



WIRE INTERMITTENT FAULT TESTER OVERVIEW



SLIDES ONLY
NO SCRIPT PROVIDED

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Matthew Jackson, V-22 Fleet Support Team, JSWAG 2025



OUTLINE

- PURPOSE
- REQUIREMENT, MAINTENANCE LEVEL, DOCUMENTATION
- SYSTEM DESCRIPTION AND OVERVIEW
- MODES OF OPERATION
- PECULIAR SUPPORT EQUIPMENT
- TRAINING
- QUESTIONS





REQUIREMENT

- Operational Level: Organizational
- SM&R Code: PEOOH
- Calibration: **NCR**
- CV needs a total qty of 22 (2 per non-mobility, 1 per mobility, 2 for training KAFB)
- CMV needs a total qty of 14 (2 per squadron)
- MV needs a total of 66 (3 per squadron)
- FMS needs a total of 6



PURPOSE

- The V-22 Wire Intermittent Fault Tester (WIFT) assists in the repair of the aircraft's metallic wiring by providing:
 - Verification testing
 - Fault detection
 - Isolation
- MegOhmmeter Replacement
- 4000 VDC Tester with Fault Detection and Fault Location.
 - Wire to Wire
 - Wire to Ground/Shield
 - Chaffed Insulation
 - Cracked Insulation
- Not a Multimeter replacement





MAINTENANCE LEVEL

- Organizational level (O-level) maintenance is limited to the replacement of the battery packs and scheduled maintenance:
 - Pre-Op
 - Corrosion
 - Daily Touch Screen cleaning
 - Monthly Device Cleaning/Self-Test/SSTDR Alignment
- Intermediate level (I-level) maintenance is limited to the on-line removal & replacement/adjustment of components to the Line Replaceable Unit (LRU). Intermediate level maintenance will utilize the Self Test to isolate malfunctions.
- Depot level maintenance is performed by Astronics Test Systems (ATS) in accordance with established guidelines. These repairs include the repair of the Tablet PC, PCBA, other internal components and/or repair of defective software.



Documentation

- AE-006AC-OMP-000
 - ORGANIZATIONAL MAINTENANCE OPERATION AND MAINTENANCE INSTRUCTIONS WITH ILLUSTRATED PARTS BREAKDOWN V-22 WIRE INTERMITTENT FAULT TESTER (WIFT)
 - WIFT PART NUMBER 4165AS0100-1
 - NSN 6625-01-668-5125
 - Housed on NATEC



SYSTEM DESCRIPTION AND OVERVIEW

- The WIFT is:
 - Portable
 - Self-contained
- Evaluates the condition of wiring/cabling
- Safety/Arc-Fault Detection
- The WIFT is capable of providing quantitative measurements to detect:
 - Opens
 - Shorts
 - **Intermittent** conditions such as wire insulator
 - Chafing
 - Cracking
- The WIFT provides:
 - Spread Spectrum Time Domain Reflectometer (SSTDR)
 - Low Energy High Voltage (LEHV) Time Domain Reflectometer (TDR)



