RZ/G1M/G1N Qseven SOM Development Platform

iWave
Embedding Intelligence

iW-RainboW-G20D
Quick Start Guide

R5.0

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INTRODUCTION

About this Guide

This document is intended as the guide for unpacking iWave's iW-RainboW-G20D - RZ/G1M/G1N Qseven Development Platform package and setting up the test environment for it. It also gives details about safety information and important cautions which should adhere while using the platform.

Development Platform Overview

The iW-RainboW-G20D Development Platform incorporates RZ/G1M/G1N Qseven SOM which is based on Renesas high performance RZ/G1M/G1N Dual ARM Cortex A15 MPU and Qseven Compatible Carrier Board. This platform can be used for quick prototyping of any high end applications in verticals like Automotive, Industrial & Medical. The board is highly packed with all necessary on-board connectors to validate almost complete RZ/G1M/G1N CPU features.

Important Symbols Used

Important Note

Warning

Use ESD Protection

ROHS complaint

Check the local regulations for disposal of electronic products

UNPACKING

Safety Information

- Before unpacking and installing the Development Platform or adding devices on it, carefully read all the manuals that came with the package.
- Place the product on a stable surface. To avoid short circuits in electronics, keep all conducting material away from the Development Platform.
- Avoid using board in extreme dust, humidity and temperature conditions. Do not place the Development Platform in wet area.
- Before using the Development Platform, make sure that all cables are correctly connected and the power adapter is correctly selected.
- Make sure that Electrical Outlet where you connected the power adapter is not damaged and working fine.
- If the power adapter is broken, do not try to fix it by yourself. To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before displacing the system.
- Don't try to remove the Qseven SOM module from the Development platform unless really required.
- Before connecting or removing Qseven SOM module from the Development platform, ensure that power cable is unplugged and ESD antistatic guidelines are followed.

Check the local regulations for disposal of electronic products.

Unpacking Guidelines

Please follow the below guidelines while unpacking the RZ/G1M/G1N Qseven Development Platform.

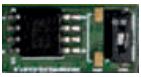
- Wear the anti-static wristband while unpacking and handling the Development platform to prevent electrostatic discharge.
- Use anti-static pad/mat with proper grounding to place the Development platform.
- Don't touch the inside surface of the Development platform circuit board.
- Self-grounding: Touch a grounded conductor every few minutes to discharge any excess static build-up.

- Make sure that packing box is facing upwards while opening.
- Make sure that the entire packing list items mentioned in Package Checklist are present.

Static electricity can destroy electronics in the platform. Make sure to follow the ESD precautions to prevent damage to the platform and injury to the user.

Package Checklist

The RZ/G1M/G1N Qseven Development Platform will be shipped with the following items:

Sl. No.	Package Item	Qty	Image
1	iW-RainboW-G20D RZ/G1M/G1N Qseven Development Platform	1	 RoHS All components used in this platform is Lead free and ROHS complaint
2	12V,2A Power Adaptor with universal plugs	1	
3	USB OTG Cable	1	
4	DVD (Please refer DVD Content section)	1	
5	Quick Start Guide Hard copy	1	
6	Camera Add On Module (With Screw Bag)	Optional	
7	SPI Programmer Board	Optional	

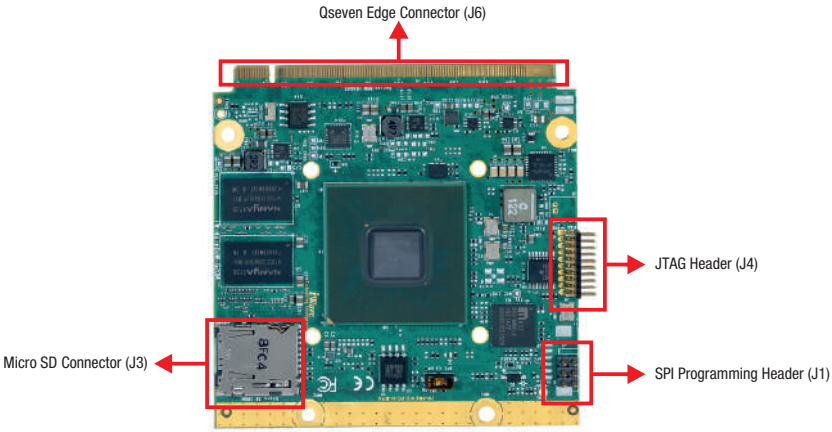
Do not proceed with installation, if any of the items listed in the above checklist is missing or damaged. Contact iWave support team.

