Quetcet M95 GSM Modem Testing Software with Device Control
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Abstract:
The main objective for designing the project is that to develop user friendly testing software. That’s benefits minimum time required for testing Quetcet M95 GSM modem. Quetcet M95 GSM modem use in industrial starter motor which is our company requirement. Quetcet M95 GSM Modem because previous GSM series SIM300 & SIM 900 having lot of problem first common problems found in that series. Modem initialization time is very high in SIM 300 & SIM 900. It takes approximately 5 to 10 minutes for initialization where Quetcet M95 GSM Modem it takes only 1 minutes time for initialization.

Keywords: Research Paper, Technical Writing, Science, Engineering and Technology.

I. INTRODUCTION

Some wise scientist once said that control system is a system where we can shut down the machine whenever we want. In control system GSM modem play a very important role. A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate. In industries the GSM based control systems are worked by the Quetcet M95 GSM modem. Before manufacturing starter motor its need to test the Quetcet M95 GSM modem for better result. This chapter introduces need, motivation for designing Quetcet M95 GSM modem. Furthermore, it also explores the report organization.

II. LITERATURE SURVEY

2.1 Introduction

GSM is a global system for mobile communication GSM is an international digital cellular telecommunication. The GSM standard was released by ETSI (European Standard Telecommunication Standard) back in 1989. The first commercial services were launched in 1991 and after its early introduction in Europe; the standard went global in 1992. Since then, GSM has become the most widely adopted and fastest-growing digital cellular standard, and it is positioned to become the world’s dominant cellular standard. Today’s second-generation GSM networks deliver high quality and secure mobile voice and data services (such as SMS/Text Messaging) with full roaming capabilities across the world. The Global System for Mobile Communication (GSM) network is a cellular telecommunication network with a versatile architecture complying with the ETSI GSM 900/GSM 1800 standard. Siemens’ implementation is the digital cellular mobile communication system D900/1800/1900 that uses the very latest technology to meet every requirement of the standard. Now a day’s most likely used GSM modems are SIM 300 and SIM 900 that are triband and quad band GSM modem respectively. Comparing with newer of GSM modem i.e Quetcet M95 GSM modem is compact in size, Ultra low power consumption and extended temperature range.

2.2 Quetcet M95 GSM modem

M95 is one of the smallest Quad-band GSM/GPRS modules in LCC castellation packaging with the compact size of 19.9 × 23.6 × 2.65mm. Ultra low power consumption and extended temperature range. With surface mounted technology, the low profile and small size of LCC package makes M95 easily embedded into the low-volume applications and ensures the reliable connectivity with the applications. This kind of package is ideally suited for large-scale manufacturing which has the strict requirements for cost and efficiency. Built-in unique QuecFOTA™ technology allows M95 to update the firmware remotely. Additional features such as integrated TCP/IP protocol stack, serial multiplexer and enhanced AT commands guarantee fast and reliable transmission of data, voice, SMS via GSM/GPRS network and extend the functionality of the application without adding cost. Its tiny size and Ultra low power consumption makes M95 a very cost effective and feature-rich platform that is quite suitable for a wide range of M2M applications such as VTS, Industry PDA, Personal Tracking, Wireless POS, Smart Metering and many other M2M applications.

2.2.1 Key benefits

- One of the smallest Quad-band GSM/ GPRS modules
- Easier soldering process with LCC package
• Embedded Class-AB amplifier
• Power consumption as low as 1.3mA
• Embedded powerful Internet service protocols, multiple Sockets & IP addresses
• eCall/ ERA-GLONASS (Supported in specific firmware)
• QuecFOTATM
• Jamming detection
• DTMF decoding

III. BLOCK DIAGRAM

To implement the Quectel M95 GSM modem testing software required such as power supply, Renasas microcontroller, Quectel M95 GSM modem. The detail description for each section is explores below.

IV. SYSTEM DESIGN

3.1 System block diagram

3.2 Hardware Description

3.2.1. Renesas Micro controller:-
The RENESAS MCU is True Low Power Platform (as low as 66 μA/mhz, and 0.57 μA for RTC + LVD), Supply voltage is 1.6 V to 5.5 V operation, 16 to 512 Kbyte Flash, 41 DMIPS at 32 MHz, for General Purpose Applications

3.2.2. LED indication
(a) Power ON/OFF
When external power supply to controller green led will glow and it is show power is given to unit.
(b) OL (RED): Over Load Fault.
When current is flowing from circuit beyond settable range this led will glow.
(c) SMS/CALL (RED): Communication Indication
When user call or sending SMS to unit this led will automatically ON.
(d) NETWORK (RED): Network Indication
When SIM card detect and mobile tower range is there this led will glow.
3.2.3. Max232 IC: -
Max232 IC is in SMD Package so it is very small in size due to that it requires less space. The Max232 is used to transmit the Pc data to the Microcontroller and also from controller to Pc. It is also used to shift the voltage level low to high a versa.

3.2.4. Current Transformer (CT): -
This Device is mainly used to monitor the Current. The CT is used to set the Starting Current of the Motor.

3.2.5. GSM Modem
The GSM modem of Quectel M95 used since it has very Good Range an Accuracy As compared With SIM 300 and SIM 900.

3.2.6. Power Supply (440V-0.5A)
When we give single phase supply to GSM base controller for external power green led will glow and it is show power is given to unit.

3.2.7. Relay
Here we have used the relay to Switch the Motor On an off we have used Leone Company relay which operates on 6V DC its Function is SPDT that is single pole Double Throw and it has magnetic coil in it.

3.3. Functional Diagram
The following figure shows a block diagram of M95 and illustrates the major functional parts.

- Radio frequency part
- Power management
- The Peripheral interface
  - Power supply
  - Turn-on/off interface
  - UART interfaces
  - Audio interfaces
  - SIM interfaces
  - RF interface
  - RTC interface

5.1 Application
1. In Industrial starter motor.
2. In Agriculture fields.

5.2 Advantages
1. User friendly software.
2. Less time required for testing GSM modem.

VI. REFERENCES
[6]. http://www.electronicsforum.com/electronicsforum/lab/
[7]. http://www.visualgsm.com/wire_sms_index.htm
[8]. http://www.sigmaelectronica.com

V. CONCLUSION
The project we have undertaken has helped us gain a better perspective on various aspects related to our course of study as well as practical knowledge of electronic equipments and communication. We became familiar with software analysis, designing, implementation, testing and maintenance concerned with our project.