Product Specification

Product Name: MT7621 DUSUN Core Board
Model Name: DSOM-090M

Revision History

Specification		Sect.	Update Description	By
Rev	**Date**			
1.0	2022-05-26		New version release	

Approvals

Organization	*Name*	*Title*	*Date*

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1. Introduction

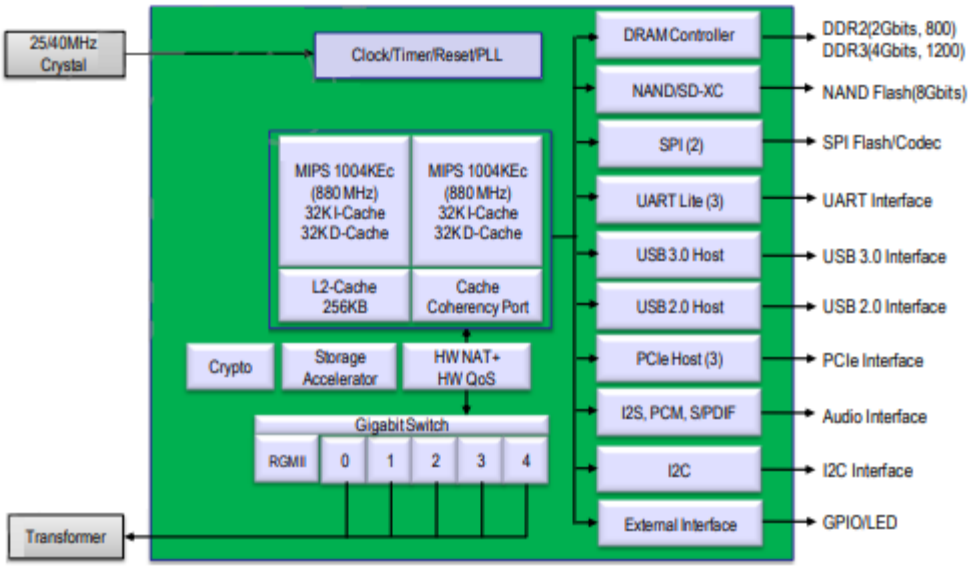
1.1 Purpose& Description

DSOM-090M adopts MTK's new dual-core network chip MT7621A solution, the main frequency is up to 880MHz, provides five 10/100/1000M adaptive Ethernet interfaces, 1x USB 2.0, 1x USB3.0 (external), 1x Micro SD Card (external) setting) and other interfaces. Comply with IEEE802.11AC/N/G/B/A wireless network protocol.

1.2 Product Feature Summary

- DSOM-090M adopts MTK MT7621AT+MT7603EN+MT7613BEN as the master chip, integrates dual-core MIPS1004K, and the main frequency is up to 880MHz.
- RAM capacity supports 512MB DDR3 (128MB/256MB/512MB optional)
- EMMC capacity supports 4GB eMMC
- OS: OpenWRT
- Standard: IEEE 802.11 a/b/g/n/ac
- Frequency bandwidth: 2.4835MHz~5.825MHz
- Wireless rate: 2.4G: 300Mbps, 5G: 900Mbps
- Interface WAN, LAN1, LAN2, LAN3, LAN4
- WAN access mode PPPoE, dynamic IP, static IP, 3G/4G/5G
- Working mode: AP, ROUTER

