Media Player Board SWH-5186

Specification V2.0

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FCC Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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 device complies with part 15 of the 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.

The distance between the product and body is more than 20cm

Revision history

Revision	Revision date	Principle changes
V1.0	Oct. 2016	Create based on SWH-5186 V1.0
V2.1	Sept. 2017	Create based on SWH-5180 V2.0

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1 Overview

1.1 Introduction

SWH-5186 multimedia network player board is designed based on Rockchip RK3288 chip. Which is CPU frequency up to 1.8GHZ and quad-core architecture Cortex-A17 and DDR3 2G memory and 8G of storage. These super-performance ensure high-speed run of terminals . The most eye-catching of the board is supporting 4K H.264 decoding. In addition, this board has rich peripheral interfaces, including TTL, RS232, GPIO multiple expansion interface and HDMI input + HDMI, LVDS, VGA three outputs to support the industry mainstream USB / serial port Equipment; It support camera and printer and identification terminal and two-dimensional code scanner and IC card reader and fingerprint reader and other mainstream peripherals.

1.2 Features

(1) the classic version, the new configuration

- CPU's frequency is 1.8GHZ
- Quad-core CPU
- DDR3 2G memory and 8G storage (expandable TF / USB)
- Android 5.1 system

(2) complete module, with on-demand

- Mainstream 3G / 4G module
- Printer, two-dimensional code scanner, camera, identification terminal, fingerprint recognition
- NFC identification module
- Thermal sensation and gravity sensing module
- Wireless charging module

(3) rich peripheral interface, flexible choice and expansion

- 3 TTL or 1 TTL + 2 RS232 (standard)
- 6 TTL or 4 TTL + 2 RS232 (Optional)
- 6 USB2.0 interface and 5 GPIO interface
- HDMI, LVDS, VGA three output
- HDMI input (optional)

2 Specification

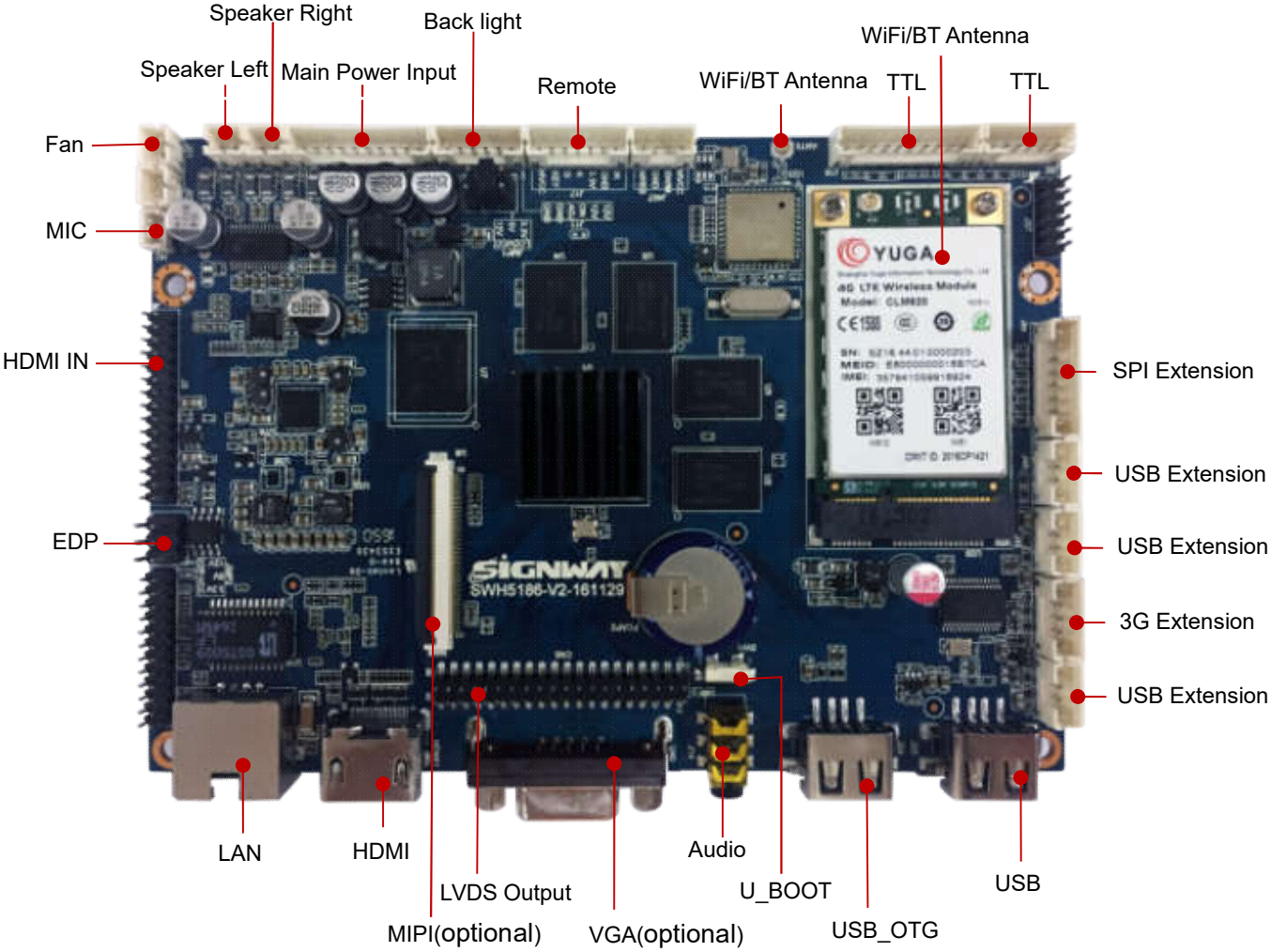
Hardware Configuration	
CPU	Rockchip RK3288 + ARM Quad-core Cortex A17 CPU (Up to 1.8GHz)
RAM	HYNIX DDR3 2Gbyte
Storage	8GB eMMC Memory (extensible TF/USB)
GPU	ARM Quad Mali-764 GPU
Resolution	4K H.264 Decoding
OS	
OS	Android 5.1
Contents	Support Video/Image/Text/logo/Date/Time/Weekday/Weather split-screen display and background image
Media Formats	
Media Formats	Video: MPEG1, MPEG2, MPEG4, H.264, WMV, MKV, TS, flv Audio: MP3 Image: JPG, JPEG, BMP, PNG, GIF
Interfaces	
Power Supply	×1
Video Output	VGA×1 (optional) HDMI×1 LVDS×1，40 Pin, 2.0mm, Double Row
Video Input	HDMI IN×1
Audio Output	×1, Linear output, 3.5mm headphone jack
	×2, 2 Pin 2.0mm, Stereo CLASS-D Amplifier, direct for 2*8W/8Ω Speaker
Internet	×1, 10/100M Ethernet
	WIFI(802.11bgn)×1, BT4.0×1
	PCIE Slot（2G/3G Module）×1
USB2.0	USB OTG×1（can be used as HOST） USB HOST×5 (J28 and 3G modules share a USB interface)
Backlight	×2, 6 Pin, 2.0mm
Fan	×2, 2 Pin, 2.0mm
IR	×1, 7 Pin, 2.0mm, Red/Green LED

