

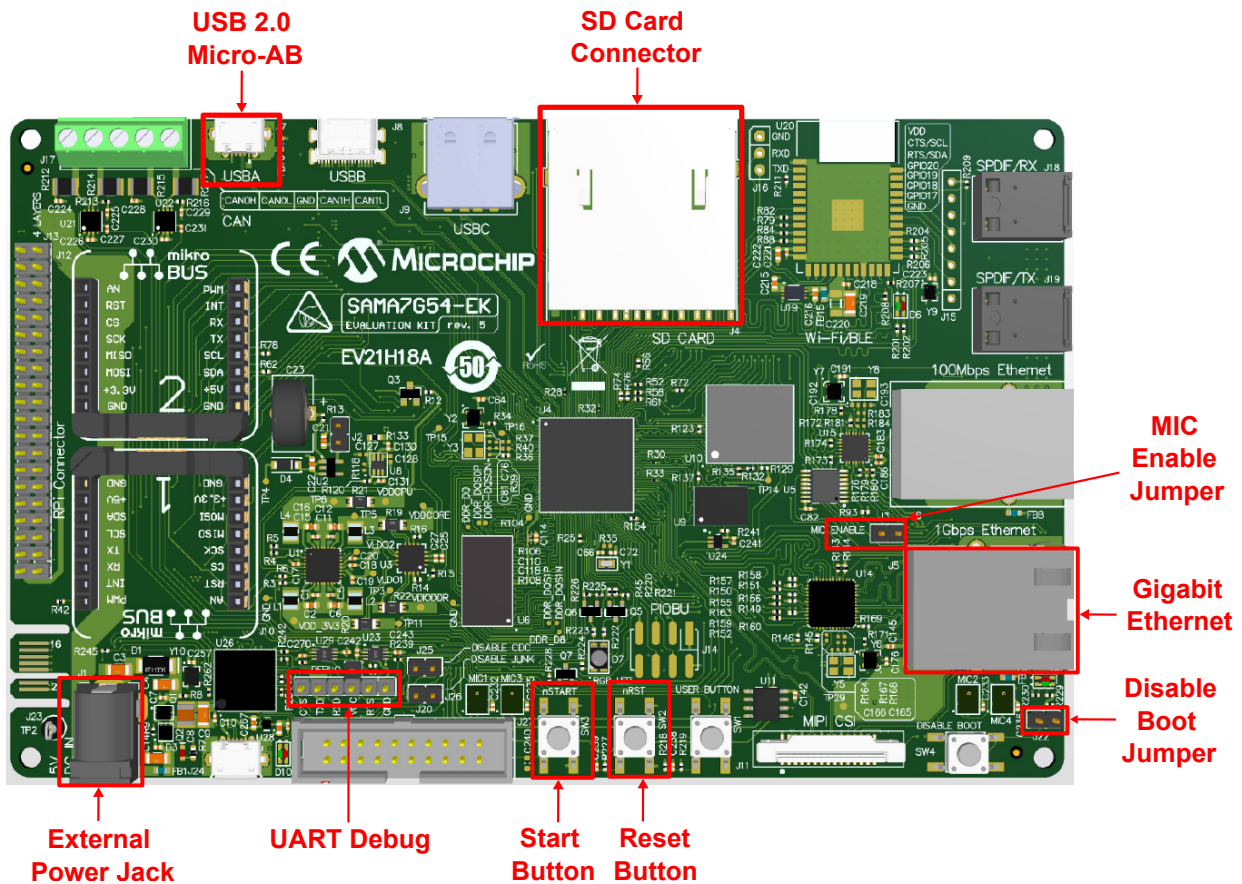


## 1. Prerequisites

- Hardware:
  - [SAMA7G54 Evaluation Kit](#)
  - Ethernet cable
  - FTDI cable
  - SD card
- Software:
  - VLC player on Windows PC

## 2. Hardware Setup

The SAMA7G54-EK board integrates multiple peripherals and interface connectors, as shown in the following figure.



Follow these instructions:

1. Close the J22 jumper to permanently disable booting from on-board memory.
2. Close the J3 jumper to enable the 4-microphone PDMIC interface.
3. Connect the Ethernet cable to the 1 Gbps Ethernet (J5) port.
4. The PC and the Ethernet cable connected to SAMA7G54-EK should be on the same network.
5. Connect the USB-TTL cable to J20 for console serial communication. Set the baud rate to 115200.
6. Power-up the USB Audio Extender by connecting the USB B cable to the USB B port of the USB audio extender.
7. Power-up the board by connecting the USB 2.0 Micro-AB cable to the USB port J7 on the SAMA7G54-EK board.

