Wirelessly Connected Personal Cloud Storage Drive for Cell Phones
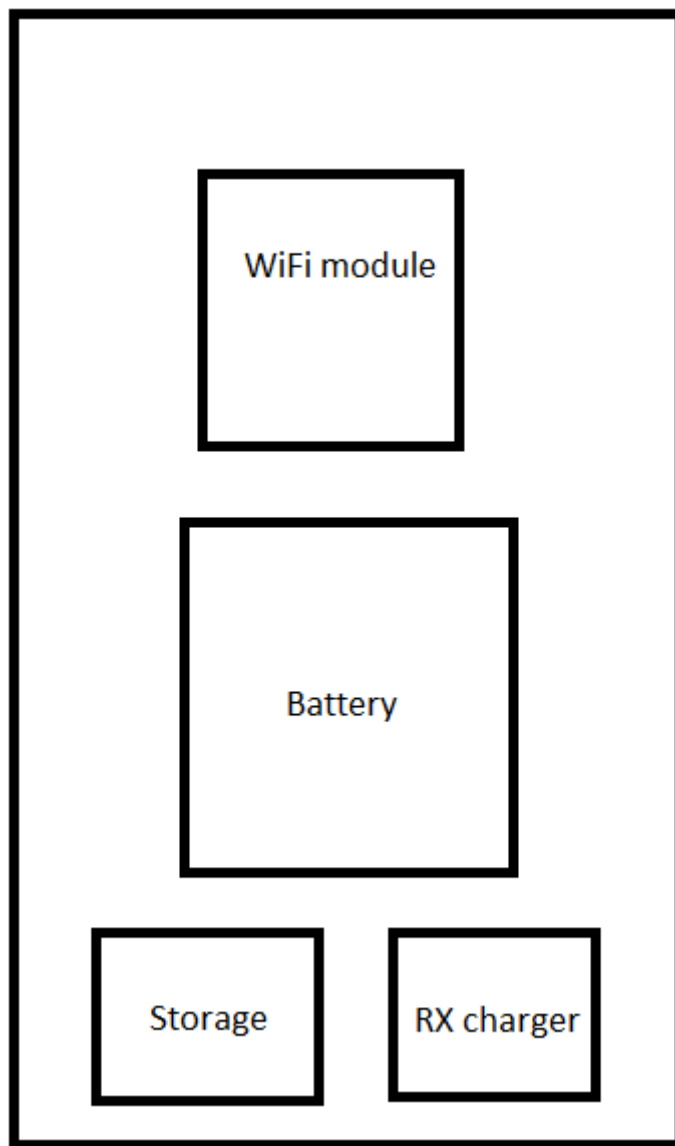
Function Description

Personal Cloud Storage(PCS) device will be connected to phones via WiFi thus eliminating necessity of physical connection between phone and cover. PCS will be embedded in phone covers and will be charged via micro-USB or wirelessly. Whenever in needs, PCS will appear on phone as remote drive and users can simply store or retrieve necessary data. In this way, users can protect their personal data from being exposed to public network. Data transfer will be encrypted to prevent hackers from sniffing it on remote position. In addition, all data can only be readable in sync with correspondent phones but not on other devices for security purpose.

Technical Specification

-Data storage: 1TB

-Data storage type: micro-SD

-Charging method: Wireless Qi charger or micro-USB

-Battery Capacity: 1000mAh

-Charging Voltage: 5V/500mA at max

-Wireless Data Transfer: WiFi

-Data Transfer Protocol: 802.11a

-Data Transfer Rate: 54Mbps

-Wireless Data Encryption: AES or SHA256

-Operating hours per charge: 10 hours in transfer mode, 48 hours in idle status

Block Diagram
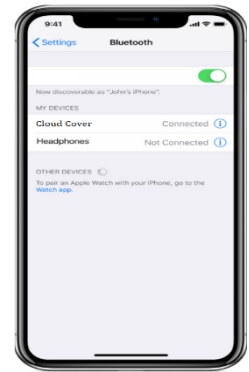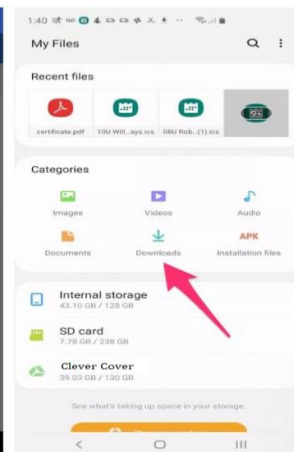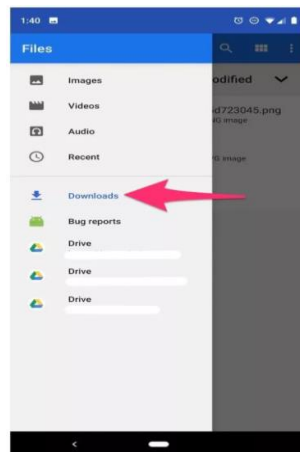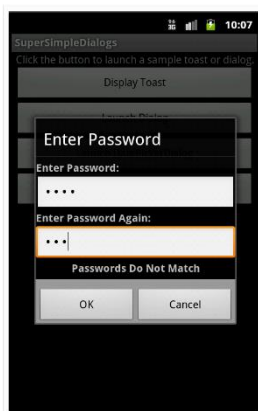

Mechanics of Phone Cover

Mechanical component of the phone cover consists of cover for phone protection, USB charging slot, micro-SD card slot and auxiliary cover for PCBs. As can be seen in the picture below, PCS looks like an ordinary phone cover which has plastic cover, and slot for phone cameras. In the middle of the cover, it has wireless charging RX coil, and it has USB charging slot and SD card slot around edges. It also has button coverage for volume and screen ON/OFF control.

Operating procedure from user perspective

As soon as the cover is on, users will be required for pairing procedure with phone. The phone cover will have QR code and password on the box so users need to scan QR code with developed phone app and it will prompt password confirmation dialog.

After successful confirmation, user will be redirected to cloud storage and remote drive will appear on phone as additional storage device. Whenever, phone cover is in power-off status, remote storage will still appear on phone but in inactive mode. When users need to remove PCS, they will go to the app and then remove the storage.
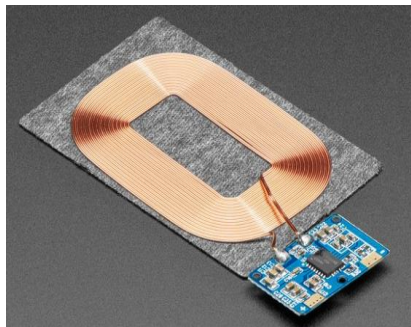
Required Component

-ESP32

-Wireless RX coil and auxiliary component

-Micro-SD card module

-USB to 3.3V converter