NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY [IJIERT]
ISSN: 2394-3696
VOLUME 6, ISSUE 02, Feb.-2019

WIRELESS MSEB METER READING VEHICLE

MR. VISHAL VINAYAK KADAM
Department of Electrical Engineering, VVP Polytechnic Solapur, India
vvk8087@gmail.com

MR. GANESH GOVARDHAN MERGU
Department of Electrical Engineering, VVP Polytechnic Solapur, India
ganesh1931mergu@gmail.com

MR. JUBER JAFAR JAMADAR
Department of Electrical Engineering, VVP Polytechnic Solapur, India
zuber.jamadar09@gmail.com

MR. IMRAN ILIYASAHMED SHAIKH
Department of Electrical Engineering, VVP Polytechnic Solapur, India
shaikhimrans5157@gmail.com

PROF. ZUBAIR ABDUL REHMAN SHAIKH
Department of Electrical Engineering, VVP Polytechnic Solapur, India
B. E. Electrical
zubee19@gmail.com

ABSTRACT
The main goal of the paper is to suggest a design that can send meter reading wirelessly which in turn will be effective in billing. It basically proposes an idea of a vehicle having RF receiver that can take readings from all energy meters installed at consumer's premise. Each meter will have a microcontroller and RF module. The microcontroller will take reading continuously from the energy meter and it will transmit the same along with Meter ID continually by using RF transmitter. When the MSEB vehicle will pass through the RF transmitter range the RF transmitter in the meter will transmit the current meter reading to MSEB vehicle's RF receiver. MSEB vehicle RF will obtain that reading and it will send it to the microcontroller for saving and future billing process.

INTRODUCTION
Electricity is essential in our daily life for performing a range of tasks. All industries are running on electrical energy. Also in commercial areas electrical energy is essential. Thus it is clear that electricity is backbone of any growing nation. Electric supply is supplied to each patron as per the requirement and billing is executed as per the consumption. Current billing system is having many flaws due to which there are several issues of fallacious billing and theft. Also massive amount of cash has to be spent in manpower to capture the reading of every meter. Here we have proposed an idea to overcome these problems. This project makes use of transreciever to take readings of meter wirelessly. This project will offer the speed and accuracy while taking MSEB meter readings. In this project AT89c51 Micro controller is employed which serves very important role. In this circuit we will be using LCD, RF transmitter, RF receiver, Energy meter, switch, RS232 etc. components.
In this project of automatic meter reading, the data from energy meter will be automatically collected by a vehicle and that data will be transferred to a central database for billing and/or analysing. So the billing can be determined on proper consumption rather than previous consumption, giving customers higher control of their use of electric power consumption. Also the readings will be displayed over the LCD.

SYSTEM OVERVIEW:

Now a day, electrical energy plays very vital role in each and every factor of life. There is provision of energy meters for measuring the extent of electricity consumed by the consumer. At each month end, the present day reading of meter is captured by means of the service provider personnel. This reading is then compared to the previous month reading then the bill is released. In this paper a new technology is put forth for MSEB billing system in which wireless vehicle is used for taking meter readings.

LITERATURE SURVEY:

This section critiques some associated work on Automatic Energy to Metering (AEM) system and split them into classes like:

1) ZigBee-Based Programmed Metering Structure:

(Shang-Wen, Knauth et al., 2008)

Advised an AMR that developed ZigBee technology for constructing home region networks of the connected metering devices.

2) Bluetooth-Based Automatic Metering System:

Which is similar to the ZigBee technology, mostly in the Bluetooth based Automatic Metering System distance is a major setback (Newbury and Miller, 2002) as a result of Bluetooth technology; it will work effectively only in nearby range and sends information at a certainly low speed.

3) PLC-based automatic metering system:

Poonam borle et al. (2013) Permits information from energy meter which is to be sent over existing electrical power lines. It licences only the utilization of existing electrical power cables so the strength of the system usage restricted cables for communication.

METHODOLOGY:

4.1 SYSTEM DESIGN:

This system mainly contains two circuits

1. Slave side (House part)
2. Master side (MSEB vehicle)

Slave side (House unit)

- At the slave side, there's energy meter that is put in in each house which is able to count the readings & send it to microcontroller 8051.
- These readings are going to be counted by microcontroller with the assistance of signal conducting circuit within the kind of pulse.
- Microcontroller displays this reading on the 16*2 alphanumeric displays.
- With the assistance of RF transmitter and RS232 Microcontroller transmits the meter reading and meter ID continuously.
- There is one improvement, at normal condition the transreceiver module is in sleep mode it'll be in active mode only if the switch within the MSEB vehicle is ON.
- Then it conveys the reading.