## 3. Software Setup

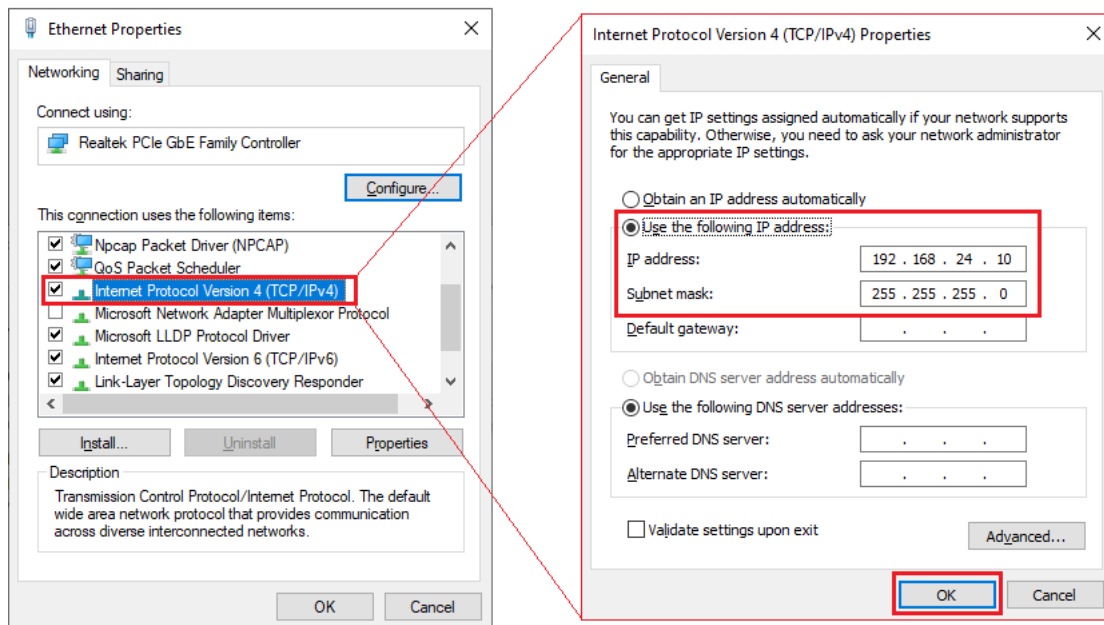
### 3.1 Windows PC Ethernet Setting

To access and modify **Ethernet Settings** on a Windows PC, follow these steps:

1. Open the **Control Panel** on the Windows computer.
2. Click on **Network and Internet**.
3. Select **Network and Sharing Center**.
4. Click on **Change adapter settings** on the left side.
5. In the **Network Connections** window, right-click on **Ethernet**.
6. Choose **Properties** from the context menu.
7. The **Ethernet Properties** window displays.

To set a **static IP address** for Ethernet connection, continue with these steps:

1. Double-click on **Internet Protocol Version 4 (TCP/IPv4)** to open settings.
2. A new window opens for **TCP/IPv4 properties**.
3. To manually set the IP address, select **Use the following IP address**.
4. Type in the desired **IP address** (for example, 192.168.24.10) and the **Subnet mask** (usually 255.255.255.0). Then click **OK** to apply the changes.



To confirm the IP address in Command Prompt:

1. Open Command Prompt by typing **cmd** in the Windows search bar and clicking the app.
2. Type **ipconfig** in the Command Prompt window and click **Enter**.
3. Scan the output for the network adapter and locate the **IPv4 Address** for Ethernet to view the set IP address.

```

C:\Users\i77027>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 3:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::84a3:6274:2be:b702%10
    IPv4 Address. . . . . : 192.168.24.10
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.24.1

Ethernet adapter Ethernet 5:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::61c7:244c:cbfb:5989%19
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :
  
