i.MX6 SODIMM Development Platform

iW-RainboW-G15D-SM
Quick Start Guide

R1.1

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INTRODUCTION

About this Guide

This document is intended as the guide for unpacking iWave's iW-RainboW-G15D-SM i.MX6 SODIMM 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-G15D-SM i.MX6 SODIMM Development Platform incorporates i.MX6 SODIMM SOM which is based on NXP high performance i.MX6 Quad/Dual/Duallite/Solo ARM Cortex A9 MPU and SODIMM 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 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 SODIMM SOM module from the Development platform unless really required.

■ Before connecting or removing SODIMM 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 iW-RainboW-G15D-SM i.MX6 SODIMM 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.
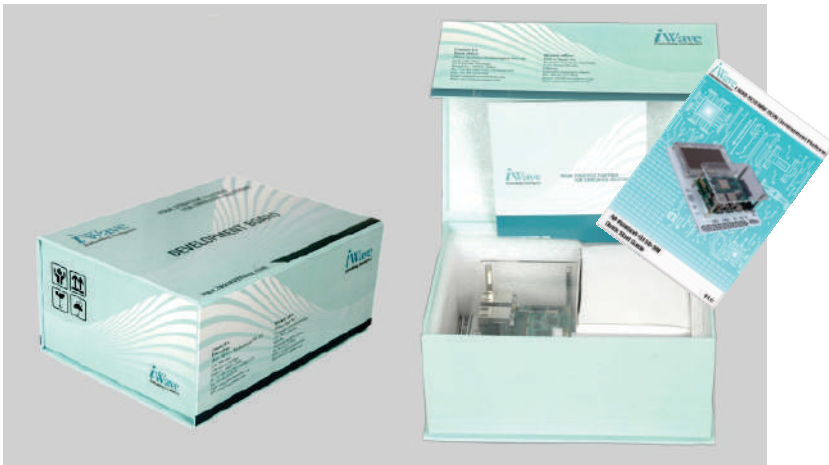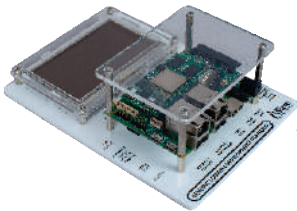
■ Make sure that packing box is facing upwards while opening.

■ 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 iW-RainboW-G15D-SM i.MX6 SODIMM Development Platform will be shipped with the following items:

Sl. No.	Package Item	Qty	Image
1	iW-RainboW-G15D-SM i.MX6 Q/D/DL/S SODIMM Development Platform	1	All components used in this platform is Lead free and ROHS complaint
2	5V,2A Power Adaptor with universal plugs	1	
3	USB OTG Cable	1	
4	Quick Start Guide Hard copy	1	
5	DVD (Please refer DVD Content section)	1	

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 i.MX6 SODIMM Development Platform

iW-RainboW-G15D-SM i.MX6 SODIMM Development platform supports the following features.

i.MX6 SODIMM SOM Features	
CPU	NXP's i.MX6 Quad/Dual/Duallite/Solo ARM™ Cortex-A9 based CPU @ up to 1.2GHz/Core
PMIC	NXP's MMPF0100 PMIC
Memory	1GB DDR3 RAM (Expandable) 2MB SPI NOR Flash (Expandable) 4GB eMMC Flash (Expandable)
i.MX6 SODIMM Carrier Board Features	
Serial Interface Features	Debug UART through USB Micro AB Connector DATA UART x 1 Port through Header
Communication Features	10/100/1000 Mbps Ethernet through RJ45MagJack USB2.0 Device x 1 Port through Micro AB Connector USB2.0 Host x 2 Port through Type A Connector SDHC x 1 Port through Micro SD Connector CAN x 1 Port through Header
High Speed Interfaces	Mini PCIe x 1 Port SATA x 1 Port
Audio/Video Features	I2S Audio Codec with 3.5mm Audio IN/OUT jack 4.3" LCD with Resistive Touch 10.4" LVDS LCD Connector HDMI Port
Additional Features	Boot Mode Setting Switch Reset Switch 20-Pin JTAG Connector RTC Coin cell Holder
20Pin Expansion Header	Data UART x 2 ports CAN x 1 Port SPI x 1 Port PWM x 1 Port
20Pin GPIO Header	GPIOs x 6nos
General Specification	Power Supply : 5V, 1A Power Input Jack Form Factor : 100mm x 72mm Pico ITX

