

Testing Report

1. Testing Objective

The goal is to verify the functionality of the Python-based TCP port scanner, ensuring it: works on local and remote hosts (within subnet), handles invalid inputs and interruptions gracefully, accurately detects open ports, respects scan rate limits, logs results correctly.

2. Test Environments

Test Type	Description
Local Host	The machine running the scanner
Remote Host (VM)	Virtual machine in the same subnet
Invalid IPs	Testing input validation for incorrect Ips

3. Hardware & Software Setup

- OS: Windows 11 / Kali 6.11.2
- Python Version: 3.10+
- Network: Private LAN (192.168.1.0/24)
- VM: VirtualBox with Kali 6.11.2 (Host-only)

4. Test Cases

Test Case 1 – Local host scan

Input: Choose L for local scan

Expected output: List of open ports on localhost (80,135,139, 445, 1462, 5040, 5357, 7680, 49664, 49665, 49666, 49667, 49668, 49670)

Result: ☒ Passed

Test Case 2 – Remote host scan

Input: Valid IP of a VM on the same subnet

Expected output: Detect open ports (22, 80, 4444, 8000)

Result: ☒ Passed

Test Case 3 – Invalid IP address

Input: 300.25.1.1 or abc.def.ghi.jkl

Expected output: "Not a valid IP address."

Result: ☒ Passed

Test Case 4 – Host with no open ports

Setup: Target with firewall blocking all ports

Expected output: "No open ports found."

Result: ☒ Passed

Test Case 5 – Manual interruption

Action: Press CTRL+C during scan

Expected output: “[!] Scan interrupted by user.”

Result: ☒ Passed

Test Case 6 – Log file creation

Check: port_scan.log file exists and includes expected entries

Expected output: Log entries for start, end, open ports

Result: ☒ Passed

Test Case 7 – Rate limiting

Setup: Delay of 0.1s per port

Check: Scan duration consistent with port count

Expected output: No overload or system freeze

Result: ☒ Passed

5. Summary of Results

Test Case	Status
Local host scan	<input checked="" type="checkbox"/> Passed
Remote host scan	<input checked="" type="checkbox"/> Passed
Invalid IP input	<input checked="" type="checkbox"/> Passed
No open ports	<input checked="" type="checkbox"/> Passed
Manual interruption	<input checked="" type="checkbox"/> Passed
Logging	<input checked="" type="checkbox"/> Passed
Rate limiting	<input checked="" type="checkbox"/> Passed

6. Conclusions

The scanner meets all functional expectations:

- Proper input validation and error handling
- Accurately detects open ports
- Robust against interruptions
- Generates logs and applies rate limiting as intended