



8MP OV8865 MIPI Camera Board for SKATE-212 SBC



SK2-KYMICAM-8MP User Manual

Rev.1.1

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Revision History

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1.0	Dec 5, 2017	Software Dev. Team	Initial Release
1.1	Feb 19, 2018	Links & logo updated	
1.2	Mar 05, 2019	Linux Support Removed	

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Table 1: Abbreviations

MIPI	Mobile Industry Processor Interface
CSI	Camera Serial Interface
MP	Mega Pixel
TBD	To Be Decided
DNI	Do Not Import
DNP	Do Not Populate
FPC	Flexible printed circuits



8MP MIPI Camera Board for SKATE-212 SBC

1. Introduction

SK2-KYMICAM-8MP is an 8 Mega Pixel MIPI camera daughter board designed by Kemsys Technologies for SKATE-212 - Qualcomm Snapdragon 212 based development platform. SK2-KYMICAM-8MP uses an 8MP camera module powered by Omni Vision's OV8865 CMOS image sensor. And this camera board is configured to provide MIPI CSI-2 interface.

SK2-KYMICAM-8MP camera daughter board can be connected to SKATE-212 through flex Cable.

2. Scope of the document

This document explains how to interface the SK2-KYMICAM-8MP camera daughter board with SKATE-212 - Qualcomm Snapdragon 212 based development Kit. The scope of this document is limited to a brief description of this camera daughter board, and the steps to be followed while connecting the board with SKATE-212.

- Brief description of the camera daughter board
- Steps to be followed while connecting the camera daughter board with SKATE-212
- User guide to the default camera application

3. Disclaimer

The specifications of the camera daughter board and instructions on how to use this daughter board with SKATE-212 – Qualcomm Snapdragon 212 development Board are provided as reference only and Kemsys Technologies reserves the right to edit/modify this document without any prior intimation of whatsoever.

4. Description

SK2-KYMICAM-8MP camera daughter board interfaces with SKATE-212 development Kit through flex cable. This camera board has 30 pin FFC connector on board to interface with the SKATE-212 Development Kit.

The 8MP camera module on the SK2-KYMICAM-8MP camera daughter board is configured to stream MIPI signals through the interface and thereby enables MIPI CSI-2 communication between OV8865 camera module and Qualcomm snapdragon 212 processor.

4.1 Block diagram

The following block diagram depicts the SK2-KYMICAM-8MP camera daughter board and SKATE-212 SBC

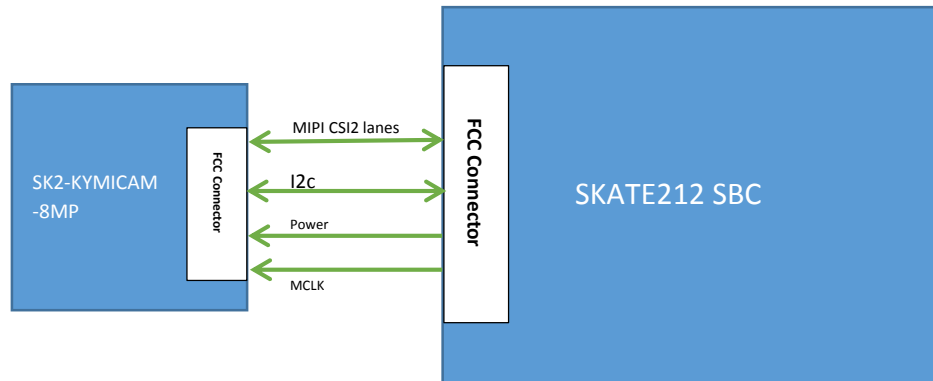


Figure 1: SKATE-212 and SK2-KYMICAM-8MP block diagram

5. Connection Procedure

This section provides the step by step procedures to be followed for connecting the SK2-KYMICAM-8MP camera daughter board with the SKATE-212 SBC.

1. The image below shows the front view of the SK2-KYMICAM-8MP camera board



Figure 2: SK2-KYMICAM-8MP camera board

2. The 30 pin connectors on the front side of SK2-KYMICAM-8MP camera daughter board should interface with another 30 pin connector on SKATE-212 using FFC cable. The picture below shows the connection between the SK2-KYMICAM-8MP camera daughter board and the SKATE-212.



