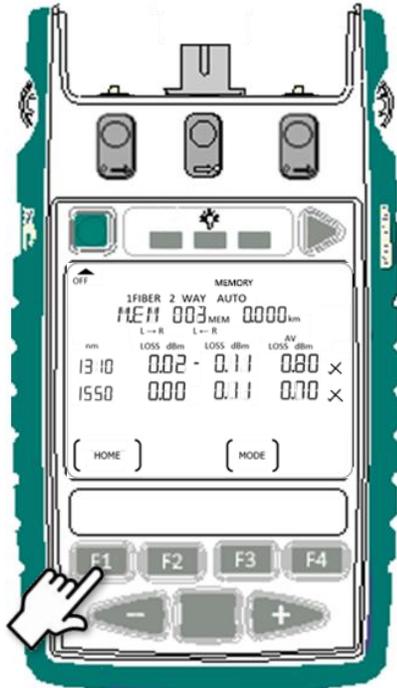
Instrument Operation

➤ Memory operation

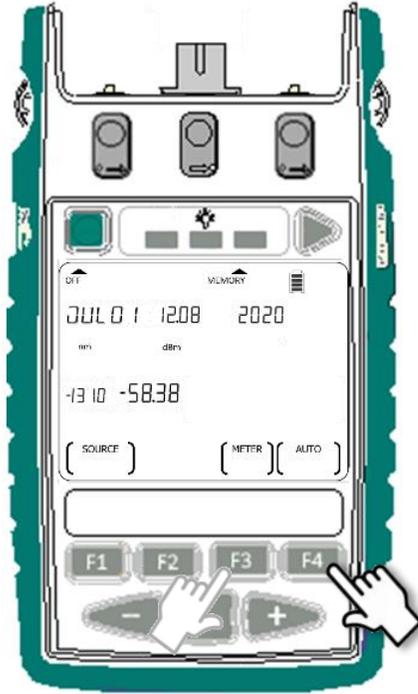
➤ Retest or overwrite results (continue)

③ Retest and save (overwrite) data

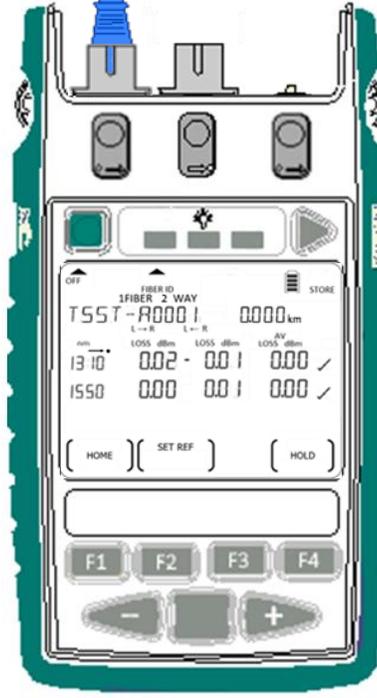
④ Exit memory mode:
Press F1.



⑤ Perform retest:
E.g. enter Meter (press F3)
or Autotest (press F4) as
needed.

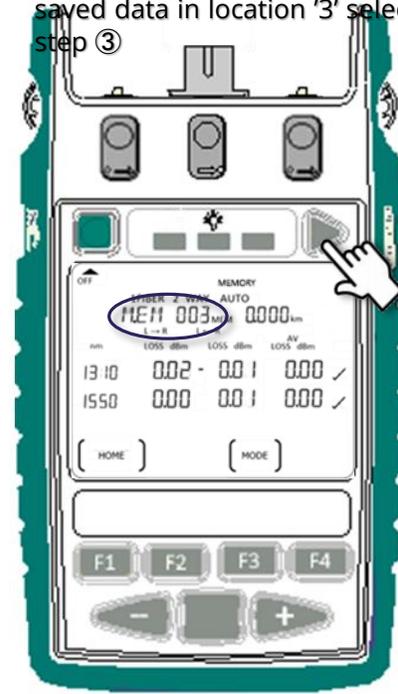


E.g. Retest is performed in Autotest mode.



⑥ Save retest data:
Press triangular button above
"STORE".

This retest data will overwrite the saved data in location '3' selected in step ③



➤ Continue next page

Instrument Operation

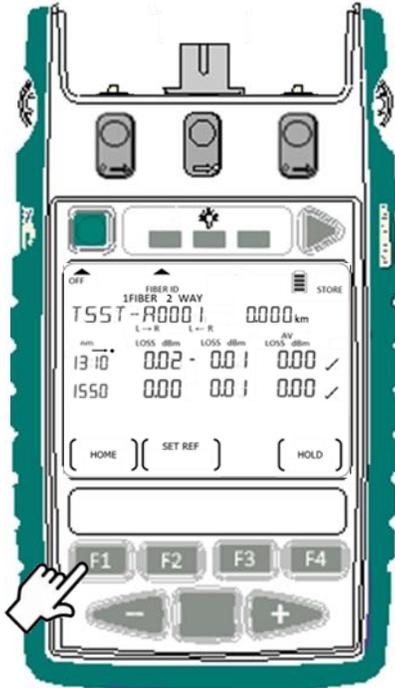
➤ Memory operation

➤ Retest or overwrite results (continue)

④ Return memory location pointer for next storage to where it was before retest

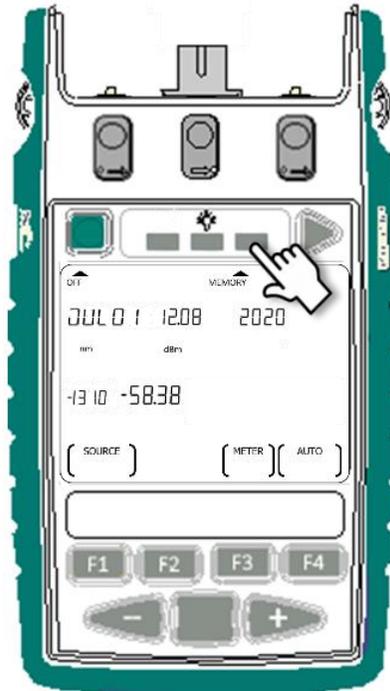
⑦ End retest:

E.g. end Autotest by pressing F1.



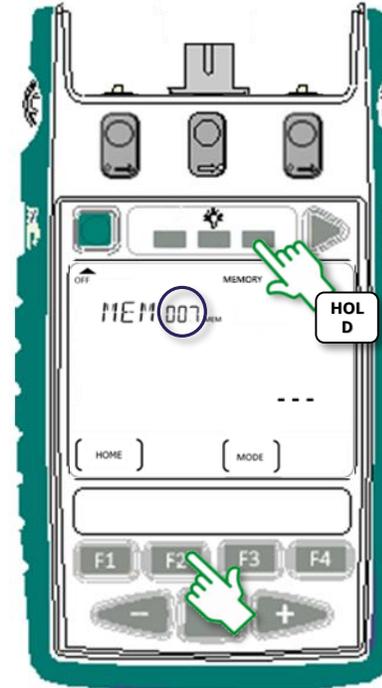
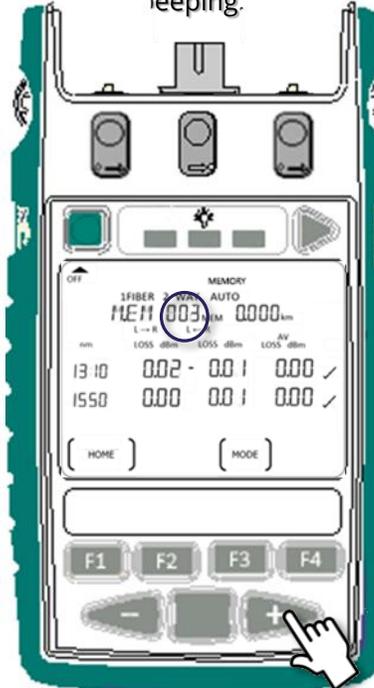
⑧ Enter Memory mode:

Press button above "MEMORY".



⑨ Set memory location pointer for next storage:

Press '+' to select location pointer '7' in this example, as location '6' was "noted" in step ②. Then, hold down button above "MEMORY" and press F2 for three seconds or until ... keeping.



Next store operation will save data into location '7'.

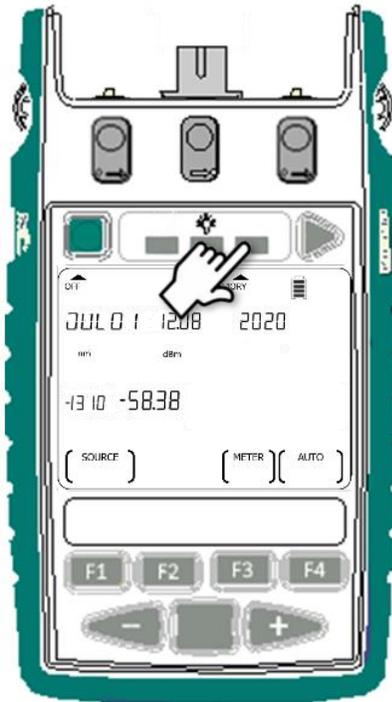
Press F1 now will exit Memory mode and return to Home Display(Main menu).