Extension	3 TTL or 1 TTL + 2 RS232 (standard) 6 TTL or 4 TTL + 2 RS232 (Optional) SPI×1 GPIO×5 I2C×2 MIC x1
TF Card Slot	×1
SIM Card Slot	×1
Other Features	
RTC	Time synchronization over network and time saving when power failure
IR Input	Specified remote of NEC format
Electrical Parameter	
Input Power	Switching Power（STB，5VSB，5V，12V）, 10 Pin, 2.00mm Single 12V (Need to short J41)

3 Profile

3.1 Profile

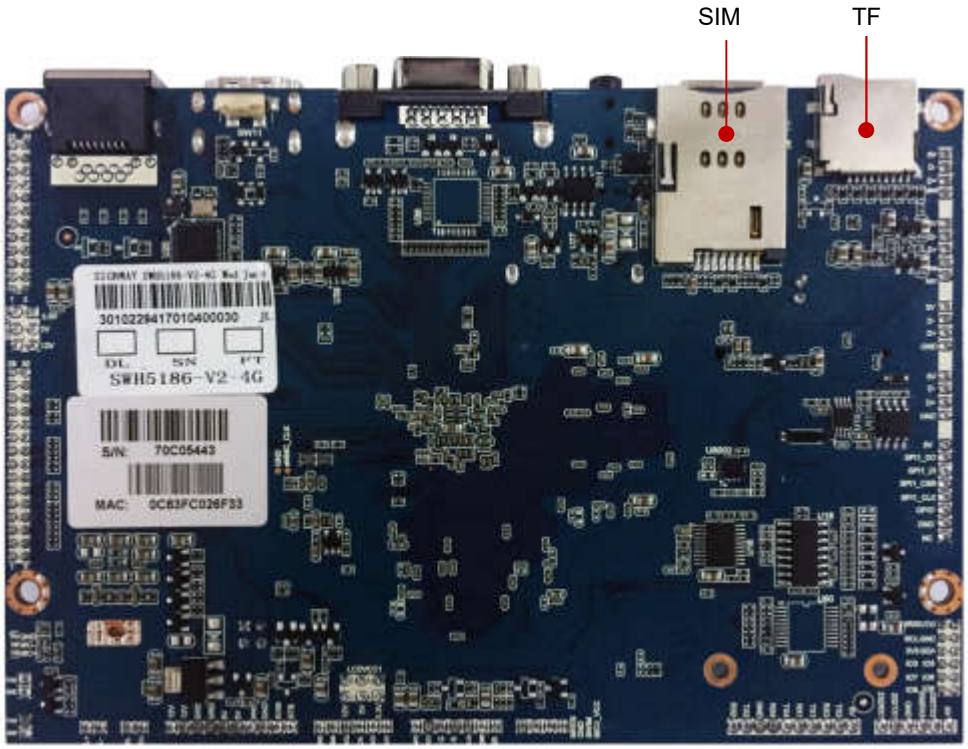
■ **Front View**



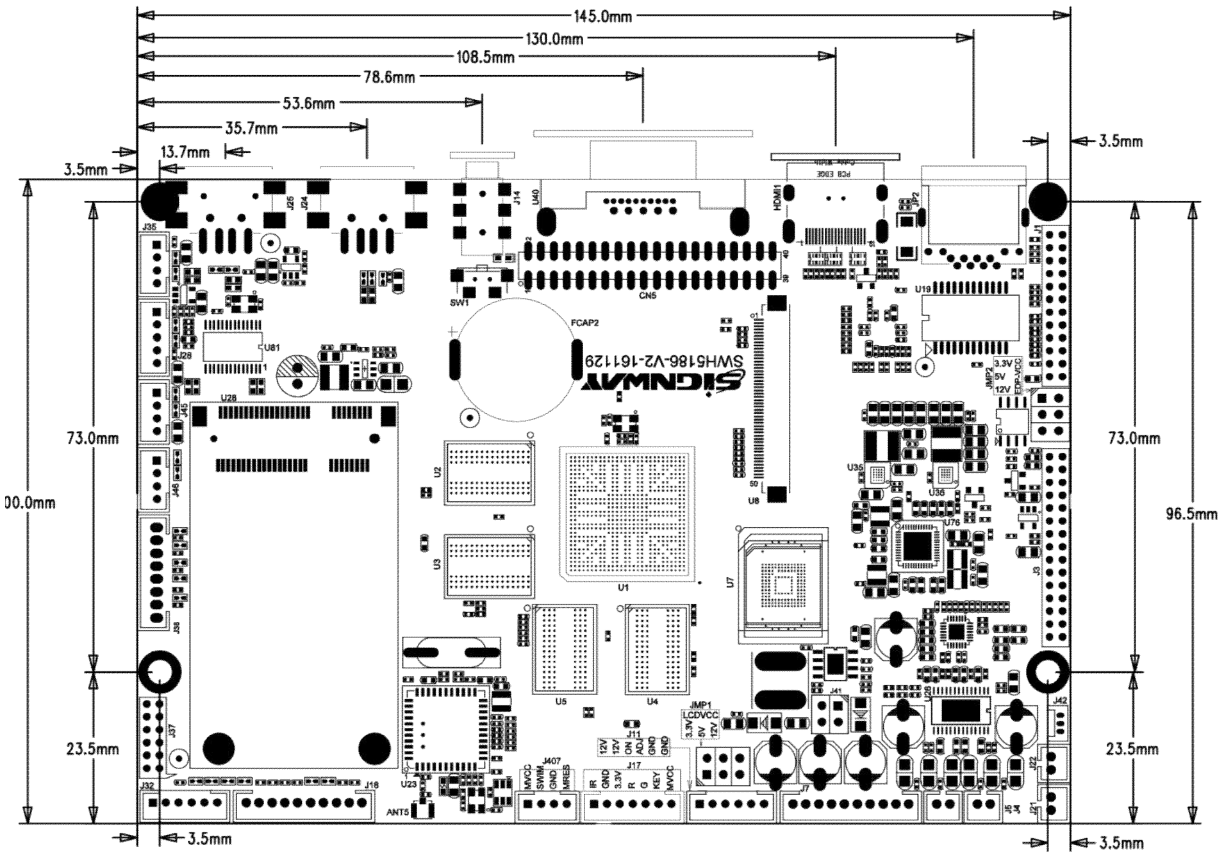
Note:

