innocomm
InnoComm Mobile Technology Corp.

User Manual

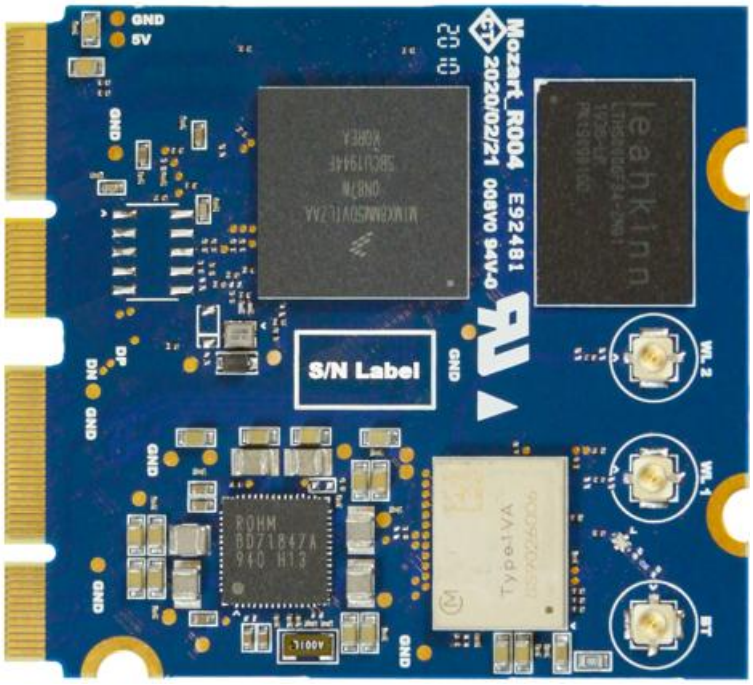
Wireless Audio Module

Brand name: InnoComm

Model Name: WB15

WB15

User Guide



Revisions History

Date	Version Number	Document Changes
2019/02/15	0.0	Initial Draft
2019/04/02	1.0	Official release
2019/08/02	1.1	Add Disclaimer; Add Chapter1.5
2019/08/21	1.2	Update Diagram
2019/10/17	1.3	Remove Optional I/O J103

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Table of Contents

1 Overview

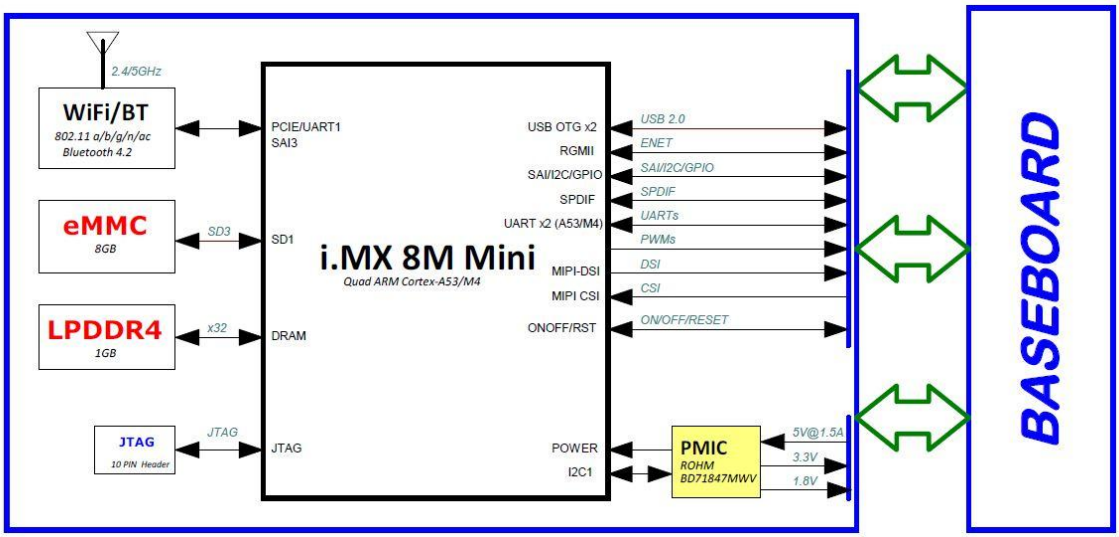
1.1 General Information

WB15i.MX8M Mini SOM is a high-performance System on Module(SOM) which is designed based on NXP®i.MX8MMini processor. i.MX8MMini integrate fourARM® Cotex-A53up to 1.8GHz and oneCotex-M4 core processor for low power processingto provide industry-leading audio voiceprocessing for applications that scale from consumer home audio to voice assistance.It supports 1080p video encode and decode.

WB15i.MX8M Mini SOM offers a wide range of interfaces - GPIOs,I2C, SPI, DSI,CSI, UART, USB, RGMII and synchronous audio interface (SAI) that supports full duplex serial interfaces with frame synchronization, such as I2S, AC97, TDM, and codec/DSP interfaces.