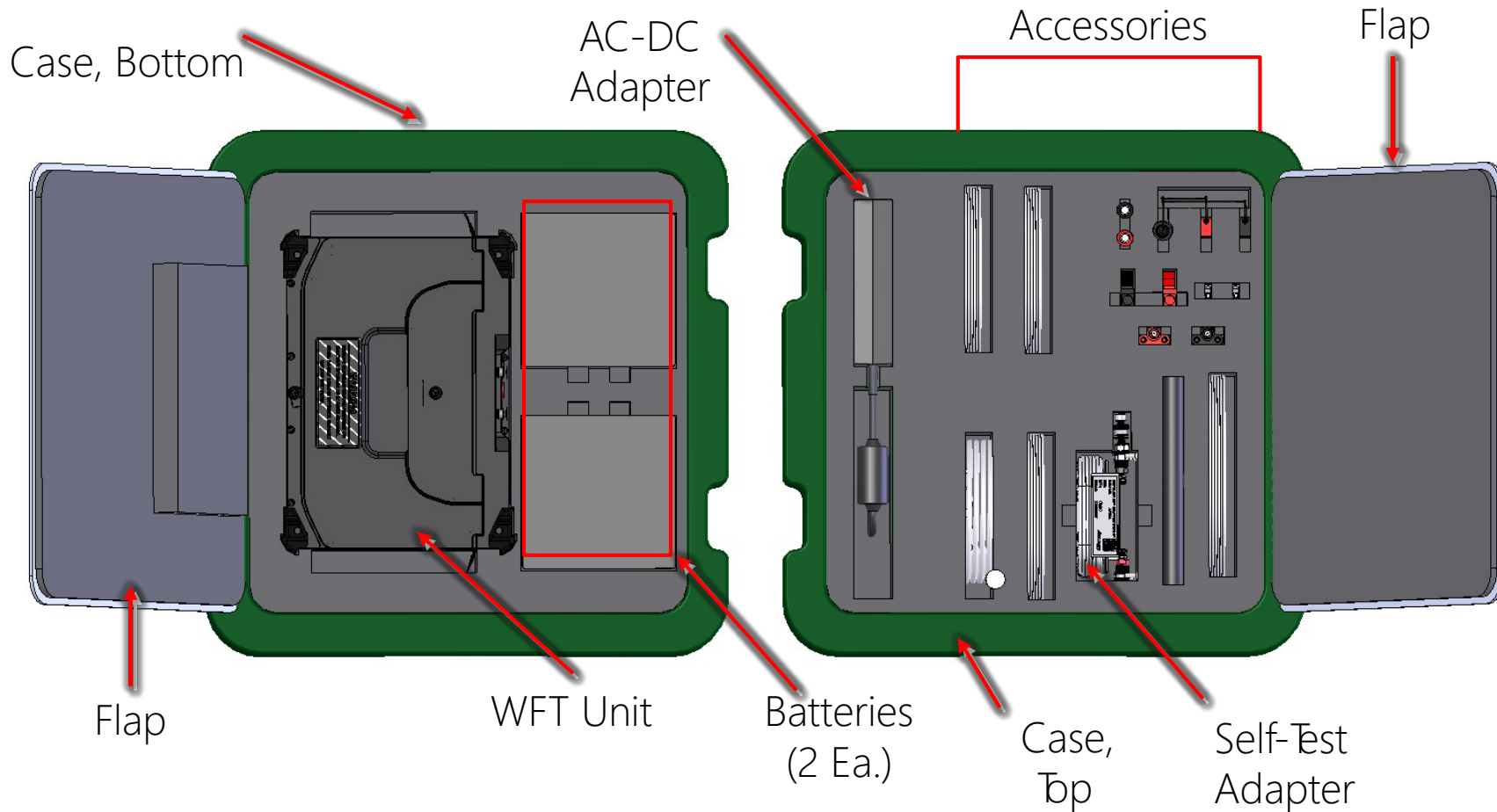
SYSTEM DESCRIPTION AND OVERVIEW

- SSTDR enables live testing of wiring:
 - Doesn't affect the system's capacity to operate correctly
 - Listening real time to determine:
 - Hard opens in the UTT (Static)
 - UTT opens and shorts (Intermittent)
 - Technology does not induce the arc-fault
- LEHV TDR:
 - Intermittent fault is induced using a short, high voltage, low energy pulse
 - Requires that all loads on the system be disconnected



SYSTEME DESCRIPTION AND OVERVIEW

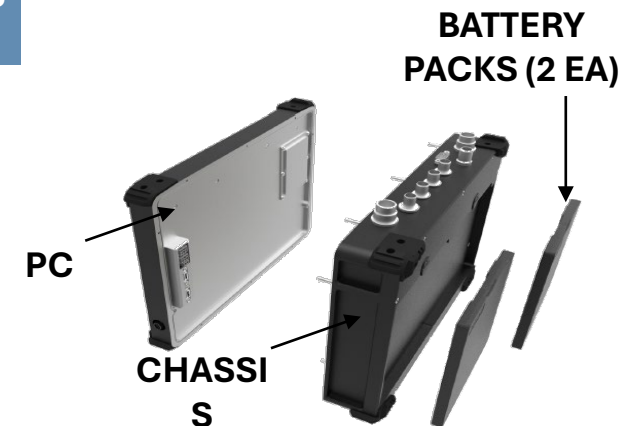
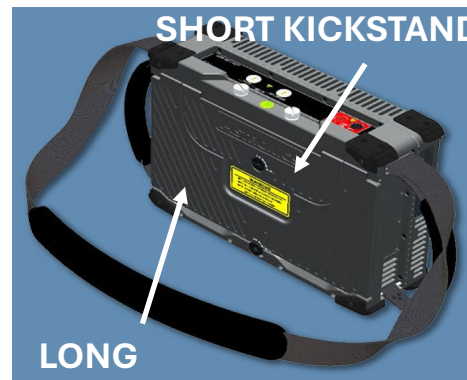
- Transit Case





