UP-CHCR1

Maker Board

User's Manual 1st Ed

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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● UP-CHCR1	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1.   All cautions and warnings on the device should be noted.

2.   Make sure the power source matches the power rating of the device.

3.   Position the power cord so that people cannot step on it. Do not place anything over the power cord.

4.   Always completely disconnect the power before working on the system's hardware.

5.   No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.

6.   If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.

7.   Always disconnect this device from any AC supply before cleaning.

8.   While cleaning, use a damp cloth instead of liquid or spray detergents.

9.   Make sure the device is installed near a power outlet and is easily accessible.

10.   Keep this device away from humidity.

11.   Place the device on a solid surface during installation to prevent falls

12.   Do not cover the openings on the device to ensure optimal heat dissipation.

13.   Watch out for high temperatures when the system is running.

14.   Do not touch the heat sink or heat spreader when the system is running

15.   Never pour any liquid into the openings. This could cause fire or electric shock.

16.   As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17.   If any of the following situations arises, please the contact our service personnel:

     i.   Damaged power cord or plug

     ii.   Liquid intrusion to the device

     iii.   Exposure to moisture

     iv.   Device is not working as expected or in a manner as described in this manual

     v.   The device is dropped or damaged

     vi.   Any obvious signs of damage displayed on the device

18.   DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

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.

- Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

- This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

- End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

This equipment complies with FCC 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.

Module

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module. 20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: OHBUPCCHTGWS01". If the size of the end product is larger than 8x10cm, then

the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	O	O	O	O	O	O
外部信号 连接器及线材	O	O	O	O	O	O

O：表示该有毒有害物质在该部件所有均质材料中的含量均在
　SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出
　SJ/T 11363-2006 标准规定的限量要求。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	O	O	O	O	O	O
Wires & Connectors for External Connections	O	O	O	O	O	O
O：The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement. X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement. **Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only**						

Table of Contents

Chapter 1

Product Specifications

1.1   Specifications

System	
● **Form Factor**	56.5 mm × 66 mm
● **CPU**	Intel® Atom™ x5-Z8350 Processor
● **CPU Frequency**	Up to 1.84 GHz
● **Chipset**	Processor integrated
● **Memory Type**	Onboard DDR3L-1600
● **Max Memory Capacity**	4 GB
● **BIOS**	SPI BIOS – 64Mb flash
● **Power Requirement**	5V3A or 5V4A
● **Power Supply Type**	DC-In
● **Power Consumption (Typical)**	<6W (SoC SDP <2W)
● **Dimensions (L x W)**	56.5 mm × 66 mm
● **Operating Temperature**	0 ~ 60°C (32 ~ 140°F)
● **Operation Humidity**	10 ~ 80% relative humidity, non-condensing
● **Certification**	CE/FCC Class A