Get to Know the RZ/G1M/G1N Development Platform

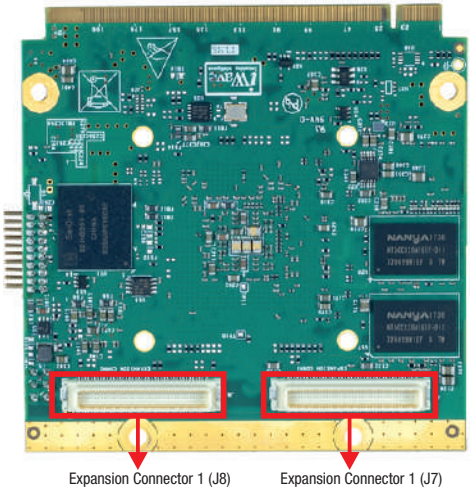
The RZ/G1M/G1N Qseven Development platform consists of 70mmx70mm RZ/G1M/G1N Qseven SOM and 120mmx120mm Nano-ITX form factor Qseven Carrier Board. The RZ/G1M/G1N Qseven Development platform supports the following features.

RZ/G1M/G1N Qseven SOM Features	
CPU	Renesas RZ/G1M MPU Dual Core ARM Cortex A15 @ 1.5GHz Three-Dimensional Graphics Engines
Memory	1GB DDR3 (Expandable) 4GB eMMC Flash (Expandable) 2MB SPI NOR Flash (Expandable) Micro SD Slot
Real Time Clock	RTC Controller
RZ/G1M/G1N Qseven Carrier Board Features	
Serial Interface	Debug UART through USB Micro AB Connector Data UART (SCIFB1) x 1 Port through Header
High Speed Interface	USB 3.0 Host x 1 Port PCIe x 1 Port through x4 connector SATA x 1 Port (Optional)
Communication Interface	100/1000Mbps Ethernet through RJ45MagJack USB 2.0 Host x 1 Port through Type A Connector USB 2.0 OTG x 1 Port through Micro AB Connector CAN x 1 Port through Header
Audio/Video Interface	I2S Audio Codec with 3.5mm Audio IN and OUT jack 7” RGB LCD Connector with Capacitive Touch
On Board Switches	Power ON/OFF Switch Reset Switch Board Configuration Switch
Additional Features	SPI Flash (MSIOF2 with SS#1) RTC Coin Cell holder Fan Header 80pin Expansion Connector x 3 (To connect Add-On-Module) 20-Pin JTAG Header (Optional)
General Specification	Power Supply : 12V,2A Power Input Jack Form Factor : 120mm X 120mm Nano ITX

The RZ/G1M/G1N Qseven SOM major components location are shown in the below figure.



