Build and Flash in IMX93 AMT

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# INTRODUCTION

**Purpose and Scope**

This document is intended to assist the engineer in programming the compiled binaries onto the IMX93 AMT board and in validating the peripherals and functionalities associated with the IMX93 AMT.

#### Acronyms

The following acronyms will be used throughout the document

|  |  |
| --- | --- |
| Acronym | Abbreviation |
| USB | Universal Serial Bus |
| UUU | Universal Update Utility |
| GB | GigaByte |
| OS | Operating System |
| SOM | System On Module |
| eMMC | embedded Multi-Media Card |
| RAM | Random Access Memory |

# Building the IMX93 AMT Source code

**Step 1: Install host OS:-**

* To build the Yocto source files, use a computer running a Linux OS."The recommended version is Ubuntu **18.04** (64-bit)."

Minimum system requirements:

* 200 GB free disk space
* 16 GB RAM

**Step 2:Install Required Packages**

* Use apt-get to install the necessary packages on Ubuntu. The following command will install the required tools:

**$ sudo apt install gawk wget git diffstat unzip texinfo gcc build-essential chrpath socat cpio python3 python3-pip python3-pexpect xz-utils debianutils iputils-ping python3-git python3-jinja2 libegl1-mesa libsdl1.2-dev python3-subunit mesa-common-dev zstd liblz4-tool file locales -y**

**$ sudo locale-gen en\_US.UTF-8**

**Step 3 : Setting up the repo utility**

To install the “repo” utility, perform these steps:

* Create a bin folder in the home directory.

**$ mkdir ~/bin (this step may not be needed if the bin folder already exists)**

**$ curl https://storage.googleapis.com/git-repo-downloads/repo > ~/bin/repo**

**$ chmod a+x ~/bin/repo**

* Add the following line to the .bashrc file to ensure that the ~/bin folder is in your PATH variable.

**$ export PATH=~/bin:$PATH**

**Step 4: Yocto Project Setup**

* First, make sure that Git is set up properly with the commands below:

**$ git config --global user.name "Your Name"**

**$ git config --global user.email "Your Email"**

**$ git config --list**

* The following example shows how to download the i.MX Yocto Project Community BSP recipe layers.

**$ mkdir imx-yocto-bsp**

**$ cd imx-yocto-bsp**

**$ repo init -u <https://github.com/nxp-imx/imx-manifest> -b imx-linux-nanbield -m imx-6.6.3-1.0.0.xml**

**$ repo sync**

**Step 5: Update the Latest yocto source**

* The following command to update the latest source patch in the IMX93 AMT board.

**$ cd imx-yocto-bsp**

**$ rm -rf sources**

* Download the below link to get the latest yocto source code.

<https://drive.google.com/file/d/1KKAbrw4DC9olnLKctWJKctOcZYE-fkUl/view?usp=sharing>

Extract the sources.tar.gz and Replace the source directory into the imx-yocto-bsp directory.

**Step 6: Build the yocto source**

* Setup the MACHINE environment

**$ MACHINE=imx93evk DISTRO=fsl-imx-xwayland source ./imx-setup-release.sh -b bld-imx93evk**

* The following command to build the full image

**$ bitbake imx-image-full**

**Step 7: Build the kernel-dtb source**

* The following command to build the linux kernel alone.

**$ bitbake -C compile linux-imx**

**Step 8: Generated WIC image**

* After compilation process was completed successfully .The following below path having the WIC image generated for flashing the latest image in the IMX93 AMT.

File path: imx-yocto-bsp/bld-imx93evk/tmp/deploy/images/imx93evk

WIC image : imx-image-full-imx93evk.rootfs-20241003132705.wic.zst

* Extract the file using the below command to change the extenstion from .wic.zst to .wic.

**$ zstd -d imx-image-full-imx93evk.rootfs-20241003132705.wic.zst**

**Step 8: Generated Kernel DTB**

* After compilation process was completed successfully .The following below path having the files for flashing the kernel & the device tree blob.
* The below reference path is for the Kernel file.