Figure 3: FFC cable right side connection to 8MP Daughter board

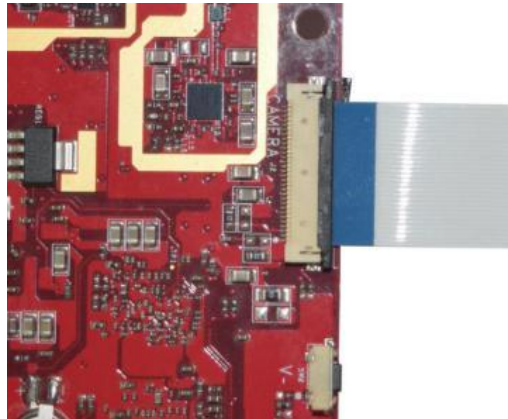


Figure 4: FFC cable left side connection to SKATE-212 SBC

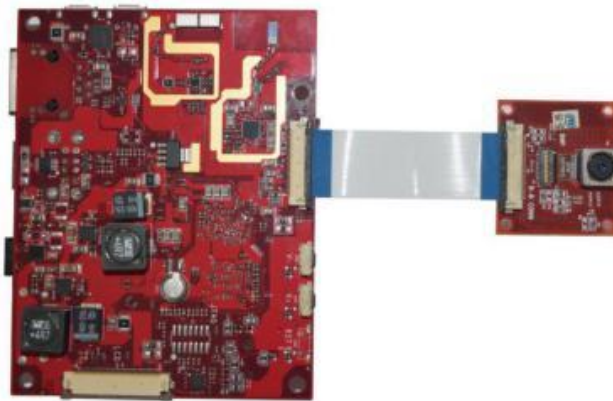


Figure 5: SKATE-212 interfaced with SK2-KYMICAM-8MP

3. Now the connection between the SK2-KYMICAM-8MP camera daughter board and the SKATE-212 SBC is done.

6. Camera Application

After booting SKATE-212 SBC, user can launch Snapdragon Camera sample application to test the SK2-KYMICAM-8MP camera module.

The Snapdragon Camera and Snapdragon Gallery sample applications will be provided along with the delivery package.

Open Snapdragon Camera application in the Home menu.