SYSTEM DESCRIPTION AND OVERVIEW

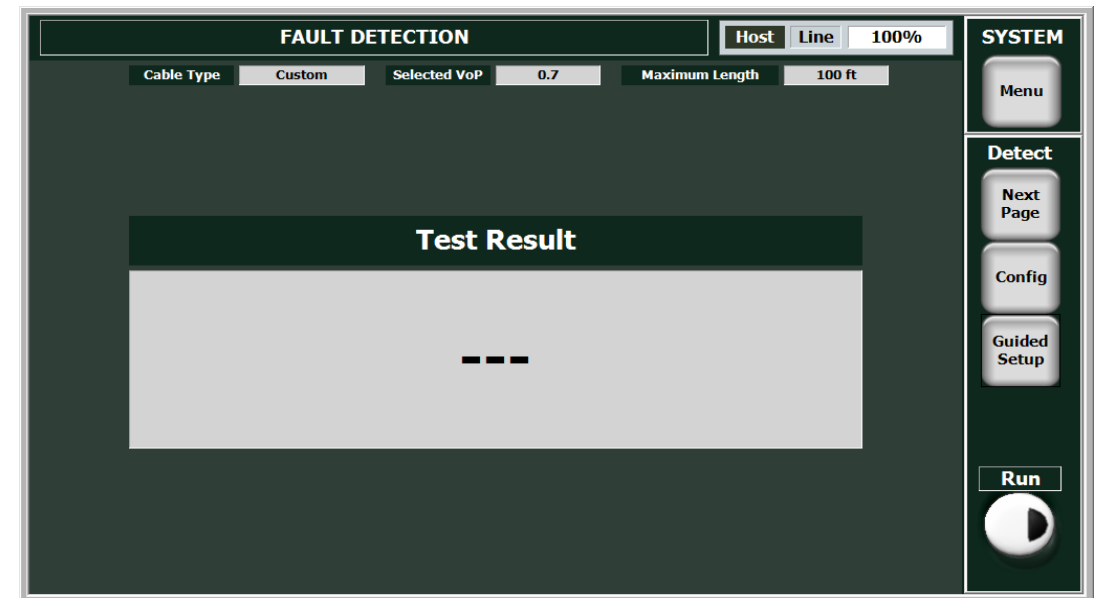
- The WIFT has:
 - Touch screen display
 - 2 Carrying straps
 - Shoulder strap
- The WIFT has:
 - Short kickstand
 - Long kickstand
- WIFT chassis and tablet PC