Kernel Image path: imx-yocto-bsp/bld-imx93evk/tmp/work/imx93evk-poky-linux/linux-imx/6.6.3+git/build/arch/arm64/boot/

Kernel file: Image

* The below reference path is for the dtb file:

Device tree blob path: imx-yocto-bsp/bld-imx93evk/tmp/work/imx93evk-poky-linux/linux-imx/6.6.3+git/build/arch/arm64/boot/dts/freescale

DTB file : imx93-11x11-evk.dtb

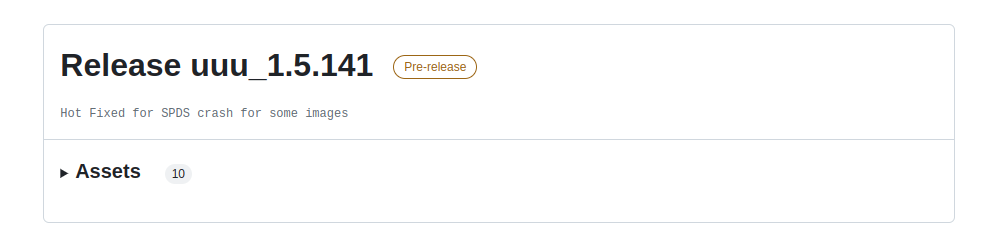
# Flashing the IMX93 AMT

1. **Download the Board requirements package**

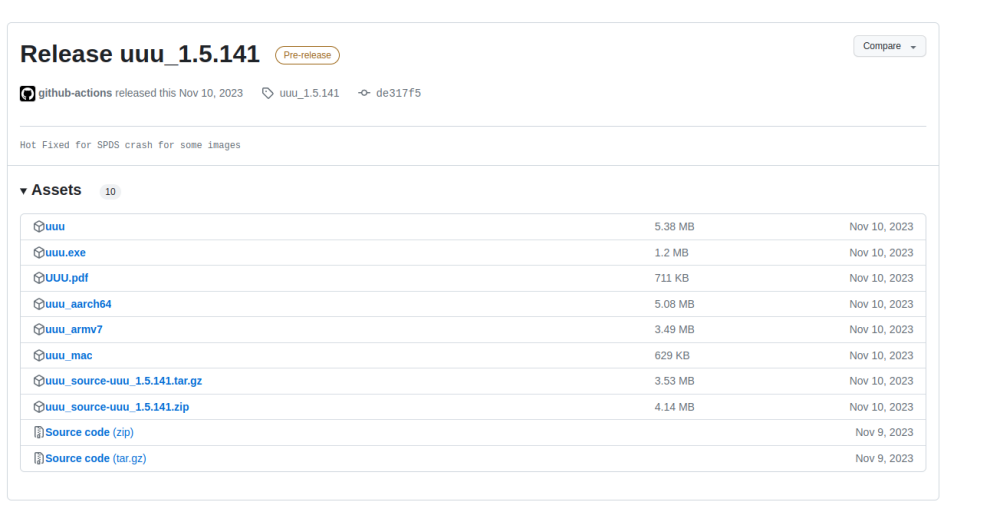
* Download the Flashing package utility from the below link.

<https://github.com/nxp-imx/mfgtools/releases>

* Select the below version by the following below screenshot.



* Select the below version by the following below screenshot.



* Download the 1st line of “uuu” & copy into your Image downloaded location.

# Yocto Image build Procedure

* Follow the below link to setup the IMX93 EVK source code setup.

<https://docs.nxp.com/bundle/GUIGUIDERUG/page/topics/yocto.html>

* Follow the below link to download the IMX93 AMT binary.