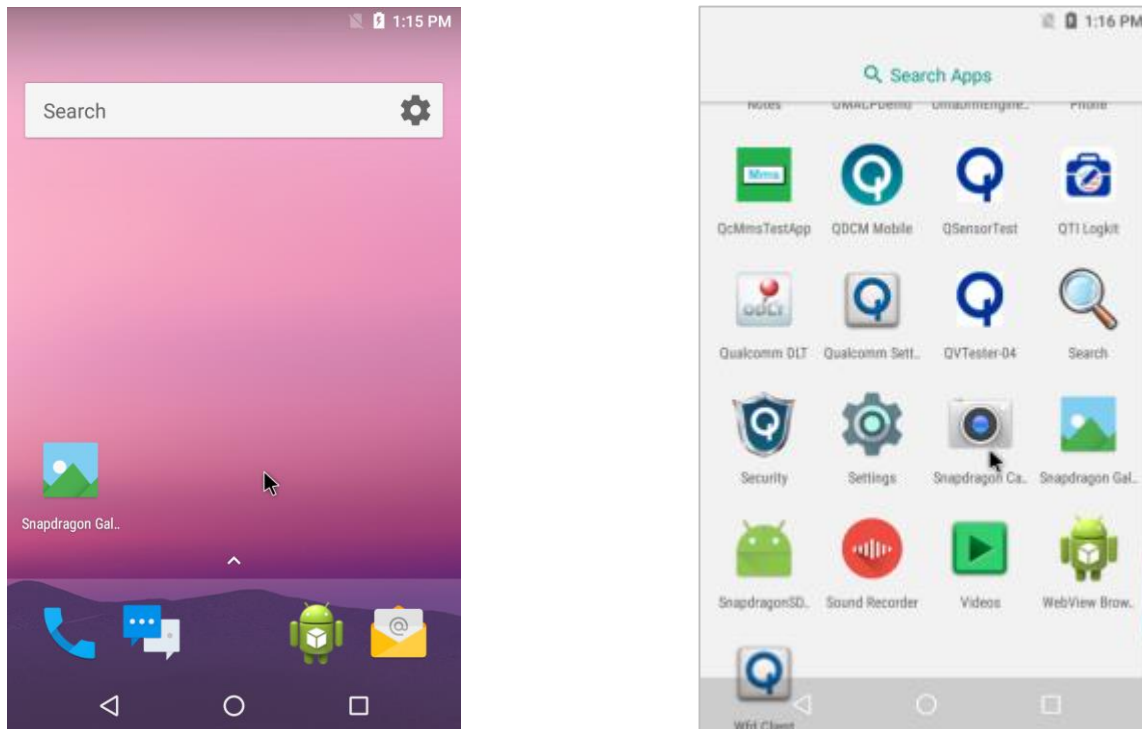


Figure: Launch Snapdragon Camera app from the Home menu

This camera application supports three types of modes namely,

- Picture
- Video
- Panorama

Clicking on the Camera Mode icon would display these modes.



Figure: Panorama, Video and Picture Mode Icons

6.1 Picture Mode:

By default, the camera application opens with picture mode. User can take still image by press the camera icon at the bottom.



Figure: Camera in Picture Mode

6.2 Camera Features:

To view the options available in Picture Mode, press the wheel icon on the right corner of the screen.

Initially, some of the camera development features will be hidden. To enable the hidden features, press Redeye Reduction option for 5 times continuously.

SKATE-212 SBC on-board ISP supports following features,

- Face Detection
- Exposure
- White Balance
- Redeye Reduction
- HDR
- Histogram
- ZSL
- Saturation
- Contrast
- Sharpness

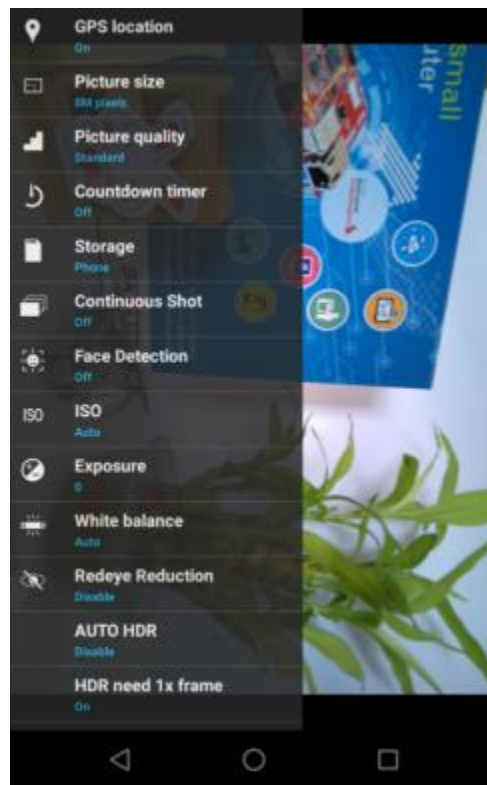


Figure: Supported Features in the Picture Mode

6.2.1 Picture Size:



Supported still image resolutions are,

- 8MP (3264 x 2448)
- 5MP (2592 x 1994)
- 3MP
- 1080P
- 2MP
- 1.3MP
- WXGA
- 720P
- 1MP
- SVGA
- WVGA
- 720 x 480
- VGA
- CIF
- QVGA
- QCIF



Figure: Supported Picture sizes list

6.2.2 Countdown Timer:



After choosing the duration, press the camera shooter button and picture would be taken after the given duration value.



Figure: Countdown Timer Feature

6.2.3 Face Detection:

SKATE-212 SBC on-board ISP supports face detection feature and it can be enabled in the feature list.