MODES OF OPERATION

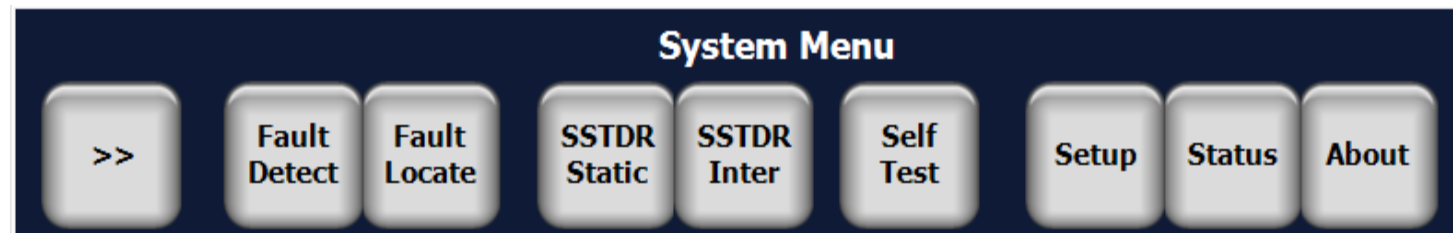
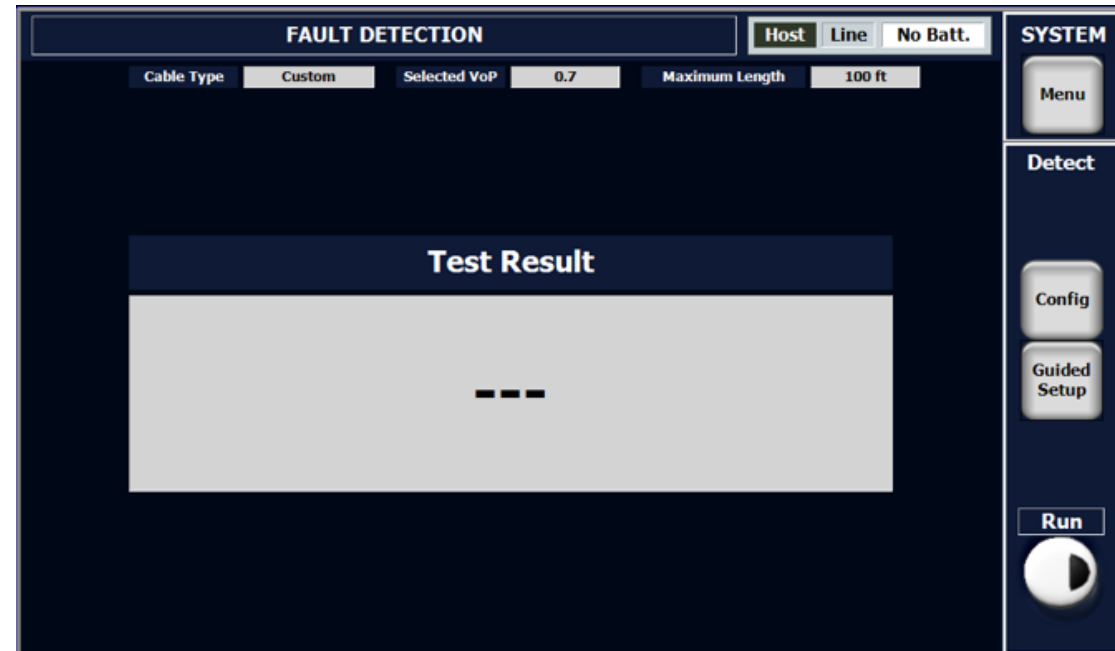
- General Operation
 - WIFT Virtual Instrumentation Display
 - Controlled via a touch screen
 - Designed for ease of navigation
 - Uses windows standard tablet navigation techniques
 - The initial system screen is displayed (LEHV “Fault Detection” is the factory default setting)





MODES OF OPERATION

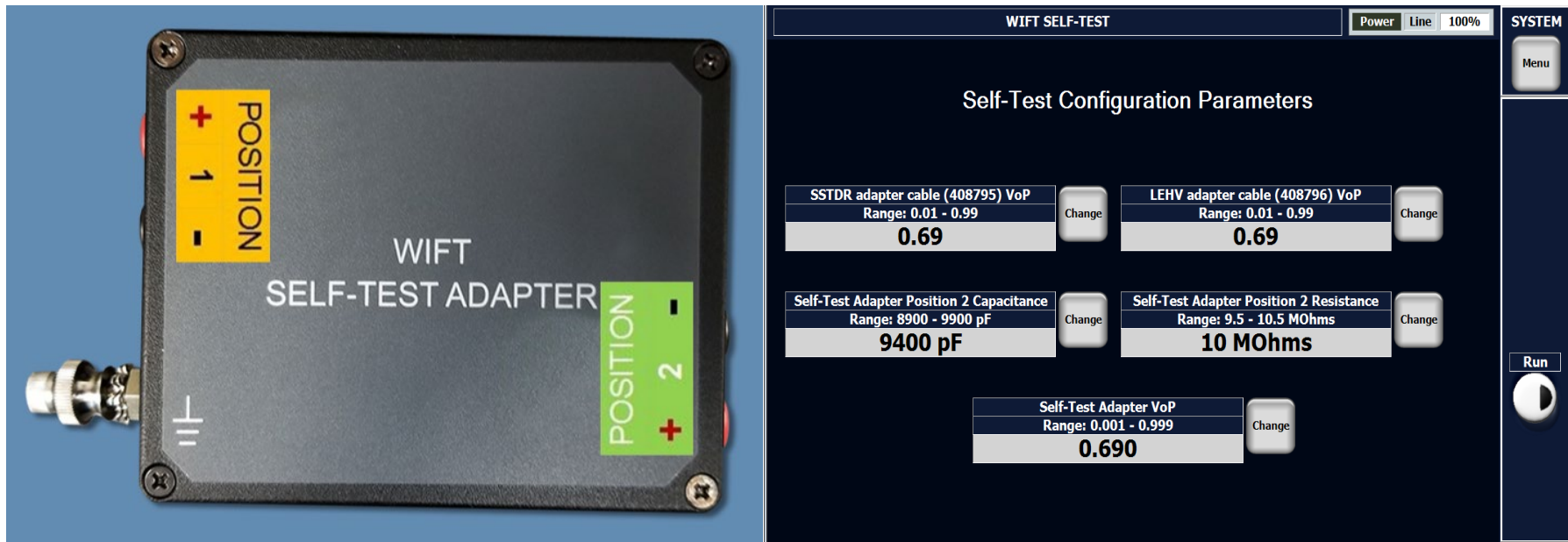
- 3 Modes of Operations
 - Self-Test Mode
 - LEHV TDR MODE
 - Fault Detect
 - Fault Locate
 - SSTDR Mode
 - SSTDR Static
 - SSTDR Intermittent