Display	
● **VGA/LCD Controller**	Intel® HD Graphics

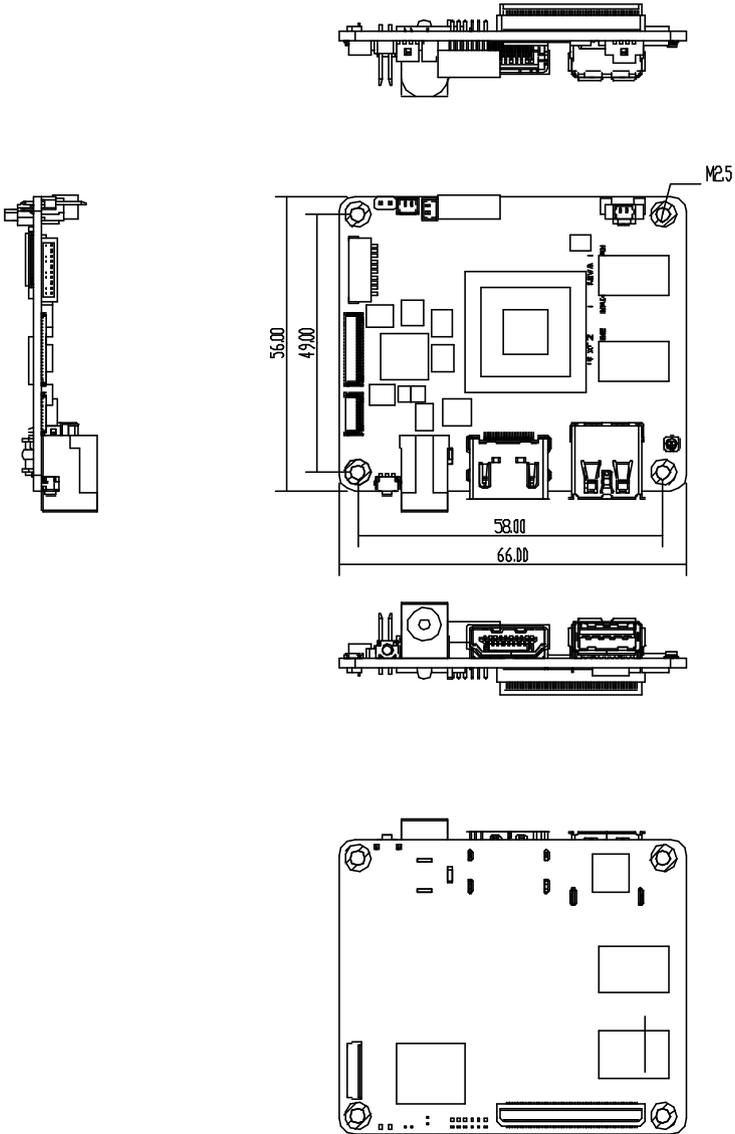| I/O	
● **Audio**	HDMI I2S

- **USB** USB 3.0 x 1

- **Onboard eMMC** 16 GB / 32 GB / 64 GB

- **Expansion Slot** 100 PIN Docking Connector

    (28 x GPIO, 2 x I2C, 1 x SPI, 1 x HSUART1, 1 x ADC,

    5V, GND)