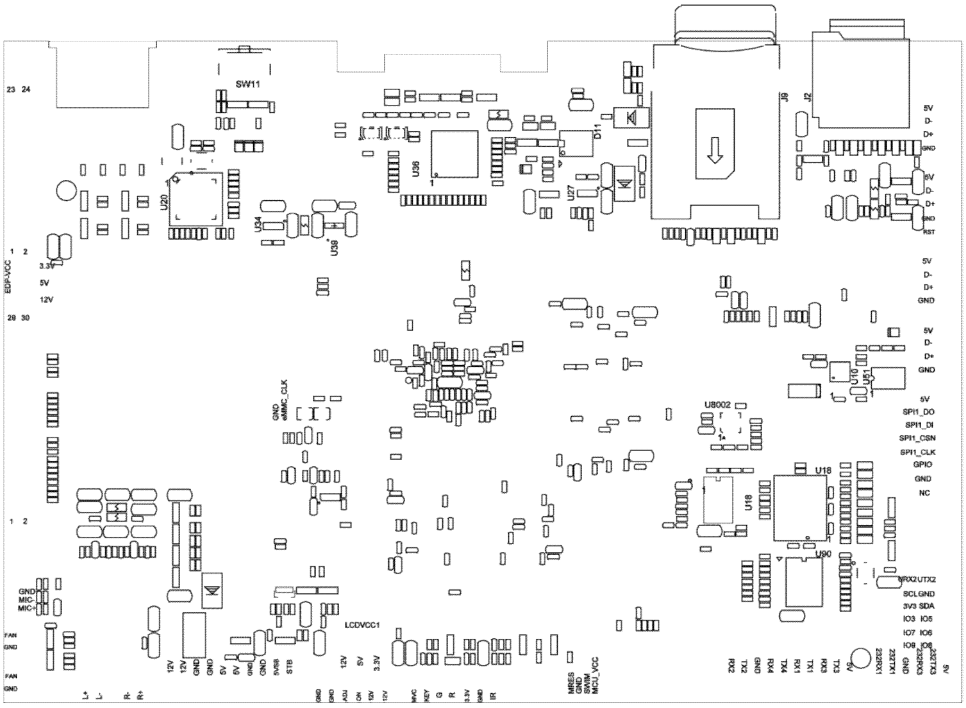
Serial port type (TTL / RS232) will be different according to the option.