```

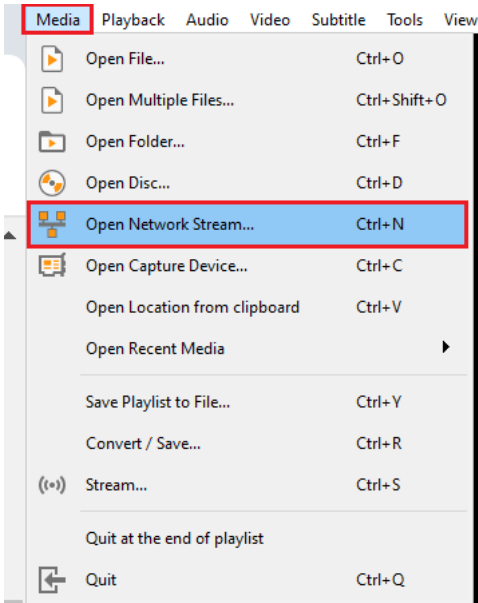
## 3.2 VLC Installation and Setting on Windows PC

### 3.2.1 VLC Media Player Installation

1. Go to the official *VLC download page*, [videolan.org](http://videolan.org).
2. Click the orange *Download VLC* button.
3. Select a location to save the installation file, or accept the default location, which is usually the downloads folder.
4. Once the download is complete, double-click the file to start the installation.
5. On the installer language screen, select a language and click *OK*.
6. Click *Next* to begin installation.
7. On the license agreement screen, click *Next*.
8. On the choose components screen, certain components and plugins for VLC can be chosen, or left at their default settings.
9. Click *Finish* when the installation is complete.

### 3.2.2 VLC Media Player Setting

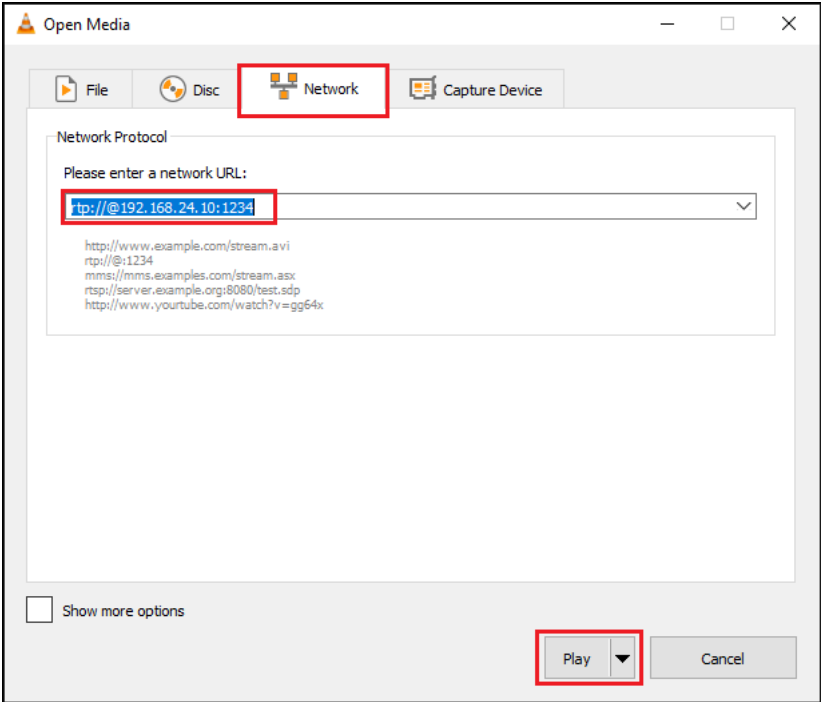
1. Open **VLC** on a Windows PC.
2. Select **Media**, then choose **Open Network Stream**.

