SOLAR POWER CAMPUS RADIO

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***Abstract*—Campus Radio (also known as college radio, university radio or student radio) is a radio station that is run by the students of a college, university or other educational institution. It comprises of an FM station operated, controlled and maintained exclusively by the students involved in the radio group of a college. It provides an opportunity for the students to exploit their talents in various fields via FM radio to the audience comprising of students and staff of a college. One of the major advantages of having such a communication media is, important information regarding various curricular, co-curricular and extra-curricular activities can be broadcasted and the students as well as the staff can tune in to the FM station, receive notices and hence information can be conveyed in a different style.**

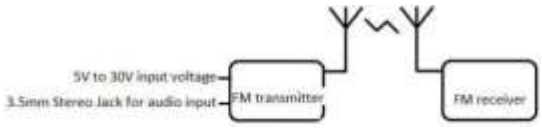
I. INTRODUCTION

This project tells you how to build a small radio station at home and share music with others. The station can also be used for making announcements in colleges, industries, hospitals, schools and other places using a condenser mic amplifier circuit. In this project an FM transmitter V2.0 module is used, as shown in Fig. 1. The module can modulate your voice or music on FM radio. If you have a radio receiver, you can receive and listen to it.

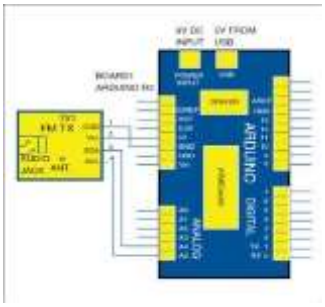
The FM radio was invented in 1933 by Edwin Armstrong. It was developed initially as an experiment to solve the problems that plagued AM radio, such as static and sky wave interference that morphed into the creation of an entirely new radio transmitting system. But development was stalled by the Depression, then by RCA and NBC chairman David Sarnoff, who was a friend of Armstrong and later bitter rival who felt threatened by Armstrong's fledgling FM radio network. Sarnoff, who's entire NBC network was built on AM radio and it's use of national radio lines provided by AT&T soon realized a network that could be relayed wirelessly in sparkling clean, crystal clear high fidelity at that time and to anyone could singlehandedly DESTROY his entire empire. Many other AM radio networks such as Mutual and CBS felt the same way. So they quickly cut off all ties to Edwin Armstrong and lobbied the FCC to make radical changes to FM radio, namely to stall the inevitable public reaction if FM ever gained a strong enough foothold.

II. CONSTRUCTION

i) TRANSMITTER- The FM transmitter design consists of a configurable FM transmitter, microcontroller, touch sensor, display and a DC/DC converter. The microcontroller configures the FM transmitter, monitors the touch pads through the touch sensor and updates the display. The FM transmitter will transmit the audio signal input on the 3.5mm stereo jack, and require an input voltage in the range 5V to 30V.



ii) ARDUINO BOARD- *Arduino* first and foremost is an open-source computer hardware and software company. The *Arduino Community* refers to the project and user community that designs and utilizes microcontroller-based development boards. These development boards are known as *Arduino Modules,* which are open-source prototyping platforms. The simplified microcontroller board comes in a variety of development board packages.



III. WORKING

Under a natural disaster situation, it is highly probable that communication networks will be restricted or may not be active. A radio is always a gadget that you will want to include in your survival kit for an emergency signal or alert.

A battery-based radio is not suitable for this type of condition because as soon as the radio runs out of power, you won't be able to charge it until you find replaceable batteries. Under natural disaster situations, it is highly improbable that this happens.

Solar campus radio will charge itself directly from the sun, therefore there are no more worries about where you should plug it in or how many back-up batteries to take. Since this radio will take sunlight and convert it into the energy on which it will run, these radios have lots of advantages.

SOLAR PANEL

Solar powered radio is a portable radio receiver powered by photovoltaic panels. It is primarily used in remote areas where access to power sources is limited. The 2018 manufacturing capacity of solar cells and solar modules in India was 1,590MW and 5,620MW, respectively. Except for crystalline silicon wafers or cadmium telluride photovoltaic or float-zone silicon, nearly 80 percent of solar-panel weight is flat glass.100-150 tons of float glass is used to manufacture a MW of solar panels. Low-iron float glass is manufactured from soda ash and iron-free silicon.PVC systems one of the most common ways to use solar power is to use photovoltaic systems or as they are also known solar cell systems, which produce electricity directly from sun light.

The ministry of New and Renewable Energy(MNRE),India, has issued a memorandum to ensure the quality of solar cells and solar modules. Compliance with the requisite specifications will grant manufacturers and their specifications products an entry in the ALMM (Approved List of Models and Manufacturers.)

A solar cell, or photovoltaic cell (PV), is a device that converts light into electric current using the photovoltaic effect. The first solar cell was constructed by Charles Fritts in the 1880s. The German industrialist Ernst Werner von Siemens was among those who recognized the importance of this discovery. In 1931, the German engineer Bruno Lange developed a photo cell using silver selenide in place of copper oxide, although the prototype selenium cells converted less than 1% of incident light into electricity. Following the work of Russell Ohl in the 1940s, researchers Gerald Pearson,

Calvin Fuller and Daryl Chapin created the silicon solar cell in 1954. These early solar cells cost US$286/watt and reached efficiencies of 4.5–6%. In 1957, Mohamed M. Atalla developed the process of silicon surface passivation by thermal oxidation at Bell Labs. The surface passivation process has since been critical to solar cell efficiency.

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