Release Note

Project Name	OnSemiCamModule_96B	**Project Code**	OT_U21_431
Release Name/ Number	1.5	**Release Date**	04/20/2023
EI Point of Contacts	Deepak Rathore	**Customer Point of Contacts**	Attila Ambrus

Prepared By	Deepak Rathore
Reviewed By	Snehal Parmar
Approved By	Snehal Parmar

1. Release Description

The Software release version (v1.5) is based on dhcom_stm32mp1-bsp-platform release from dh-electronics. It is to be used with Avenger96 Development board. This release is based on dhcom_stm32mp1-bsp-platform release from dh-electronics with adaptations and customizations from eInfochips to interface AP1302 ISP with Avenger96 Development platform.

2. Release Details

This release consists of the following:

- Pre-built images
- Documentation
- Build and source code setup script
- Readme
- Yocto recipes and patches
- Test report

This release includes the following references and additional information:

- ei_OnSemiCamModule_96B_AV96_ReleaseNote.pdf – Provides release information
- ei_Camera_User_Guide_STM32MP1_Avenger96_L5_10_Rel_1_5.pdf – Provides the information on interfacing camera to Avenger96 development board and steps to capture images and stream
- ei_OnSemiCamModule_96B_AV96_TestCases.xlsx – Provides the validated test cases and its result to verify the camera module

a. Software Package Deliverables

Download or clone release Avenger96, it contains following:

```
Avenger96/Kernel_5_10_74
├── Avenger96_L5_10_74_Rel_1_5_patches
├── readme.md
├── Software_Docs
│   ├── ei_Camera_User_Guide_STM32MP1_Avenger96_L5_10_Rel_1_5.pdf
│   ├── ei_OnSemiCamModule_96B_AV96_ReleaseNote.pdf
│   └── ei_OnSemiCamModule_96B_AV96_TestCases.xlsx
├── Yocto_build_manual_steps_avenger96.txt
└── yocto_build_setup_Avenger96.sh
```

b. For Product Delivery

i) Shipping Address:

N.A.

ii) **If customer's shipment account to be used, provide details**

N.A

3. Release Contents

a. Release Feature Description

Sr. No.	Feature Description	Feature or Change implemented/ Bug Resolved	Ref ID
1	Live stream from AR0430 camera image sensor using AP1302 ISP in HDMI Display supporting following resolution: • 4MP (2316x1746) @10FPS	Feature	
2	Live stream from ARX3A0 camera image sensor using AP1302 ISP in HDMI Display supporting following resolution: • 0.3MP (560x560) @30FPS	Feature	
3	Live stream from AR1335 camera image sensor using AP1302 ISP in HDMI Display supporting following resolution: • 13MP (1280x720) @15FPS – Streaming • 13MP (4208x3120) – Image capture	Feature	
4	Live stream from AR1335 camera image sensor using AP1302 ISP in HDMI Display supporting following resolution: • 8MP (3840x2160) @5FPS – Streaming • 8MP (3840x2160) – Image capture	Feature	
5	Supporting following MEDIA format type: • UYVY • RGB • JPEG	Feature	
6	ISP Control feature – Identify resolution, FPS, and data format type of AP1302 ISP	Feature	
7	ISP Control feature - White balance on AP1302 ISP is supported	Feature	
8	ISP Control feature - Exposure on AP1302 ISP is supported	Feature	
9	ISP Control feature - Gain on AP1302 ISP is supported	Feature	
10	ISP Control feature - Contrast on AP1302 ISP is supported	Feature	
11	ISP Control feature - Brightness on AP1302 ISP is supported	Feature	
12	ISP Control feature - Saturation on AP1302 ISP is supported	Feature	
13	ISP Control feature - Gamma on AP1302 ISP is supported	Feature	
14	Auto focus feature is supported for AR1335 camera sensor	Feature	

b. Known Issues

No known issue in this release.

c. For Product Delivery

NA

d. Applicable Accessories

NA

e. List of Documents Delivered/ Affected

Sr. No.	Document Name	Current Version
1	ei_Camera_User_Guide_STM32MP1_Avenger96_L5_10_Rel_1_5.pdf	1.5
2	ei_OnSemiCamModule_96B_AV96_TestCases.xls	1.5

4. Software and Hardware Tool Used

- Avenger96 Development board
- SD Card
- 12V/2A Power adapter
- Ethernet cable
- HDMI Display
- USB Mouse
- USB Keyboard
- UART debug cable - UART Serial - 96Boards
- SRT-Vision96-AR0430 mezzanine (AP-vision-AR0430-54)
- SRT-Vision96-ARX3A0 mezzanine (AP-vision-ARX3A0-55)
- SRT-Vision96-AR1335 mezzanine (AP-vision-AR1335-74)
- SRT-Vision96-AR0830 mezzanine (AP-vision-AR0830-83)

5. Dependencies and Restrictions

- The theoretical throughput rate of MIPI CSI-2.1 interface of about 2.5 Gbyte/s is not possible due to the hardware limitations in the STM32MP1. Please refer to the section 3.3 STM32MP1 Series video throughput performance through DCMI of this document
- Using v4l2-ctl utility, we are able to get complete FPS as configured in the camera driver. But when streaming in the HDMI display the FPS count gets reduced. This is due to the gstreamer performance in DH Mainline based Avenger96 release

6. Installation notes

Refer to the Section 2.3 and Section 2.4 of ei_Camera_User_Guide_STM32MP1_Avenger96_L5_10_Rel_1_5.pdf to flash firmware image to SD Card for Avenger96 board.

7. Test Environment

Refer to the ei_OnSemiCamModule_96B_AV96_TestCases.xls for all the Avenger96 camera interface Test cases.

8. Recommendations for System Handling

Avenger96 boards must be used in ESD safe environment.