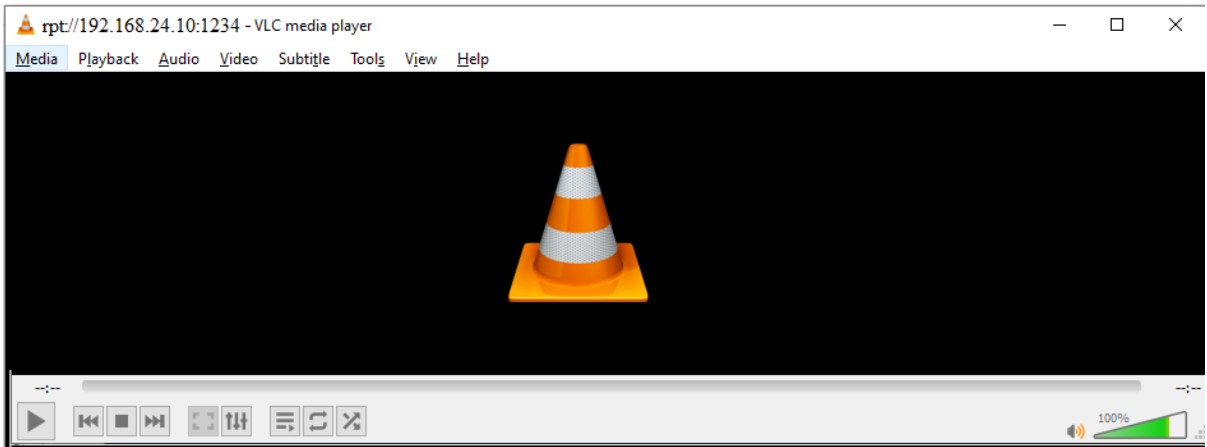


3. The **Open Media** window appears.
4. Navigate to the **Network** tab and enter the **Network URL**.
5. **Network URL:** `rtp://@<HostMachine_IP_Address>:<Port_Number>`  
- **Example:** `rtp://@192.168.24.10:1234`

**Note:** Port Number is customizable. Refer to [RTP Protocol](#) for more details.

6. Click **Play**.





### 3.3 SAMA7G54-EK Ethernet Setting

After the SAMA7G54-EK board boot-up, enter `ifconfig eth0 <ip>` in the terminal.

Example: `$ ifconfig eth0 192.168.24.11`

**➔ Important:** Ensure the IP address of the Windows PC and the SAMA7G54-EK are different and within the same IP address range.

```
# ifconfig eth0 192.168.24.11
# ifconfig
eth0: flags=4095<UP,BROADCAST,MULTICAST> mtu 1500
    inet 192.168.24.11 netmask 255.255.255.0 broadcast 192.168.24.255
    inet6 fe80::871:02ff:fe72:7403 prefixlen 64 scopeid 0x20<link>
    ether 04:91:62:f2:94:63 txqueuelen 1000 (Ethernet)
    RX packets 260 bytes 13842 (13.5 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 39 bytes 6555 (6.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 172

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

# macb e2800000.ethernet eth0: Link is Up - 1Gbps/Full - flow control tx
```

## 4. Custom Linux Build Procedure for FFmpeg

### 4.1 Get Buildroot

To get the source code, the `buildroot-mchp` and `buildroot-external-microchip` repositories should be cloned.

`buildroot-mchp` is a fork of Buildroot with a few specific patches. The external tree provides added defconfigs and packages dedicated to the demos.

To clone `buildroot-mchp` from the repository:

```
$ git clone https://github.com/linux4microchip/buildroot-mchp.git
```

To clone `buildroot-external-microchip` from the repository:

```
$ git clone https://github.com/linux4microchip/buildroot-external-microchip.git
```

The source code should be pointing to the latest version of the `buildroot-mchp` and `buildroot-external-microchip` repositories.



**Tip:** We recommend to use the same `linux4microchip` tag for both repositories.

**Note:** This document is verified with the tag `linux4microchip-2024.04`.

```
Username@Hostname :~/buildroot-mchp$ git tag | grep 2024
linux4microchip-2024.04
linux4microchip-2024.04-rc2
```

### 4.2 Configure buildroot-mchp

1. Navigate to the `buildroot-mchp` directory:

```
$ cd buildroot-mchp
```

2. Enter the following command to export the additional defconfigs and packages from the external tree (`buildroot-external-microchip`):

```
$ export BR2_EXTERNAL=../buildroot-external-microchip/
```

```
Username@Hostname :-$ cd buildroot-mchp/
Username@Hostname :~/buildroot-mchp$ export BR2_EXTERNAL=
../buildroot-external-microchip/
```