iW-RainboW-G15D-SM i.MX6 SODIMM Development platform consists of 37x67.6mm i.MX6-Q/D/DL/S SODIMM SOM and 70mmx100mm PICO-ITX form factor SODIMM Carrier Card as shown below.
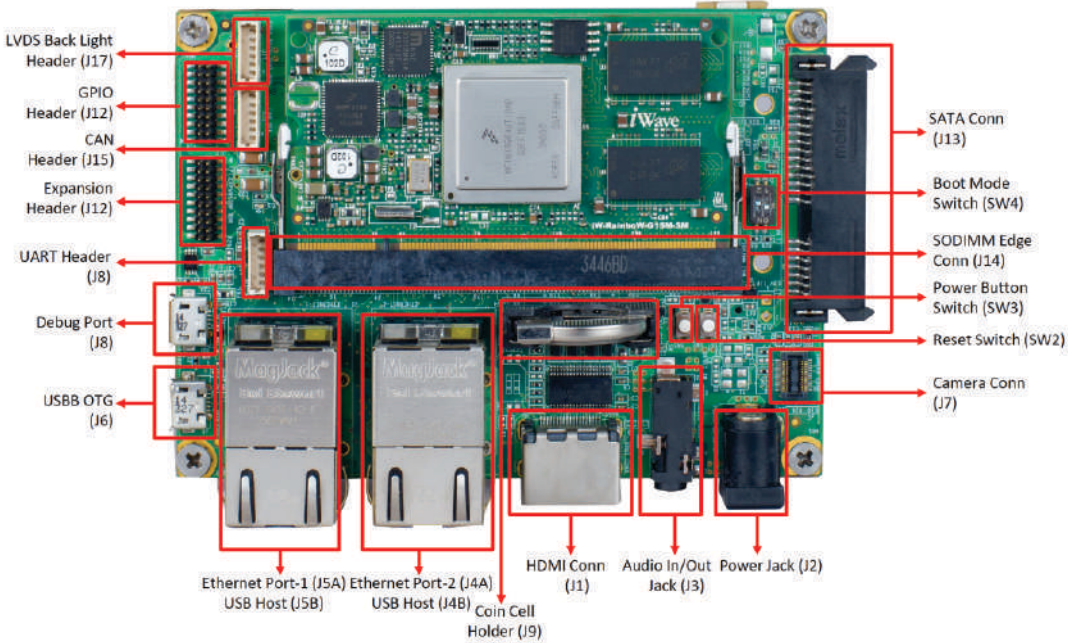