Instrument Operation

➤ Memory operation

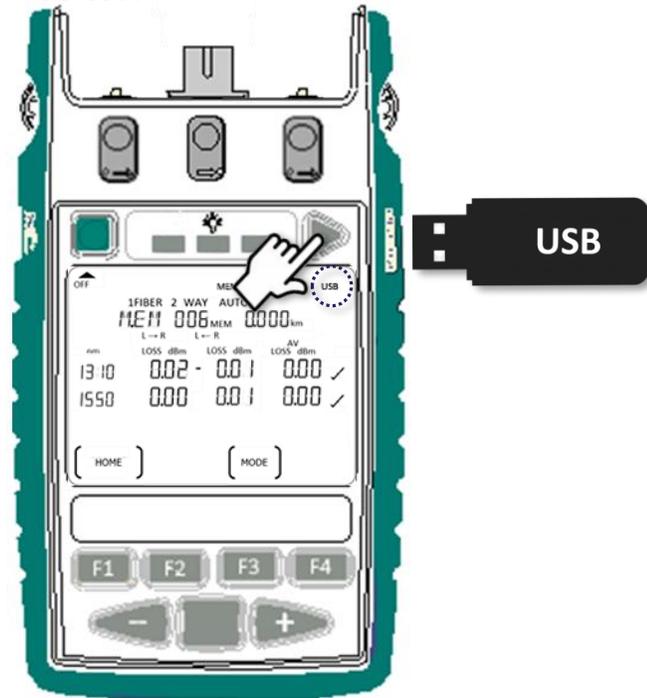
➤ Transfer internally stored data onto USB stick

① At Home display (Main menu), press button above "MEMORY" to enter memory mode.



② Insert a USB stick on instrument connector marked "MEM".

"USB" is displayed when a USB stick is inserted.



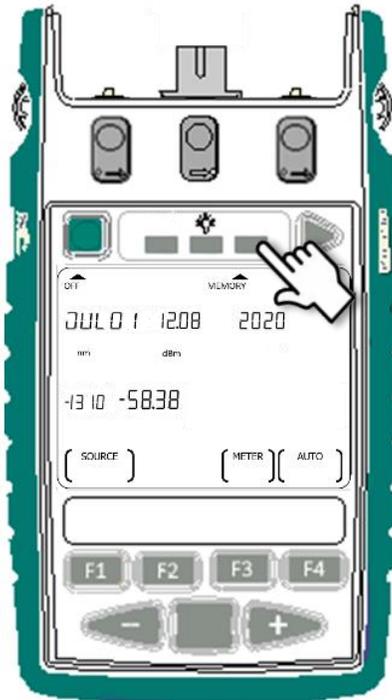
➤ Data transfer is completed when instrument stops beeping and, USB stick stops flashing.

Instrument Operation

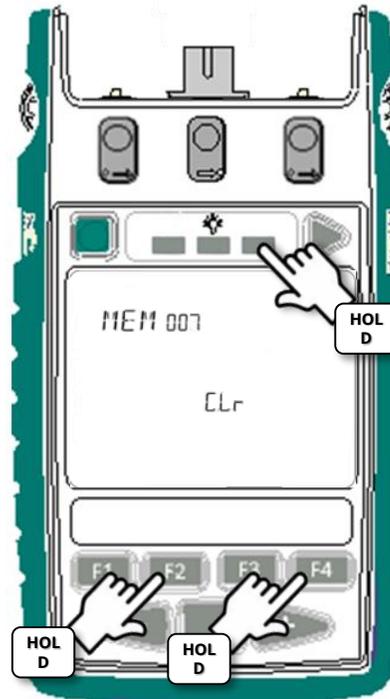
➤ Memory operation

➤ Clear internal memory

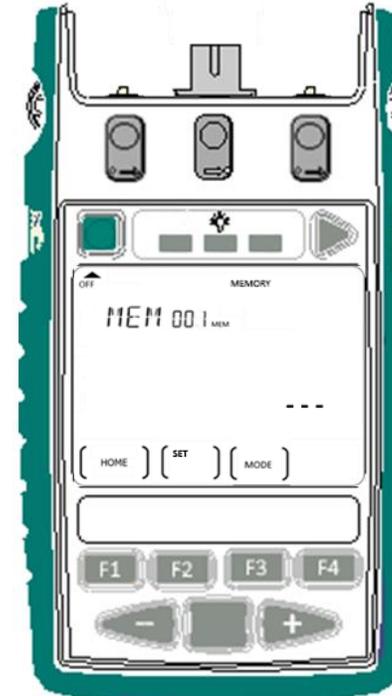
① At Home display (Main menu), press button above "MEMORY" to enter memory mode.



② Hold down button above "MEMORY" then, press and hold F2 followed by F4.



When unit stops beeping, content saved in all memory locations is erased.



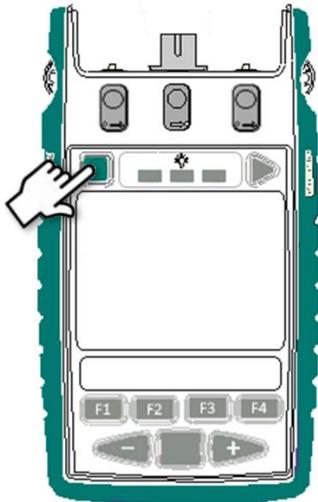
➤ Press F1 now will exit Memory mode and return to Home Display(Main menu).

Instrument Operations

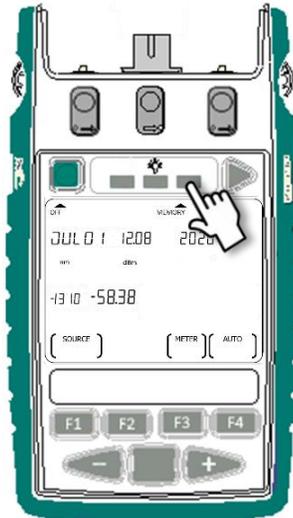
➔ Instrument Data Sanitization

Erase all parts of the non-volatile user memory, including user data, and restore default instrument settings.

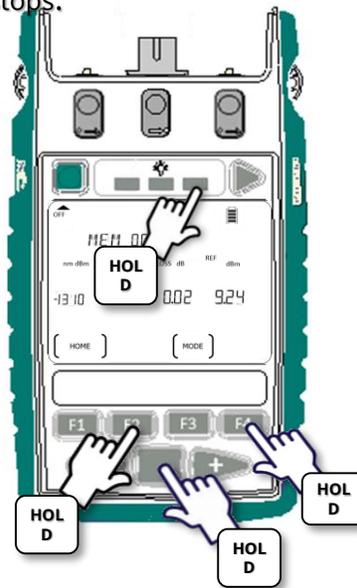
- ① **Switch on instrument:**
Press green button.



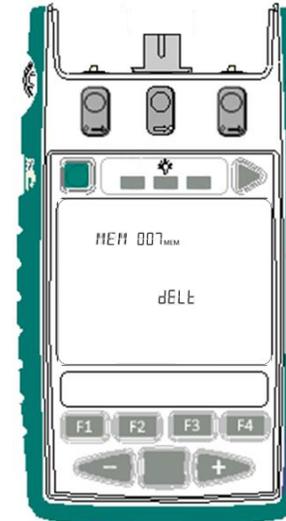
- ② **Enter Memory mode:**
Press button above 'MEMORY'.



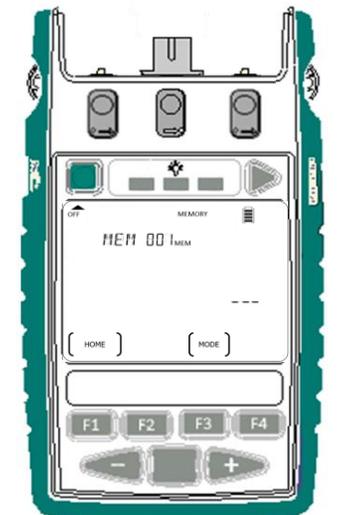
- ③ Press and hold [MEMORY] & F2 simultaneously then, quickly press and hold F4 & Toggle Centre simultaneously for 3 seconds until beeping stops.



Erasing memories.



Memories erased.
Note: Date / time settings & Text ID Tag will not be erased.



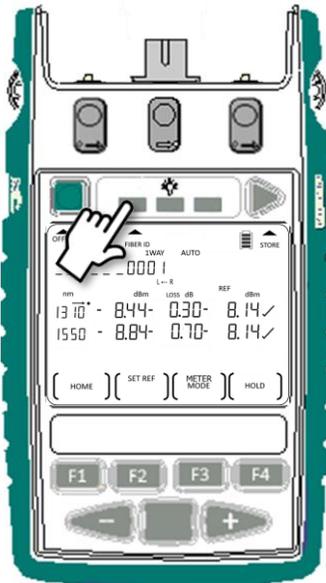
Instrument Operation

➔ Text ID Tag operation

A useful auto-naming feature to systematically pre-configure (project) text names for test results stored in memory.