    USB Device
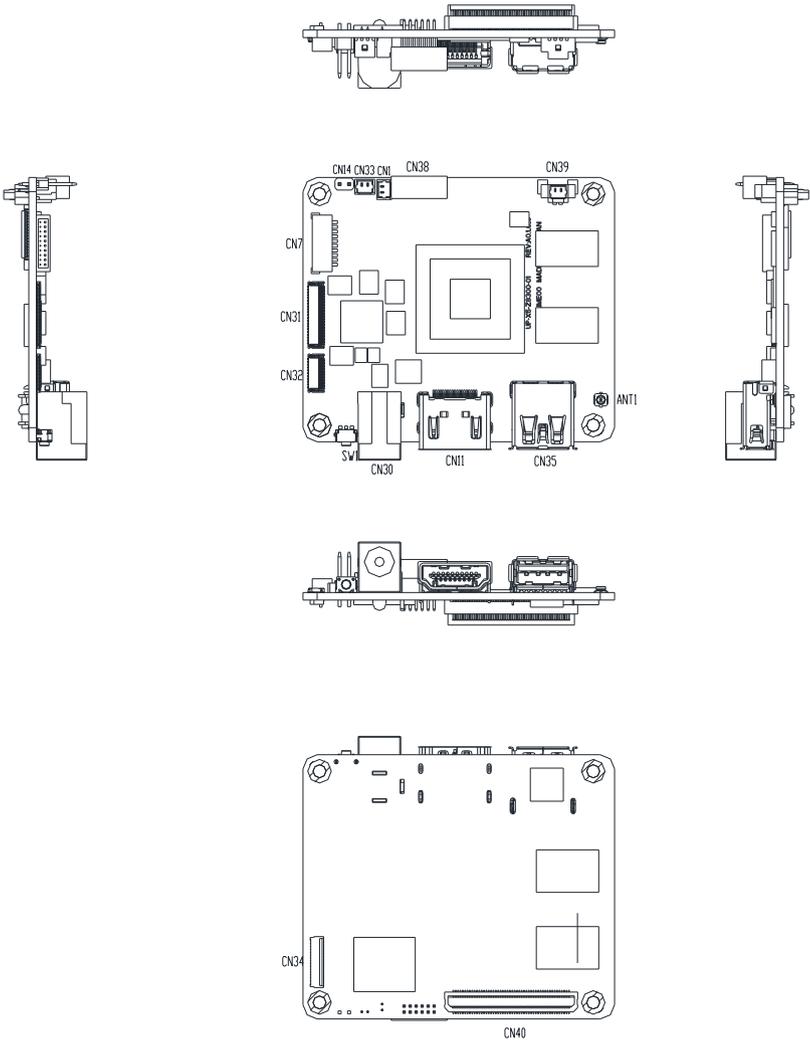
    1 x PCIe

    1 x USB2.0

Chapter 2

Hardware Information

2.1   Dimensions

M2.5

56.00

49.00

58.00

66.00

2.2   Jumpers and Connectors

2.3   List of Switches and Connectors

Please refer to the table below for all of the board's jumpers that you can configure for your application

| Reference	Function	Connector Type
SW1	Power Button	(TF) Push Button Switch.HCH.PTS-099
CN1	RTC Battery Wafer	(TF) WAFER BOX 2P.180D.1.25mm.CATCH.1201-700-02S
CN31	MIPI DSI Connector	(TF)FPC/FFC Conn.41P.90D(F).0.6mm.Hirose.FH35C-41S-0.3SHW(50)
CN32	MIPI CSI Connector	(TF)FPC/FFC Conn.21P.90D(F).0.6mm.Hirose.FH35C-21S-0.3SHW(50)
CN35	USB 3.0 Connector	(TF)USB3.0 CONN..9P.90D(F).Sinking.SMD.Single Port.TRONTEK.930-00153-A91-21
CN7	USB 2.0 1x10P Wafer	(TF)Wafer Box.10P.90D.1.0mm.CATCH.1204-700-10RM
CN11	HDMI Connector	(TF)HDMI CONN.19P.90D(F).A TYPE.FOXCONN.QJ51191-LFB4-7F
CN14	Reset Pin Header	(TF) PIN HEADER.2*1P.180D.(M).2.0mm.DIP
CN30	DC Jack	(TF)DC Power Jack.3P.90D(M).DIP.2.0mm.COXOC.416AEWTJ02004PA
CN38	Update BIOS Header	(TF)PIN HEADER.6*2P.180D(M).1.27mm.Astron.C27-4112-206-1
CN33	Power Button Wafer	(TF)WAFER BOX.2P.180D.(M).1.25mm.CATCH.1201-700-02S

| CN39	FAN Wafer	(TF)WAFER.2P.180D(M).SMD.1.25mm.W/Cap.PINREX.712-73-02TWE0
CN34	MIPI CSI CONNECTOR	(TF)FPC/FFC Conn..31P.90D(F).SMD.0.3mm.Dual Contact.Panasonic.AYF333135
CN40	EXHAT-100.Header	(TF)Board-Board Connector.100P.180D(M).SMD.Pitch=0.5mm.Header.Panasonic.AXK6S00547YG
ANT1	WIFI Antenna CONNECTOR	(TF)Antenna Conn..3P.90D(M).SMD.I-PEX1.I-PEX.20279-001E