i.MX6 SODIMM SOM
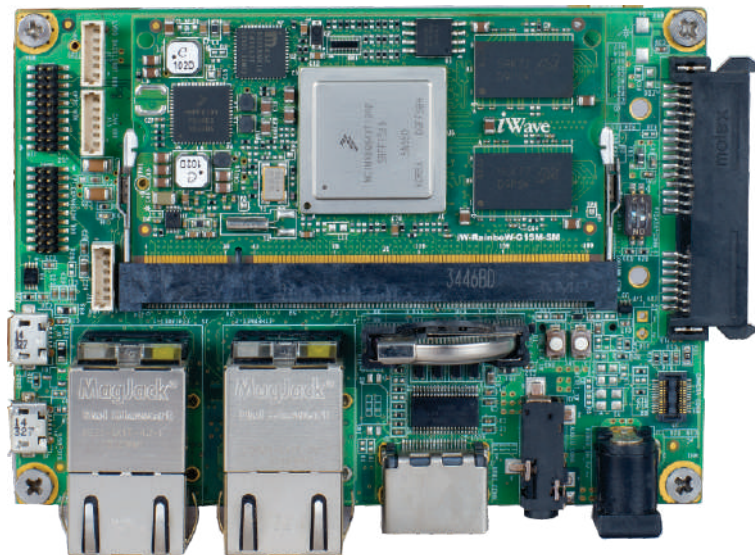
SODIMM Carrier Card

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.

iW-RainboW-G15D-SM i.MX6 SODIMM Development platform top side major components location is shown in the below figure.

Top View of Development Platform

Refer Hardware User Guide for more details

iW-RainboW-G15D-SM i.MX6 SODIMM Development platform bottom side major components location is shown in the below figure.
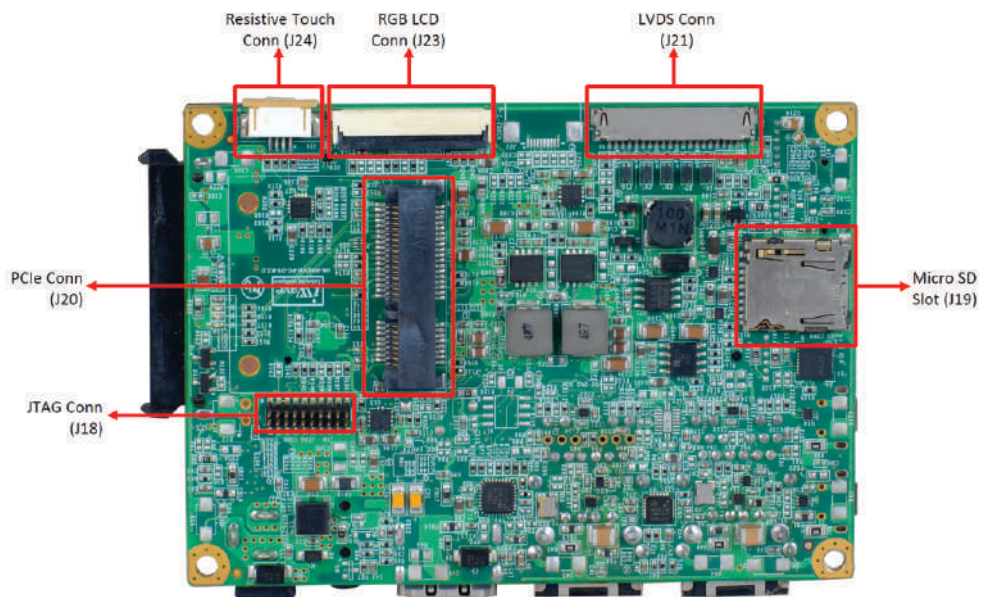
Bottom View of Development Platform

Refer 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 iW-RainboW-G15D-SM i.MX6 SODIMM Development platform.

- Read the Development Platform Documents
- 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 iW-RainboW-G15D-SM i.MX6 SODIMM Development platform to know about the Platform, its features and to get familiar with it. These documents are available in the DVD which comes along with the iW-RainboW-G15D-SM Package.

Below mentioned documents are available in the DVD,

- iW-RainboW-G15D-SM Quick start Guide (This Guide)
- i.MX6 SODIMM SOM Hardware User Guide
- i.MX6 SODIMM Carrier Board Hardware User Guide
- i.MX6 SODIMM SOM Software User Guide

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

Boot Mode Setting

iW-Rainbow-G15D-SM i.MX6 SODIMM Development Platform supports different boot mode options for booting.

- ■ Internal Boot Mode (Default):
    This mode is used for normal booting and default set while shipping. Please make sure that boot mode switch (SW4) is in this mode while setting up the Test Environment.