Figure: Face Detection Feature

6.2.4 Exposure:

Supported Exposure modes are,

- Auto
- Manual (level -2 to level +2)



Figure: Exposure Levels

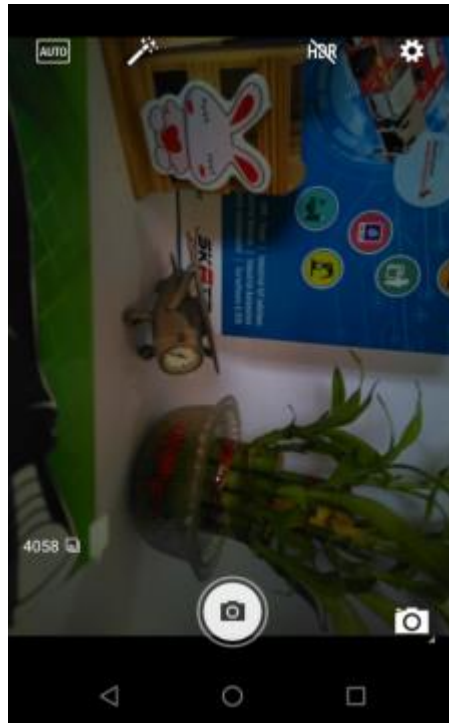


Figure: Preview with Exposure level -2 and +2 respectively

6.2.5 White Balance:



Supported White Balance Modes are,

- Auto
- Incandescent
- Fluorescent
- Daylight
- Cloudy



Figure: Supported White Balance Mode



Figure: Preview with Incandescent and Cloudy WB mode respectively

6.2.6 Histogram:

If Histogram option is enabled, the histogram graph will be plot on the preview.

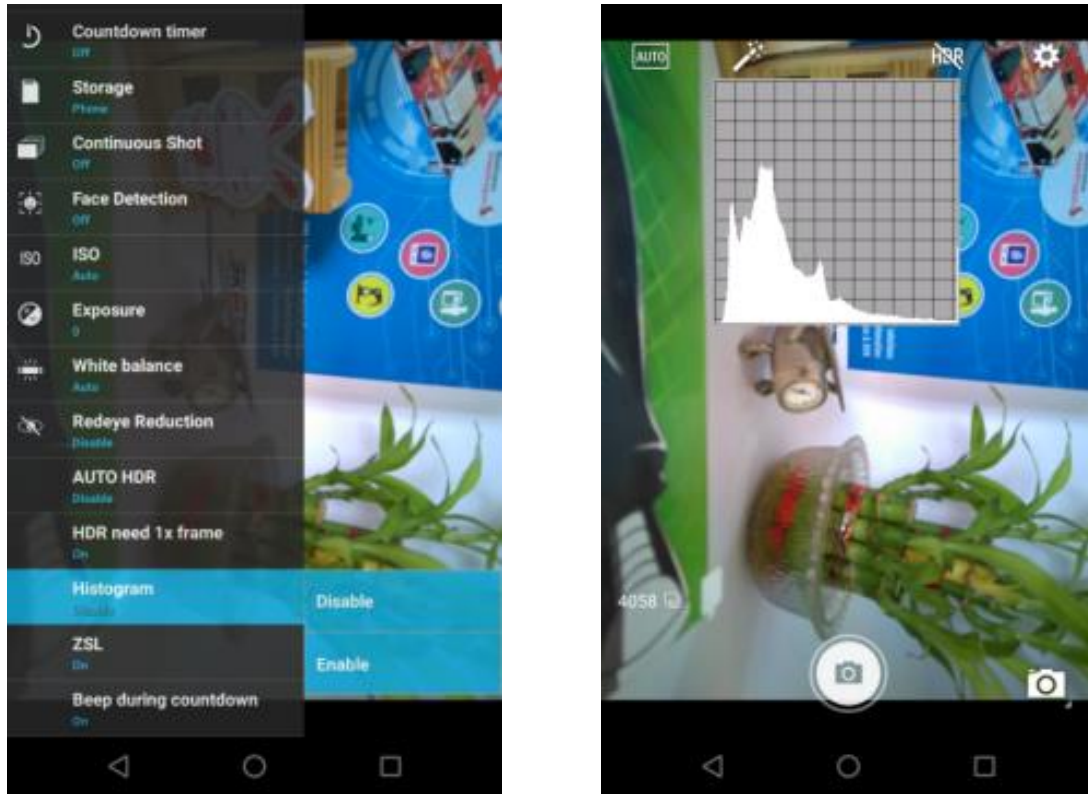


Figure: Histogram option and Graph on the Preview

6.2.7 Zero Shutter Lag:



If ZSL option is enabled, the still image will be captured immediately without any time difference between the shutter button click and image record.