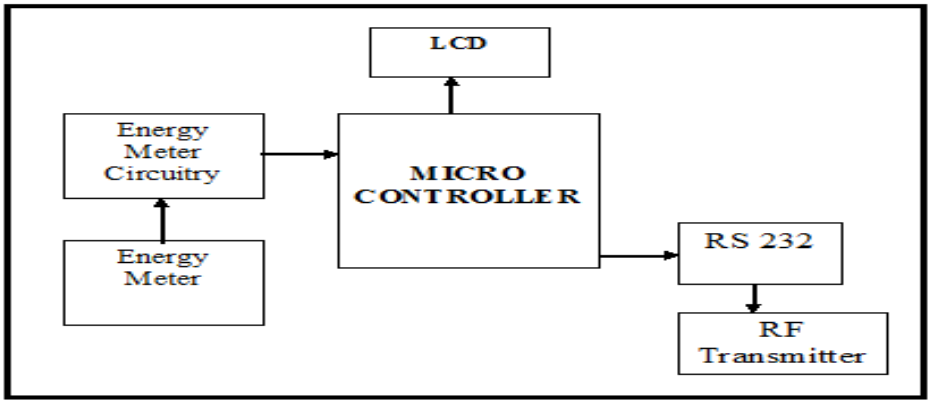

Fig 1: Slave side (House unit)

Master side (MSEB vehicle)

- When switch is in ON mode the RF trans receiver module receive that reading with the assistance of RS232.
- This reading sends to microcontroller and display on LCD.
- Note down this readings.
- From this we can do billing of energy meter.

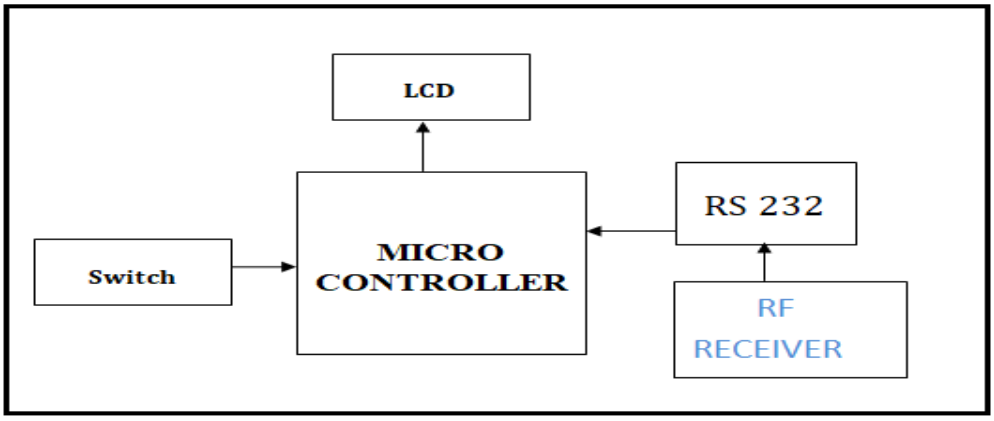

Fig 2: Master side (MSEB vehicle)