- ■ Serial Downloader Mode:
    This mode is used when user wants to program boot media using MFG Tool. For more details, please refer Software User Guide.

Boot modes can be selected by user using boot mode switch (SW4) settings on SODIMM Carrier Board

Boot Mode Settings Truth Table

Boot Mode Setting On SODIMM Carrier Board	SW4 (2 Position Switch)		
	POS1	POS2	Image
Internal Boot Mode (Default)	ON	OFF	
Serial Downloader Mode	OFF	ON	
ON - High OFF - Low			

 Use ESD Protection while changing the switch setting.

Debug Port Setting

Please follow the below procedure to setup the Debug Micro USB of iW-RainboW-G15D-SM i.MX6 SODIMM Development platform.

■ Connect TypeA end of USB cable to PC and Micro AB end of USB cable to Development platform's debug Micro USB connector (J8) as shown below.
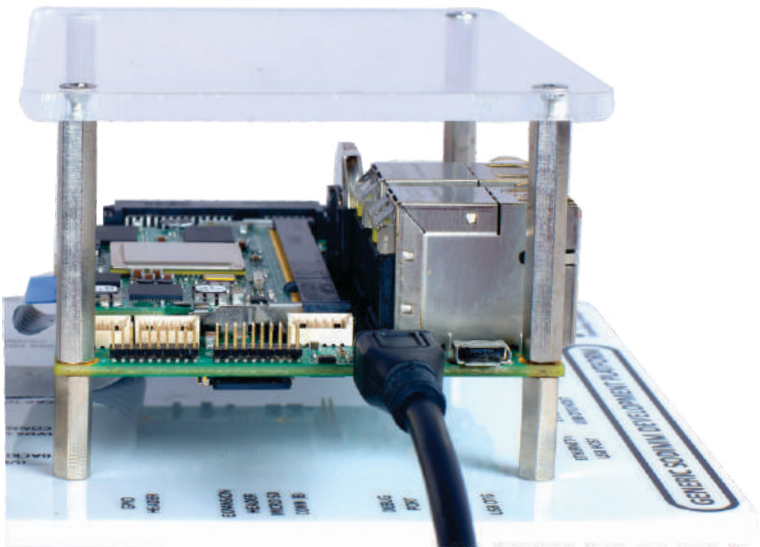
Debug Port Connection

■ 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

■ Open the HyperTerminal on PC/Laptop with the following setting.

Baud rate   : 115200 bps
Data bits   : 8
Parity   : None
Stop bits   : 1
Flow control   : None

Powering ON iW-RainboW-G15D-SM

iW-RainboW-G15D-SM i.MX6 SODIMM Development platform comes with 5V, 2A power supply with universal plugs. Please follow the below procedure to power ON the Development platform.

- Connect the 5V power supply plug to the power connector (J2) of the iW-RainboW-G15D-SM i.MX6 SODIMM Development platform as shown below and switch ON the power supply.

Power Supply Connection

- Once Power is applied to iW-RainboW-G15D-SM i.MX6 SODIMM Development Platform, the Power LED in the SODIMM Carrier Board will glow as shown below.
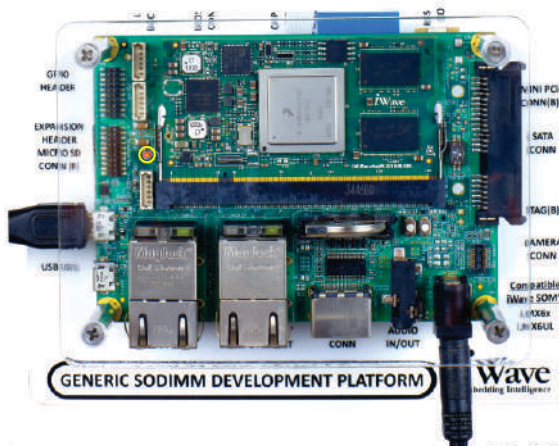
Power On Indication

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 iW-RainboW-G15D-SM i.MX6 SODIMM 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 iW-RainboW-G15D-SM i.MX6 SODIMM Development platform.