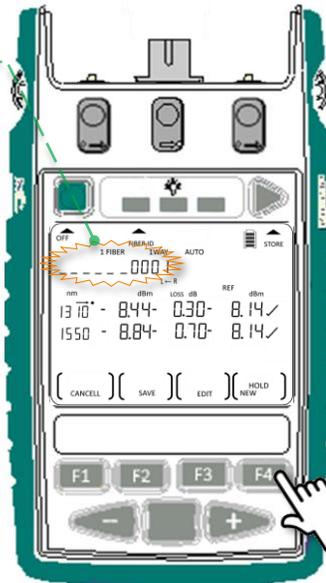
① Create a New Text ID Tag:

① In Meter or Autotest mode, press button above "FIBERID".



Flashing "- - - - -0001"
If no Text ID Tag has previously been created & stored.

② Enter Text ID Tag creation mode, press F4.



"AAAAA001" is displayed with its 1'st character highlighted (flashing) for modification.

③ Select new alphanumeric character, press '+' or '-'. Possible characters selectable for Text ID Tag:
First 6 digits: "blank", "-", "A-B", "0-9"
Last 4 digits (for fiber indexing): "0-9".



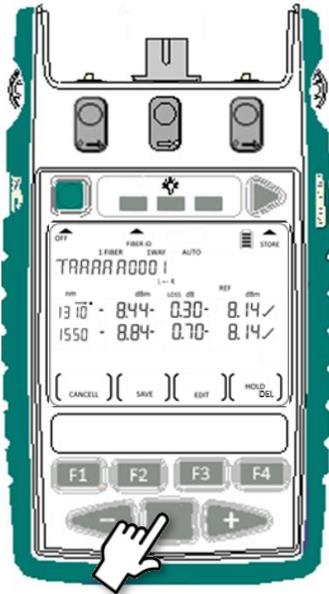
➔ Continue next page

Instrument Operation

➔ Text ID Tag operation (continue)

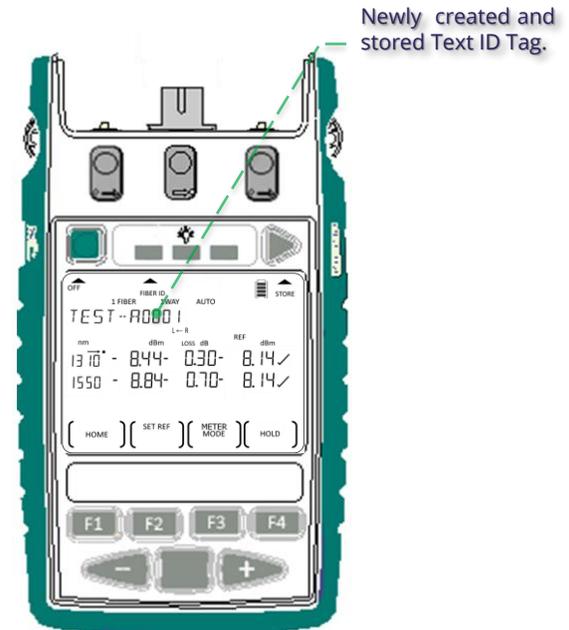
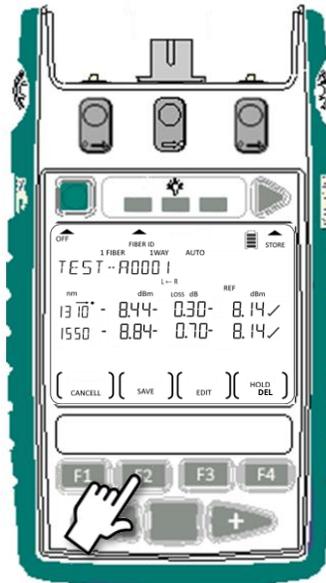
① Create a New Text ID Tag (continue):

④ Move on to enter the next character, press Toggle Centre.



⑤ Store the newly created Text ID, press F2.
Press F1 will quit without saving.

Up to 20 user-created Text ID Tags can be stored.

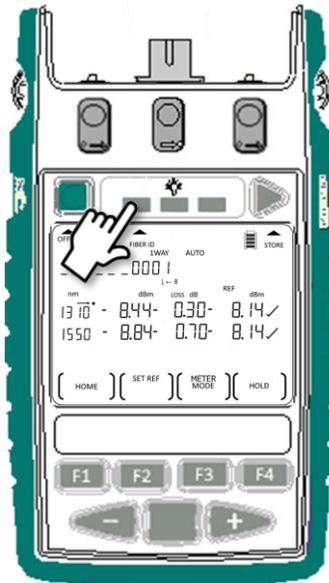


Instrument Operation

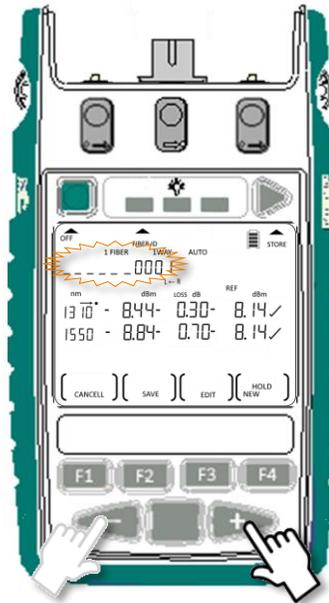
➔ Text ID Tag operation (continue)

② To use a Text ID Tag:

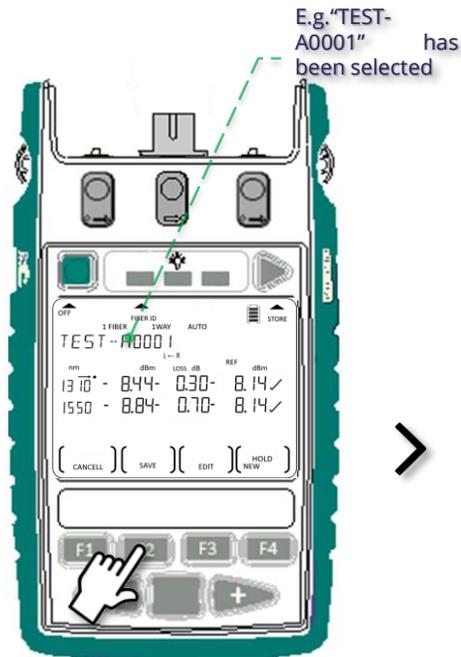
① In Meter or Autotest mode, press button above "FIBERID".



② Select a stored Text ID Tag, press '+' or '-'.
E.g. "TEST-A0001" has been selected



③ Confirm selection, press F2.



Selected Text ID Tag for use.

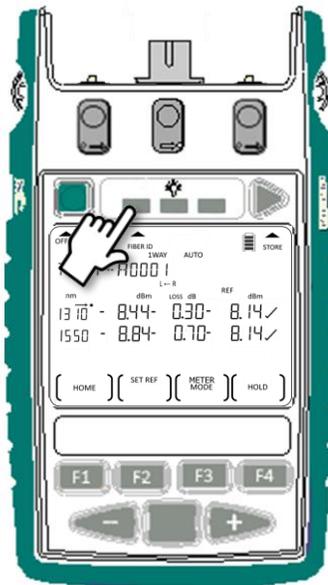
Note:
During the next data storing operation, this will be saved along with data into internal memory. The last 4 fiber indexing digits of the tag will increment after each memory store operation.

Instrument Operation

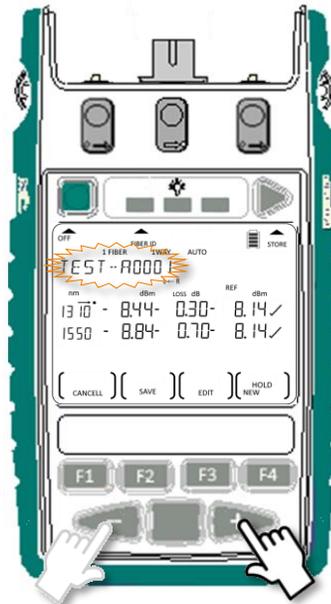
➔ Text ID Tag operation (continue)

③ To modify a Text ID Tag:

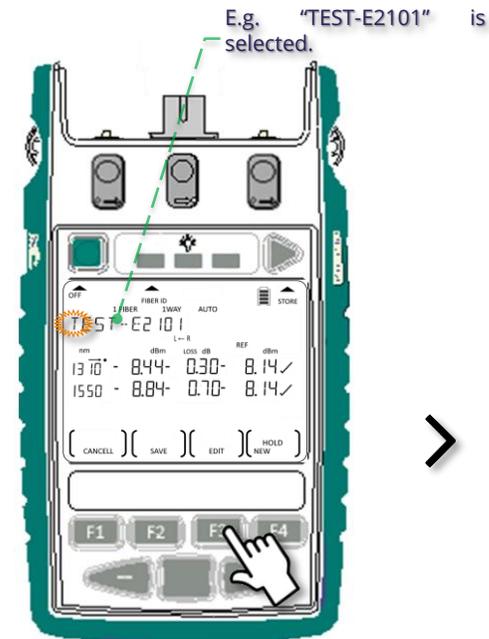
❶ In Meter or Autotest mode, press button above "FIBERID".



❷ Select the Text ID Tag for modification, press '+' or '-'.