2. Main chip block diagram



3. Specifications

3.1 Technical Parameters

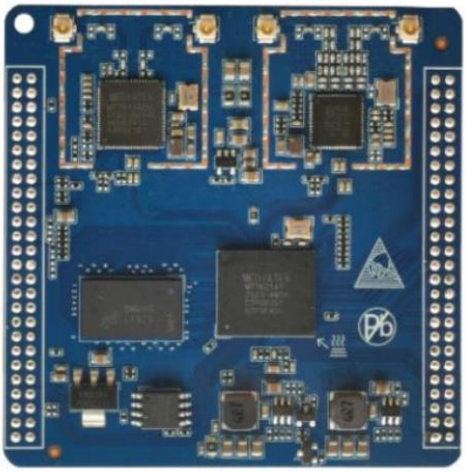
Basic parameters	
Master chip	MT7621AT+MT7603EN+MT7613BEN
CPU	dual-core MIPS1004K, main frequency 880MHz
RAM	512 DDR3 (optional 128MB ~ 512MB)
Storage	4GB/8GB eMMC 64MB SPI Flash
hardware features	
Ethernet	10/100/1000M bps WAN.LAN1.LAN2.LAN3.LAN4
Wireless network	2.4GHz/5.0GHz WiFi
USB	USB 2.0 × 1、USB3.0 × 1 (external)
Debug	Debug serial port × 1 for development and debugging
Extended interface	Support PWM×4, UART×3, I2C×1, SPI×1, I2S×1, SDXC, PCIe Host ×3, RGMII TMII/MII ×1, 2.4G/5G ANT interface
Operating temperature	-10°C to +70°C
Storage temperature	-20°C to +80°C
System software	
System Support	MTK-openwrt-3.10.14, based on Linux platform
Appearance specification	
Core board size	65.0*65.0*1.6mm
Interface Type	Stamp Hole 104pins, 1.2mm pitch

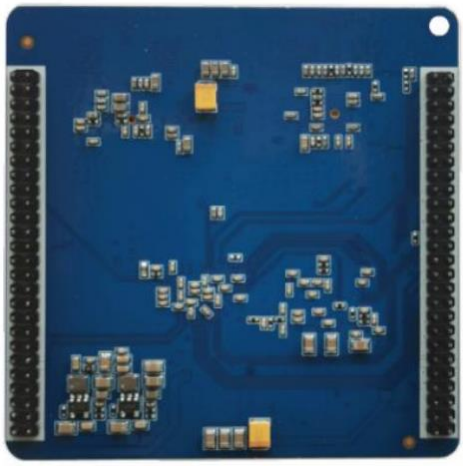
3.2 RF technical parameters

Transmit power	2.4G: 802.11b-11Mbps: 17±1.5dBm&<-15dB@11b 802.11g-54Mbps: 15±1.5dBm&<-25dB@11b 802.11n -HT20-65Mbps: 14±1.5dBm&<-28dB@11b 802.11n -HT40-300Mbps: 14±1.5dBm&<-28dB@11b WiFi-5G: 18.0±2dBm&<-25dB@11a 54Mbps 17.0±2dBm&<-28dB@5G-11n-HT20-MCS7 17.0±2dBm&<-28dB@5G-11n-HT40-MCS7 16.5±2dBm&<-32dB@5G-11ac-HT80-MCS9
Receive sensitivity	WiFi-2.4G: 11b 1Mbps: -94dBm@PER<8% 11b 11Mbps: -84dBm@PER<8% 11g 54Mbps: -72dBm@PER<10%

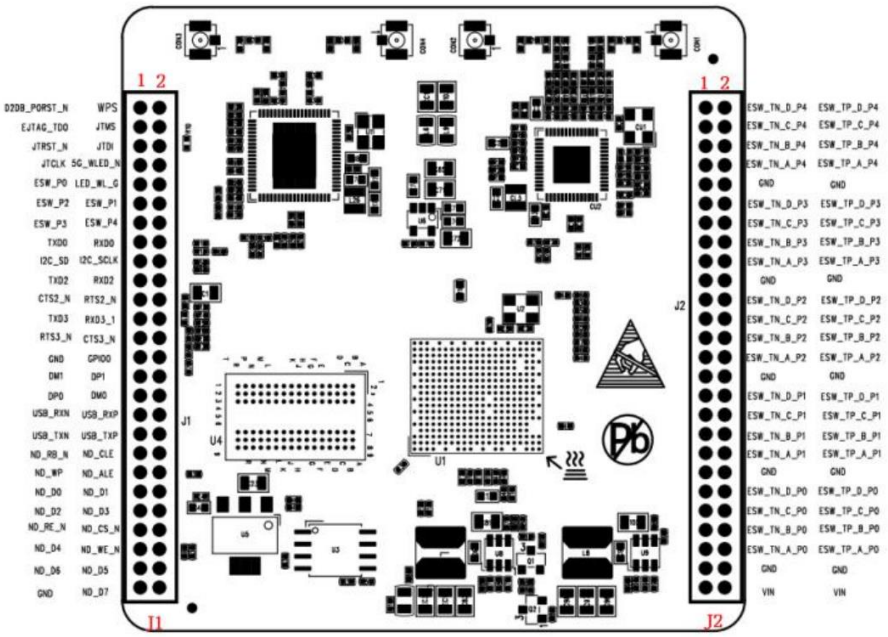
	11n-HT40-MCS7-2.4G: -65dBm@PER<10% WiFi-5G: 11a 54Mbps: -70dBm@PER<10% 11n-HT40-MCS7-5G: -65dBm@PER<10% 11ac-HT80-MCS9-5G: -57dBm@PER<10%