Rear View



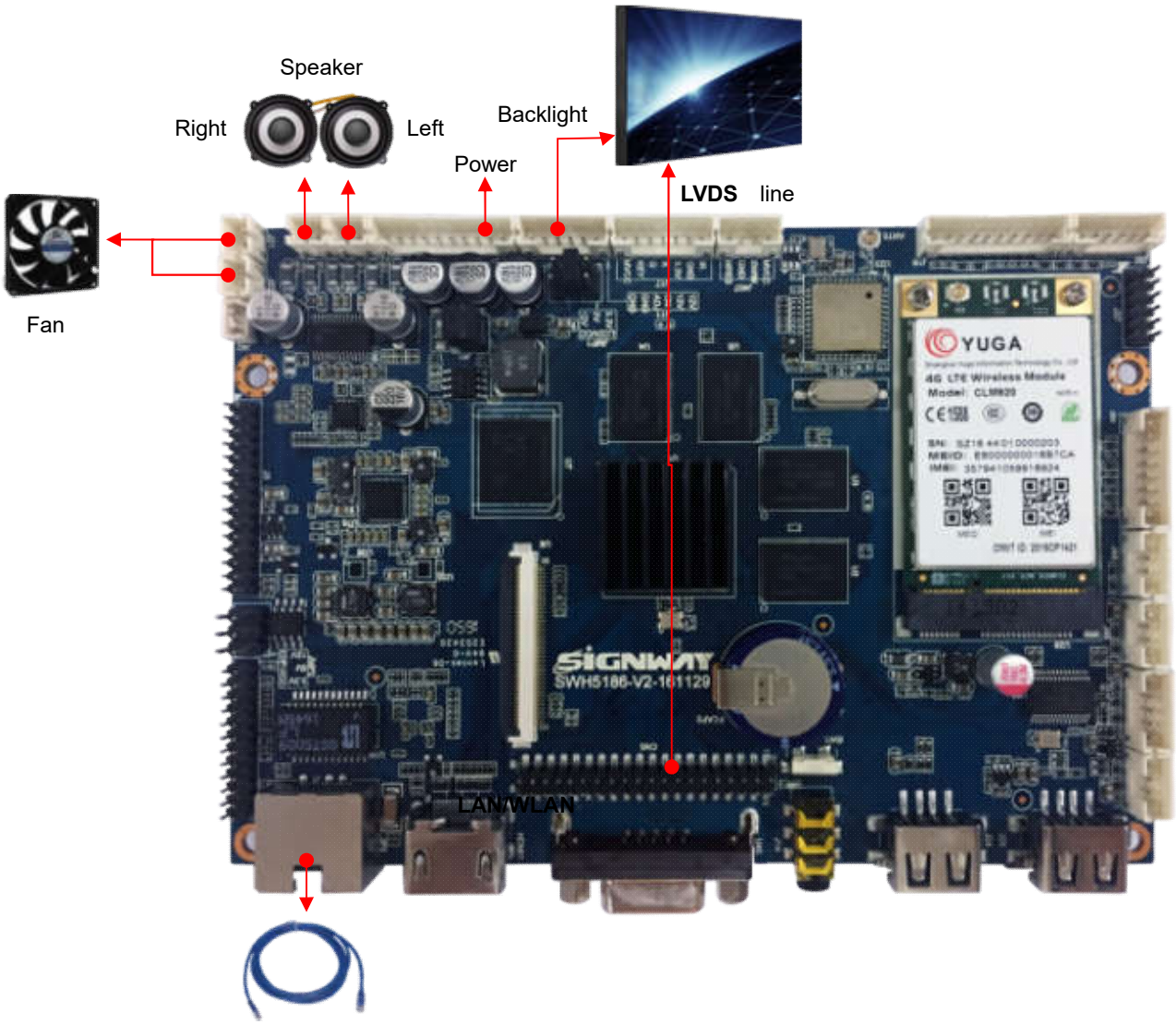
3.2 Dimensions





Length:145mm, Width:100mm,Front Max. Height: 9mm,Rear Max Height:4mm, Screw Hole:Φ3.5mm