2.3.1 Power Button (SW1)
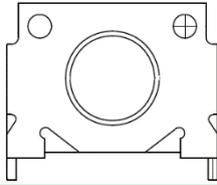
Position	Function
SW1 1	(default)
SW1 0	Power ON

2.3.2 RTC Battery Wafer (CN1)
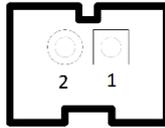
Pin	Signal
1	+V_COIN_BAT
2	GND

2.3.3 MIPI DSI Connector (CN31)
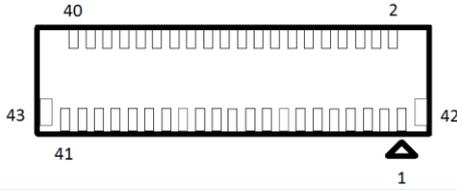
Pin	Signal	Pin	Signal
1	MDSI_A_DATA1_DN	23	DDI0_TX2_DN
2	MDSI_A_DATA1_DP	24	GND
3	GND	25	DDI0_TX3_DP
4	MDSI_A_CLK_DN	26	DDI0_TX3_DN
5	MDSI_A_CLK_DP	27	GND
6	GND	28	DDI0_AUX_DP
7	MDSI_A_DATA0_DN	29	DDI0_AUX_DN
8	MDSI_A_DATA0_DP	30	GND
9	GND	31	DDI0_HPD_CONN
10	I2C2_3P3_SCL	32	DDI0_BKLT_R_CTRL
11	I2C2_3P3_SDA	33	DDI0_VDD_EN
12	GND	34	DDI0_BKLT_EN
13	DDI1_DDC_C_CLK	35	NC
14	DDI1_DDC_C_DAT	36	NC
15	GND	37	+3.3V
16	DDI0_TX0_DP	38	+3.3V
17	DDI0_TX0_DN	39	+3.3V
18	GND	40	+3.3V
19	DDI0_TX1_DP	41	+3.3V
20	DDI0_TX1_DN	42	GND
21	GND	43	GND
22	DDI0_TX2_DP		

2.3.4 MIPI CSI Connector (CN32)
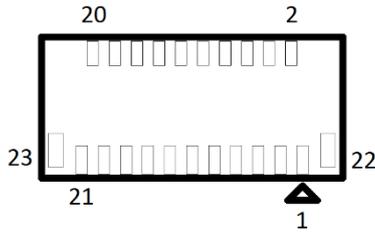
Pin	Signal	Pin	Signal
1	GND	13	GND
2	MCSI_1_DATA1_DN	14	CAM_MCLK
3	MCSI_1_DATA1_DP	15	GND
4	GND	16	I2C2_SOC_SCL
5	MCSI_1_CLK_DN	17	I2C2_SOC_SDA
6	MCSI_1_CLK_DP	18	CAM_RST_N
7	GND	19	FLASH_RESET_N
8	MCSI_1_DATA0_DN	20	+2.8V
9	MCSI_1_DATA0_DP	21	GND_CAM
10	GND	22	GND
11	+1.2V	23	GND
12	+1.8V		

2.3.5 USB 3.0 Connector (CN35)
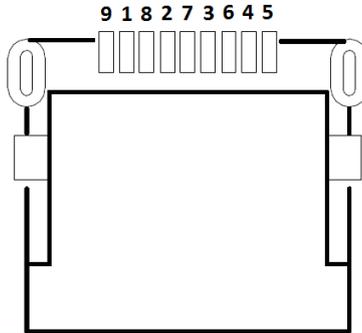
Pin	Signal	Pin	Signal
1	+5V	6	CROSSBAR_RX1_P
2	USB2_P1_DN_L	7	GND
3	USB2_P1_DP_L	8	CROSSBAR_TX1_N
4	GND	9	CROSSBAR_TX1_P
5	CROSSBAR_RX1_N		

2.3.6 USB 2.0 1x10P Wafer (CN7)
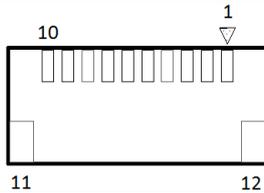
Pin	Signal	Pin	Signal
1	+5V	7	USB2_P2_DP_L
2	USB2_P3_DN_L	8	GND
3	USB2_P3_DP_L	9	UART0_RXD
4	GND	10	UART0_TXD
5	+5V	11	GND
6	USB2_P2_DN_L	12	GND