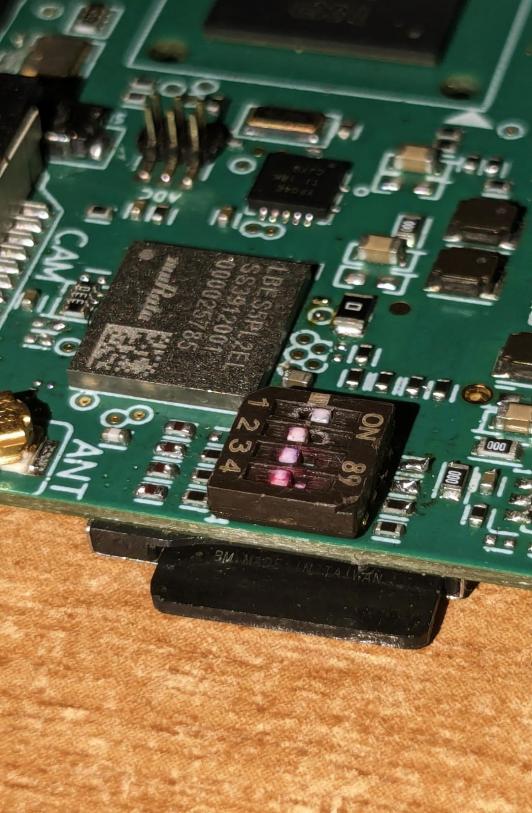
https://drive.google.com/file/d/1b5tNff70gPk5cEGlevf6f9fiCElv9Q8R/view?usp=sharing

Requirements to flashing the WIC image in the IMX93 AMT board

* uuu
* imx-boot-imx93-11x11-lpddr4x-evk-sd.bin-flash\_singleboot
* imx-image-full-imx93evk.rootfs-20241001074934.wic

# Flashing the Image

* Configure the board switches to the **Flash mode** using the below screenshot.



* Before flashing you need to connect the **USB ”C”** cable between the PC & Device.
* Go to the following path of your installed package folder ”/home/<UserName>/DownloadedPath>”.
* Run the following command to flash the image

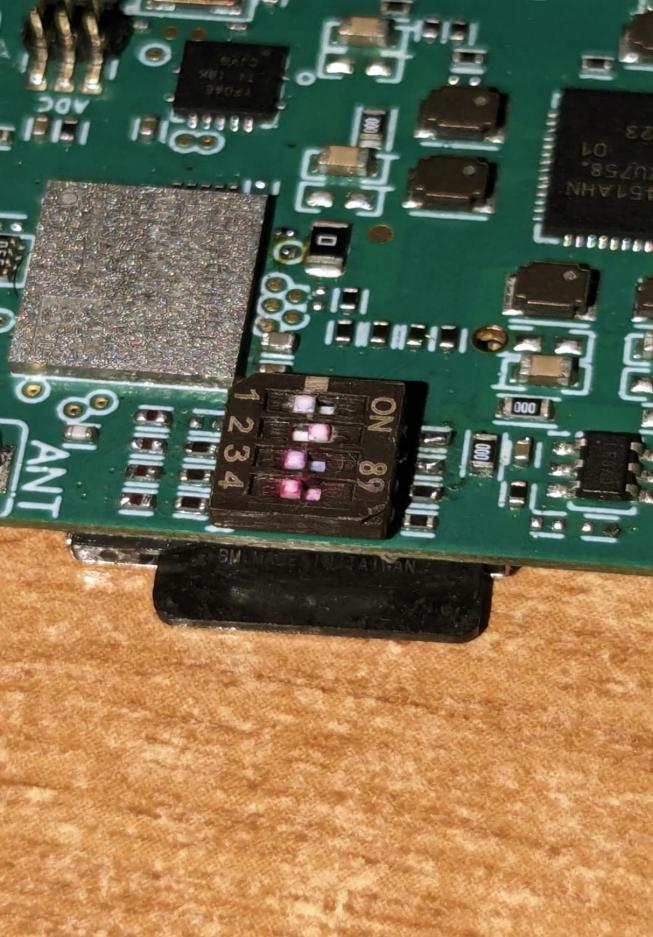
**$ cd /home/<PC UserName>/<DownloadedPath>**

**$ chmod 777 uuu**

**$ sudo ./uuu -b emmc\_all imx-boot-imx93-11x11-lpddr4x-evk-sd.bin-flash\_singleboot <Downloaded Path>/imx-image-full-imx93evk.rootfs-20241001074934.wic**

# Booting

* Once the flashing got completed, Power off the board, Follow the below image & select the **eMMC** mode.



* Then Power on board and boot the board using the **USB “C”** cable between the board & PC along with the serial communication.