❸ Enter edit mode, press F3.



❹ Move to the character/s to modify, press Toggle Centre.



➔ Continue next page

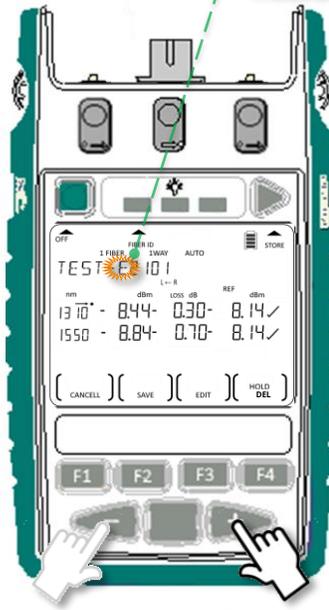
Instrument Operation

➔ Text ID Tag operation (continue)

③ To modify a Text ID Tag (continue):

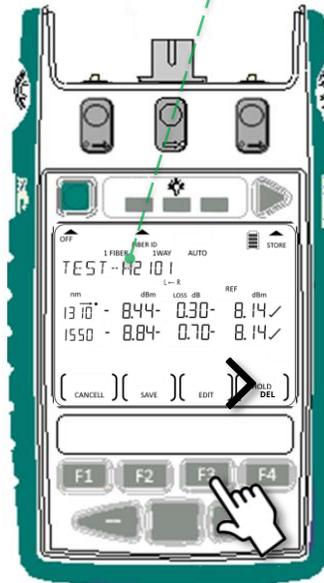
⑤ Modify selected character, press '+' or '-'

E.g. Character "E" is for selected modification.



⑥ Reset the Fiber Indexing digits to "0001", press F3.

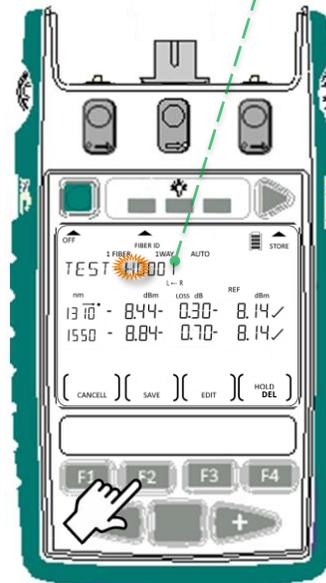
E.g. The selected "E" has been changed to "H".



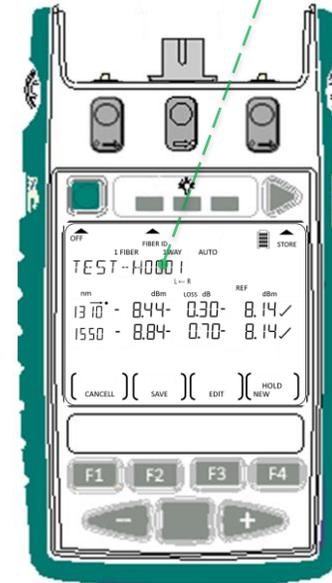
⑦ Save modification, press F2.

Press F1 will quit without saving.

The last 4 digits are reset to "0001".



E.g. Text ID Tag has been modified to "TEST-H0001".



Instrument Operation

➔ Text ID Tag operation (continue)

④ To delete a stored Text ID

Tag:

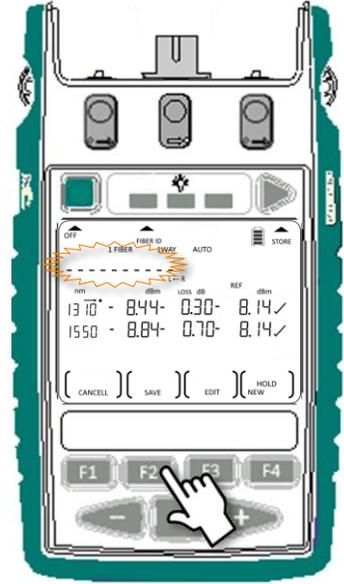
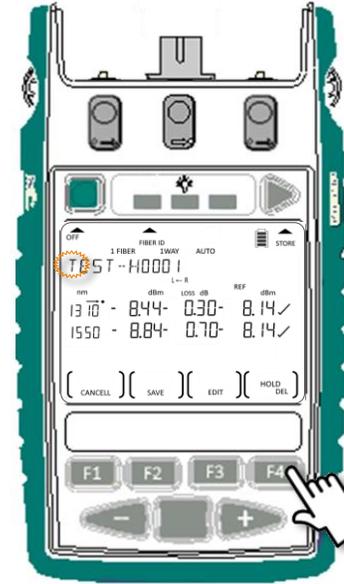
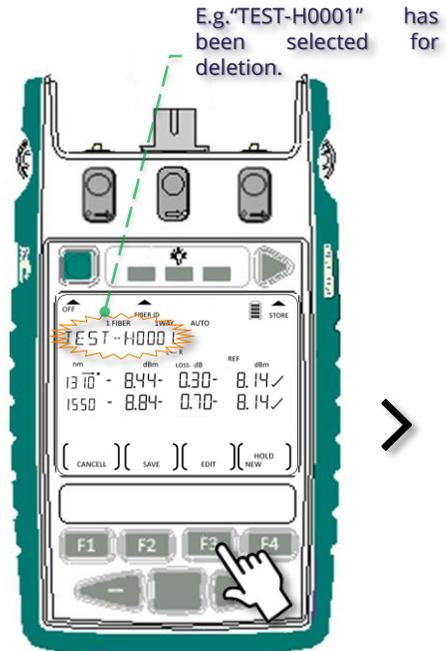
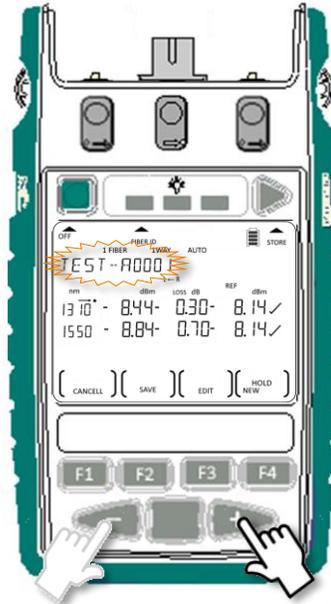
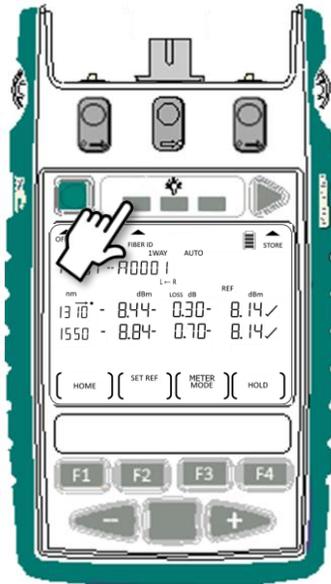
① In Meter or Autotest mode, press button above "FIBERID".

② Select a stored Text ID Tag to delete, press '+' or '-'.

③ Enter edit mode, press F3

④ Delete the selected Text ID Tag, press F4

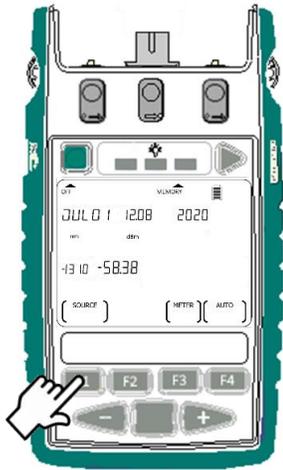
⑤ Confirm deletion, press F2.



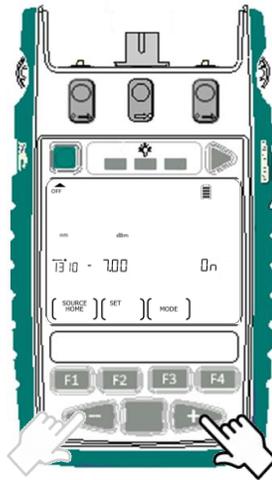
Instrument Operation

➔ Visible laser operation

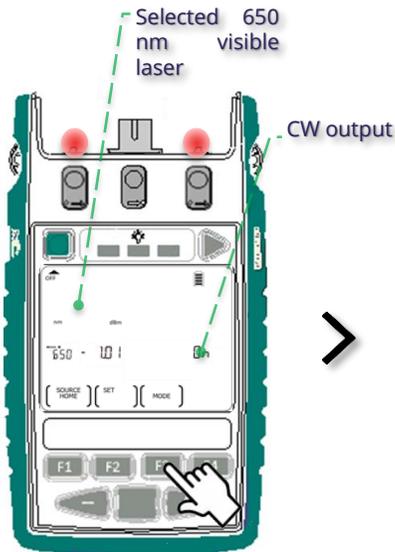
① **Enter Source mode:**
At Home display, press F1.