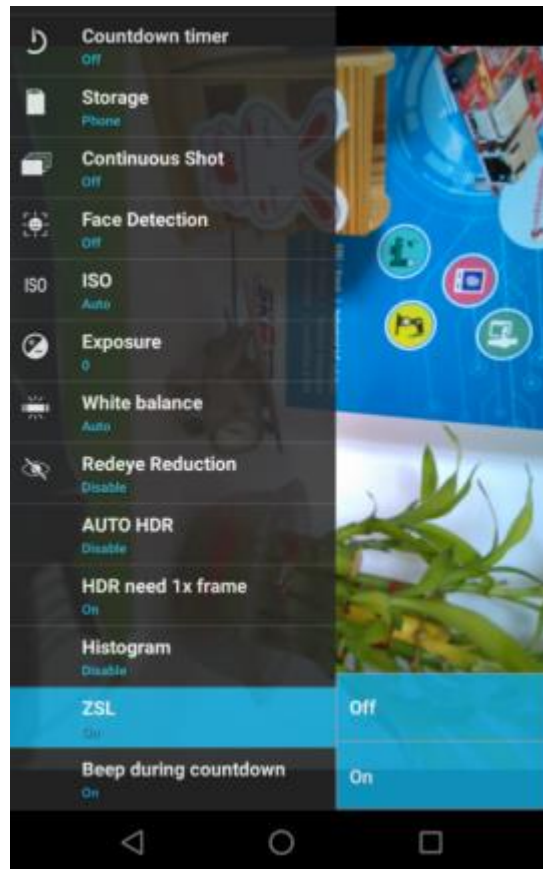


Figure: Zero Shutter Lag mode

6.2.8 Saturation:



- Support level from 0 to 10



Figure: Supported Saturation Levels



Figure: Preview with saturation level set to 10 and 0 respectively

6.2.9 Scene Modes:



Supported Scene modes are,

- Auto
- HDR
- Portrait
- Landscape
- Sports
- Sunset
- Candlelight
- Night
- Beach
- Snow