1.2 Architecture and Block Diagram

Figure 1-1 WB15 SOM Block Diagram

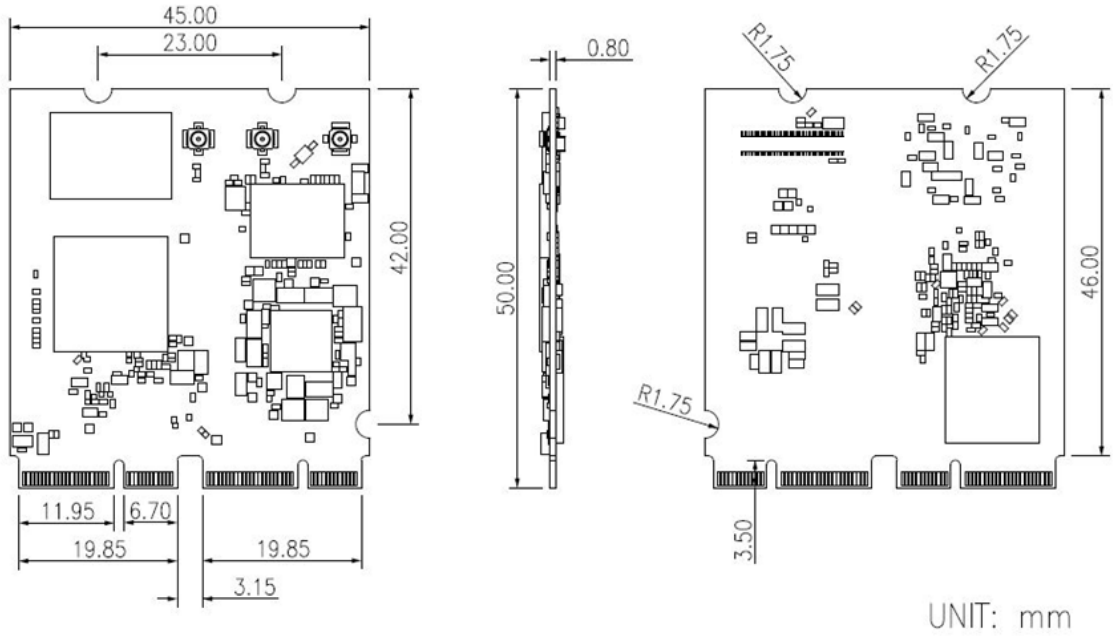


1.3 Feature Summary

- NXP i.MX8M Mini CPU
- 1GB LPDDR4 RAM
- 8GB eMMC
- 1 x MIPI DSI
- 1 x MIPI CSI
- Wi-Fi 802.11 a/b/g/n/ac, 2x2 MIMO
- Bluetooth 4.2
- 1 x USB 2.0 OTG
- 1 x USB 2.0 Host
- 1x RGMII interface
- 1 x SD/MMC
- Serial interfaces (2 x I2C, 3 x UART, 1 x SPI, 3 x SAI)
- 9 x GPIOs
- 1x PDM
- 1x SPDIF

1.4 Dimension

The dimension of WB15i.MX8M Mini SOM is 45mm x 42mm x 0.8mm.



1.5 Electrical Specification

Symbol	Parameter	Minimum	Maximum	Unit
VSYS_5V	5V input	2.7	5.5	V
NVCC_ENET_2V5	NVCC_ENET input	2.25	2.75	V

Table 1: Input Power Absolute Maximum Ratings

Symbol	Parameter	Minimum	Maximum	Unit
VDD_3V3	VDDIO_3V3	3.267	3.333	V
VDD_1V8	VDDIO_1V8	1.782	1.818	V

Table 2: Output Power Absolute Maximum Ratings

Symbol	Parameter	Typical	Maximum	Unit
I_{VSYS_5V}	5V Current	260	850	mA

Table 3: Input Current Absolute Maximum Ratings

2 Main Hardware Components

WB15-i.MX8M Mini SOM has two75-pin M.2 E-key golden finger.It integrates the NXP®i.MX8M Mini, LPDDR4 Memory,eMMC, Power Manage IC (PMIC), and Wi-Fi/Bluetooth on the module.