MODES OF OPERATION

- Self-Test Mode
 - Performed with Self-Test Adapter
 - NCR
 - Self-Test completed:
 - Monthly as part of Scheduled Maintenance



The image displays the WIFT Self-Test Adapter hardware and its corresponding software interface. The hardware is a black rectangular device with a silver connector on the left. It features two labeled positions: Position 1 (yellow label, +, -, 1) and Position 2 (green label, -, +, 2). The software interface, titled "WIFT SELF-TEST", shows the following configuration parameters:

Parameter	Range	Value	Action
SSTDOR adapter cable (408795) VoP	0.01 - 0.99	0.69	Change
LEHV adapter cable (408796) VoP	0.01 - 0.99	0.69	Change
Self-Test Adapter Position 2 Capacitance	8900 - 9900 pF	9400 pF	Change
Self-Test Adapter Position 2 Resistance	9.5 - 10.5 MOhms	10 MOhms	Change
Self-Test Adapter VoP	0.001 - 0.999	0.690	Change

The interface also includes a "Power" indicator (Line 100%), a "SYSTEM" menu, and a "Run" button.



MODES OF OPERATION

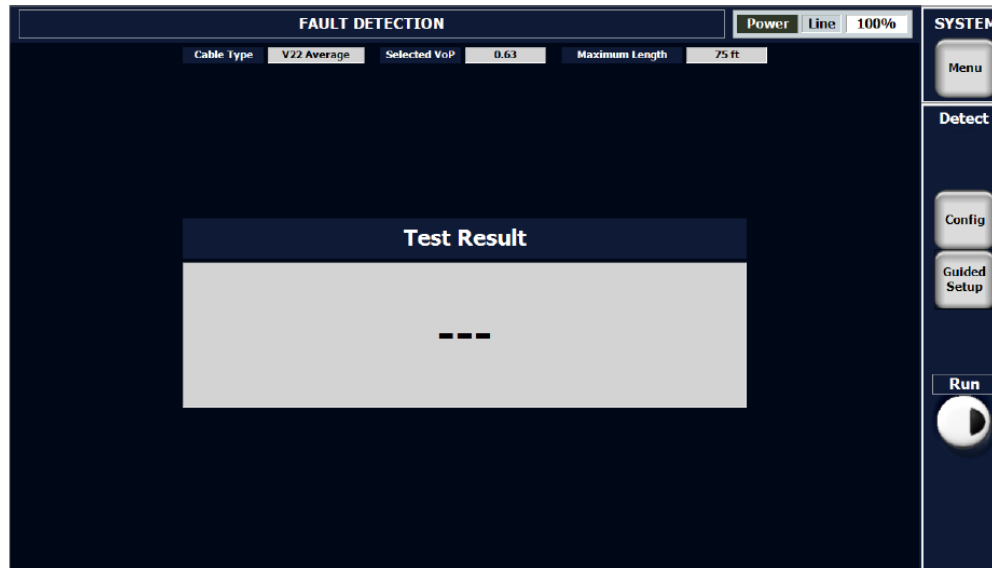
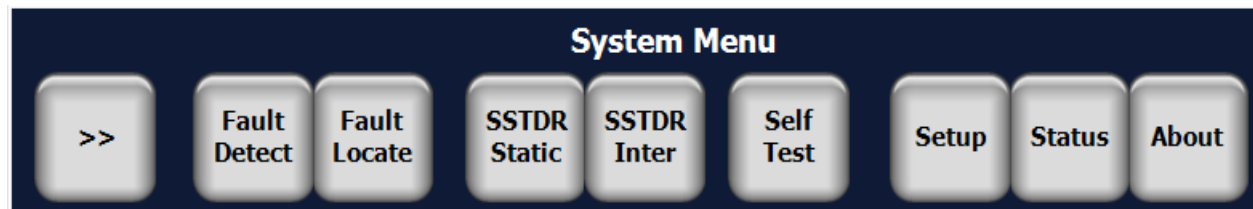
- LEHV TDR Modes