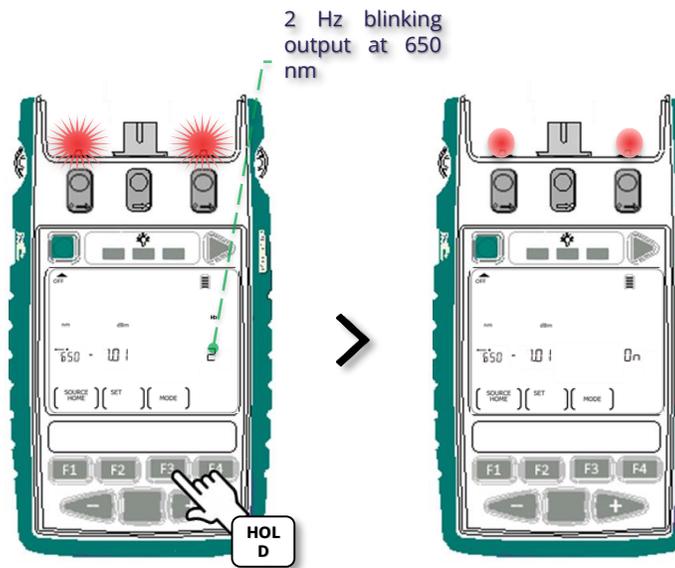
② **Select 650 nm:**
Press '+' or '-'.>



③ **Select blinking output mode:**
Press F3 to select "2 Hz" tone.>



④ **Return to CW output mode:** hold down F3 for 3 seconds.>



⑤ **Turn off Visible laser & exit Source mode:** Press Toggle Centre then press F1.>

Instrument Settings

→ Date & time

① Enter date & time setting mode:

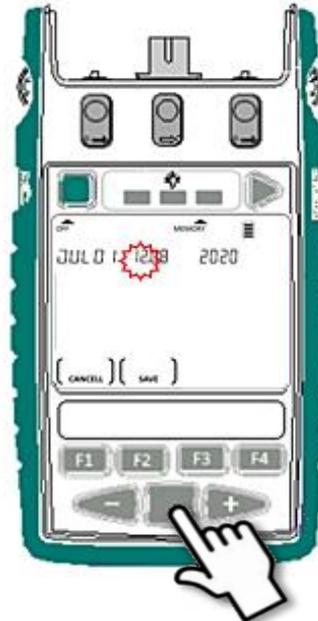
When instrument is *off*, hold Toggle Centre then press green button.



② Select item to change:

Press Toggle Centre to select item. Selected item will flash.

Items toggle in the



③ Change value of selected item:

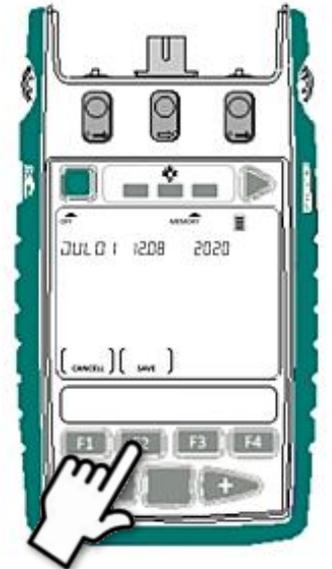
Press - or + key.



④ Save settings:

Press F2.

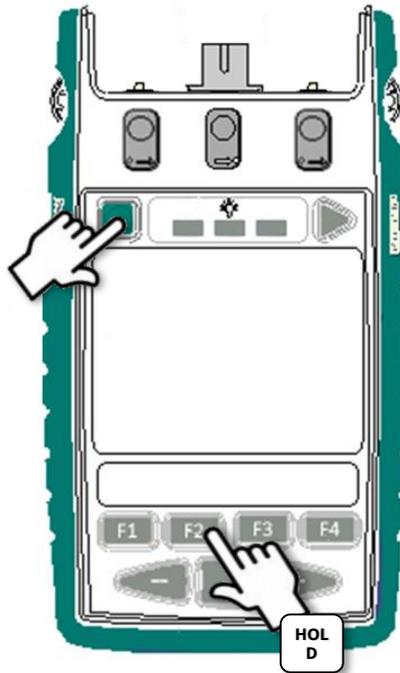
Press F1 [CANCEL] will return to Main menu without saving the new settings.



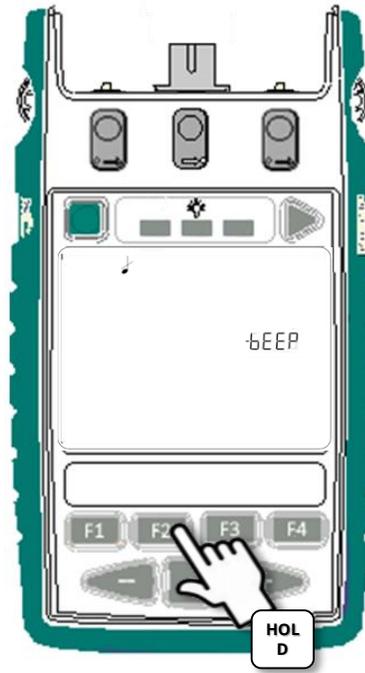
Instrument Settings

➔ To deactivate beeping

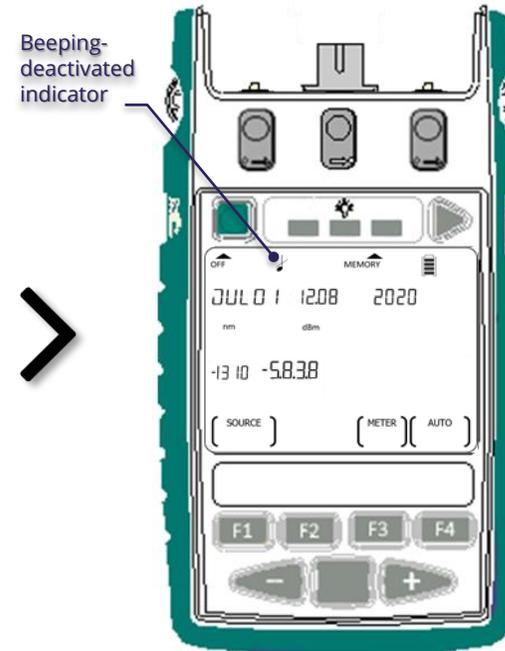
① When instrument is off, hold down F2 then press green button.



② Continue to hold down F2.



③ Release F2.

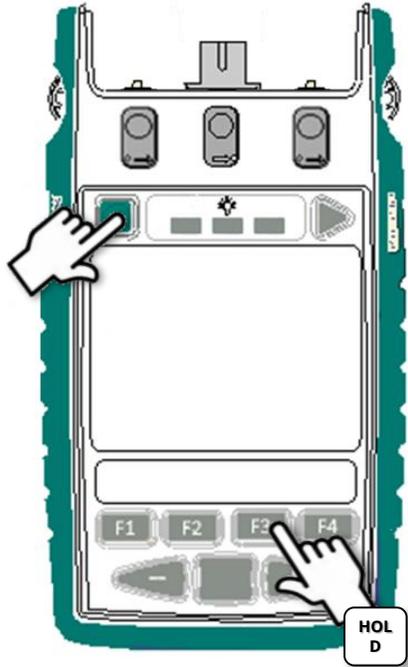


To reactivate beeping:
Switch instrument off and back on.

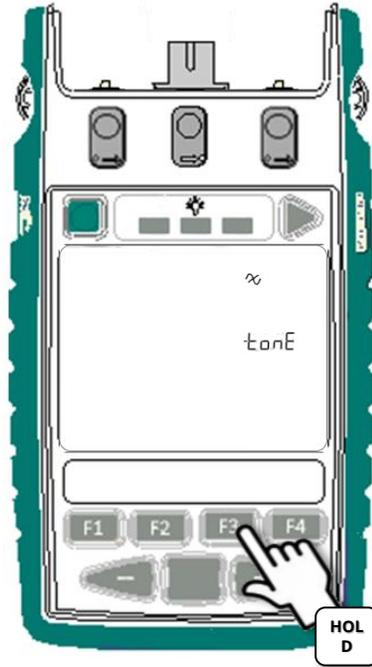
Instrument Settings

➔ To activate Slow Mode at instrument switch-on

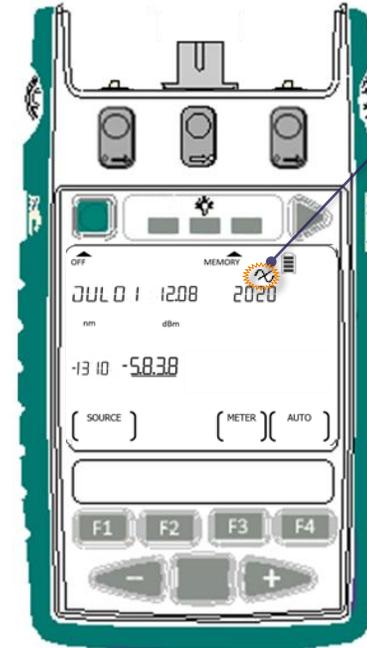
① When instrument is off, hold down F3 then press green button.



② Continue to hold down F3.



③ Release F3.



Slow Mode-activated indicator (flashing)

To deactivate Slow Mode:
Switch instrument off and back on.