Figure 2-1 – Top side of WB15 SOM

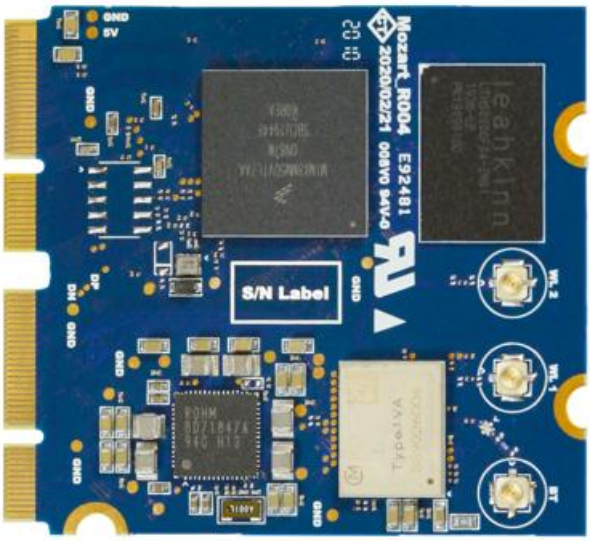
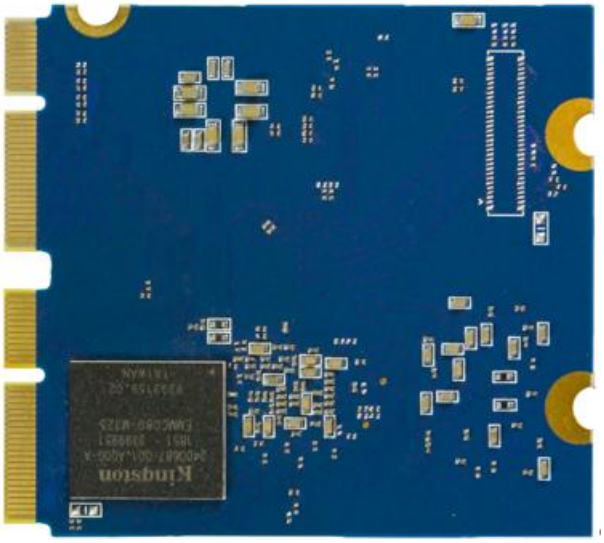


Figure 2-2 – Bottom side of WB15 SOM



2.1 CPU

The i.MX8M Mini processor integrate four ARM® Cotex-A53 up to 1.8GHz and one Cotex-M4 coresto provide industry-leading audio, voice and video processing for applications.

The features of i.MX 8M Mini processors include the following:

- 4xARM Cortex-A53 plus ARM Cortex-M4
- L1 Instruction Cache
  - → 32 KB L1 Instruction Cache for A53
  - → 16 KBL1 Instruction Cache for M4
- L1 Data Cache (each core)
  - → 32 KB L1 Data Cache (A7)
  - → 16 KB L1Data Cache (M4)
- The ARM Cortex-A53 Core complex shares
  - → General interrupt controller (GIC)
  - → Global timer
  - → Snoop control unit (SCU)
  - → Unified instruction and data (1MB)

2.2 Memory

WB15 SOM is available with up to 2GB of LPDDR4 memory. The default configuration is 1GB LPDDR4.

2.3 Power Management IC

WB15 SOM featuresRohm BD71847MWV power management IC. BD71847MWV is a programmable power management IC integrates 6 buck regulators and 6 LDOs to provide all power rails required by SoC and peripherals.

For system management, it provides the following features,

- Support software shutdown or hardware power off
- External wakeup source
- Output monitor
- PWROK signal for reset or power off
- OVP, UVLO, TSD

2.4 eMMC Storage

The onboard eMMC device is connected on the SD3 pins of the i.MX 8MMini processor in an 8bit width configuration.

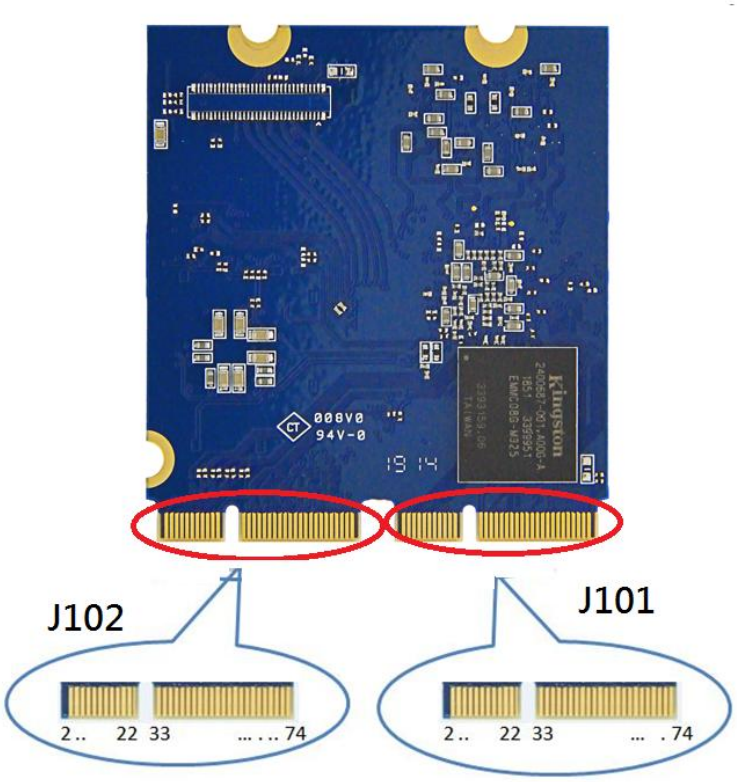
2.5 Wi-Fi/Bluetooth Module

The WB15 adopts MurataSP-XV1VA-Acombo module that integrates wireless local area network802.11 a/b/g/n/ac2x2 MIMO and Bluetooth 4.2.

3 WB15 iMX8MMini Interfaces and Connectors

WB-15 use two M.2 E-key golden finger to connect with carrier board.