- Fault Detection

- Quick Testing
 - UUT Faults

- Fault Location

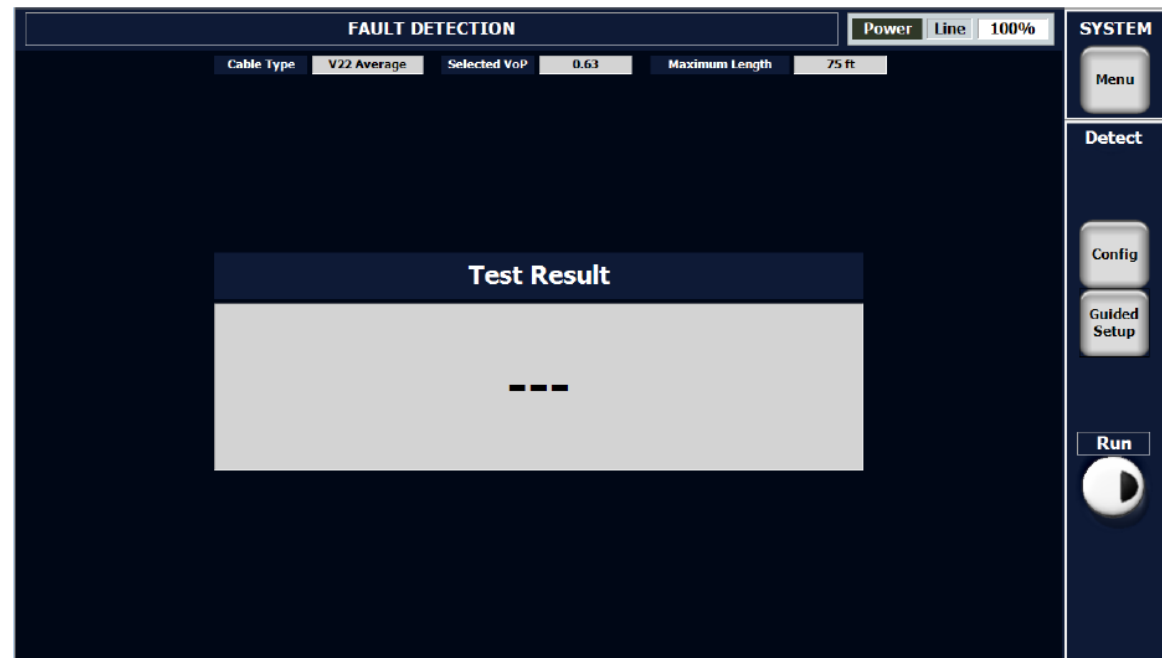
- Detailed numeric and graphic distance to fault measurements/diagnostics
 - More setup time