3. From the `config's` directory in the `buildroot-external-microchip` directory, find the SAMA7G54-EK defconfig files:

```

user@hostname:~/buildroot-external-microchip/configs$ ls
at91sam9x5ek_headless_defconfig      sama5d29_curiosity_headless_defconfig
icicle_amp_defconfig                 sama5d2_icp_headless_defconfig
icicle_defconfig                     sama5d2_ptc_ek_graphics_defconfig
icicle_nand_defconfig                sama5d2_ptc_ek_headless_defconfig
icicle_nor_defconfig                 sama5d2_ptc_ek_nodered_defconfig
icicle_rootfs_defconfig              sama5d2_xplained_graphics_defconfig
sam9x60_curiosity_graphics_defconfig sama5d2_xplained_headless_defconfig
sam9x60_curiosity_headless_defconfig sama5d2_xplained_nodered_defconfig
sam9x60ek_graphics_defconfig         sama5d2_xplained_optee_graphics_defconfig
sam9x60ek_headless_defconfig         sama5d2_xplained_optee_headless_defconfig
sam9x75_curiosity_graphics_defconfig sama5d3_eds_headless_defconfig
sam9x75_curiosity_headless_defconfig sama5d3_eds_nf_defconfig
sama5d27_som1_ek_graphics_defconfig  sama5d3_xplained_graphics_defconfig
sama5d27_som1_ek_headless_defconfig  sama5d3_xplained_headless_defconfig
sama5d27_som1_ek_headless_wilc_defconfig sama5d3_xplained_nodered_defconfig
sama5d27_som1_ek_nodered_defconfig   sama5d4_xplained_graphics_defconfig
sama5d27_som1_ek_optee_graphics_defconfig sama5d4_xplained_headless_defconfig
sama5d27_som1_ek_optee_headless_defconfig sama5d4_xplained_headless_wilc_defconfig
sama5d27_wlsom1_ek_graphics_defconfig sama5d4_xplained_nodered_defconfig
sama5d27_wlsom1_ek_headless_defconfig sama7g5ek_headless_defconfig
sama5d29_curiosity_graphics_defconfig

```

- From *buildroot-mchp* directory, make the configuration files using the command below:  
\$ make sama7g5ek\_headless\_defconfig

```

Username@Hostname:~/buildroot-external-microchip$ cd ../buildroot-mchp/
Username@Hostname:~/buildroot-mchp$ make sama7g5ek_headless_defconfig

```

### 4.3 Configure Buildroot for FFmpeg

- Enter the following command to modify the configurations:  
\$ make menuconfig

The *buildroot Configuration* window opens.

```

Usrname@Hostname:~/buildroot-mchp$ make menuconfig

```

- In the menu, click *Target Packages*.

```

Buildroot linux4microchip-2024.04 Configuration
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted
letters are hotkeys. Pressing <Y> selects a feature, while <N> excludes a feature. Press
<Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] feature is selected [ ] feature is
excluded

Target options --->
Toolchain --->
Build options --->
System configuration --->
Kernel --->
Target packages --->
Filesystem images --->
Bootloaders ---->
Host utilities --->
Legacy config options --->
External options --->

<Select> < Exit > < Help > < Save > < Load >

```

- In the *Target Packages* window, select *Audio and video applications* and press *Enter*.

```

Target packages
Arrow keys navigate the menu. <Enter> selects submenu ---> (or empty submenu ----). Highlighted
letters are hotkeys. Pressing <Y> selects a feature, while <N> excludes a feature. Press
<Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] feature is selected [ ] feature is
excluded

[*] BusyBox
(package/busybox/busybox.config) BusyBox configuration file to use
() Additional BusyBox configuration fragment files
-- Show packages that are also provided by busybox
[ ] Individual binaries
[ ] Install the watchdog daemon startup script
Audio and video applications --->
Compressors and decompressors --->
Debugging, profiling and benchmark --->
Development tools --->
Filesystem and flash utilities --->
↓(+)
```

<Select>   < Exit >   < Help >   < Save >   < Load >

4. In the **Audio and video applications** window, select **lame** and press **Enter**.

```

Target packages -> Audio and video applications
Audio and video applications
Arrow keys navigate the menu. <Enter> selects submenu ---> (or empty submenu ----). Highlighted
letters are hotkeys. Pressing <Y>
selects a feature, while <N> excludes a feature. Press <Esc><Esc> to
exit, <?> for Help, </> for Search. Legend: [*] feature is selected

↑(-)
[ ] jack2
*** kodi needs python3 w/ .py modules, a uClibc or glibc tool
*** kodi needs udev support for gbm ***
*** kodi needs an OpenGL EGL backend with OpenGL or GLES supp
[*] lame
[ ] madplay
[ ] mimic
[ ] minimodem
[ ] miraclecast
[ ] mjpegtools
↓(+)
```

<Select>   < Exit >   < Help >   < Save >   < Load >

5. In the **Audio and video applications** window, select **FFmpeg** and press **Enter**.

```

Audio and video applications
Arrow keys navigate the menu. <Enter> selects submenu ---> (or empty submenu ----). Highlighted
letters are hotkeys. Pressing <Y> selects a feature, while <N> excludes a feature. Press
<Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] feature is selected [ ] feature is
excluded

↑(-)
[*] atest
[ ] aumix
[ ] bluez-alsa
[ ] dvblast
[ ] dvdauthor
[ ] dvdread-tools
[ ] espeak
[ ] faad2
[*] ffmpeg --->
[ ] flac
[ ] flite
↓(+)
```