Instrument Settings

➔ Pass / fail thresholds setting

Pass / fail thresholds (for loss, optional cable length, optional ORL) can be set directly on instrument or downloaded from KITS software.

Note: pass/fail check only works for 1-way or 2-way Autotest.

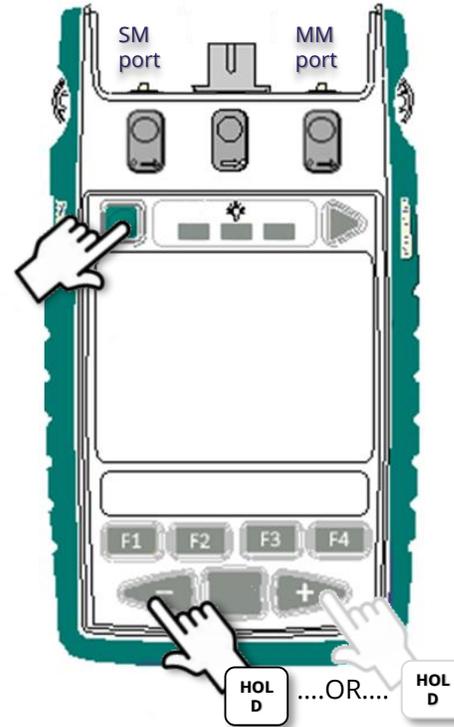
To download the thresholds from KITS, refer to KITS software manual.

To setup the thresholds directly on instrument, refer to the instructions on this and the following pages
cable length

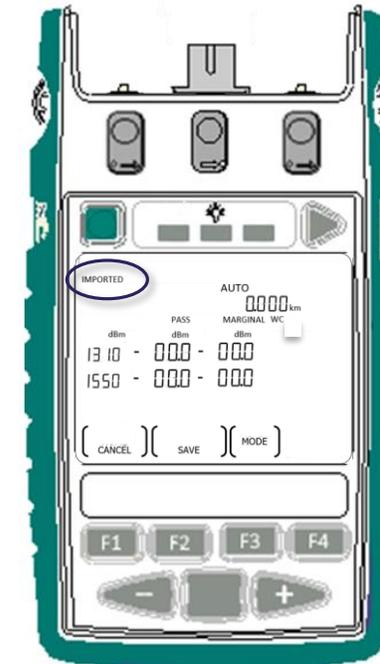
① Enter pass/fail setting mode:

When instrument is off,
[For SM @ left 2-way port]: Hold down "-" and then press green button.

[For MM @ right 2-way port]: Hold down "+" and then press green button



"IMPORTED" will show if a threshold setting has been imported from KITS and, change to "SETUP" if any changes are made locally.



➔ Continue next page

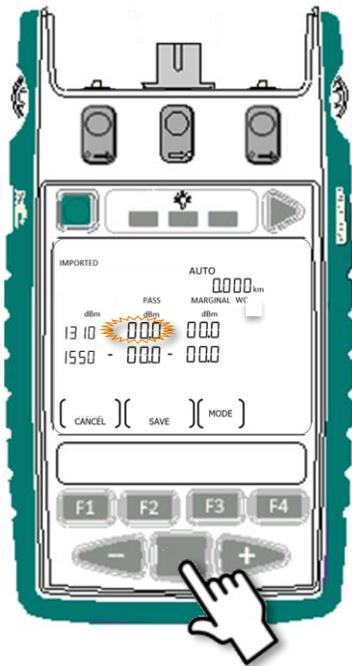
Instrument Settings

➔ Pass / fail thresholds setting (continue)

For loss & optional cable-length:

② Select item:

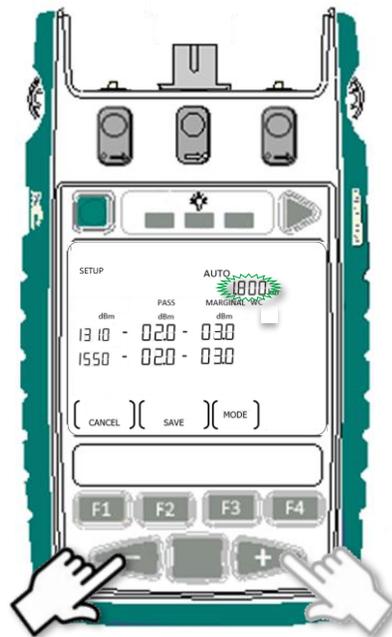
Press Toggle Centre to select item (among PASS, MARGINAL, length). Selected item will flash.



③ Edit value of selected item:

Press - or + to change values of selected item.

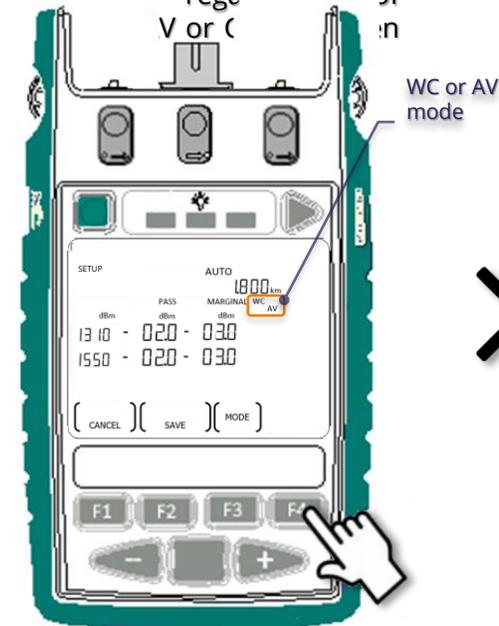
Note: if value of selected item is set at 0, pass / fail check for that item is disabled



④ Select pass / fail method:

Press F4 repeatedly to select between AV (Average method) or WC (Worst Case method).

Note: Worst Case method always apply for 1-way rega of V or C



Continue next page.....

- to set ORL thresholds (if this option is available)
- to save settings

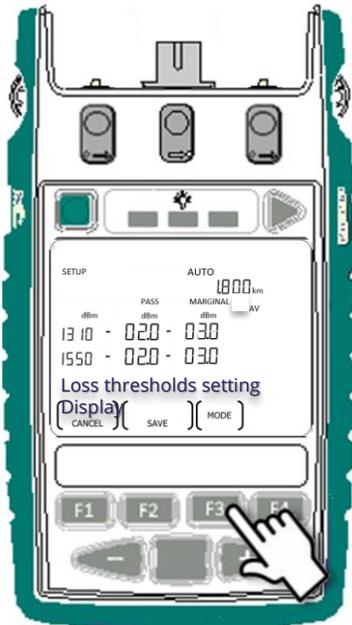
Instrument Settings

➔ Pass / fail thresholds setting (continue)

For optional ORL:

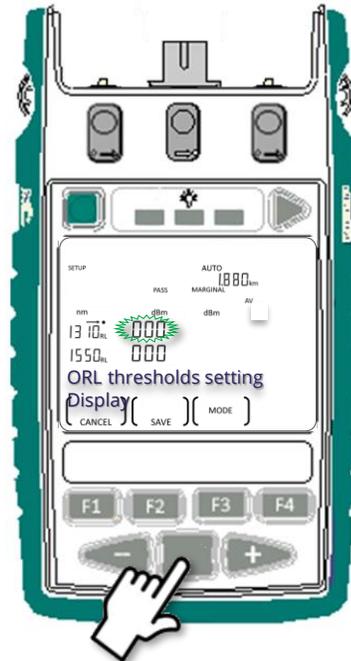
⑤ Enter ORL thresholds setting display :

Press F3



⑥ Select item:

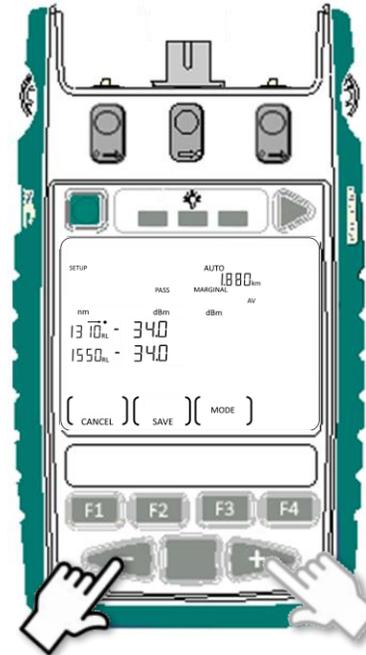
Press Toggle Centre to highlight value of item to be edited.



⑦ Edit value of selected item:

Press - or + to change values of selected item.

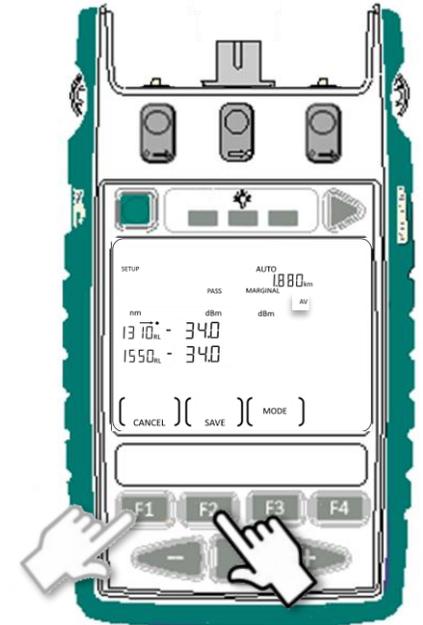
Note: if value of selected item is set at 0, pass / fail check for ORL for that item is disabled.



