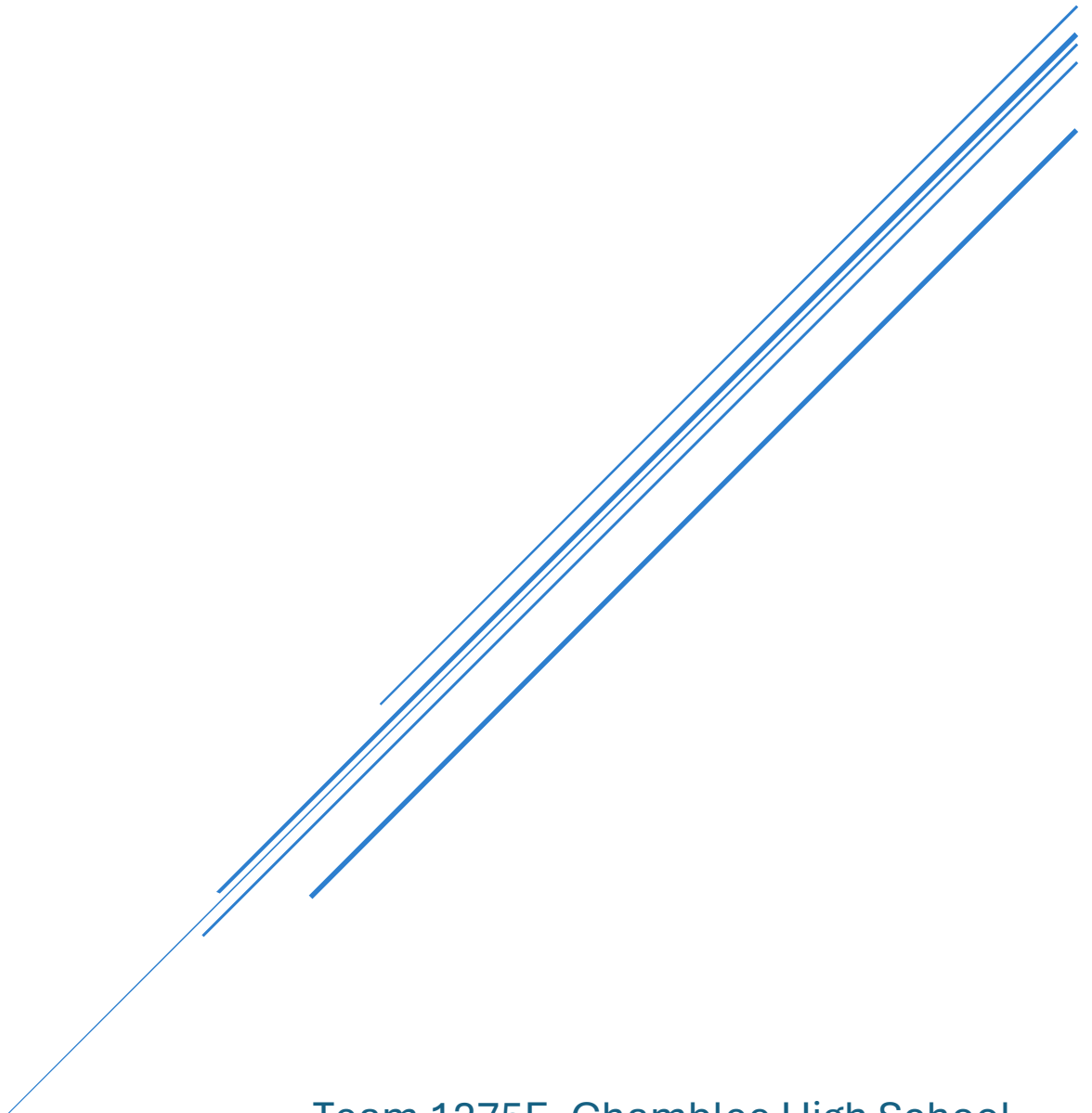


REVERSE ENGINEERING: PANASONIC CORDLESS TELEPHONE

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Introduction

Before cellular devices and Voice over Internet Protocol (VoIP), cordless telephones were the most portable method of speaking with others over long distances. They work by communicating to a base that is physically connected to the landline.



The reason our team chose this device to reverse-engineer is because as second-generation citizens with relatives overseas, every member of our team has fond memories of using these telephones to talk with family members in countries where cellphones weren't always widely available.

What we hope to learn from the disassembly of this Panasonic cordless handset will be how its individual systems work together to accomplish the task of transmitting and receiving voice communications between the user and the landline.

Summary and Description of Components

Motherboard



The motherboard is a printed circuit board (PCB) that houses, connects, and delivers power to every component of the handset. It was specially designed for this device and uses different connectors to interact with each component.