MODES OF OPERATION

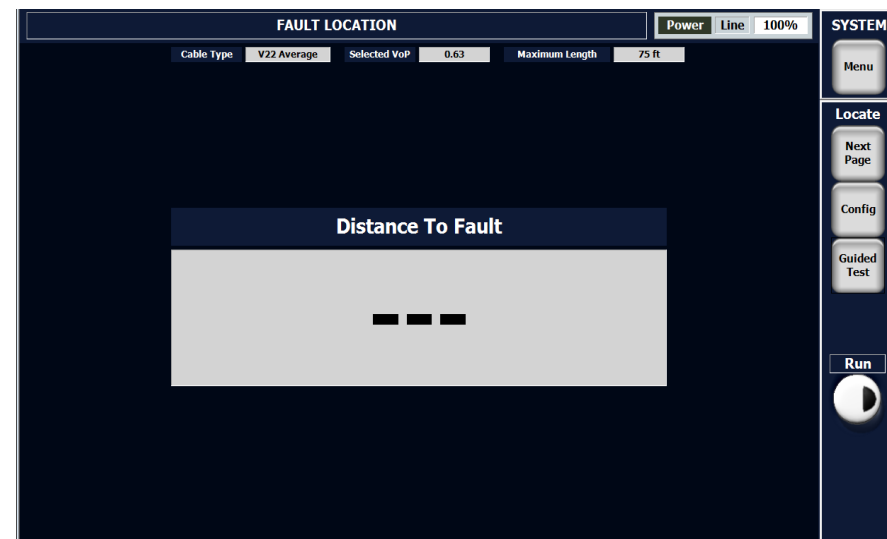
- LEHV TDR - Fault Detection
 - Operates similar to any other MegOhmmeter.
 - Used to HiPot wiring to detect any high resistive shorts or chafes in wiring.
 - Gives a either “NO FAULT” or “FAULT DETECTED”
 - Does not provide location
 - Guided Setup





MODES OF OPERATION

- LEHV TDR - Fault Locate
 - Uses a combination of HiPot and TDR to not only detect faults, but also provide location of fault.
 - Gives the distance to fault in feet.
 - Typically requires a little more setup time
 - VoP – averages predetermined





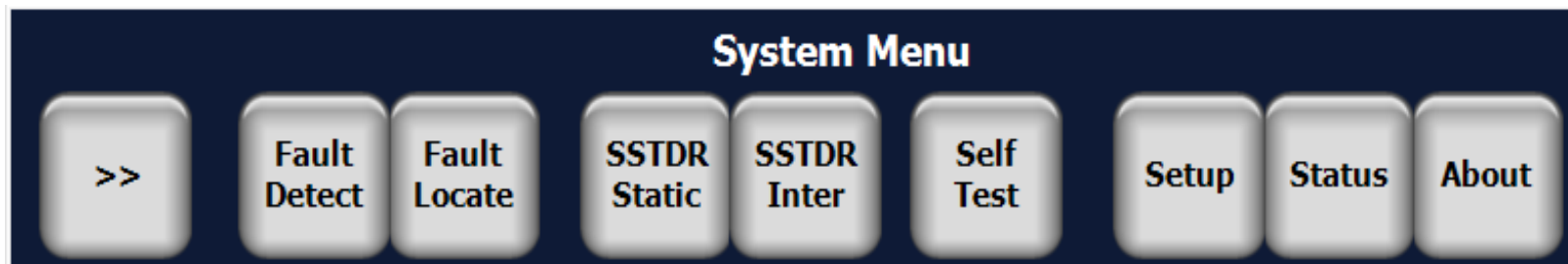
MODES OF OPERATION





MODES OF OPERATION

- WIFT provides two different SSTDR modes of operation:
 - SSTDR Static Option - provides a means of troubleshooting hard opens and shorts in the UUT
 - SSTDR Intermittent Option- detects UUT intermittent opens and shorts
- Faults isolated by disconnecting cables and probing suspect pins





PECULIAR SUPPORT EQUIPMENT

- Currently this item is only PSE.
 - Looking to garner some interest to make this CSE
 - Engineering has been completed.





QUESTIONS

QUESTIONS?