<Select>   < Exit >   < Help >   < Save >   < Load >

6. In the **FFmpeg** window, ensure that the **Enable GPL code**, **Enable nonfree code**, **Build ffmpeg**, **Build ffmpeg**, **Build ffmpeg**, **Build libavresample**, **Build libpostproc**, and **Build libswscale** check boxes are selected. If not, select them and press **Enter**.

```

                                     ffmpeg
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted
letters are hotkeys. Pressing <Y> selects a feature, while <N> excludes a feature. Press
<Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] feature is selected [ ] feature is
excluded

--- ffmpeg
[*] Enable GPL code
[*] Enable nonfree code
[*] Build ffmpeg (the command line application)
[*] Build ffplay
[*] Build ffprobe
[*] Build libavresample
[*] Build libpostproc
-*- Build libswscale
(jpeg mjpeg png mpeg4) Enabled encoders
(mpeg1 mpeg2 mpeg4 vp6 vp8 vp9 h264 h263 jpeg mjpeg aac vorbis mp3 rawvideo) Enabled
↓(+)
```

<Select>   < Exit >   < Help >   < Save >   < Load >

7. In the **FFmpeg** window, select **Additional parameters for ./configure**.

```

                                     ffmpeg
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted
letters are hotkeys. Pressing <Y> selects a feature, while <N> excludes a feature. Press
<Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] feature is selected [ ] feature is
excluded

↑(-)
(jpeg mjpeg png mpeg4) Enabled encoders
(mpeg1 mpeg2 mpeg4 vp6 vp8 vp9 h264 h263 jpeg mjpeg aac vorbis mp3 rawvideo) Enabled m
(avi mv4 h263 h264 mp4 mp3 mp2 mov mpjpeg mpeg2video mpegts image2 rawvideo) Enabled m
(avi matroska mpegts mjpeg mp3 mov mpegps mpegvideo aac h263 h264 m4v rawvideo) Enabl
(h263 h264 mjpeg mpeg4video mpegvideo mpegaudio vp8 vp9 jpeg aac vorbis) Enabled pars
() Enabled bitstreams
(file) Enabled protocols
(scale) Enabled filters
[*] Enable input devices
[*] Enable output devices
() Additional parameters for ./configure
```

<Select>   < Exit >   < Help >   < Save >   < Load >

8. In the **Additional parameters for ./configure** window, add the following configurations.
- ```

--enable-protocols --enable-protocol=rtp --enable-demuxer=wav --enable-
muxer=wav --enable-demuxer=pcm_s16le --enable-muxer=pcm_s16le --enable-
muxer=rtp --enable-libvpx --enable-libx264 --enable-libmp3lame --enable-
libfdk-aac --enable-nonfree --enable-libvorbis --enable-decoder=pcm_s16le
--enable-encoder=pcm_mulaw --enable-encoder=alaw --enable-filter=aresample
--enable-libmp3lame
```

```

Additional parameters for ./configure
Please enter a string value. Use the <TAB> key to move from the input
field to the buttons below it.

--enable-protocols --enable-protocol=rtp --enable-demuxer=wav --enabl
```

< Ok >   < Help >

9. Press **Exit** and then return to the **Target Packages** Window. In the **Target Packages** window, select **Libraries** and press **Enter**.

```

Target packages
Target packages
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty
submenus ----). Highlighted letters are hotkeys. Pressing <Y>
selects a feature, while <N> excludes a feature. Press <Esc><Esc> to
exit, <?> for Help, </> for Search. Legend: [*] feature is selected
↑(-)
Hardware handling --->
Interpreter languages and scripting --->
Libraries --->
Mail --->
Miscellaneous --->
Networking applications --->
Package managers --->
Real-Time --->
Security --->
Shell and utilities --->
↓(+)
<Select> < Exit > < Help > < Save > < Load >

```

10. In the **Libraries** window, select **Audio/Sound** and press **Enter**.

```

Target packages → Libraries
Libraries
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty
submenus ----). Highlighted letters are hotkeys. Pressing <Y>
selects a feature, while <N> excludes a feature. Press <Esc><Esc> to
exit, <?> for Help, </> for Search. Legend: [*] feature is selected
Audio/Sound --->
Compression and decompression --->
Crypto --->
Database --->
Filesystem --->
Graphics --->
Hardware handling --->
Javascript --->
JSON/XML --->
Logging --->
↓(+)
<Select> < Exit > < Help > < Save > < Load >