⑧ Save settings:

Press F2 (screen will return to Home Display).

Or press F1 will exit to Home Display without saving the new settings.

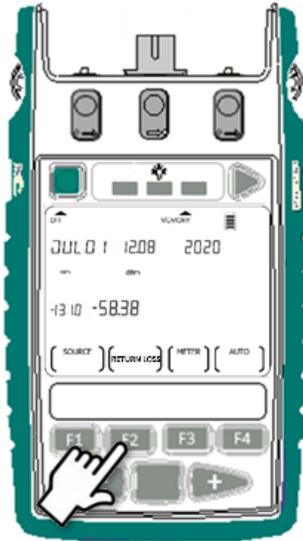


Instrument Settings

➔ ORL UCAL (User CALibration) setting

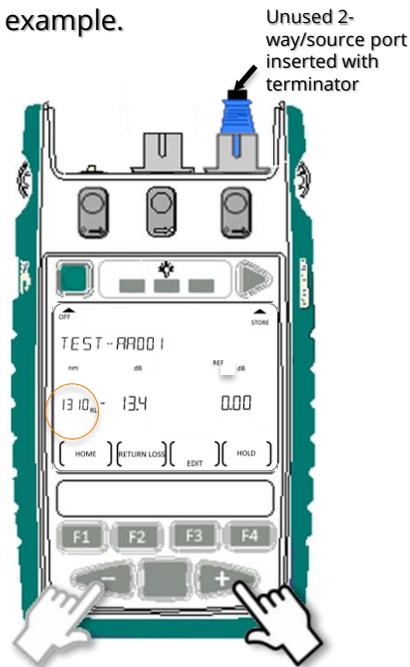
This sets up the instrument with an optical reference condition to compensate for optical loss in a test jig.

- ① **Enter ORL measurement mode:**
At Home Display, press F2.



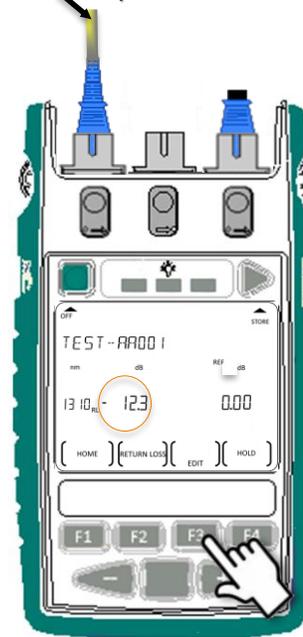
- ② **Select wavelength for setting:**
Press - or +

1310 nm has been selected in this example.



- ③ **Connect test jig (or launch cord etc.) to the 2-way/source port.**

Read & note ORL reading on display, -12.3 dB in this example.



- ④ **Enter UCAL setting mode:**
Press F3.

➔ Continue next page

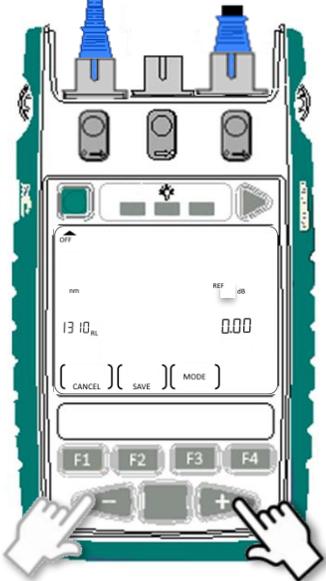
Instrument Settings

➔ ORL UCAL (User CALibration) setting.....continue

⑤ Enter/edit value of UCAL offset:

Press - or + to enter the required offset (possible range:-9.99~9.99) on instrument.

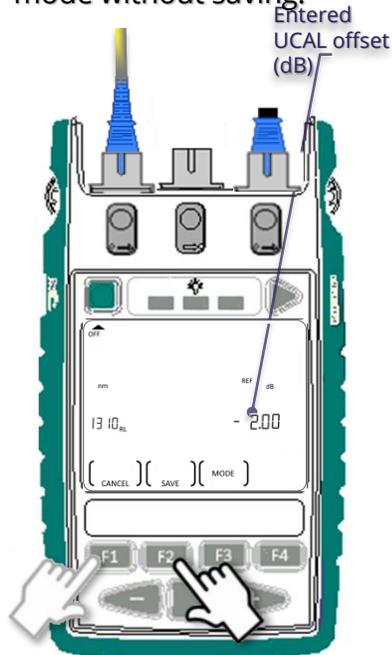
In this example, UCAL offset of -2 dB is required, as ORL of test jig is measured at -12.3 dB when compared to the expected -14.3 dB of a known good reference SMF test cord.



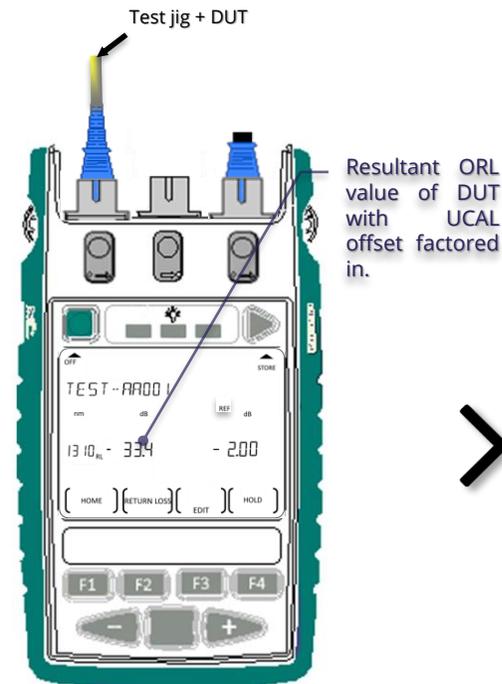
⑥ Save settings:

Press F2 to save and return to ORL measurement mode.

Or press F1 to return to ORL measurement mode without saving.



⑦ Connect DUT to the test jig (or launch cord etc.).



Note:

- UCAL offset for different wavelengths need to be set separately.
- The saved UCAL offsets are used for ORL measurements during 2-way Autotest or manual ORL measurement mode.
- The UCAL offsets are only effective on measurements made by the instrument on which these offsets are saved.

⑧ To exit ORL measurement mode:

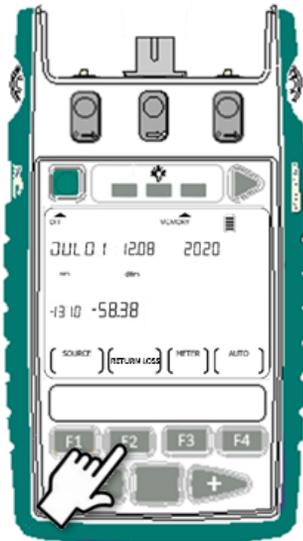
Press F1 to return to Home Display.

Instrument Settings

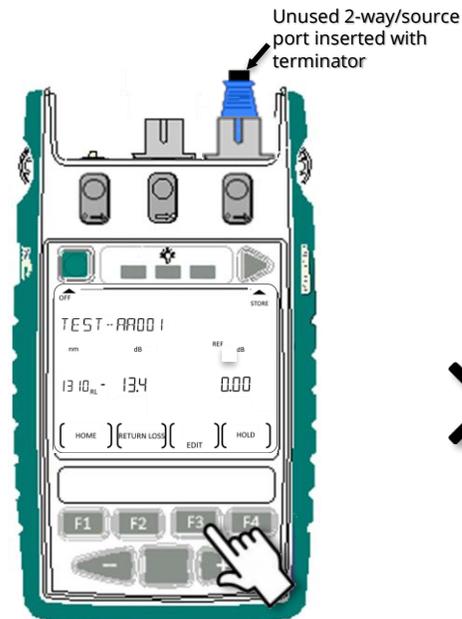
➔ ORL Zero Function

- *This compensates for stray (residual) reflections to allow testing of weak reflection levels. Using this feature, the instrument can read accurately up to 10 dB below the stray reflection level. However, this feature causes increased noise, so when using this feature, ORL test resolution is decreased.*
- *This setting is default at -60 dBm (max)*

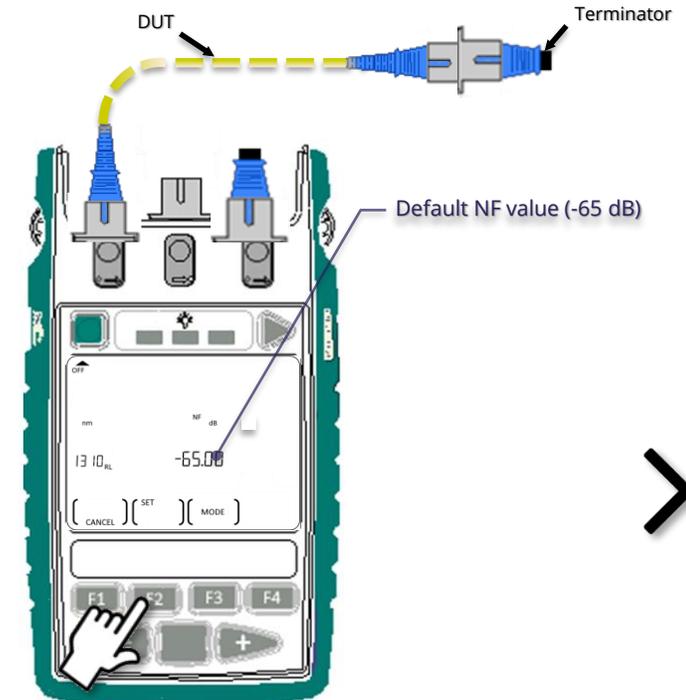
① **Enter ORL measurement mode:**
At Home Display, press F2.