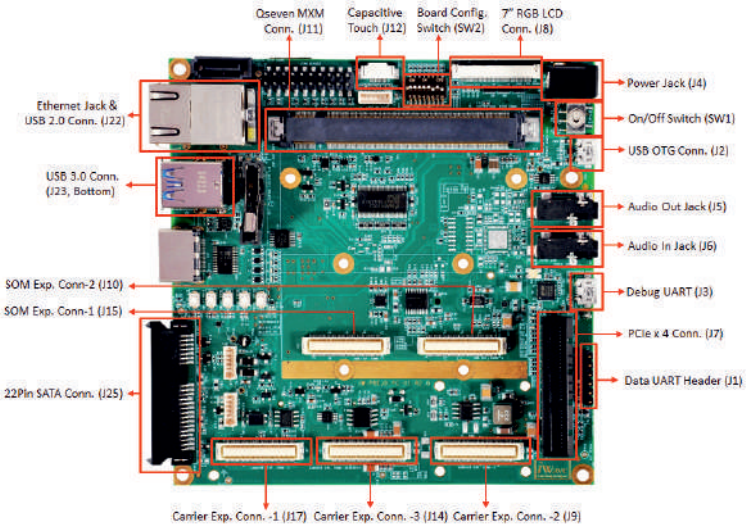
Top View of SOM



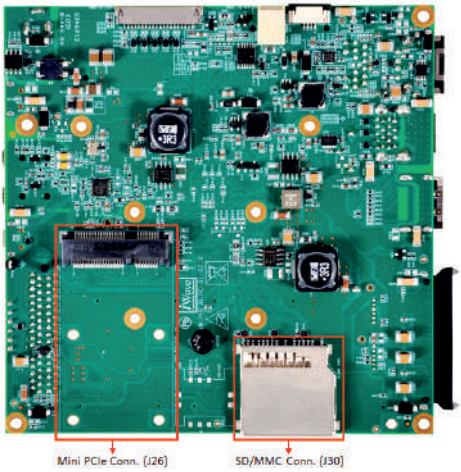
Bottom View of SOM

Refer SOM Hardware User Guide for more details.

The RZ/G1M/G1N Qseven Carrier Board major components location are shown in the below figure.



Top View of Qseven Carrier Board



Bottom View of Qseven Carrier Board

Refer Development Platform Hardware User Guide for more details.

SETTING UP THE TEST ENVIRONMENT

Getting Start

This section describes the step by step procedure to setup the test environment for RZ/G1M/G1N Qseven Development Platform.

- Read the Development Platform Documents
- Setting Board Configuration Switch
- Setting up the Debug port
- Power ON the Development platform

Read the Documents

Before setting up the test environment, one must read all the documents of the RZ/G1M/G1N Qseven Development platform to know about its features and get familiar with it. These documents are available in the DVD which comes along with the RZ/G1M/G1N Qseven Development platform Package.

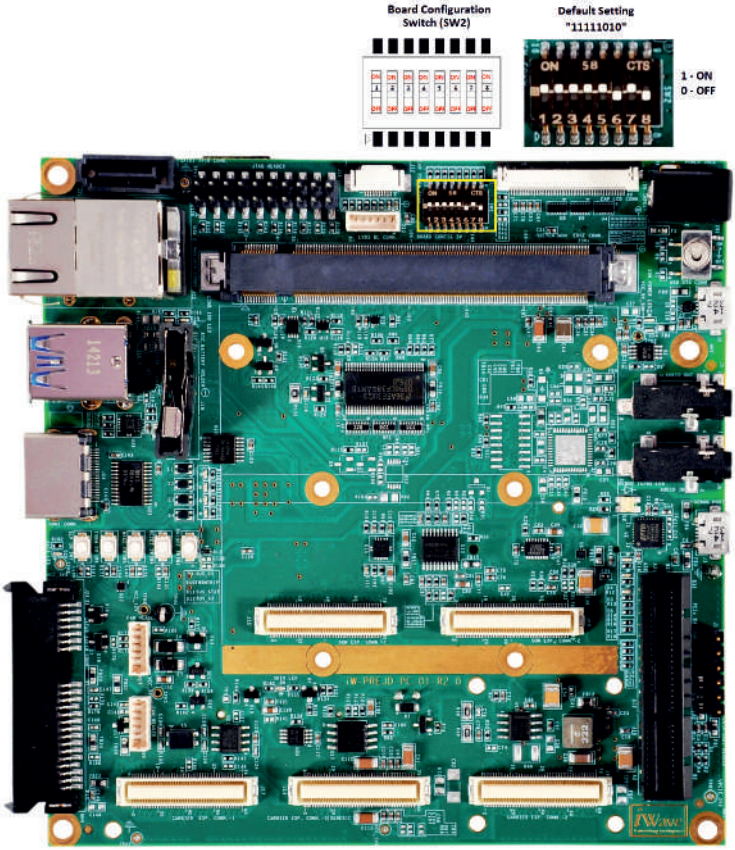
Below mentioned documents are available in the DVD,

- RZ/G1M/G1N Qseven Development Platform Quick start Guide (This Guide)
- RZ/G1M/G1N Qseven SOM Hardware User Guide
- RZ/G1M/G1N Qseven Development Platform Hardware User Guide

Refer DVD contents section to know about the DVD content structure and platform related document's path.