- Linux 3.10.31(or higher)
- Android Lollipop5.0 (or higher)
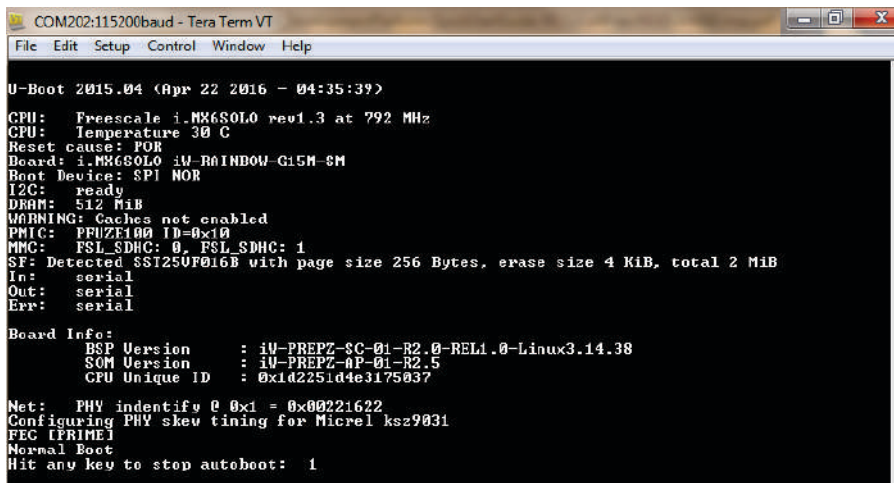
Depending upon the supported Operating system and boot loader on particular delivery, the Hyper Terminal will show the boot messages as described in the following section.

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.
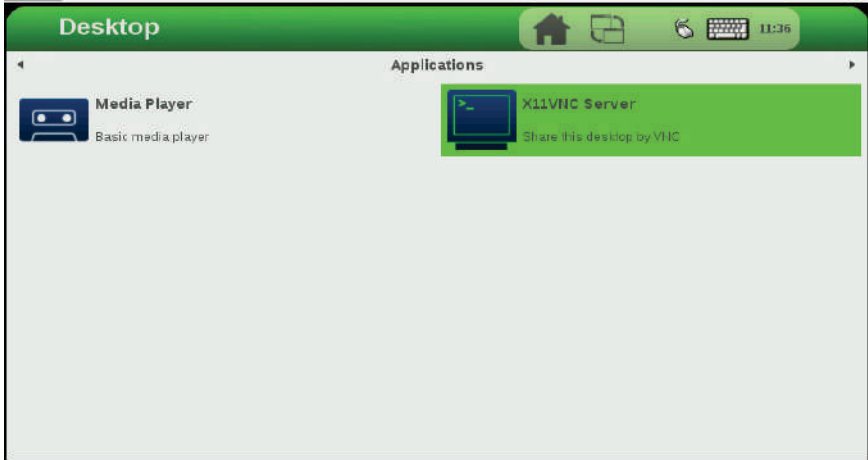
LCD after Linux Launch

