

Modified Versatile Lightning Cable With in-Built Jack synchronization

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ABSTRACT

Abstract- This Paper relates to working of lightning connector with audio jack. The goal of this paper is to build up an amend assembly for accessing input signals which is coming from two different ports at the same time in only one connector. This relates to working of a lightning cable with audio jack by using lightning cable power assembly for producing output from the jack without using extra adaptors or any connectors. With the current Generation smartphones, the audio jack is removed, due to that lighting to audio jack adaptor is required hence earphones can't be used while charging your phone without specific adaptors. With this sort of cable design, single lightning port will further use into both audio jack and/or lightning out and can be used for two signals synchronization. So users can use more accessories at the same time despite having a single port and at the same time user can operate on two signals simultaneously.

The goal of this paper is giving two ports in one connector by using energy harvesting and synchronization for both of this port.here usb port will further use as access port for pen-drive access and it will connecting through Arm cortex A7 H3 processor development board by linux.we can access this ports by using linux shell scripting while providing a power supply through Arm cortex A7 H3 processor development board. here lightning connector used for charging of cell phone(Iphone) in which we provide audio port for music play for providing two functions through the lightning connector at the same time.also providing multi functionality of USB port.

Keyword: lightning connector, USB port, LINUX, Arm cortex A7 H3 processor development board,Audio jack, synchronization of signals, audio amplifier

1.INTRODUCTION

Since major smartphone companies were giving two separate single ports, one is for individual charging and the other is for individual audio jack for listening to music play. But in current scenario major cell phone companies are removing audio jack in their flagship phones and giving only one type of port for charging. And providing wireless ear pods for listening to audio signals which are rechargeable. Since this ear pods are operating with restored battery capability and their working is based on frequent charging of them and operate them, which is somehow very bothersome and it takes more time.

The goal of using two ports in one cable can be obtained by adding two ports and establishing a Connector for surveying them for multi functionality purposes.

1.1 Background

A lightning cable currently invariably used commonly for earphone, charging etc. for its operative function, and at a time only one cable can be connected in only one available port. We have to transfer the cable frequently which is very tedious. To avoid frequent transfer of cables like earphone cable and charging cable an new assembly in a form of combination of lightning connector with in-built audio jack and lightning out is being designed. here we add some functionality to usb port by accessing pen-drive through that port using Linux.

1.2 Proposed Technique

Proposed technique consist of arm cortex A7 H3 processor development board with Debian os for combining of signals which arrived from USB port and audio jack assembly and operate them at the same time. Here the operating technique consists of important blocks like audio synthesizer unit, audio amplifier and Power Supply unit. Charging circuit consist of power section of 5v, 1.2 A is used for of signals. here voltage protection circuit is used to prevent an overvoltage condition from damaging the circuits.for accessing the audio port and pen-drive access port linux programming is used.