The tables below detail the pin assignment and functionality of these connectors.



3.1 J101 Connector

Table 3-1 J101 Connector

J101 Pin#	Signal Name	i.MX8M Mini Pin #	Voltage	J101 Pin#	Signal Name	i.MX8M Mini Pin #	Voltage
1	PDM_DATA3	AC13	3.3V	2	SAI1_TXFS	AB19	3.3V
3	PDM_DATA1	AC14	3.3V	4	SAI1_TXD0	AG20	3.3V
5	PDM_DATA2	AD13	3.3V	6	SAI1_TXC	AC18	3.3V
7	SAI1_TXD2	AG21	3.3V	8	PDM_DATA0	AD18	3.3V
9	SAI1_TXD1	AF20	3.3V	10	GND	.	.
11	SAI1_TXD3	AF21	3.3V	12	PDM_CLK	AC15	3.3V
13	GND	.		14	GND	.	.
15	SAI1_MCLK	AB18	3.3V	16	SAI1_RXD1	AF15	3.3V

17	GND	.		18	SAI1_RXD0	AG15	3.3V
19	USB1_DN	A23		20	SAI1_RXFS	AG16	3.3V
21	USB1_DP	B23		22	SAI1_RXC	AF16	3.3V
23	GND	.		32	NVCC_ENENT_2V5	.	2.5V
33	USB1_VBUS	F23	5V	34	GND	.	
35	USB1_ID	D23		36	ENET_TXC	AG24	3.3V
37	GPIO1_IO08	AG10	3.3V	38	GND	.	
39	GPIO1_IO09	AF10	3.3V	40	ENET_TX_CTL	AF24	3.3V
41	GND	.		42	ENET_TD2	AG25	3.3V
43	ECSPI2_SCLK	E6	3.3V	44	ENET_TD3	AF25	3.3V
45	GND	.		46	ENET_TD0	AG26	3.3V
47	ECSPI2_MISO	A8	3.3V	48	ENET_TD1	AF26	3.3V
49	ECSPI2_MOSI	B8	3.3V	50	GND	.	
51	ECSPI2_SS0	A6	3.3V	52	ENET_RXC	AE26	3.3V
53	UART2_RXD	F15	3.3V	54	GND	.	
55	UART2_TXD	E15	3.3V	56	ENET_RX_CTL	AF27	3.3V
57	UART3_RXD	D6	3.3V	58	ENET_RD0	AE27	3.3V
59	UART3_TXD	B7	3.3V	60	ENET_RD2	AD26	3.3V
61	I2C2_SCL	D10	3.3V	62	ENET_RD1	AD27	3.3V
63	I2C2_SDA	D9	3.3V	64	ENET_RD3	AC26	3.3V
65	GND	.		66	GND	.	
67	SPDIF_RX	AG9	3.3V	68	ENET_MDC	AC27	3.3V
69	VDD_3V3	.		70	ENET_MDIO	AB27	3.3V
71	GND	.		72	ONOFF	A25	3.3V
73	GND	.		74	SYS_nRST	.	3.3V
75	VSYS_5V	.	5V				

3.2 J102 Connector

Table 3-2 J102 Connector

J102 Pin#	Signal Name	i.MX8M Mini Pin #	Voltage	J102 Pin#	Signal Name	i.MX8M Mini Pin #	Voltage
1	GND	.		2	SD2_CLK	W23	3.3V
3	PCIE_CLKN	A21	3.3V	4	GND	.	

5	PCIE_CLKP	B21	3.3V	6	SD2_nRST	AB26	3.3V
7	GND	.		8	SD2_CMD	AA27	3.3V
9	PCIE_RXN	A19	3.3V	10	SD2_DATA0	AB23	3.3V
11	PCIE_RXP	B19	3.3V	12	SD2_DATA1	AB24	3.3V
13	GND	.		14	SD2_DATA2	V24	3.3V
15	PCIE_TXN	A20	3.3V	16	SD2_DATA3	V23	3.3V
17	PCIE_TXP	B20	3.3V	18	SD2_nCD	AA26	3.3V
19	GND			20	GND	.	
21	USB2_DN	A23		22	USB2_VBUS	F23	5V
23	USB2_DP	B23		32	SPDIF_TX	AF9	3.3V
33	SAI2_RXD	AC24	3.3V	34	BOOT_MODE0	G26	3.3V
35	SAI2_RXFS	AC19	3.3V	36	BOOT_MODE1	G27	3.3V
37	SAI2_RXC	AB22	3.3V	38	UART4_RXD	F19	3.3V
39	GND	.		40	UART4_TXD	F18	3.3V
41	SAI2_MCLK	AD19	3.3V	42	I2C3_SCL	E10	3.3V
43	GND	.		44	I2C3_SDA	F10	3.3V
45	SAI2_TXD	AC22	3.3V	46	GND	.	
47	SAI2_TXFS	AD23	3.3V	48	DSI_DN3	A13	3.3V
49	SAI2_TXC	AD22	3.3V	50	DSI_DP3	B13	3.3V
51	GND	.		52	GND	.	.
53	SAI1_RXD5	AF18	3.3V	54	DSI_DN2	A12	3.3V
55	SAI1_RXD6	AG19	3.3V	56	DSI_DP2	B12	3.3V
57	SAI1_RXD4	AG18	3.3V	58	GND		.
59	GND	.		60	DSI_DN1	A10	3.3V
61	SAI3_MCLK	AD6	3.3V	62	DSI_DP1	B10	3.3V
63	GND	.		64	GND	.	.
65	SAI3_TXD	AF6	3.3V	66	DSI_DN0	A9	3.3V
67	SAI3_TXFS	AC6	3.3V	68	DSI_DP0	B9	3.3V
69	SAI3_TXC	AG6	3.3V	70	GND	.	.
71	GND	.		72	DSI_CKN	A11	3.3V
73	SAI1_TXD7	AF23	3.3V	74	DSI_CKP	B11	3.3V
75	SAI1_TXD4	AG22	3.3V				