2.3.7 HDMI Connector (CN11)
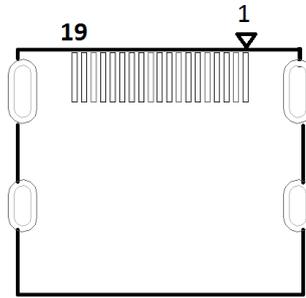
Pin	Signal	Pin	Signal
1	DDI2_TX0_HDMI_DP+	11	GND
2	GND	12	DDI2_CLK_HDMI_DN-
3	DDI2_TX0_HDMI_DN-	13	HDMI_CEC_D
4	DDI2_TX1_HDMI_DP+	14	NC
5	GND	15	DDI2_DDC_CLK
6	DDI2_TX1_HDMI_DN-	16	DDI2_DDC_DAT
7	DDI2_TX2_HDMI_DP+	17	GND
8	GND	18	+5V_HDMI
9	DDI2_TX2_HDMI_DN-	19	DDI2_TYPE_C_HPD
10	DDI2_CLK_HDMI_DP+		

2.3.8 Reset Pin Header (CN14)
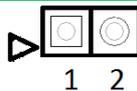
Pin	Signal
1	PMU_RSTBTN_N
2	GND

2.3.9 DC Jack (CN30)
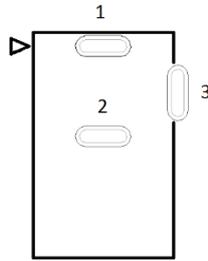
Pin	Signal
1	+V5
2	GND
3	GND

2.3.10 Update BIOS Header (CN38)
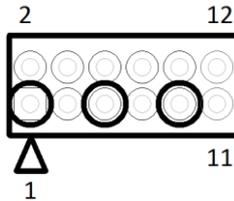
Pin	Signal	Pin	Signal
1	NC	2	GND
3	NC	4	3.3V
5	NC	6	FST_SPI_CS0_N
7	FST_SPI_CLK	8	FST_SPI_D1
9	NC	10	GND
11	FST_SPI_D0	12	SPI_SOCK_HOLD_N

2.3.11 Power Button Wafer (CN33)
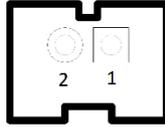
Pin	Signal
1	PWR_SW#_CTL_R
2	

2.3.12 FAN Wafer (CN39)
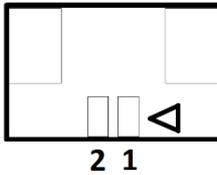
Pin	Signal
1	GND
2	FAN_PWR

2.3.13 MIPI CSI Connector (CN34)
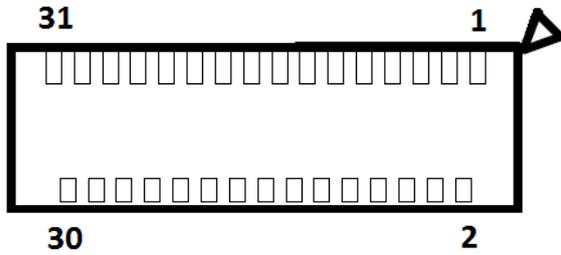
Pin	Signal	Pin	Signal
1	GND	2	CAM1_RST_N
3	NC	4	I2C5_SOC_SDA
5	I2C5_SOC_SCL	6	GND
7	CAM1_MCLK	8	GND
9	MCSI_0_DATA0_DN	10	MCSI_0_DATA0_DP
11	GND	12	MCSI_0_DATA1_DN
13	MCSI_0_DATA1_DP	14	GND
15	MCSI_0_CLK_DN	16	MCSI_0_CLK_DP
17	GND	18	MCSI_0_DATA2_DN
19	MCSI_0_DATA2_DP	20	GND
21	MCSI_0_DATA3_DN	22	MCSI_0_DATA3_DP
23	GND	24	+AVDD_CAM
25	GND	26	+1.2V
27	+1.8V	28	GND
29	+2.8V	30	+2.8V