2. BLOCK DIAGRAM

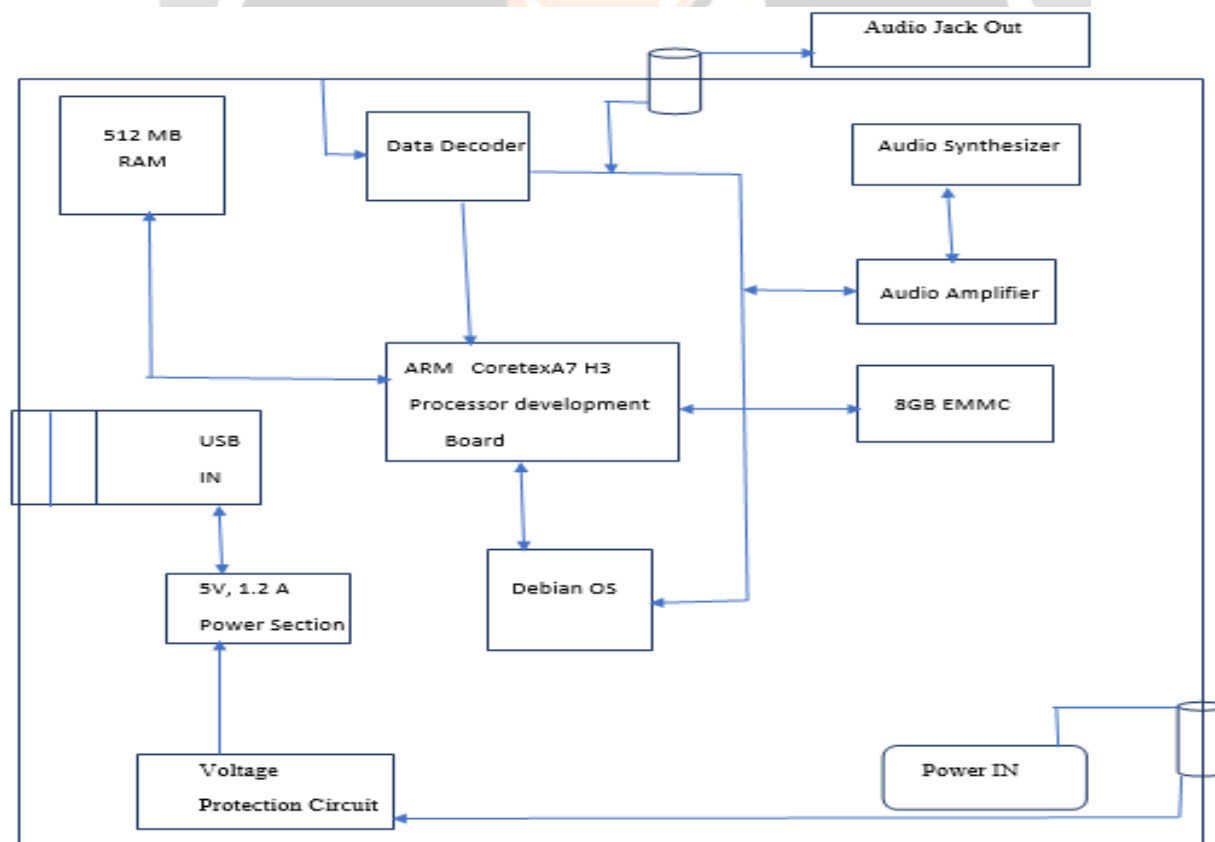


Fig – 1 Block Diagram

2.1 Proposed tools and schematic proposed design

Proposed system consists of, audio jack ,USB port, Lightning cable, audio synthesizer. here this system is work on linux programming for different ports for accessing them from Arm cortex A7 H3 processor development board.

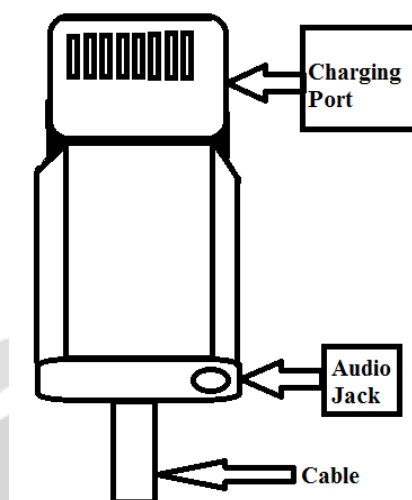


Fig - 2 Schematic proposed design of connector

2.2 Observation

After completing the testing on the Arm cortex A7 H3 processor development board, individual output of the charging port and of the audio port is gained by using Linux programming. By using development board same power harvesting can be used for ports for receiving output signals at the same time.

3. SIMULATION OBSERVATION

Here we use linux programming for interfacing of Arm cortex A7 H3 processor development board with the cell phone(Iphone) using shell scripting. serial communication between Arm cortex A7 H3 processor development board and cell phone(Iphone) is observed with the help of linux.