3.3 Power Signals

Table 4-1 Power Signal Pins

Connector PIN#	Function	I/O	Description
J101 71, 73, 75	VSYS_5V	I	Input power 5V
J101 69	VDD_3V3	O	3.3V IO power
J101 32	NVCC_ENET_2V5	O	2.5V Ethernet Power

3.4 Ethernet

One RGMII interface is supported.

Table 4-3 Ethernet Signal Pins

Connector PIN#	Function	I/O	Description
J101 21	NVCC_ENET_2V5	O	Ethernet POWER
J101 36, 40, 42,44,46, 48, 52, 56, 58, 60, 62, 64, 68	RGMII interface	IO	RGMII

3.5 USB

The USB interface which provides high speed USB functionality conforms to the USB2.0. The OTG controller conforms to OTG2.0 specification.

Table 4-4 USB Signal Pins

Connector PIN#	Function	I/O	Description
J101 33	USB1_VBUS	I	USB1_VBUS
J101 35	USB1_ID	I	USB1_ID
J102 22	USB2_VBUS	I	USB2_VBUS
J101 21	USB1_DP	IO	USB1_DP
J101 19	USB1_DN	IO	USB1_DN
J102 23	USB2_DP	IO	USB2_DP
J102 21	USB2_DN	IO	USB2_DN

3.6 UARTs

Each of the UART interface support the followingserial data transmit/receive protocols andconfigurations:

- 7- or 8-bit data words, 1 or 2 stop bits, programmable parity (even, odd or none)
- Programmable baud rates up to 4 Mbps. This is a higher max baud rate relative to the 1.875 MHz, which is stated by the TIA/EIA-232-F standard.
- 32-byte FIFO on Tx and 32 half-word FIFO on Rx supporting auto-baud

Table 4-5 UART Signal Pins

Connector PIN#	Function	I/O	Description
J101 55	UART2_TXD	O	UART2_TXD
J101 53	UART2_RXD	I	UART2_RXD
J102 40	UART4_TXD	O	UART4_TXD
J101 38	UART4_RXD	I	UART4_RXD
J101 59	UART3_TXD	O	UART3_TXD
J101 57	UART3_RXD	I	UART3_RXD

3.7 I2Cs

WB15 hasTWO I2C interfaces which provide serial interface for external devices. Datarates of up to 400 kbps are supported.

Table 4-6 I2C Signal Pins

Connector PIN#	Function	I/O	Description
J102 44	I2C3_SDA	IO	I2C3_SDA
J102 42	I2C3_SCL	IO	I2C3_SCL
J101 61	I2C2_SCL	IO	I2C2_SCL
J101 63	I2C2_SDA	IO	I2C2_SDA

3.8 eCSPI

WB15supports one full-duplex Enhanced Configurable Serial Peripheral Interface (ECSPI).

The ECSPI contain a 64x32 receive buffer and a 64x32 transmit buffer.

Table 4-7eSPI Signal Pins

Connector PIN#	Function	I/O	Description
J101 49	ECSPI2_MOSI	O	ECSPI2_MOSI
J101 47	ECSPI2_MISO	I	ECSPI2_MISO
J101 43	ECSPI2_SCLK	O	ECSPI2_SCLK
J101 51	ECSPI2_SS0	O	ECSPI2_SS0

3.9 DSI Interface

WB15 provides a 4-lanes MIPI display interface operating up to 1080p60 resolution.

Table 4-8 DSI Signal Pins

Connector PIN#	Function	I/O	Description
J102 74	DSI_CLKP	O	DSI_CLKP
J102 72	DSI_CLKM	O	DSI_CLKM
J102 68	DSI_D0P	O	DSI_D0P
J102 66	DSI_D0M	O	DSI_D0M
J102 62	DSI_D1P	O	DSI_D1P
J102 60	DSI_D1M	O	DSI_D1M
J102 56	DSI_D2P	O	DSI_D2P
J102 54	DSI_D2M	O	DSI_D2M
J102 50	DSI_D3P	O	DSI_D3P
J102 48	DSI_D3M	O	DSI_D3M

3.10 SD/MMC

Fully compatible with MMC command/response setand Physical Layer as defined in the MultimediaCard System Specification,v5.0/v4.4/v4.41/v4.4/v4.3/v4.2.