Configuration Switch Setting

The RZ/G1M/G1N Qseven Development platform has one 8bit Board configuration switch (SW2) to configure the carrier board specific feature setting. Each bit of this switch is used to select the different features or modes. Default setting of Board configuration switch is “11111010” as shown in the below figure.



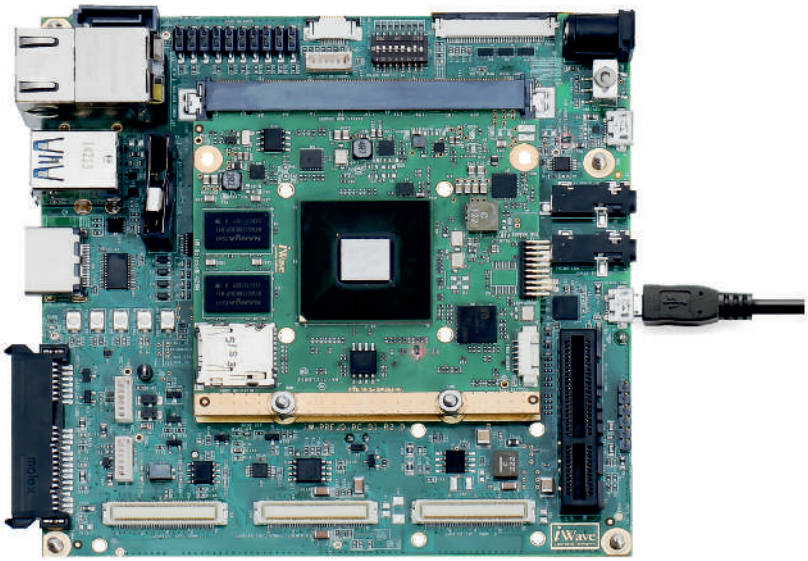
Board Configuration Switch

Refer Development Platform Hardware User Guide for more details.

Debug Port Setting

Please follow the below procedure to setup the Debug Micro USB port of RZ/G1M/G1N Qseven Development Platform.

- Connect TypeA end of USB cable to PC and MicroB end of USB cable to Development platform's debug Micro USB connector(J3) as shown below.



Debug Port Connection

- Install the driver for Debug USB Port in Host PC/Laptop using the below link.

  Drivers located at: http://www.ftdichip.com/Products/ICs/FT232R.htm

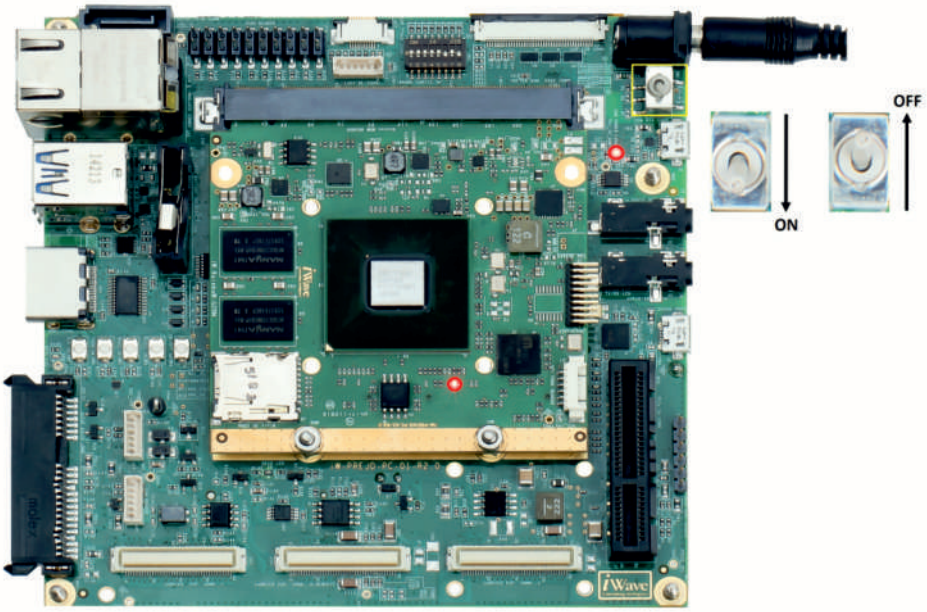
- Setup the Debug Terminal parameters.