3.1 Simulation Results

```

root@ubuntu:~# login
Ubuntu 16.04.1 LTS orangepillite tty0
orangepillite login: smart
Password:
OrangePillite
Welcome to Ubuntu 16.04.1 LTS (Ubuntu 16.04.1 LTS 3.4.113-muni)
System load: 0.00          0% min          1% max
Memory usage: 29 % of 496MB  IP: 192.168.1.10
CPU temp: 44°C
Usage of /: 30% of 7.2G

[ 170 updates to install: apt-get upgrade ]
smart@orangepillite:~$ ls
add-ib  Downloads  examples  Music  Public  Videos
Desktop  Downloads  mountsub.sh  Pictures  Templates
smart@orangepillite:~$ sudo cp /media/smart/mountsub.sh /home/smart
[sudo] password for smart:
sudo: cp /media/smart/mountsub.sh /home/smart: command not found
smart@orangepillite:~$ ./mountsub.sh
Disk /dev/mmcblk0: 7.4 GiB, 791461440 bytes, 1549304 sectors
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Partition type: dos
Disk identifier: 0xaab24667

Device      Boot  Start        End  Sectors  Size  File System
/dev/mmcblk0p1 2048 15149119 15147072 7.2G  ext4

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Fig-3 accessing Arm cortex A7 H3 processor development board

Here we use putty software for simulation of different ports using shell scripting for that ports for accessing the data signals arriving to audio jack from cell phone(Iphone).

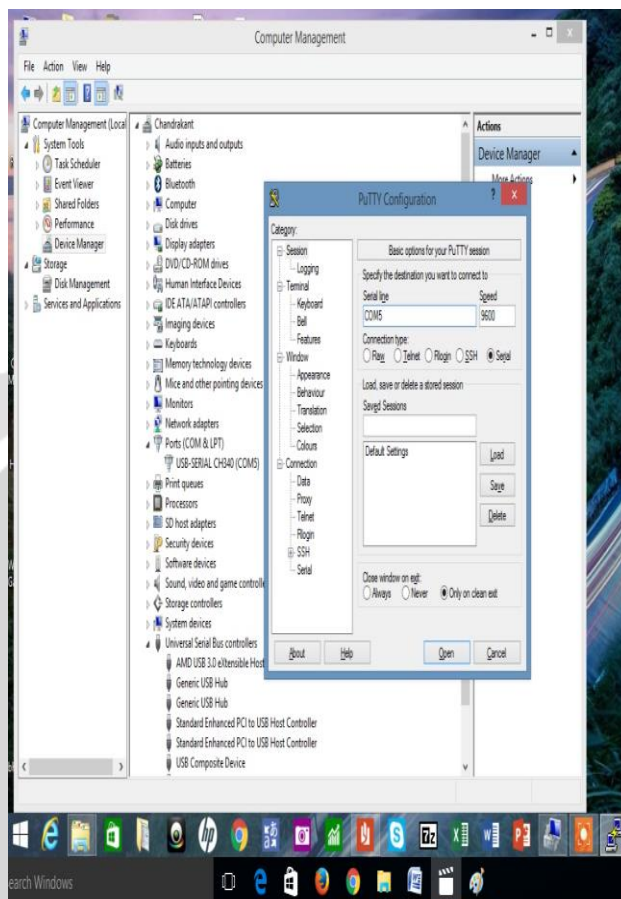


Fig – 4 Accessing ports using putty software

4. CONCLUSIONS

Communication between arm cortex A7 H3 processor development board and mobile phone(Iphone) is successfully established with proposed system with the help of shell scripting in Linux. Interfacing of usb port and audio jack has been verified in Linux on arm cortex A7 H3 processor development board. hence, by this work we can use earphone while phone is charging. further usb port is utilize as access port for pen-drive. so we access pen-drive data signals of audio file through arm cortex A7 H3 processor development board by shell scripting commands.

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