- Fully compatible with SD command/response sets and Physical Layer as defined in the SD Memory Card Specifications v 3.0 including high-capacity SDXC cards up to 2 TB.
- Fully compatible with SDIO command/response sets and interrupt/Read-Wait mode as defined in the SDIO Card Specification, Part E1, v. 3.0

Table 4-11 SD/MMC Signal Pins

Connector PIN#	Function	I/O	Description
J102 6	SD2_nRST	O	SD2 Rest
J102 8	SD2_CMD	O	SD2_CMD
J102 18	SD2_nSDCD	I	SD2 Card detection
J102 10	SD2_DATA0	IO	SD2_DATA0
J102 12	SD2_DATA1	IO	SD2_DATA1
J102 14	SD2_DATA2	IO	SD2_DATA2
J102 16	SD2_DATA3	IO	SD2_DATA3

3.11 SAIs

The SAI interface provides a synchronous audiointerface (SAI) that supports full duplex serial interfaceswith frame synchronization, such as I2S, AC97, TDMand codec/DSP interfaces.

Table 4-12 SAI1 Signal Pins

Connector PIN#	Function	I/O	Description
J101 15	SAI1_MCLK	O	SAI1_MCLK
J101 22	SAI1_RXC	I	SAI1_RXC
J101 20	SAI1_RXFS	I	SAI1_RXFS
J101 18	SAI1_RXD0	I	SAI1_RXD0
J101 16	SAI1_RXD1	I	SAI1_RXD1
J102 3	SAI1_RXD2	I	SAI1_RXD2
J102	SAI1_RXD3	I	SAI1_RXD3

5			
J102 57	SAI1_RXD4	I	SAI1_RXD4
J102 53	SAI1_RXD5	I	SAI1_RXD5
J102 55	SAI1_RXD6	I	SAI1_RXD6
J101 2	SAI1_TXFS	O	SAI1_TXFS
J101 6	SAI1_TXC	O	SAI1_TXC
J101 4	SAI1_TXD0	O	SAI1_TXD0
J101 9	SAI1_TXD1	O	SAI1_TXD1
J101 7	SAI1_TXD2	O	SAI1_TXD2
J101 11	SAI1_TXD3	O	SAI1_TXD3
J102 75	SAI1_TXD4	O	SAI1_TXD4
J102 73	SAI1_TXD7	O	SAI1_TXD7

Table 4-13 SAI2,3,5 Signal Pins

Connector PIN#	Function	I/O	Description
J102 41	SAI2_MCLK	O	SAI2_MCLK
J102 37	SAI2_RXC	I	SAI2_RXC
J102 35	SAI2_RXFS	I	SAI2_RXFS
J102 338	SAI2_RXD	I	SAI2_RXD
J102 49	SAI2_TXC	O	SAI2_TXC
J102 47	SAI2_TXFS	O	SAI2_TXFS
J102 45	SAI2_TXD	O	SAI2_TXD
J102 61	SAI3_MCLK	O	SAI3_MCLK
J102 69	SAI3_TXC	O	SAI3_TXC
J102 67	SAI3_TXFS	O	SAI3_TXFS
J102 65	SAI3_TXD	O	SAI3_TXD

3.12 SPDIF

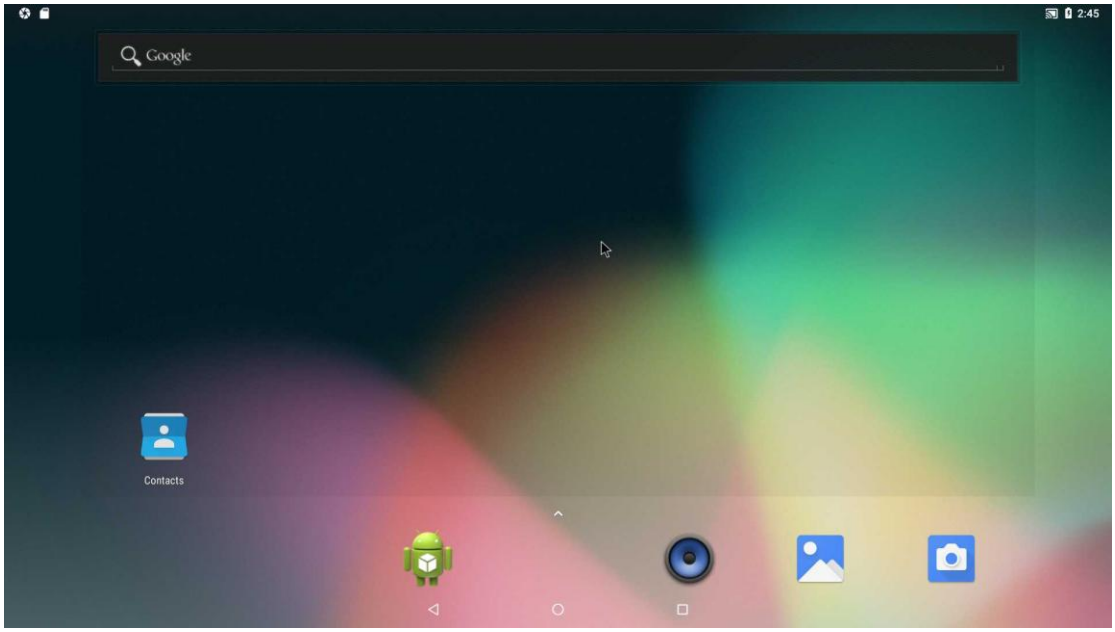
WB15 SOM supports Sony/Philips Digital Interface with 24-bit data width.

