# Sat-Com Automated Test Bench

SKU# SERV-TRAIN-FDL

## D-LEVEL- Factory Acceptance Testing

### OVERVIEW:

The Sat-Com Automated Test bench enables the end user technical department to perform automated Testing, verification, and FAT with a report on the performance of the device under test. The test bench also facilitates calibration and waterproof testing as the last step ensures the product returns to service in Full specification with respect to radio performance and environmental conditions.

This automated testing of multiband SDR equipment is critical to saving time without compromising on quality.

### PRE-REQUISITES:

Factory Acceptance Test training of operators/technical staff and managers to be able to perform the testing accurately.

Sat-Com Recommended Automated Test Bench and additional test equipment

See recommended list and equipment summary.

### AUDIENCE

Technical Repair/Maintenance staff.

### Test Bench OBJECTIVES:

- Modular Testing and repairs. (Depend on staff skills)
- Systems Checks and alignment.
- Equipment and System FAT
- Report Generation
- Water Proofing

### BENEFITS:

- End User is in control of own repairs
- Time saving.
- Cost saving (Depends on quantity of radios or Amplifiers etc. is procured in total.

### FACILITY (LAB) REQUIREMENTS:

In order to install and run the automated Test Bench and additional Radio Telecommunications repair benches, the following space and layout is recommended:

Sat-Com FAT Test Bench with

- PC-Labview
- TEST Stand.
- Hardware,
- Firmware,
- Software,
- Accessories,
- Tools
- Spare modules.

Additional Test Equipment:

- Communication Analyzer.
- Spectrum Analyzer
- Network Analyzer.
- RF Power Meter.

Additional Equipment:

- RF Loads.
- High-Quality Flexible RF Test Cables.
- Temperature-controlled Soldering Station.
- AC/DC Power Supply (Low Ripple)

Work Benches:

- 1 x Works desk/table for (Intermediate) Test Bench.
- 1 x Works desk/table for Final Test Bench.

LAB Environment:

- Stable AC Power Supply to lab.
- Air Conditioning and clean air environment
- Dust Free environment.
- ESD Floor grounded to building earth
- ESD mats on workbenches.
- A stable Wi-Fi for internet access of remote assistance from the factory.




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*Typical Test Bench Equipment, but not limited to these.

## SUMMARY OF AUTOMATED TEST BENCH

### Labview Test Stand

Labview and Test Stand is computer software used to interface with the test equipment and automatically control the radio and the test equipment for repetitive accuracy, correctness, and time-saving.

All test equipment used in the Test Bench is controlled by the proprietary developed software protocol which remotely triggers and configures, performs measurements, and then stores the result against the test where it is compared to a recommended window for a PASS or a FAIL.

An easy-to-read FAT report is generated from the test results and presented in a compact report for final acceptance and filing.

### Desk TEST PC with accessories

This PC is pre-configured with Labview, Test Stand radio programming application, and Firmware Update Application.

### Calibration Kit F503ME

The calibration kit comprises of highly accurate standard reference items to calibrate test equipment and cables

### Oscilloscope S1104

The oscilloscope is used to measure and calibrate the audio output when a modulated signal is injected into the radio at a specific level. This procedure prevents the radio from outputting a signal level greater than 1V Peak to Peak.

### RF Spectrum Analyzer R815

Controlled by Labview Test Stand and is required to measure and calibrate the output power of the radio in Low, Medium, and High settings on designated test frequencies at a rapid rate over the bandwidth.

### RF Signal Generator R815

Controlled by Labview Test Stand and is required to generate accurate levels of modulated signals to test the radio's receive capability on No, Low, Medium, High, and Very High pre-amplifier settings in all modes in designated test frequencies at a rapid rate over the bandwidth.

### Programmable PSU R811A

Required to supply accurate power to DUT and measure power consumption when TX power is calibrated during a wide band sweep.

### Test Equipment PC package accessories

Various are accessories required to connect and operate the automated Test bench.

### RF Attenuator 60dB 100W

Enables High power measurements while protecting the sensitive test equipment from high power levels generated by the DUT.

### 2 Port BOB-USB

Used to interface and control the radio from Labview Test Stand software.

### Soldering Station

Used for repairs when needed.

### Digital Volt Meter

Used to measure output voltage levels generated by the radio such as the radio charging voltage, 12DV out headset 5V, and 12V and SWR/POWER meter calibration voltage.

### Cable Kit section;

For all connections between the radio to a measuring instrument.

### Adaptor Kit

For all various connections between the radio and measuring instrument.

### RF Load 200W

Required for testing the high RF amplifier output power.

### Vacuum/Submerge Test Station

Testing and verifying the closing of opened equipment was done correctly and that the waterproofing is in specification to survive submersion of the DUT.

### Digital Multimeter D3058

In automated tests to measure output voltage levels generated by the radio.

### Jigs for boards Testing

Specialized testing on board level FAT to determine a board's functionality before the board is fitted in the radio.

### Reference Radio batt, charge, and accessories

A complete LAB reference radio (Leopard-1HV) with all accessories to compare and verify results obtained from DUT.