Microprocessor



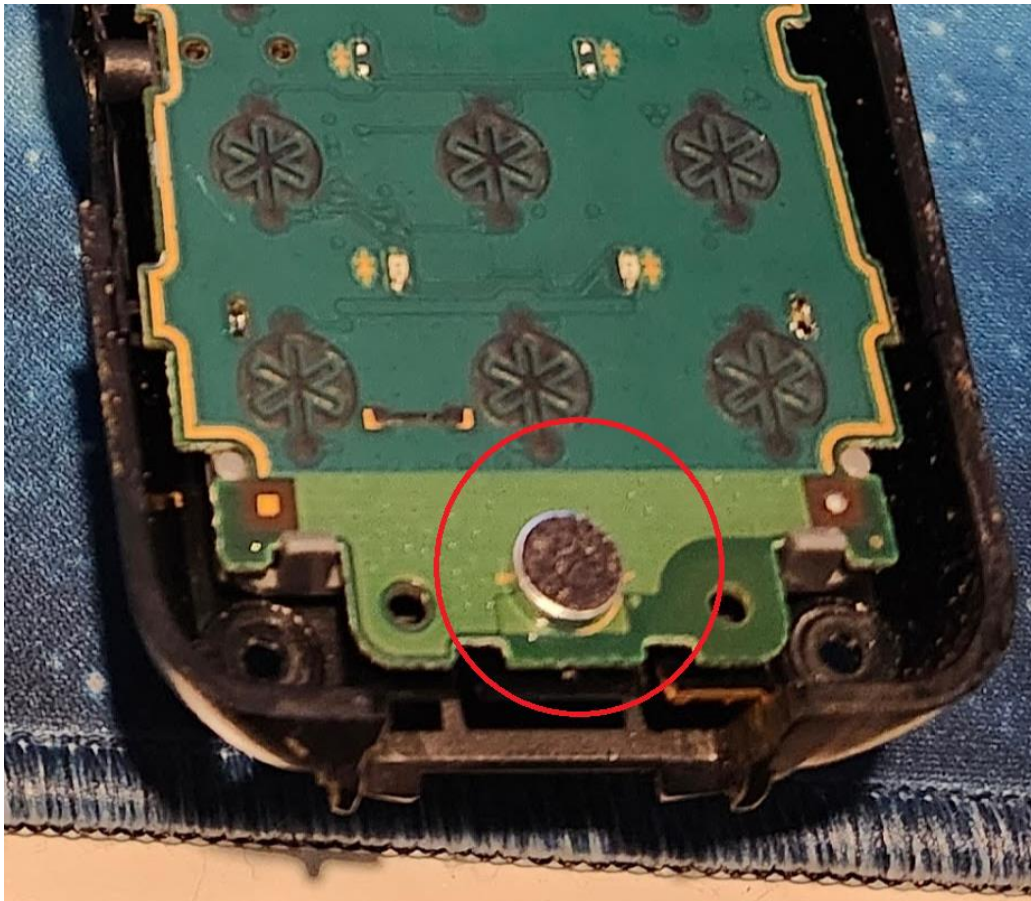
The microprocessor contains all the logic, control, and arithmetic operations needed for the handset to function. It is composed of a silicon wafer containing billions of transistors and is directly attached to the motherboard chipset.

Speaker



The speaker plays the audio received from the base to the user. It creates sound by oscillating a cone at different frequencies, creating pressure waves in the air that humans interpret as different sounds.

Microphone



The microphone collects the speech input from the user to be interpreted and transmitted from the handset to the landline base. It works by using a diaphragm to pick up sounds which are converted into electrical currents via a magnet that alters the current of a nearby coil.

Screen



The screen displays data to the user about the system including caller information, date & time, battery level, and signal strength. It works using a backlit Liquid-Crystal Display (LCD) with electrodes that when charged, allow light to pass through a polarizing filter, creating an image on the screen.

Receiver & Transmitter



The receiver and transmitter collect and send frequency modulation (FM) radio signals to the landline base that are interpreted as different sounds. These radio signals are received and dispatched using electromagnetic waves.

Keypad Circuit Board



The keypad circuit board uses a series of physical buttons connected directly to the back of the motherboard that provide the user a method to interact with the handset. It uses push-buttons as inputs which are communicated to the motherboard and microprocessor that determine what the system will output.

Lessons Learned

After disassembling the handset and observing its main components, we gained valuable knowledge about how cordless telephones work and how different devices that use similar components function. We learned a great deal about electronics and the types of connections that systems interface with to accomplish a task. With our new understanding of electronic apparatuses, we soldered and assembled an FPV drone.