  Baud Rate : 115200
  Data bits : 8
  Parity : None
  Stop Bits : 1
  Flow Control : None

Powering ON the Development Platform

The RZ/G1M/G1N Qseven Development platform comes with 12V,2A power supply with universal plugs. Please follow the below procedure to power ON the Development platform.

- Connect the 12V power supply plug to the power connector (J4) of the Development platform as shown below and switch ON the power supply.



Power Supply Connection

- Once Power is applied to the Development platform, the Red Power LEDs in the RZ/G1M/G1N Qseven SOM and carrier board will glow as shown in the above image.

Do not use different power adapter other than the supplied one. Do not proceed with installation, if any of the Power Status LEDs are blinking or not glowing. Contact iWave support team.

Done with Test Environment

Once power is applied to the RZ/G1M/G1N Qseven Development Platform as explained in the previous section, the HyperTerminal of the PC/Laptop which is connected to the Development platform will immediately show the boot messages of the boot loader.

iWave supports below mentioned Operating System Releases for RZ/G1M/G1N Qseven Development Platform.

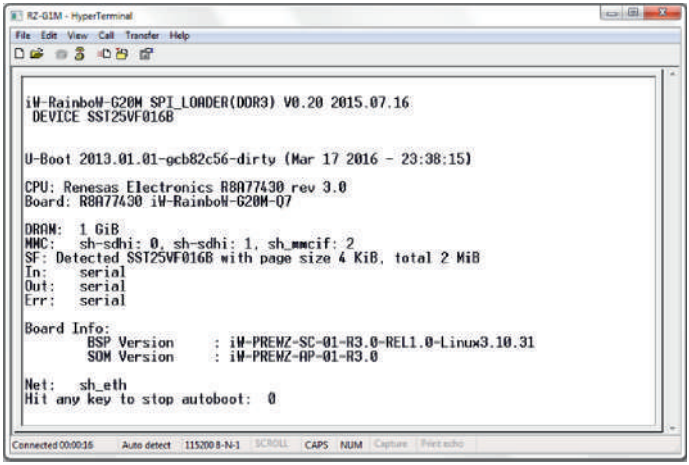
- Linux 3.10.31(or higher)

Depending upon the supported Operating system and boot loader on particular delivery, the Hyper Terminal will show the boot messages as described in the following section.

1. **Platform comes with bootable binary in default boot media.**
2. **Make sure that all the steps mentioned in Getting Start section is followed.**

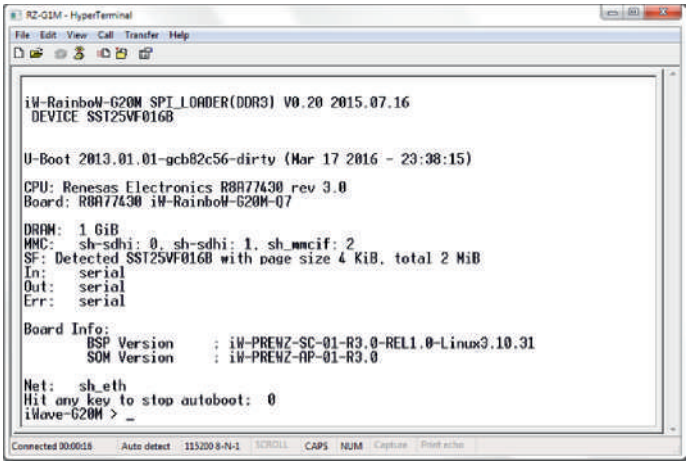
Linux Test Environment

- In Linux Release, U-boot boot messages will appear in Hyper Terminal as shown below.