4.2 CIRCUIT DIAGRAM (House meter):

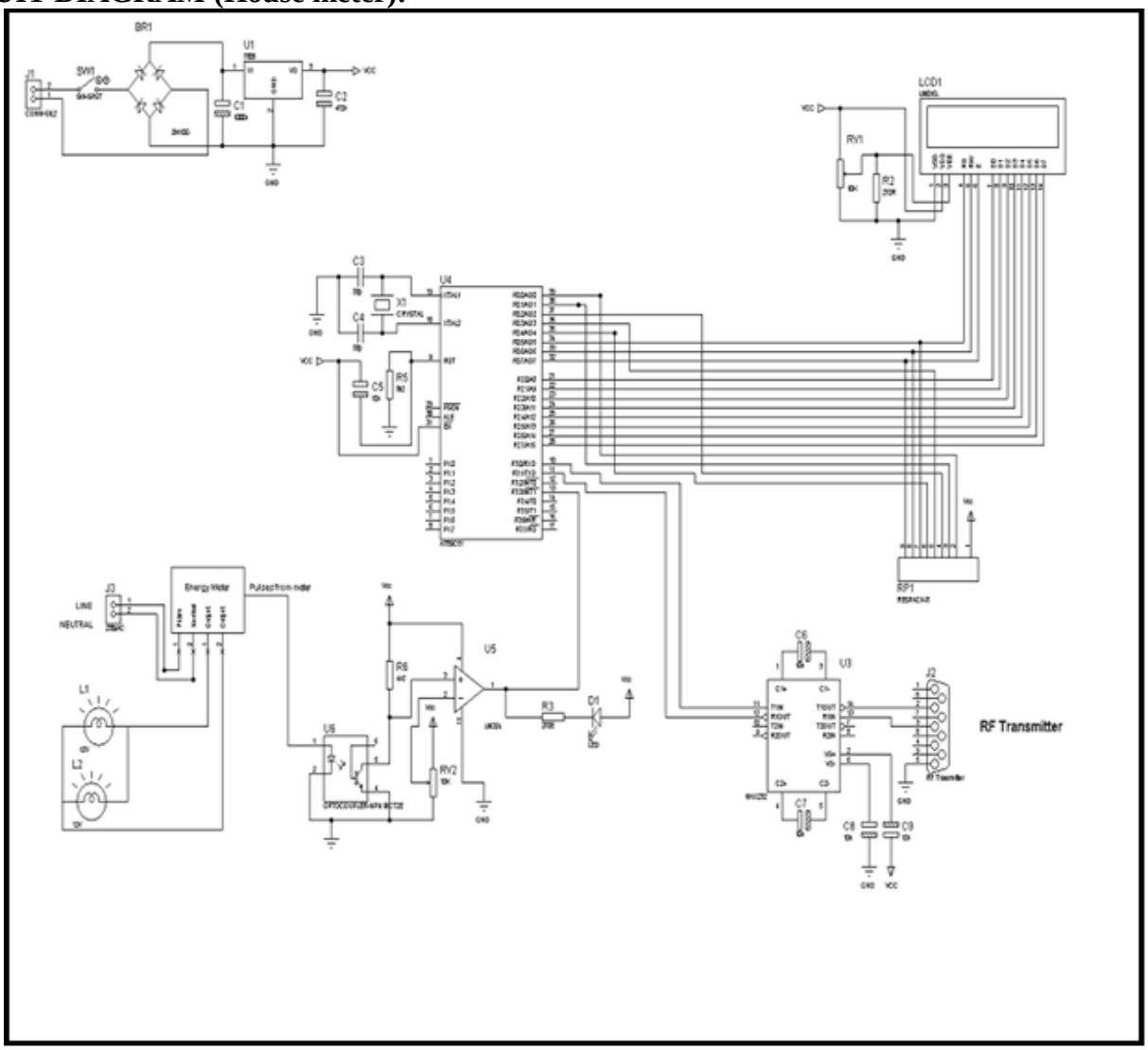

Fig 3: Circuit Representation of House meter

4.3 CIRCUIT DIAGRAM (MSEB vehicle):

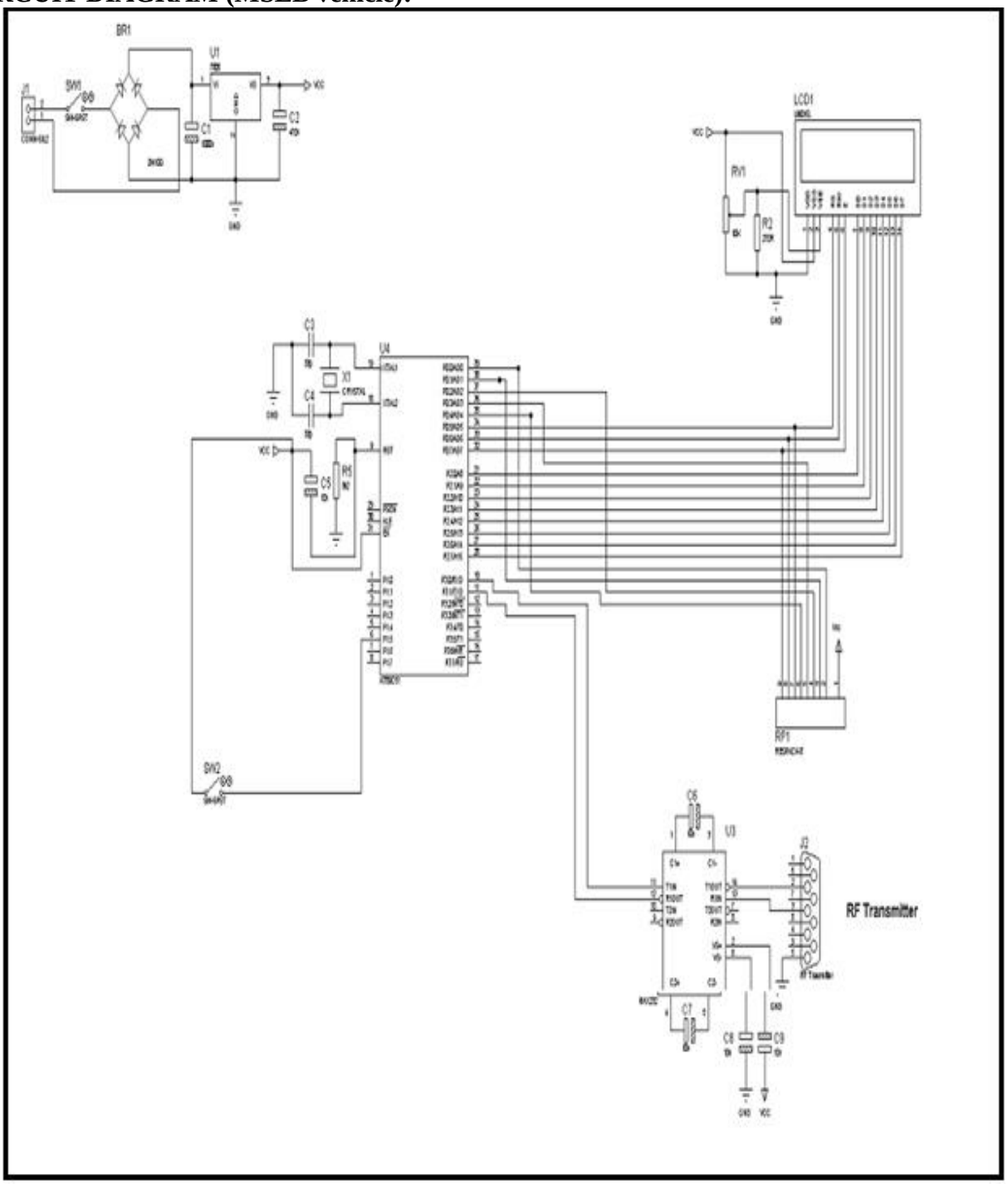

Fig 4: Circuit Representation of MSEB vehicle

4.4 RF-TRANS-RECEIVER

Features of RF Trans-Receiver

- Power consumption is less.
- It is highly sensitive (Type-104dBm)
- Programmable o/p power(-20dbm to 1dbm)
- Operation temperature range(-40 to +85 deg C)
- Operation voltage(1.8 to3.6 v)
- Available frequency (2.4 to 2.483 GHz)