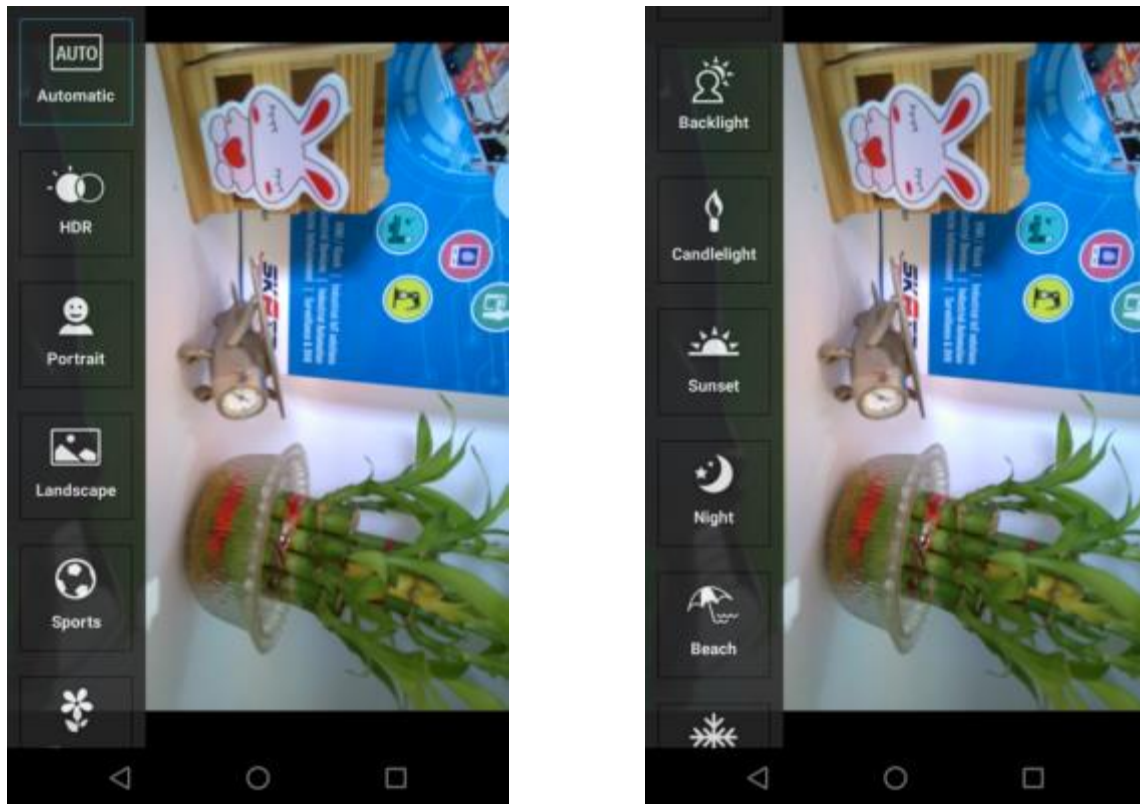


Figure: Supported Scene Modes

6.2.10 Color Effects:



Supported Color effects are,

- None
- Mono
- Sepia
- Negative
- Solarize
- Posterize
- Aqua



Figure: Supported Color Effects

6.3 Video Mode

Click the Capture Mode icon and choose the Video option

Simply click the camera shooter button (circular red) to start and stop the recording.

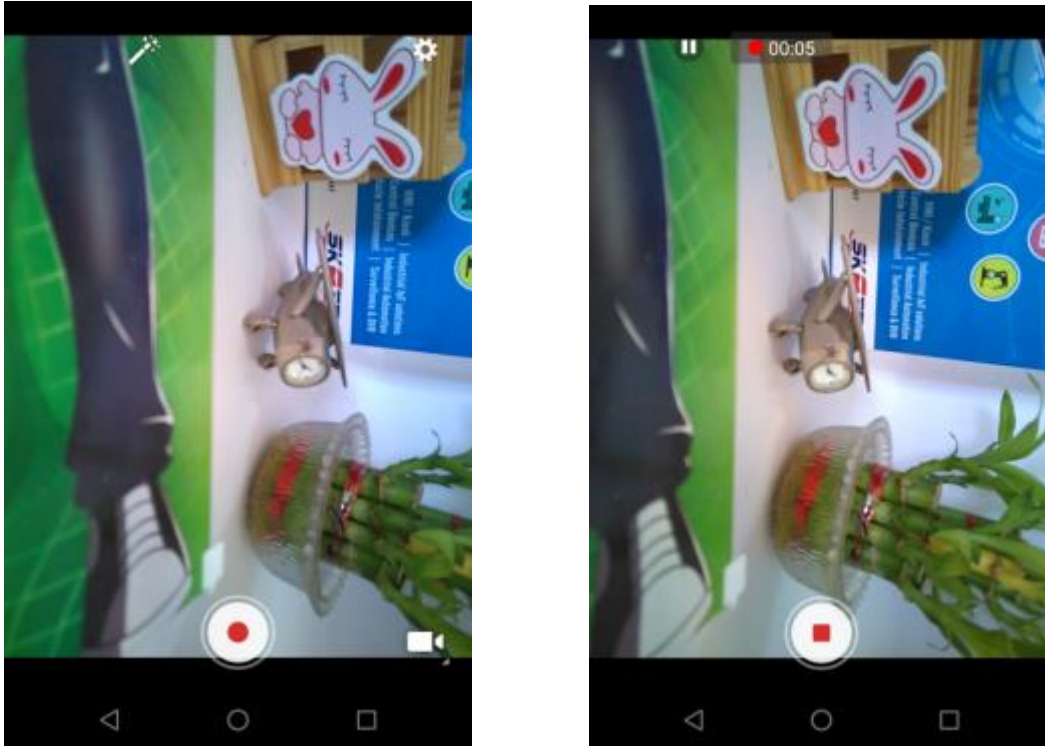


Figure: Camera in Video Mode and Recording

To view the recorded video, Slide the screen towards left and select the video
Press Play Button to play the video

Video Mode Features

- Supported resolutions
 - 720p @ 60 fps
 - VGA @ 120 fps
 - QCIF @ 120 fps
- Supported Video Encoders
 - MPEG4
 - H263
 - H264
- Supported Audio Encoders
 - AMRNB
 - AAC