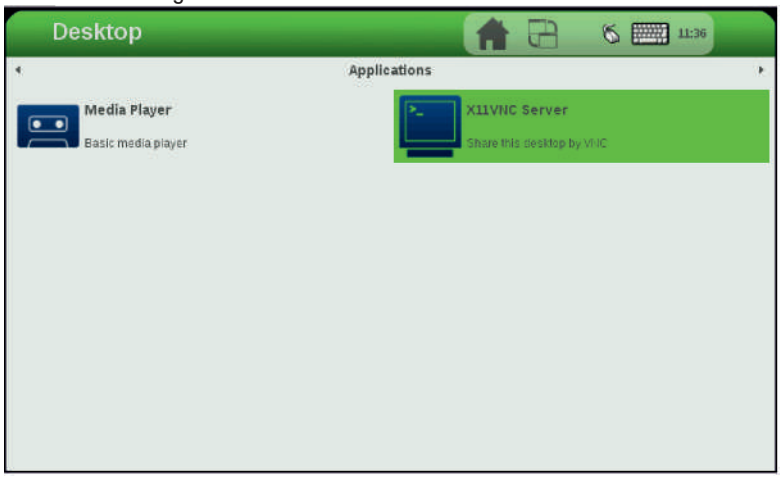
U-boot on Terminal

- Immediately after power on, press any key in HyperTerminal to go to the U-boot command prompt as shown below. Otherwise Linux will launch automatically.



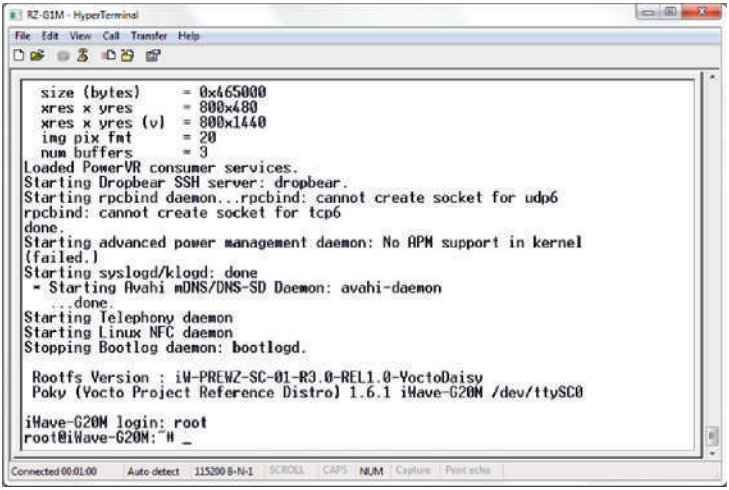
U-boot Command Prompt

- Once Linux is launched, the LCD will show the Yocto images as shown below and HyperTerminal will show the Linux Login.



LCD after Linux Launch

- To Login in Linux, enter “root” in terminal and you will get the Linux command prompt as shown below. Once you get the prompt you are done with Test Environment setup on Linux delivery.