Table 4-15 SPDIF Signal Pins

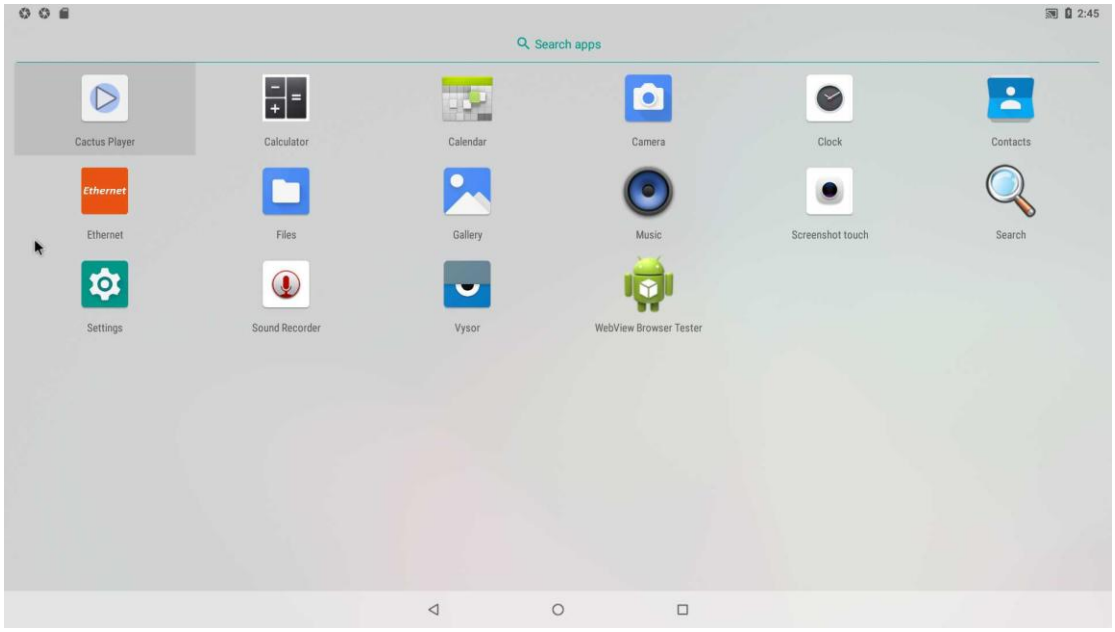
Connector PIN#	Function	I/O	Description
J101 67	SPDIF_RX	I	SPDIF_RX
J102 32	SPDIF_TX	O	SPDIF_TX

4 User interface Getting start

The SoM can function power on 5V DC input, once system start, WB15 can use EVB HDMI output or use USB sharing to external monitor for control.



You can use App for any application like play video, music etc.



5 Reference Documents

1. i.MX 8M Family of Applications Processors Datasheet
2. i.MX 8MMini Applications Processor Reference Manual
3. BD71847MWV Data sheet
4. Murata SP-XV1VA-A Combo Wi-Fi Module Datasheet

Antenna gain

BT/LE

	ANT	Model Number	Type	Max. Gain (dBi)
Antenna information	ANT-0	WA-F-LA-01-015	FPCB Antenna	2.17
	ANT-1	N14-0808-R0A	PCB Antenna	2.09

WLAN 2.4GHz

	ANT	Model Number	Type	Max. Gain (dBi)
Antenna information	ANT-0 / ANT-1	N12-5776-R0A	PCB Antenna	2.91
		N12-5777-R0A	PCB Antenna	2.22
		WA-F-LB-03-110	FPCB Antenna	5.42
		WA-F-LB-02-187	FPCB Antenna	5.28
		N12-7231-R0A	PCB Antenna	1.81

WIFI 5G

	ANT	Model Number	Type	Max. Gain (dBi)
Antenna information	ANT-0 / ANT-1	N12-5776-R0A	PCB Antenna	5.48
		N12-5777-R0A	PCB Antenna	6.39
		WA-F-LB-03-110	FPCB Antenna	2.79
		WA-F-LB-02-187	FPCB Antenna	3.23
		N12-7231-R0A	PCB Antenna	3.40

Indoor Use Statement

Caution: This product operates in the frequency band 5.180–5.240 GHz. It is restricted to indoor operation only.