■ 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.
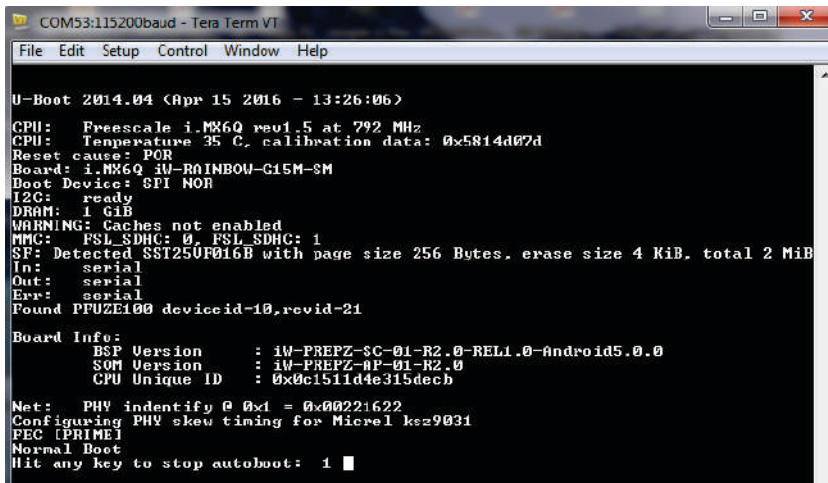

Linux Command Prompt

Refer Linux Software User Guide for further details.

Android Test Environment

■ In Andriod 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 Android will launch automatically.

U-boot Command Prompt

■ Once Android is launched, the LCD will show the Android screen as shown below and HyperTerminal

LCD after Android Launch

■ Press Enter key in terminal to see the Android command prompt as shown below. Once you get the prompt you are done with Test Environment setup on Android delivery.

Android Command Prompt

DVD Contents

iWave supports below mentioned Operating System Releases for iW-RainboW-G15D-SM i.MX6 SODIMM Development platform

- iW-RainboW-G15D-SM - Linux 3.10.17 or higher
- iW-RainboW-G15D-SM - Android 5.0 or higher

DVD contents will differ depending upon the operating system supported on the particular delivery. The following Figures show the DVD content structure of each Operating System Release.

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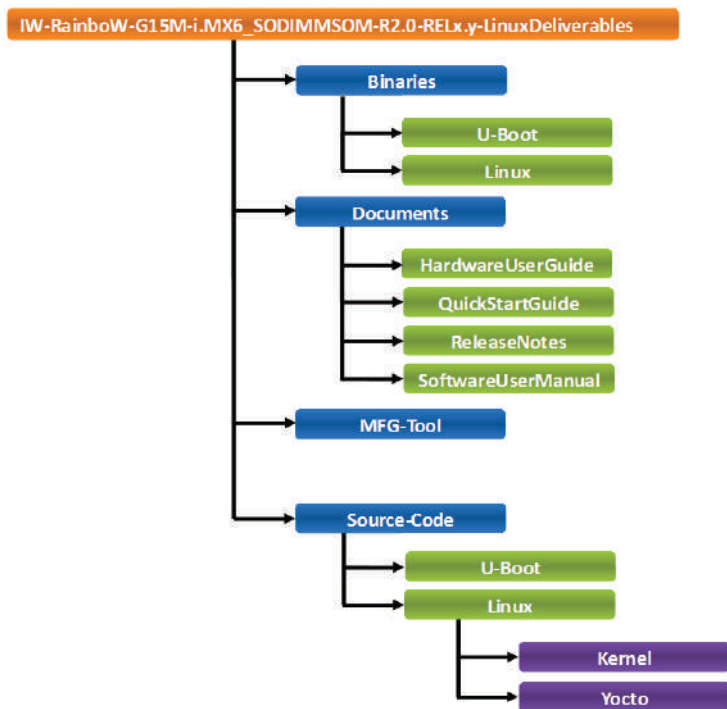
iWave continuously improves software releases with latest kernel version. Contact iWave for latest software release detail.