② **Enter Zero Function setting mode:**
Press F3 twice.



③ **Determine Noise Floor (NF) of DUT:**
Connect DUT to the 2-way/source port, connect far end of DUT with an appropriate Terminator.



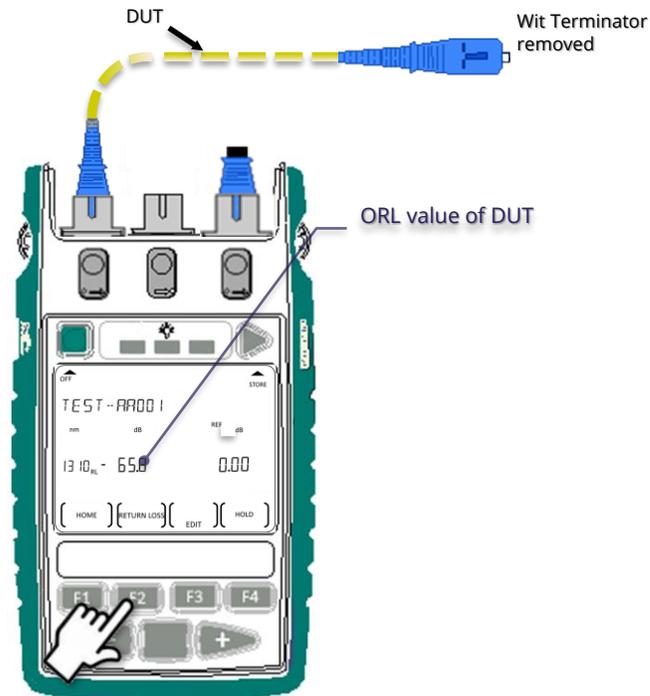
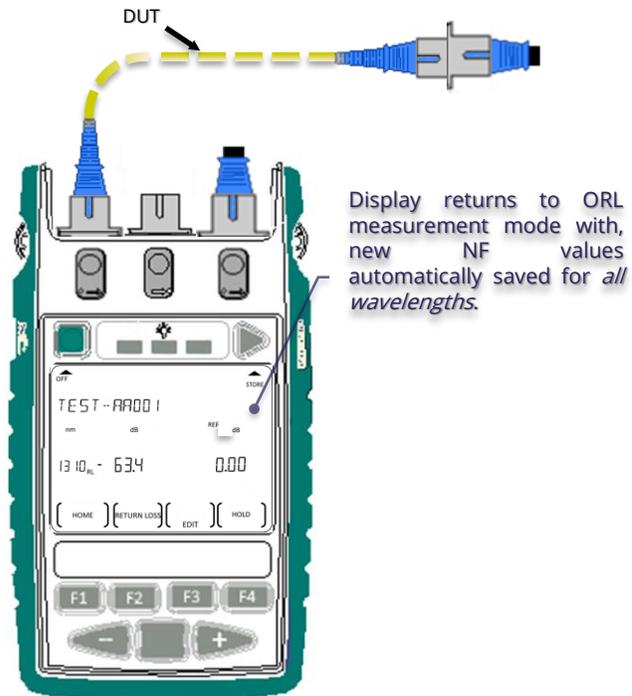
④ **Set NF of the instrument:**
Press and hold F2 until it stops beeping.

➔ Continue next page

Instrument Settings

➔ ORL Zero Function (continue)

⑤ **Measure actual ORL of DUT:**
Removed Terminator from DUT and read DUT's ORL from display.



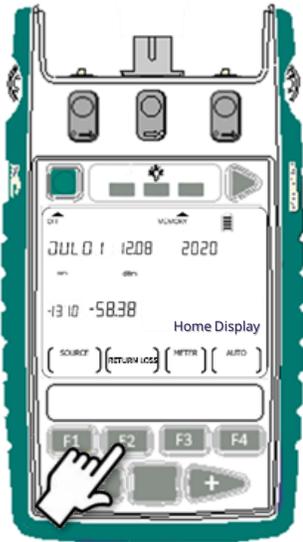
⑥ **To exit ORL measurement mode:**
Press F1 to return to Home Display.

Instrument Settings

➔ Reset ORL UCAL & NF (for Zero Function) to factory defaults

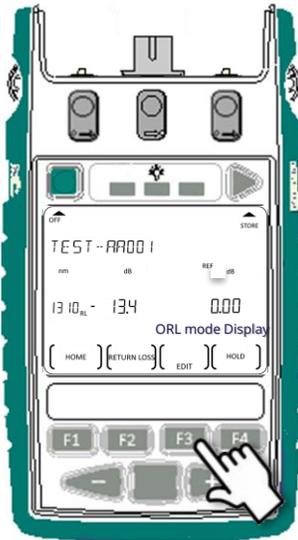
① Enter ORL measurement mode:

At Home Display, press F2.



② Enter Zero Function setting mode:

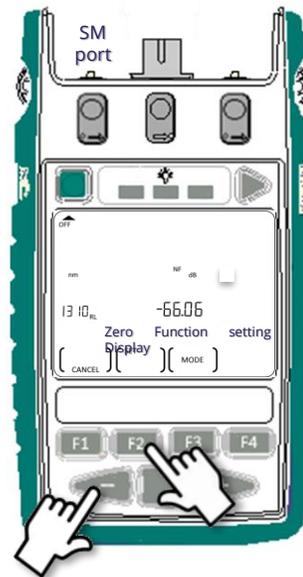
Press F3 twice.



③ Reset UCAL & NF to default values (NF=65.00 dB, UCAL offset=0.00 dB):

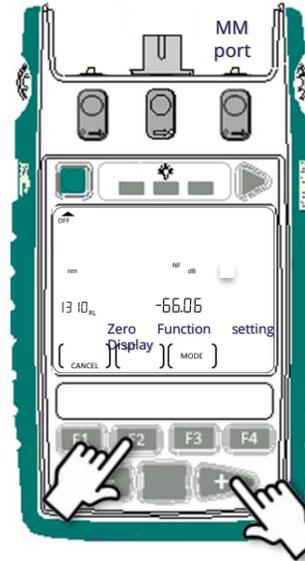
For instrument model with two 2-way/source ports:

SM port- Hold down F2 followed by "-" until it stops beeping.



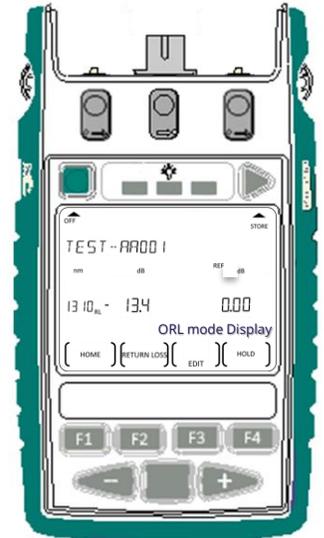
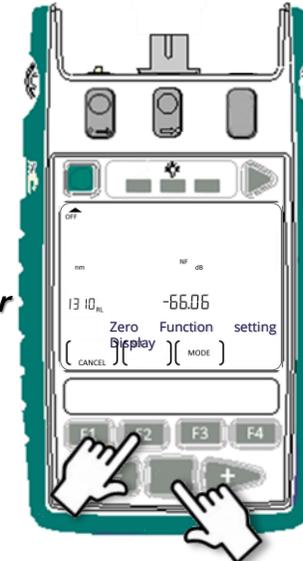
For instrument model with two 2-way/source ports:

MM port- Hold down F2 followed by "+" until it stops beeping.



For instrument model with a single 2-way/source port:

Hold down F2 followed by Toggle Centre until it stops beeping.



10 Instrument Care

- Keep the instrument in a carry case during storage and transport
- Use only high-quality batteries.
- For prolonged storage remove batteries.
- The instrument is resistant to normal dust and moisture; however it is not waterproof.
- If moisture gets into the instrument, remove batteries & dry it out carefully before using it again.
- Where possible, keep instrument away from strong sunlight.
- Clean the instrument case using Isopropyl-alcohol (IPA) or other non solvent cleaning agents.
- DO NOT use Acetone or other active solvents.



Simac Electronics b.v.

Eindstraat 53, 5151 AE Drunen
Postbus 89, 5150 AB Drunen

I: www.simacelectronics.com
E: info@simacelectronics.nl
T: +31 (0)416 387 700
F: +31 (0)416 387 707