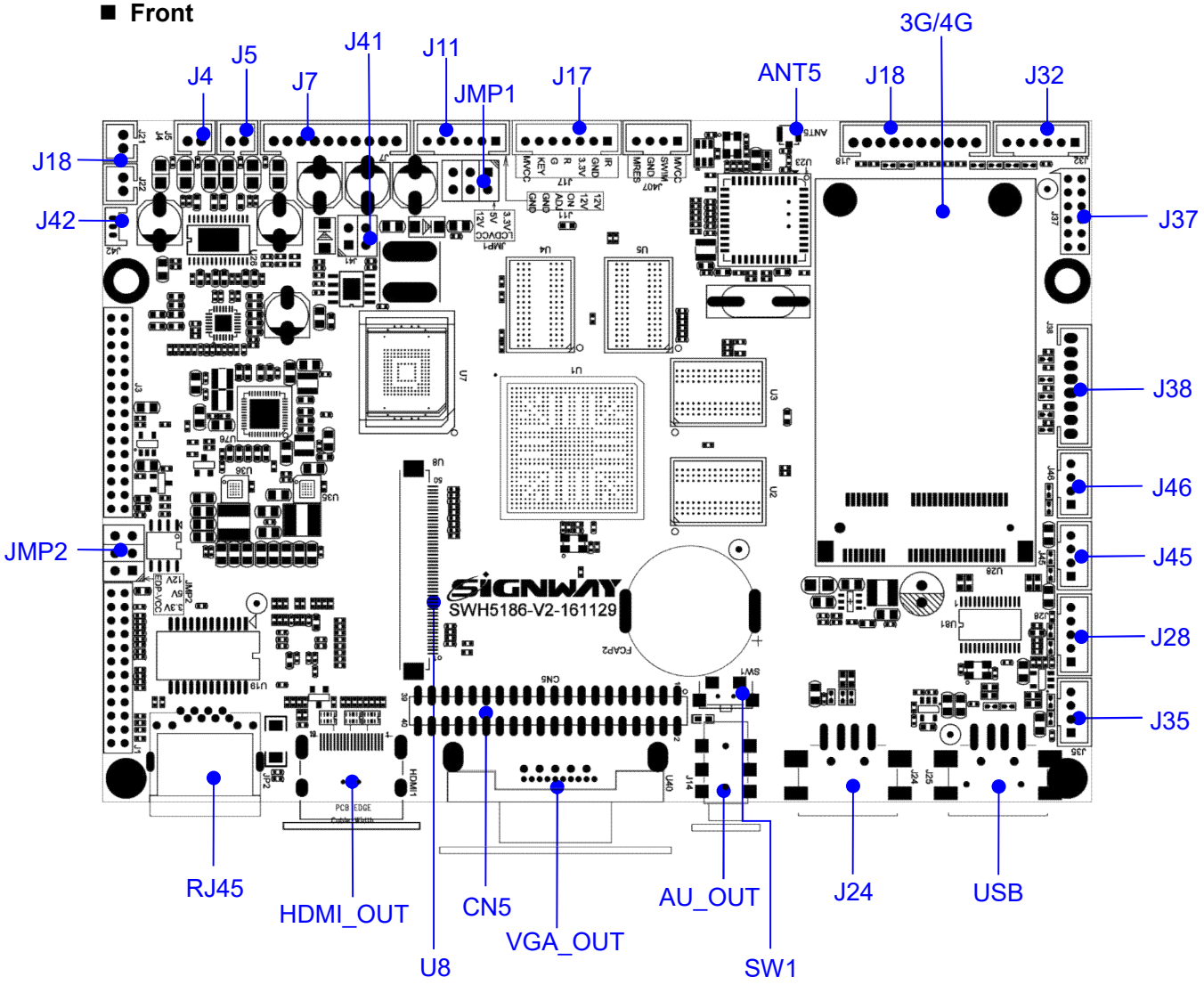
3.3 Structure



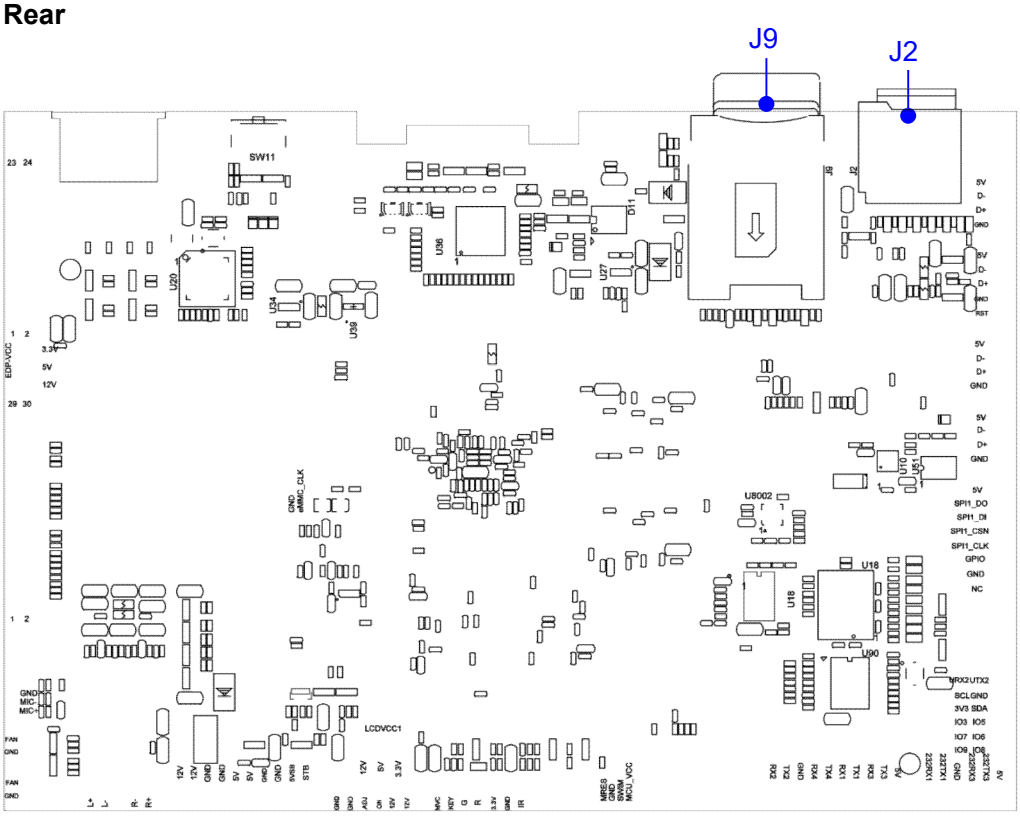
4 Interfaces

4.1 Interface Layout

■ **Front**



Rear



4.2 Interface Description

- **J4 Left Speaker Output**

Pin No.	Pin Name	Type	Description
1	L-	Output	Left channel negative
2	L+	Output	Left channel positive

- **J5 Right Speaker Output**

Pin No.	Pin Name	Type	Description
1	R-	Output	Right channel negative
2	R+	Output	Right channel positive

- **J7 Main Power Input**

Pin No.	Pin Name	Type	Description

1	12V	Input	Total Power Input, 12V
2			
3	GND	Ground	Ground
4			
5	5V	Input	Total Power Input, 5V
6			
7	GND	Ground	Ground
8			
9	5VSB	Input	Standby Powe, 5V
10	STB	Output	Standby power control

- **J11 Backlight Inverter Control**

Pin No.	Pin Name	Type	Description
1	12V	Power Output	+12V Backlight Power Output, Switch Controlled, Max. Current: 3A Large size multi-tube backlight with more than 3A current requires separate power supply
2			
3	ON	Output	3.3V Backlight On/Off Signal, High/Low Configured
4	ADJ	Output	Backlight DIMMING Control
5	GND	Ground	Ground
6			

- **J17 Remote Receiver/ Working Indicator/ Button Interface**

Pin No.	Pin Name	Type	Description
1	IR	Input	Remote Receiver Input
2	GND	Ground	Ground
3	3.3V	Power Output	Remote Power 3.3V
4	R	Red Light	Indicates Standby State
5	G	Green Light	Indicates Working State
6	KEY	Input	Outer Button Input
7	MVC	Power	3.3V Power Output

		Output	

- **J18 TTL Serial Port**

Pin No.	Pin Name	Type	Description
1	NC		Reserved
2	NC		Reserved
3	GND	Ground	Ground
4	RX4	Input	UART Data Input, TTL
5	TX4	Output	UART Data Output, TTL
6	NC		Reserved
7	NC		Reserved
8	NC		Reserved
9	NC		Reserved
10	5V	Output	5V