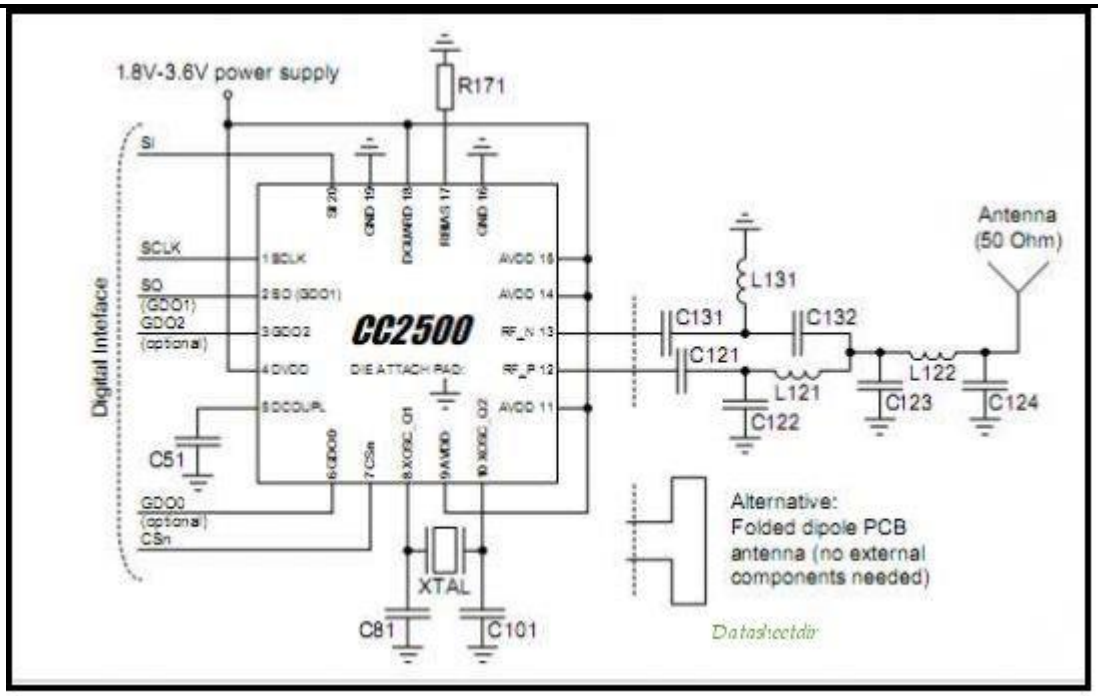

Fig 5: Figure of RF trans-receiver

DESCRIPTION

This is FSK transceiver module that is intended using chip on IC (CC2500). It provides the 30-meter range with on board antenna. In some cases this trans-receiver can be used along with a microcontroller. The CC2500 is intended for very low-power rating wireless applications. Its operating range is about 30 meters without using any external antenna.

ADVANTAGES:

- A smaller amount of man power is required.
- It require less time for taking meter reading.
- Exactness of the entire system will be increase.

APPLICATIONS

- In different mills, Factories etc.
- In hospitals, schools, colleges etc.
- The energy meter can send the readings wirelessly to MSEB meter reading vehicle. When the switch in MSEB vehicle is ON then the transmitter in energy meter is active and it conveys the reading to the receiver, and this readings are show on alphanumeric display.

CONCLUSION

The main purpose of implementing this idea is to scale back man power, reduce the price for taking meter reading and additionally increase accuracy of the electricity billing system. The concept of this technology overcomes the difficulties that were arising with earlier billing system like billing process; incorrect meter reading, demand of man power and labor price, and time consuming. Therefore this new technology of Meter Reading is helpful and reliable.

FUTURE SCOPE

By using EPROM we are able to save the reading in the receiver.

IOT and GSM primarily based smart Energy Meter system may be used to automatically receive readings on smartphone via SMS at the month end as per the consumption of electricity.

By installing a meter which is able read water consumption and merging the same with the above proposed scheme we can develop a system to provide proper water consumption bill. By doing therefore we are able to save water and additionally correct revenue from billing will be often engineered.

REFERENCES

I. Terry Chandler, "The Technology Development of Automatic Metering and Monitoring Systems", the seventh International Power Engineering Conference, pp. 147-150, Nov. 2005. Information Technology, New Generation, pp. 84-89, Apr. 2006.
II. IngeborgGraabak, Ove S. Grande, JussiIkaheimo and SeppoKarkkainen, "Establishment of Automatic Meter Reading and Load Management, Experiences and Cost/Benefit", 2004 International Conference held on Power System Technology, pp. 1333-1338, Nov. 2004.
III. PoojaU.Shinde, Gauri A. Bhor, Trupti D. Shinde, Harshada S. Joshi, "Wireless MSEB Meter Reading Vehicle",Gauri A. Bhor et al Int. Journal of Engineering Research and Applications ISSN: 2248-9622, Vol. 4, Issue 4(Version 7), April 2014, pp.100-102
IV. AkashGiri, Piyush Chandra Ojha, Satish Kumar, "SMART ENERGY METERING AND THEFT DETECTION WITH IOT TECHNOLOGY", Department of Electronics and instrumentation KIET GROUP OF INSTITUTIONS, GHAZIABAD.
V. IngeborgGraabak, Ove S. Grande, JussiIkaheimo and SeppoKarkkainen, "Establishment of Automatic Meter Reading and Load Management, Experiences and Cost/Benefit", 2004 International Conference on Power System Technology, pp. 1333-1338, Nov. 2004.
VI. www.electronicsforyou.com
VII. www.wikipedia.com
VIII. www.efy.com
IX. www.ieeeXplore.com
X. www.datasheetcatalog.com