WARNING

1.§ P15.21 Information to user.
Notice: Any changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment. Aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.
2.§ P15.105 Information to the user.
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: —Reorient or relocate the receiving antenna. —Increase the separation between the equipment and receiver. —Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. —Consult the dealer or an experienced radio/TV technician for help. This Class B digital apparatus complies with Canadian ICES-003.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

1. This device may not cause interference, and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 Canada.

Pour réduire le risque d'interférence aux autres utilisateurs, le type d'antenne et son gain doivent être choisies de façon que la puissance isotrope rayonnée équivalente (PIRE) ne dépasse pas ce qui est nécessaire pour une communication réussie.

Cet appareil est conforme à la norme RSS Industrie Canada exempts de licence norme(s). Son fonctionnement est soumis aux deux conditions suivantes:

1. Cet appareil ne peut pas provoquer d'interférences et

2. Cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

3.§ P15.19 FCC Labelling requirements

Notice:

This device complies with Part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils

radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

4.FCC/IC RF Radiation Exposure Statement:

FCC

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This

equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your

body.

1.L'émetteur ne doit pas être colocalisé ni fonctionner conjointement avec à autre antenne ou autre émetteur. 2.Cet appareil est conforme aux limites d'exposition aux rayonnements de la IC pour un environnement non contrôlé. L'antenne doit être installé de façon à garder une distance minimale de 20 centimètres entre la source de rayonnements et votre corps.

Caution:

1) The device for operation in the band 5150 – 5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

2) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

3) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and

The high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

DFS (Dynamic Frequency Selection) products that operate in the bands 5250- 5350 MHz, 5470-5600MHz, and 5650-5725MHz.

Avertissement:

1) Le dispositif fonctionnant dans la bande 5150-5250 MHz est réservé uniquement pour une utilisation à l' intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

2) Le gain maximal d' antenne permis pour les dispositifs avec antenne(s) amovible(s) utilisant les bandes 5250-5350 MHz et 5470-5725 MHz doit se conformer à la imitation P.I.R.E.;

3) Le gain maximal d' antenne permis pour les dispositifs avec antenne(s) amovible(s) utilisant la bande 5725-5850 MHz doit se conformer à la limitation P.I.R.E spécifiée pour l' exploitation point à point et non point à point, selon le cas.

En outre, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu' ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Les produits utilisant la technique d' atténuation DFS (sélection dynamique des réquences) sur les bandes 5250- 5350 MHz, 5470-5600MHz et 5650-5725MHz.

Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d' exposition aux radiations:

Cet équipement est conforme aux limites d' exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

5.FCC/IC RF Radiation Exposure Statement:

This radio transmitter [20480-WB15] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Cet émetteur radio [20480-WB15] a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous, avec le gain maximal autorisé indiqué. Les types d'antennes non inclus dans cette liste qui ont un gain supérieur au gain maximum indiqué pour tout type répertorié sont strictement interdits pour l'utilisation avec cet appareil.

	Antenna	Model	Type	Max. Gain (dBi)	
Antenna Information	ANT-0	N14-0808-R0A	PCB Antenna	2402 - 2480	2.09
	ANT-1	WA-F-LA-01-015	FPCB Antenna	2402 - 2480	2.17
	ANT-0	N12-5776-R0A	PCB Antenna	2412 - 2472	5.42
				5180 - 5850	5.48
	ANT-1	N12-5777-R0A	PCB Antenna	2412 - 2472	5.28
				5180 - 5850	6.39
	ANT-2	WA-F-LB-03-110	FPCB Antenna	2412 - 2472	2.91
				5180 - 5850	2.79
	ANT-3	WA-F-LB-02-187	FPCB Antenna	2412 - 2472	2.22
				5180 - 5850	3.23
	ANT-4	N12-7231-R0A	PCB Antenna	2412 - 2472	1.81
				5180 - 5850	3.40

Notice to OEM integrator

Must use the device only in host devices that meet the FCC/ISED RF exposure category of mobile, which means the device is installed and used at distances of at least 20cm from persons. The end user manual shall include FCC Part 15 /ISED RSS GEN compliance statements related to the transmitter as show in this manual.
Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B, ICES 003. Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host. Must have on the host device a label showing Contains FCC ID: YAIWB15 ， IC: 20480-WB15
l'hôte doit utiliser l'instrument uniquement dans des dispositifs qui répondent à la fcc / (cat égorie d'exposition rf

mobile, ce qui signifie le dispositif est installé et utilisé à une distance d'au moins 20 cm de personnes.
le manuel de l'utilisateur final doit inclure la partie 15 / (fac rss gen déclarations de conformité relatives à
l'émetteur que de montrer dans ce manuel.
le fabricant est responsable de la conformité de l'hôte, le système d'accueil avec le module installé avec toutes
les autres exigences applicables du système comme la partie 15 b, ices - 003. accueillir le fabricant est fortement recommandé de confirmer la conformité avec les exigences de la fcc /
(émetteur lorsque le module est installé dans l'hôte.
le dispositif d'accueil doivent avoir une étiquette indiquant contient FCC ID: YAIWB15，IC: 20480-WB15

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