- **J21/ J22 Fan**

Pin No.	Pin Name	Type	Description
1	FAN	Power Output	Fan Power Output, 12V
2	GND	Ground	Ground

- **J28 3G USB Extension**

Pin No.	Pin Name	Type	Description
1	5V	Power Output	Power Output, +5V
2	D-	Input\Output	D- Signal
3	D+	Input\Output	D+ Signal

4	GND	Ground	Ground
5	RST	Output	Reset Control

- **J32 TTL Serial Port**

Pin No.	Pin Name	Type	Description
2	5V	Power Output	Power Output, 5V
3	232TX3	Output	UART Data Output, TTL
4	232RX3	Input	UART Data Input, TTL
5	GND	Ground	Ground
6	232TX1	Output	UART Data Output, TTL
7	232RX1	Input	UART Data Input, TTL

- **J35 USB Extension**

Pin No.	Pin Name	Type	Description
1	5V	Power Output	Power Output，5V
2	D-	Input\Output	D- Signal
3	D+	Input\Output	D+ Signal
4	GND	Ground	Ground

- **J37 Reserved IO socket, function reserved**

Pin No.	Pin Name	Type	Description
1	IO9	Input/Output	Reserved IO
2	IO8	Input/Output	Reserved IO
3	IO4	Input/Output	Reserved IO
4	IO6	Input/Output	Reserved IO
5	IO3	Input/Output	Reserved IO
6	IO5	Input/Output	Reserved IO
7	3V3	Input/Output	Reserved IO
8	SDA	Input/Output	I2C Data, Reserved
9	SCL	Output	I2C Clock, Reserved
10	GND	Ground	Ground
11	URX2	Input	Debug Interface, Reserved
12	URT2	Output	Debug Interface, Reserved

- **J38 SPI Extension**

Pin No.	Pin Name	Type	Description
1	5V	Power Output	Power Output，5V
2	SPI1_DO	Output	SPI Data Output
3	SPI1_DI	Input	SPI Data Input
4	SPI1_CSN	Output	SPI Chip Select
5	SPI1_CLK	Output	SPI Clock
6	GPIO	Output/Input	IO Port, Reserved
7	GND	Output	SPI Clock Output
8	NC	NC	

- **J42 MIC**

Pin No.	Pin Name	Type	Description
1	MIC+	Input	Microphone Input Positive Pole
2	MIC-	Input	Microphone Input Negative Pole
3	GND	Ground	Ground

- **J45 USB Extension**

Pin No.	Pin Name	Type	Description
1	5V	Power Output	Power Output，5V
2	D-	Input\Output	D- Signal
3	D+	Input\Output	D+ Signal
4	GND	Ground	Ground

- **JMP1 LCD Screen Pressure Selection Interface**

JMP1 corresponds to the LCDVCC1 voltage selection on the CN5 socket

Pin No.	Pin Name	Type	Description
1	3.3V	Power Output	Power Output，3.3V
3	5V	Power Output	Power Output，5V
5	12V	Power Output	Power Output，12V
2	LCDVCC1	Power Output	Screen Pressure Output
4			
6			

- **JMP2 EDP Screen Pressure Selection Interface**

JMP2 corresponds to the EDP-VCC voltage selection on the J1 socket

Pin No.	Pin Name	Type	Description
1	3.3V	Power Output	Power Output，3.3V
3	5V	Power Output	Power Output，5V
5	12V	Power Output	Power Output，12V
2	EDP-VCC	Power Output	Screen Pressure Output
4			
6			

- **U8 MIPI Input/Output**

Pin No.	Pin Name	Type	Description
1	5V	Output	5V
3	5V	Output	5V
5	GND	Ground	Ground
4	GND	Ground	Ground
5	BL_EN	Output	Backlight Enable
6	PWM	Output	Backlight Brightness Control
7	LCD_EN	Output	Enable
8	LCD_RST	Output	Reset
9	GND	Ground	Ground
10	MIPI_TX_D3N	Output	MIPI lane3 Output
11	MIPI_TX_D3P	Output	MIPI lane3 Output
12	GND	Ground	Ground
13	MIPI_TX_D2N	Output	MIPI lane2 Output
14	MIPI_TX_D2P	Output	MIPI lane2 Output
15	GND	Ground	Ground
16	MIPI_TX_CLKN	Output	MIPI Clock Output

