**SOFTWARE REQUIREMENTS DATA**

**FOR**

**SERIAL COMMUNICATION WITH 8051**

**MICROCONTROLLER**

|  |  |  |
| --- | --- | --- |
| REFERENCE NO. | REV NO. | EFFECTIVE DATE |
| SCW8051/SRD/07/20 | 01 | 22/07/2020 |
| TITLE | **SOFTWARE REQUIREMENTS DATA**  **FOR**  **SERIAL COMMUNICATION WITH 8051**  **MICROCONTROLLER** | |
| CUSTOMER |  | |
| PROJECT | SERIAL COMMUNICATION WITH 8051 MICROCONTROLLER | |
| PREPARED BY | Niranjan patil | |
| VERIFIED BY |  | |
| IV &V | Oak Systems Private Limited | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision#** | **Date** | **Details** | **Author initials** |
| 01 | 22/07/2020 | First draft | Niranjan patil |
|  |  |  |  |

**REVISION HISTORY**

**TABLE OF CONTENTS**

1. Introduction………………………………………………………4
   1. Purpose………………………………………………………...4
   2. Scope…………………………………………………………..4
   3. Abbreviations and Acronyms………………………………….4
2. Overall Description……………………………………………….5
   1. Project perspective……………………………………………..5
   2. User interface…………………………………………………..5
   3. Communication interface………………………………………5
   4. Software Requirements………………………………………...5
   5. Assumptions……………………………………………………6
   6. Dependencies…………………………………………………..6
   7. Functional Requirements………………………………………6
3. **INTRODUCTION**
   1. **Purpose**

This is the Standard “Software Requirement Data” document. This document establishes the software requirement data for the “Serial Communication(SC) with 8051 Microcontroller(MC)”. This document brings out the requirements which shall be satisfied by Serial communication between the computer and the 8051 microcontroller and which shall form basic for test document to check whether the software design meets all the software requirements.This forms the baseline for the software design and implementation of Serial communication with

8051 microcontroller. The software shall be validated against the requirements specified in this document.

* 1. **Scope**

This document brings out the functional requirements of SC between computer and the 8051 MC.

* 1. **Abbreviations and Acronyms**

|  |  |
| --- | --- |
| EBC | Ethernet based communication |
| IV & V | Independent verification and validation |
| SC | Serial Communication |
| MC | Microcontroller |

1. **OVERALL DESCRIPTION**

* 1. **Project perspective**

The following diagram shows the overview of SC between computer and 8051 MC.

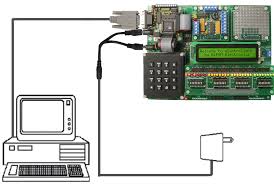


Figure : Serial Communication between computer and 8051 MC

The fundamental requirement of the project is to make an serial communication between 8051 and computer by using the ‘RX232 to USB converter’ cable connected between them. Once the connection has been established we should send message/data to and receive data/message from MC and vice verse.

* 1. **User interface**

User has to interact with console window to send and receive the data via the RX232 to USB converter cable.

* 1. **Communication interface**

RX232 to USB converter cable should be used for the communication

* 1. **Software Requirements**

The software should able to transmit a data regardless of length of the data, and the software should able to handle the possible exceptions may occur while communicating.

* 1. **Assumptions**

Platform: Python IDE

Interpreter: Python 3.8.2

modules: functions of ‘pyserial’ python module used.

Language used for the development is the Python.

* 1. **Dependencies**

Windows operating system is required for the development of the software.

* 1. **Functional Requirements**

We should able to send an message/data to the microcontroller.

By using that data MC will perform some operations based upon the input data, for the time being operations inside MC are not the requirements. MC will send some message/Data back to the computer via RX232 cable, now the system should be able to capture the data and display it on the console window.