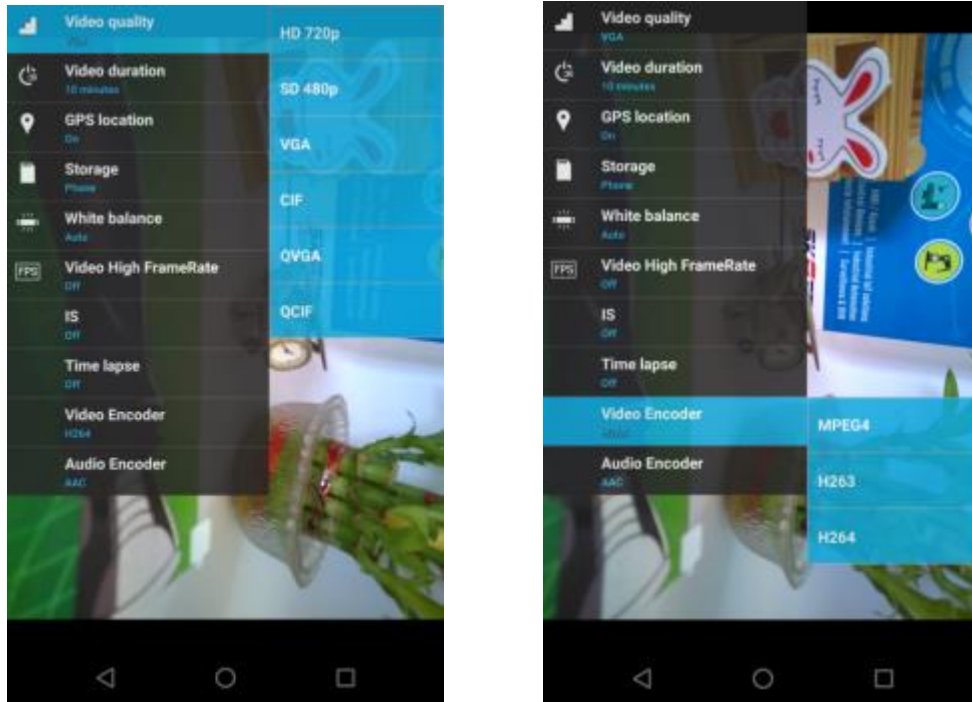


Figure: Video Mode Feature list and supported Encoder list

6.4 Panorama Mode

Click the Camera Mode icon and Select Panorama Button.

To generate a panorama image, click the shooter button and tilt it in the required direction



Figure: Camera in Panorama Mode

6.5 Gallery

To view the photos and videos, press the Snapdragon Gallery icon in the Home Menu.