```

11. In the **Audio/Sound** window, select **fdk-aac** and press **Enter**.

```

Target packages → Libraries → Audio/Sound
Audio/Sound
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty
submenus ----). Highlighted letters are hotkeys. Pressing <Y>
selects a feature, while <N> excludes a feature. Press <Esc><Esc> to
exit, <?> for Help, </> for Search. Legend: [*] feature is selected
-*- alsa-lib --->
[ ] alure
[ ] aubio
[ ] bcg729
[ ] caps
[*] fdk-aac
[ ] libao
[ ] libbroadvoice
[ ] libcanberra
[ ] libcdaudio
↓(+)
<Select> < Exit > < Help > < Save > < Load >

```

12. In the **menuconfig** dialog, enable or disable features as required. Once done, move to **<Exit>** with arrows and press the **Enter** key to exit from this screen. Then, click **Yes** to save the configuration.

```
Do you wish to save your new configuration?  
(Press <ESC><ESC> to continue Buildroot configuration.)
```

```
< Yes >      < No >
```

## 4.4 Build the Buildroot Image

After all the required changes are made, the build can be performed.

1. Navigate to the ***buildroot-mchp*** directory:

```
$ cd buildroot-mchp
```

**Note:** Before building the buildroot-mchp, setup the cross-compile toolchain. Refer to [Cross Compiler](#) for detailed instructions.

2. Start the building process for the Buildroot SD Card image with the following command:

```
$ make
```

The building will take a few hours to complete.

3. Once the build is complete, navigate to ***buildroot-mchp/output/Images***.
4. Verify that the ***sdcard.img*** file is generated.

## 5. Flashing the Linux Image onto the SD Card

1. Follow the steps provided [here](#) to Flash the generated sdcard.img onto the SD card.
2. Open the console serial communication and observe Linux booting from the SD card.

## 6. Enabling PDM Microphones using the Device Tree Overlay

Pulse Digital Modulation (PDM) for microphones is a method used to convert an analog signal into a digital signal. The SAMA7G54-EK features four PDM microphones. For more information, refer to the Quad MEMS Microphones section in the SAMA7G54-EK User's Guide (DS50003273), available on [www.microchip.com](http://www.microchip.com).

Follow the steps below to use the device tree overlay to enable PDM microphones:

1. During booting, **stop** at U-Boot level by pressing *Enter* key to apply the device tree overlay to enable Quad PDM microphones.

```
AT91Bootstrap 4.0.8 (2024-05-03 19:47:17)

SD/MMC: Image: Read file u-boot.bin to 0x66f00000
MMC: ADMA supported
SD: Card Capacity: High or Extended
SD: Specification Version 3.0X
SD/MMC: Done to load image

<debug_uart>

U-Boot 2023.07.02-linux4microchip-2024.04 (May 03 2024 - 19:47:02 +0530)

CPU: SAMA7G54
Crystal frequency: 24 MHz
CPU clock : 800 MHz
Master clock : 200 MHz

Model: Microchip SAMA7G5-EK
DRAM: 512 MiB
Core: 261 devices, 24 uclasses, devicetree: separate
MMC: mmc@e1204000: 0, mmc@e1208000: 1
Loading Environment from FAT... OK
In: serial@200
Out: serial@200
Err: serial@200
Net: eth0: ethernet@e2800000, eth1: ethernet@e2804000
Hit any key to stop autoboot: 0 =>
```

2. Edit the **bootcmd** environment variable using the **edit bootcmd** command and apply the PDMC0 overlay by updating the string bootcmd from

```
bootcmd=fatload mmc 1:1 0x63000000 sama7g5ek.itb; bootm
0x63000000#kernel_dtb
```