2.3.14 EXHAT-100.Header (CN40)
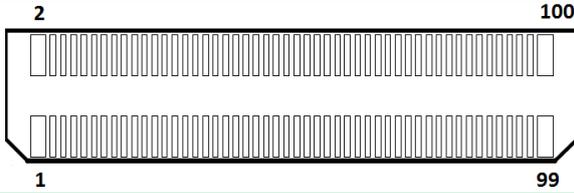
Pin	Signal	Pin	Signal
1	+5V	51	LPE_I2S2_TX
2	+5V	52	USB_HSIC_1_DATA
3	+5V	53	GND
4	+5V	54	USB_HSIC_1_STROBE
5	+5V	55	PCIE_TX0_DP
6	+5V	56	GND
7	+5V	57	PCIE_TX0_DN
8	+5V	58	USB_HSIC_2_DATA
9	GND	59	GND
10	GND	60	USB_HSIC_2_STROBE
11	PLTRST_BUF_3P3_N	61	PCIE_RX0_DP
12	UART1_RTS	62	GND
13	PMU_PWRBTN_3P3_N	63	PCIE_RX0_DN
14	UART1_CTS	64	USB2_P0_DP
15	PMU_SLP_S0IX_N_3P3	65	GND
16	UART1_TXD	66	USB2_P0_DN
17	PCIE_CLKREQ0	67	PCIE_REFCLK0_DP
18	UART1_RXD	68	GND
19	PMC_SUSCLK0	69	PCIE_REFCLK0_DN
20	GND	70	USB_OTG_R_ID
21	GND	71	GND
22	DDI2_DDC_CLK	72	GND

23	SPI2_MOSI	73	I2C0_SOC_SDA
24	DDI2_DDC_DAT	74	SD3_CD
25	SPI2_MISO	75	I2C0_SOC_SCL
26	HDMI_CEC_D	76	SD3_CMD
27	SPI2_CLK	77	GND
28	HDMI_CEC_R	78	SD3_1P8_EN
29	SPI2_CS0	79	I2C1_SOC_SDA
30	DDI2_TYPE_C_HPD	80	SD3_PWREN
31	SPI2_CS1	81	I2C1_SOC_SCL
32	ISH_GPIO0	82	SD3_WP
33	GND	83	GND
34	ISH_GPIO1	84	SD3_CLK
35	NA	85	ISH_I2C1_DATA
36	ISH_GPIO2	86	SD3_SD0
37	NA	87	ISH_I2C1_CLK
38	ISH_GPIO3	88	SD3_SD1
39	NA	89	GND
40	ISH_GPIO4	90	SD3_SD2
41	NA	91	NA
42	ISH_GPIO7	92	SD3_SD3
43	GND	93	NA
44	ISH_GPIO9	94	GND
45	LPE_I2S2_CLK	95	NA
46	SOC_PWM0	96	CPLD_OE
47	LPE_I2S2_FRM	97	NA
48	SOC_PWM1	98	CPLD_RST
49	LPE_I2S2_RX	99	NA
50	GND	100	CPLD_STROBE

2.3.15WIFI Antenna CONNECTOR (ANT1)
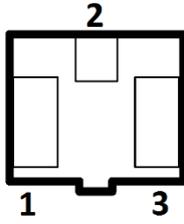
Pin	Signal
1	GND
2	RF trace
3	GND

Chapter 3

Drivers Installation

3.1   Driver Download and Installation

Please access https://up-community.org and go to the Downloads section to find the

relevant driver.