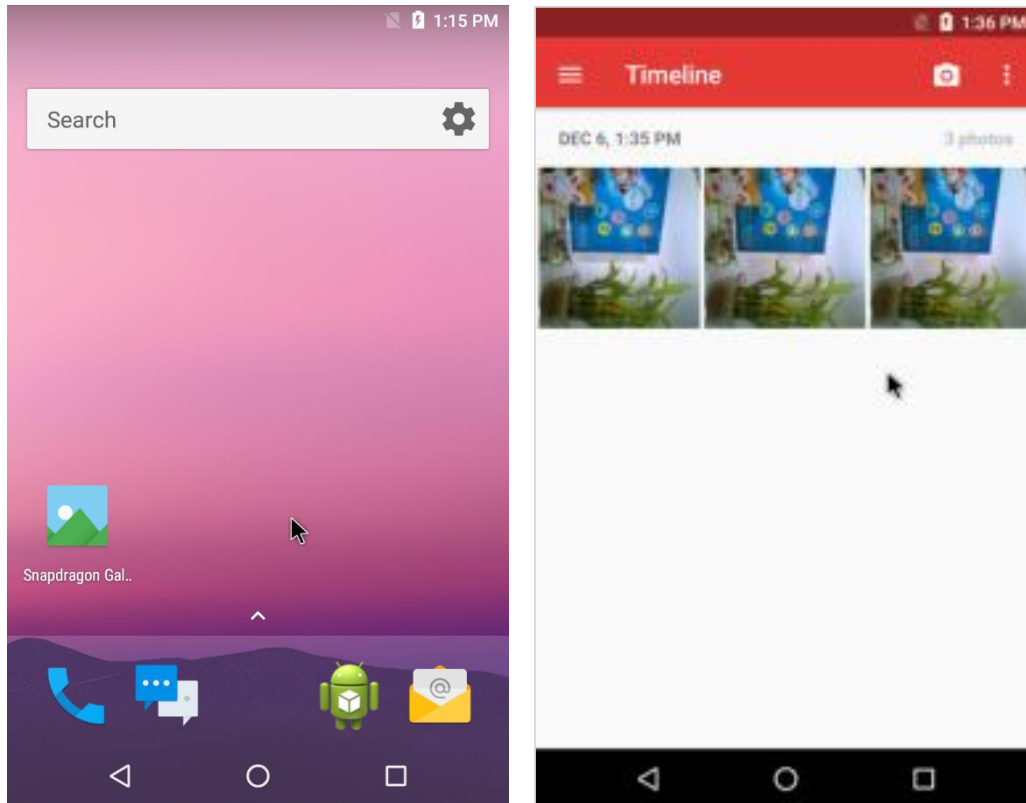


Figure: Home Screen and Gallery Menu

To View the Image Details press the right corner icon.

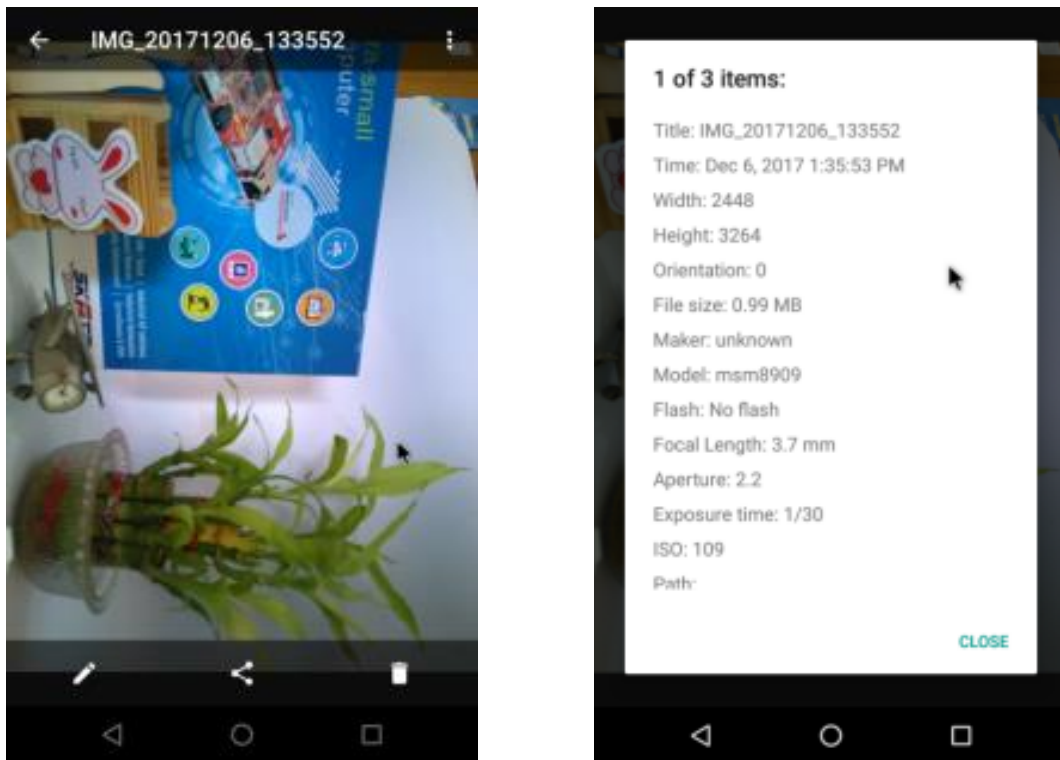


Figure: 8MP Still image and its details

7. Conclusion

This document explained about how to connect SK2-KYMICAM-8MP camera with SKATE-212 SBC and also explained supported features.

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