to

```
bootcmd=fatload mmc 1:1 0x63000000 sama7g5ek.itb; bootm
0x63000000#kernel_dtb#pdmc0.
```

```

=> boot
4943532 bytes read in 304 ms (15.5 MiB/s)
## Loading kernel from FIT Image at 63000000 ...
Using 'kernel_dtb' configuration
Trying 'kernel' kernel subimage
  Description: Linux4SAM Linux kernel
  Type: Kernel Image
  Compression: uncompressed
  Data Start: 0x630000d4
  Data Size: 4881144 Bytes = 4.7 MiB
  Architecture: ARM
  OS: Linux
  Load Address: 0x62000000
  Entry Point: 0x62000000
  Hash algo: crc32
  Hash value: 4bbc49d3
  Hash algo: sha1
  Hash value: 5a9aa6c02feaa35d17f5a17124eff6640ace8d05
Verifying Hash Integrity ... crc32+ sha1+ OK
## Loading fdt from FIT Image at 63000000 ...
Using 'kernel_dtb' configuration
Trying 'base_fdt' fdt subimage
  Description: SAMA7G5-EK Flattened Device Tree blob
  Type: Flat Device Tree
  Compression: uncompressed
  Data Start: 0x634a7d04
  Data Size: 44378 Bytes = 43.3 KiB
  Architecture: ARM
  Load Address: 0x61000000
  Hash algo: crc32
  Hash value: f4dfd9ed
  Hash algo: sha1
  Hash value: ccd88978c716bcee62a659cb2a644be486b850b2
Verifying Hash Integrity ... crc32+ sha1+ OK

```

- To login as the root user, enter `root`.

```

Welcome to the Microchip SAMA7G5 Demo
sama7 login: root

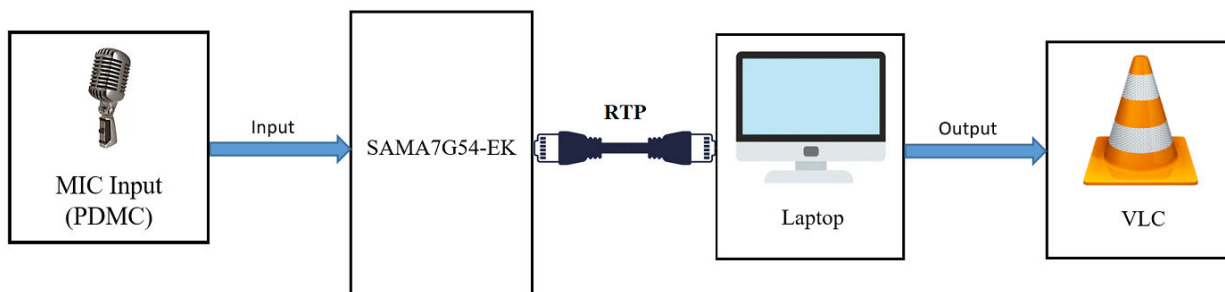
```

This completes enabling PDM microphones with the pdmc0 device tree overlay.

## 7. Live Audio Streaming via RTP

This test is intended to stream live audio captured by the SAMA7G54-EK's PDMC to VLC on a Windows PC via RTP.

**Figure 7-1.** Audio Over Ethernet on SAMA7G54-EK using Linux



1. To check the PDMC audio device card number and device number, use the command below.

```
$ arecord -l | grep pdmc
```

In the following example, the PDMC card number is 0 and the device number is 4:

```
# arecord -l | grep pdmc
card 0: EK [mchp-asrc-card @ sama7g5 EK], device 4: mchp-pdmc - dmic-hifi dmic-hifi-4 [mchp-pdmc - dmic-hifi dmic-hifi-4]
```

This command verifies that the pdmc0 device tree overlay has been applied successfully

2. To stream live audio captured by the SAMA7G54-EK's, use the following command:

```
$ arecord -Dplughw:0,4 -r 8000 -c 1 -f S16_LE | ffmpeg -f s16le -ar 8000 -ac 1 -i - -f mulaw -f rtp rtp://<IP_address>:<Port>
```

**Example:** \$ arecord -Dplughw:0,4 -r 8000 -c 1 -f S16\_LE | ffmpeg -f s16le -ar 8000 -ac 1 -i - -f mulaw -f rtp rtp://192.168.24.10:1234

```
# arecord -Dplughw:0,4 -r 8000 -c 1 -f S16_LE | ffmpeg -f s16le -ar 8000 -ac 1 -i - -f mulaw -f rtp rtp://192.168.24.10:1234
```

3. Play audio or speak close to microphones MIC3 (C232) and MIC1 (C235) on the SAMA7G54-EK. That audio can be listened to through VLC on a Windows PC.

## 8. Conclusion

This guide shows the necessary steps to successfully set up a Windows PC and the SAMA7G54-EK board, configure Buildroot for FFmpeg, and execute the build process. By following these instructions, the user can test and stream live audio using the RTP protocol on the SAMA7G54-EK evaluation kit within a Linux Buildroot environment.

## 9. Revision History

### 9.1 Rev. A - 01/2025

First issue.

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