DVD Contents

Android DVD Contents
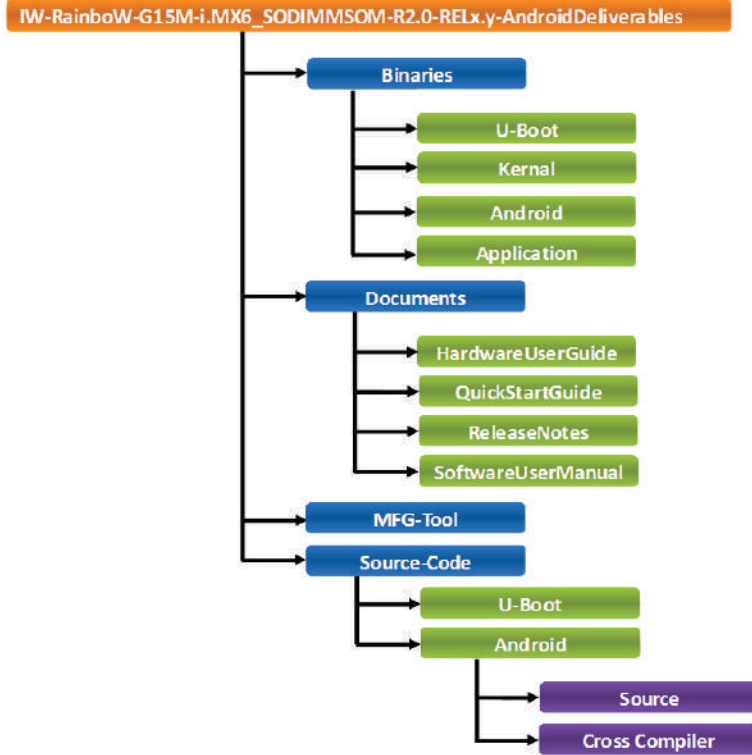
Note iWave continuously improves software releases with latest kernel version. Contact iWave for latest software release detail.

iWave's other Products

iW-RainboW-G22M-RZ/G1E SODIMM Module

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-G18M-SM i.MX6 Ultra Lite SODIMM Module

iWave's i.MX6UL based SODIMM CPU module integrates power efficient high performance ARM Cortex A7 CPU core operating up to 528MHz speed. The SOM is ultra-compact in size and integrated with on-board PMIC, Flash, DDR3 and dual Ethernet PHY. The SOM is ideally suitable for the cost & power optimized general embedded and industrial applications.

iWave's other Products

iW-RainboW-G20M-RZ/G1M/G1N Qseven SOM

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
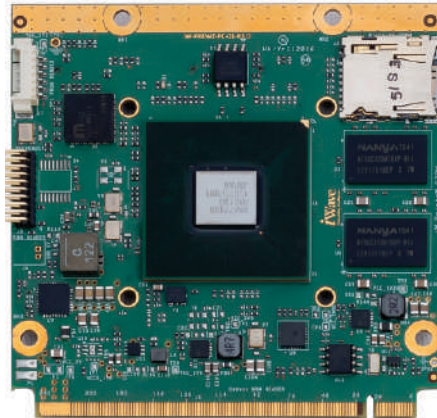
iW-RainboW-G15M-i.MX6 QP/DP Qseven SOM

iWave Systems introduced in-house developed i.MX6 QuadPlus (i.MX6 QP) and i.MX6 DualPlus (i.MX6 DP) CPU based Qseven SOMs to iW-RainboW-G15M family for broadening the existing i.MX6 SOM portfolio. The i.MX6 QP/DP delivers dramatic graphics and memory performance enhancements.
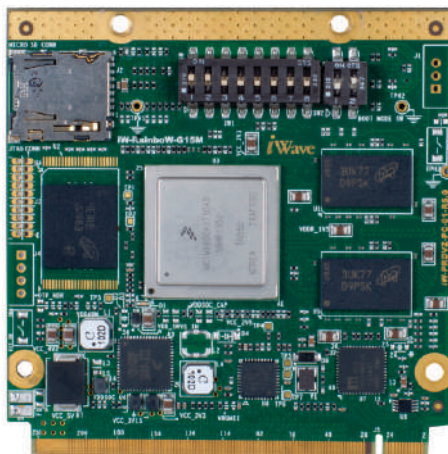
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