Pin No.	Pin Name	Type	Description
17	MIPI_TX_CLKP	Output	MIPI Clock Output
18	GND	Ground	Ground
19	MIPI_TX_D1N	Output	MIPI lane1Output
20	MIPI_TX_D1P	Output	MIPI lane1Output
21	GND	Ground	Ground
22	MIPI_TX_D0N	Output	MIPI lane0Output
23	MIPI_TX_D0P	Output	MIPI lane0Output
24	GND	Ground	Ground
25	MIPI_TX/RX_D3N	Output/Input	MIPI lane3Output/Input
26	MIPI_TX/RX_D3P	Output/Input	MIPIlane3Output/Input
27	GND	Ground	Ground
28	MIPI_TX/RX_D2N	Output/Input	MIPI lane2Output/Input
29	MIPI_TX/RX_D2P	Output/Input	MIPI lane2Output/Input
30	GND	Ground	Ground
31	MIPI_TX/RX_CLKN	Output/Input	MIPI Clock
32	MIPI_TX/RX_CLKP	Output/Input	MIPI Clock
33	GND	Ground	Ground
34	MIPI_TX/RX_D1N	Output/Input	MIPI lane1Output/Input
35	MIPI_TX/RX_D1P	Output/Input	MIPI lane1Output/Input
36	GND	Ground	Ground
37	MIPI_TX/RX_D0N	Output/Input	MIPI lane0Output/Input
38	MIPI_TX/RX_D0P	Output/Input	MIPI lane0Output/Input
39	GND	Ground	Ground
40	MIPI_RST	Output	MIPI Reset
41	CIF_PDN	Output	IO Control, Reserved
42	CIF_CLK	Output	Clock Output, Reserved

Pin No.	Pin Name	Type	Description
43	I2C_SCL	Output	I2C Clock
44	I2C_SDA	Input/出	I2C Data
45	GND	Ground	Ground
46	GND	Ground	Ground
47	VCC15	Output	1.5V Power
48	VCC18	Output	1.8V Power
49	AVDD28	Output	Simulation 2.8V
50	VCC28	Output	2.8V Power

- **CN5 LVDS Signal Output**

Pin No.	Pin Name	Type	Description
1	LCDVCC1	Power Output	LCD Screen Power Output, 3.3V/5V/12V(optional)
2			
3			
4	GND	Ground	Power Ground
5			
6			
7	RXO0-	Output	Pixel0 Negative Data (Odd)
8	RXO0+	Output	Pixel0 Positive Data (Odd)
9	RXO1-	Output	Pixel1 Negative Data (Odd)
10	RXO1+	Output	Pixel1 Positive Data (Odd)
11	RXO2-	Output	Pixel2 Negative Data (Odd)
12	RXO2+	Output	Pixel2 Positive Data (Odd)
13	GND	Ground	Power Ground
14			
15	RXOC-	Output	Negative Sampling Clock (Odd)
16	RXOC+	Output	Positive Sampling Clock (Odd)
17	RXO3-	Output	Pixel3 Negative Data (Odd)
18	RXO3+	Output	Pixel3 Positive Data (Odd)
19	RXE0-	Output	Pixel0 Negative Data (Even)
20	RXE0+	Output	Pixel0 Positive Data (Even)
21	RXE1-	Output	Pixel1 Negative Data (Even)

Pin No.	Pin Name	Type	Description
21	RXE1+	Output	Pixel1 Positive Data (Even)
23	RXE2-	Output	Pixel2 Negative Data (Even)
24	RXE2+	Output	Pixel2 Positive Data(Even)
25	GND	Ground	Power Ground
26			
27	RXEC-	Output	Negative Sampling Clock (Even)
28	RXEC+	Output	Positive Sampling Clock (Even)
29	RXE3-	Output	Pixel3 Negative Data (Even)
30	RXE3+	Output	Pixel3 Positive Data (Even)
31	GND	Ground	Power Ground
32			
33	LCD_HSYNC	Output	Reserved
34	XN223_BLANK	Output	Reserved
35	LCD_VSYNC	Output	Reserved
36	LCD_CLK	Input/出	Reserved
37	RXO4-	Output	Pixel2 Negative Data (Odd)
38	RXO4+	Output	Pixel2 Positive Data (Odd)
39	RXE4-	Output	Pixel2 Negative Data (Even)
40	RXE4-	Output	Pixel2 Positive Data (Even)

- **J2 TF Card Slot**
- **J9 SIM Card Slot**
- **J41 Place on 2 jumper caps when supply single 12V power**
- **U28 MINIPCIE slot, expandable 3G / 4G module**
- **RJ45 LAN**
- **HDMI_OUT 4KExternal HDMI signal Output, Max. 4K**
- **AU_OUT Audio Sound Output**
- **SW1 System forced upgrade button**

- **J24 Master IC USB OTG port, can be used for system upgrades; access system; external USB device**
- **ANT5 WIFI/BT Antenna**
- **FCAP2 When the board is powered off, Power is supplied to the RTC Real-Time Clock**

5 Electrical Performance

Item		Min	Typical	Max
Parameters	Voltage	--	12V	--
	Ripple	--	--	--
	Current	--	TBD	--
Environment	Relative Humidity	--	--	80%
	Working Temperature	0℃	--	40℃
	Storage Temperature	0℃	--	70℃