WIFT OVERVIEW



Matthew Jackson
Electrical Engineering
V22 Fleet Support Team



WIFT





WIFT



- MegOhmeter Replacement
- Used for both Fault Detection and Fault Location
- Uses a step function for voltage increases (Max voltage is 4000V)
- Provides a response of NO FAULT or FAULT DETECTED when using Detection mode
- Provides a distance to fault and waveform of signal when using the Fault Location mode



WIFT



FAULT DETECTION Host Line 100%

Cable Type Custom Selected VoP 0.7 Maximum Length 100 ft

Test Result

SYSTEM

Menu

Detect

Next Page

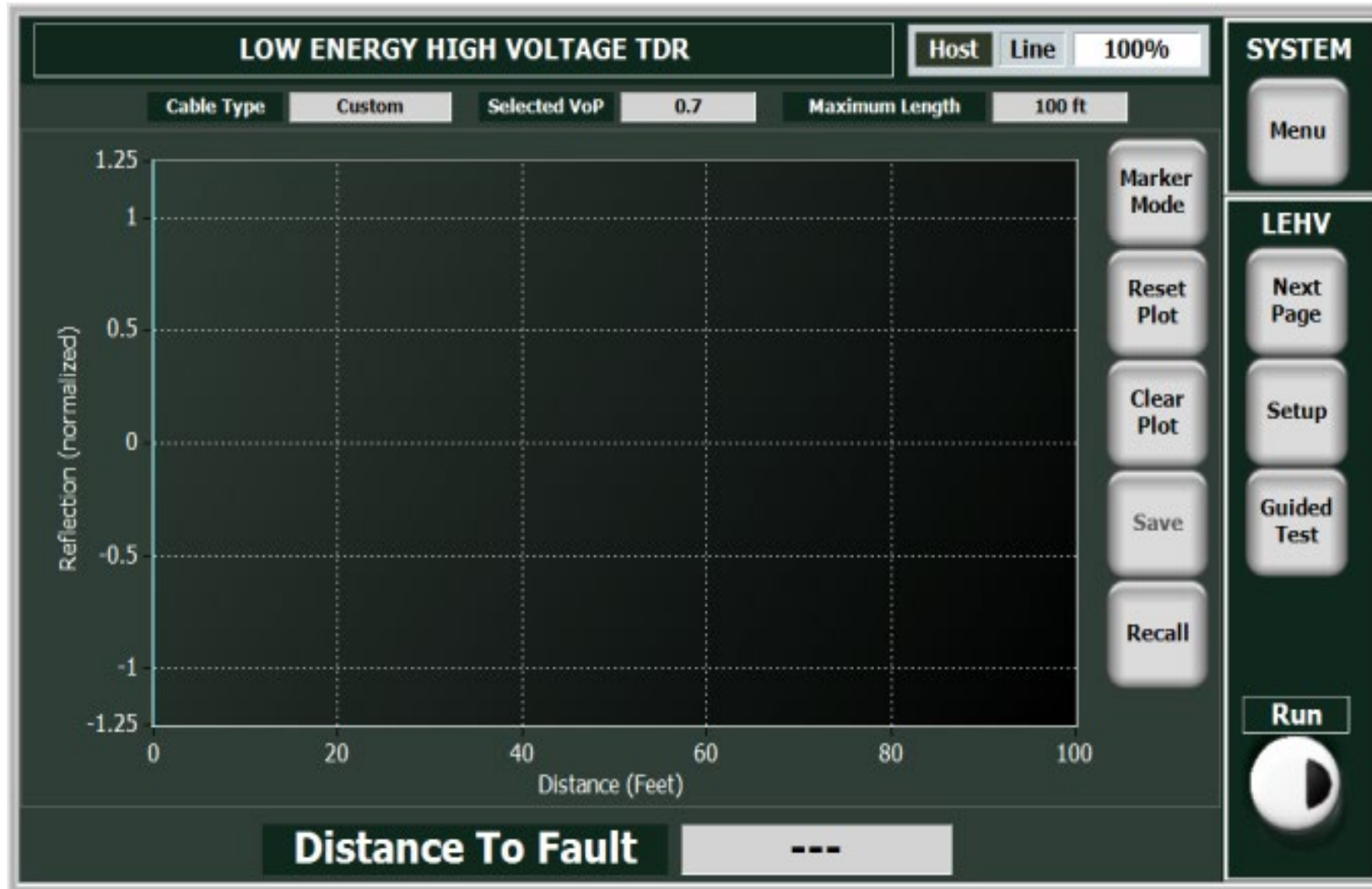
Config

Guided Setup

Run



WIFT





Test Aid