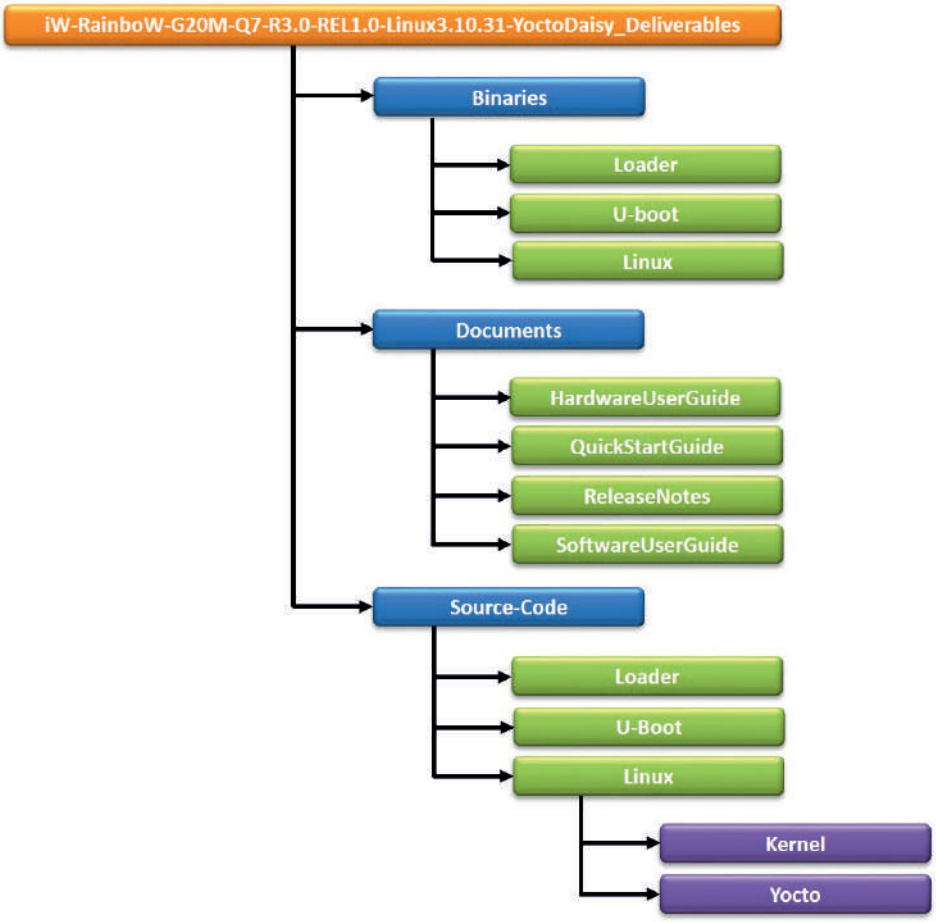
Linux Command Prompt

Refer Linux Software User Guide for further details.

DVD Contents

The following figure shows the DVD content structure for Linux Operating System Release.

Linux Release DVD Contents



iWave continuously improves software releases with latest kernel version. Contact iWave for latest software release detail.

RZ/G1M/G1N Camera Add On Module

- iWave supports Camera Add-on Module for RZ/G1M/G1N Development platform, which supports following features.

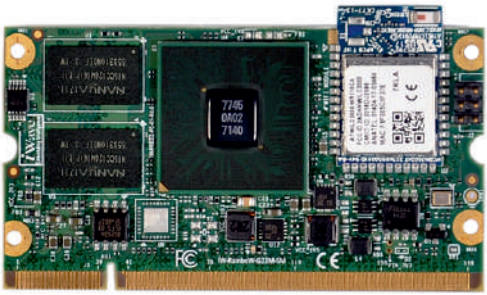
RZ/G1M/G1N Camera Add On Module Features	
Video Features	Analog Video/TV-IN through TV Decoder (8bit VIN0)x 1 Port 8bit CMOS Camera (8bit VIN2) x 1 Port HDMI Output through HDMI Transmitter (24bpp DU1) x 1 Port HDMI Input through HDMI Receiver (16bit VIN1) x1 Port (Optional) 16bit CMOS Camera (16bit VIN1) x 1 Port (Optional)
Communication Features	CAN1 Header x 1 Port
Serial Interface Features	Data UART RS232 Header (SCIF1) x 1 Port High Speed UART RS232 Header (HSCIF1) x 1 Port
General Specification	Form Factor : 90mm X 60mm

For More details about Camera Add-on Module, contact iWave Sales Team.

iWave's other Products

iW-RainboW-G22M-RZ/G1E SODIMM SOM

The RZ/G1E SODIMM SOM is industry latest ultra-compact yet highly integrated SOM based on Renesas high performance RZ/G1E Dual ARM Cortex A7 MPU running at 1GHz. A single ruggedized miniature SODIMM connector allows compact carrier board form factors which is ideally suitable for space constraint embedded applications.



iW-RainboW-G21M-RZ/G1H Qseven SOM

The RZ/G1H Qseven SOM is based on the Renesas's RZ/G1H Heterogynous Octa Core processor running at 1.4GHz Quad ARM Cortex®-A15 MPCore® and 80MHz Quad ARM Cortex®-A7 MPCore®. A single ruggedized Qseven connector provides the carrier board interface to carry all the I/O signals to and from the Qseven SOM. This SOM supports 2GB DDR3L RAM (Expandable) and 8GB eMMC Flash (Expandable) by default.

The MPU is enabled with PowerVR™ G6400 3D graphics @ 520MHz and has built-in dual channel full HD encode & decode multimedia codecs. The MPU also supports four channels video input and three channels video display output ports. This makes the RZ/G1H MPU as ideal choice for graphic rich video centric multimedia applications.

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