TI Electronics Challenge

The 21st Century has given birth to great technological innovations that have encapsulated our lives. From this outbreak of expeditious technological advancement, one great piece of technology has been left in the dust: the cordless phone. I grew up in an area with poor cellular service, so cordless phones became the optimal device in my household for making and receiving calls. Due to my long-standing history with cordless phones, I have developed a deep interest in wanting to understand their components and how they function.

The components of cordless phones include a display, receiver, speaker, rubber keypad, and circuit board. The circuit board contains a 220uF capacitor, crystal oscillator, RAM chip, and a SC 14481 Dialog microchip. There weren't any TI components found within the phone.

All these components are integral for the functionality of the phone. A crystal oscillator fabricates an electric signal with a constant frequency. It uses the mechanical resonance of a



vibrating crystal of piezoelectric material. It's role in the system is to control the frequency moving around the crystal and to send clock signals. A capacitor is a device that houses electrical energy in an energy field and moderates the flow of current throughout electrical devices. The



capacitor plays an important role in maintaining a power supply while the battery is being charged, keeping the voltage constant and preventing voltage spikes. Random Access Memory is used for storing short-term memory and relaying information to the CPU. In this system, RAM can be used to identify and store a short list of numbers and identify caller ID. Microprocessor chips are used as a collection of machine instructions that send commands to different parts of



devices. It runs the logical and mathematical operations of devices and can also store or receive memory. The microprocessor chip helps run almost everything in the system. It writes code for the display, receiver, speaker, and just about any other component. A receiver acquires different kinds of signals and transforms them into something useful, like audio. In this phone, the receiver captures signals, which helps it transform into the audio that a person listens to. A speaker is a device that creates sound based off of electrical audio signals that it receives. In cordless phones, the speaker plays the dual purpose of acting as a microphone and emitting the sound that the phone is receiving and converting. Separately, these parts don't mean much, but together, they create a system that binds the phone together.







From my experiment, I've gained a general understanding of what goes into electronic devices (such as phones) that are centered around communication. I now understand that electronic devices can function off some vital components. Before, I thought something such as a cordless phone would need a numerous amount of parts to function. I've gained an understanding of the true practicality of core components in electronic devices and how they come together to make the phone function.

STEPS CONDUCTED WHEN DISMANTLING PHONE:

STEP 1: TAKING OUT BATTERIES AND UNSCREWING SCREWS:

OK

OF

FLASH

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6

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STEP 3: REMOVING CIRCUIT BOARD FROM PLASTIC FRAME:



STEP 2: OPENING UP PHONE:



STEP 4: REMOVING SPEAKER FROM PHONE



