Cleveland State University – WIFI Analyzer

Test Specification document

Proposed by

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Cleveland State University – WIFI Analyzer

TEST SPECIFICATION DOCUMENT

1.0 Introduction

This is test specification document for the testing purpose of the project "Cleveland State University – WIFI analyzer" website. This website is designed to represent a Wi-Fi access points (APs) coverage map in the city of Cleveland at the periphery of the Cleveland State University.

WIFI heat map helps in identifying the specific position with poor signal reception and determine effective router positions. This document is specifically written for the testing team, it includes testing scope, testing strategy, test plans and test cases to validate the project.

1.1 Goals and objectives

The Testing specification of the "Cleveland State University – WIFI analyzer" website and procedures contains: scope, referenced documents, test specifications and test procedures. It provides a detailed description of each test.

1.2 Statement of scope

Specific functionality and features of "Cleveland State University – WIFI analyzer" website to be tested are included in section 3.0.

Features to be tested: To test the different functionality of the website WIFI heat map of the Cleveland State University

- **Smoke Testing**
- **Functional & UI Testing**

Features Not to be Tested

- **Input Data**

This document does not address testing of the input data collected by measuring WIFI signal strength using mobile App around the college building

including basement where we have car parking. The smart phone uses application to measure Wi-Fi signal strength at a specific area.

- **Performance Testing**

  This document does not address Performance Testing for “Cleveland State University – WIFI analyzer” website, as there will be limited users at any given time.

- **Security Test and Evaluation**

  This document does not address Certification and Accreditation (C&A) Security Test and Evaluation (ST&E) testing for “Cleveland State University – WIFI analyzer” website as there is no authentication/authorization is involved.

2.0 Test Plan

This section describes the overall testing strategy and the project management issues that are required to properly execute effective tests.

2.1 Software to be tested

As a part of testing of the WIFI Analyzer website portal we need to test Requirements Specifications & Design Specifications.

2.3 Testing tools and environment set up

Below Software were used to develop the website, for code execution during unit testing we need below software installed on the system, so that tester/developer can run the application on their system (to complete environment setup) and test different features.

- **React** for the frontend GUI
- **Node.js** for the backend
- **Matlab** to generate heat map and verification
- **Chrome**- Browser
- **Microsoft® Word & Excel** - This will be used for defect tracking.
- **Microsoft's Windows 11 Operating System** - This will be used to test the website and validate different test cases.
- **Adobe Acrobat** - This will be used to test the WIFI heatmap pdf downloaded from the “Cleveland State University – WIFI analyzer” website.

2.4 Test schedule

A detailed schedule for testing is described below

Serial Number	Tasks	Days	Start Date	End Date
1	Test Planning	1	11/1/2022	11/2/2022
2	Test Specification Document preparation	1	11/2/2022	11/3/2022
3	Test Environment Preparation	1	11/4/2022	11/5/2022
4	Testing Features	6	11/6/2022	11/12/2022
5	Bug Reporting	6	11/12/2022	11/18/2022
6	Fixing Issues	6	11/19/2022	11/25/2022
7	Finalizing Test Results Report	3	11/25/2022	11/28/2022

3.0 Test Cases

This section enumerates a complete list of test cases for the software.

ID	Test Input/Action	Expected output	Description
TS3001.1	**User accessing website link**	Home Page should be loaded with -header should have label : "Cleveland State University Wifi Analyzer"	
		User should be able to see menu on the page load showing different floors - Menu items on left side - Current Location - BH Ground Floor - BH First Floor - BH Second Floor - BH Third Floor - BH Fourth Floor	Current location will be the default option to display WIFI signal strength. Menu should be left aligned.
TS3001.2	**User accessing menu options**	After selecting one of the value from the menu, User should be able to see the heatmap of that specific floor, showing what are the strongest & weakest WIFI reception areas.	Heat map should have legends, which should clearly elaborate which area has strongest WIFI signal strength and which area has weakest. Along with that how it is gradually changing the WIFI strength.

TS3001.3	**User validating heatmap**	User should be able to locate specific area with poor signal strength and strong signal strength	Usually covered areas show poor signal strength (<-85 dbm) and open area show good signal strength (~ -45dbm to -70 dbm) check appendices section 4.1 for more WIFI signal strength details
TS3001.4	**Download button click on the floor page**	User should see a download button, so that he can download the heatmap on their system	User should see a download button at the bottom of the page, so that he can download the heatmap on their system.
TS3001.5	**User click on "location" option**	User should be able to see current location WIFI strength	In Current location menu WIFI signal strength of the current signal should show channel, frequency, signal level etc.

4.0 Risks and Contingencies

- Lack of personnel resources when testing is to begin.
- Lack of availability of required hardware, software, data or tools.
- Late delivery of the software, hardware or tools.
- Delays in training on the application and/or tools.
- Delay in fixing bugs.

5.0Appendices

4.1 Ideal Signal Strength

Below table describes the probable values of the WIFI signal strength

Signal Strength	TL;DR		Required for
-30 dBm	Amazing	Max achievable signal strength. The client can only be a few feet from the AP to achieve this. Not typical or desirable in the real world.	N/A
-67 dBm	Very Good	Minimum signal strength for applications that require very reliable, timely delivery of data packets.	VoIP/VoWi-Fi, streaming video
-70 dBm	Okay	Minimum signal strength for reliable packet delivery.	Email, web
-80 dBm	Not Good	Minimum signal strength for basic connectivity. Packet delivery may be unreliable.	N/A
-90 dBm	Unusable	Approaching or drowning in the noise floor. Any functionality is highly unlikely.	N/A