4. Core board size(仅供参考)





5. Interface description(仅供参考)



6. Pin definition(仅供参考)

Notes1:

① : I/O types: I = input, O = output, I/O = input/output (bidirectional) , I/GPIO = When used as GPIO port, it is input (I) ,

A = Analog , G= Ground , P = power supply , DOWN = Internal pull down , UP = Internal pull UP

0 = Lowe Level 1 = High level

Pin number	Name	I/O Type	I/O Pull	I/O Def	I/O Voltage(Unit: V)	Function
1	D2DB_PORST_N	GPIO#18				Power on reset
2	WDT_RST_N	GPIO#19				Watchdog reset
3	JTAG	GPIO#15				JTAG Mode Select
4	JTMS	GPIO#14				JTAG Data Input
5	JTRST_N	GPIO#17				JTAG Target Reset
6	JTDI	GPIO#13				JTAG Data Output
7	JTCLK	GPIO#16				JTAG Clock
8	5G_WLED_N					5G_WIFI_LED
9	ESW_P0					Port #0 PHY LED indicators
10	LED_WL_G					LED_WIFI_G
11	ESW_P2					Port #2 PHY LED indicators
12	ESW_P1					Port #1 PHY LED indicators
13	ESW_P3					Port #3 PHY LED indicators
14	ESW_P4					Port #4 PHY LED indicators
15	TXD0	GPIO#22				RGMII2 Tx Data bit #0
16	RXD0	GPIO#28				RGMII2 Rx Data bit #0
17	I2C_SD	GPIO#3				I2C Data
18	I2C_SCLK	GPIO#4				I2C Clock
19	TXD2	GPIO#11				RGMII2 Tx Data bit #2
20	RXD2	GPIO#12				RGMII2 Rx Data bit #2
21	CTS2_N	GPIO#_TX				UART Clear To Send
22	RTS2_N	GPIO#9				UART Request To Send
23	TXD3	GPIO#7				RGMII2 Tx Data bit #
24	RXD3	GPIO#8				RGMII2 Rx Data bit #3
25	RTS3_N	SPDIF_TX				UART Request To Send
26	CTS3_N	GPIO#6				UART Clear To Send

Pin number	Name	I/O Type	I/O Pull	I/O Def	I/O Voltage(Unit: V)	Function
27	GND					Ground
28	GPIO0	GPIO#0				GPIO0 (output only)
29	DM1					SB Port0 HS/FS/LS data pin Data+ (USB2.0)
30	DP1					SB Port0 HS/FS/LS data pin Data+ (USB2.0)
31	DP0					USB Port1 data pin Data+ (USB3.0)
32	DM0					USB Port1 data pin Data+ (USB3.0)
33	USB_RXN					USB Port0SS data pinRX+-(USB3.0)
34	USB_RXP					USB Port0SS data pinRX+-(USB3.0)
35	USB_TXN					USB Port0SS data pinTX- (USB3.0)
36	USB_TXP					USB Port0SS data pinTX- (USB3.0)
37	ND_RB_N	GPIO#42				NAND Flashi Redy/Busy
38	ND_CLE	GPIO#43				NAND Flash Command Latch Enable
39	ND_WP	GPIO#41				NAND Flash Write Protect
40	ND_ALE	GPIO#44				NAND Flash ALE Latch Enable
41	ND_D0	GPIO#45				NAND Flash Data0
42	ND_D1	GPIO#46				NAND Flash Data1
43	ND_D2	GPIO#47				NAND Flash Data2
44	ND_D3	GPIO#48				NAND Flash Data3
45	ND_RE_N	GPIO#36				NAND Flash Read Enable
46	ND_CS_N	GPIO#34				NAND Flash Chip Select
47	ND_D4	GPIO#37				NAND Flash Data4
48	ND_WE_N	GPIO#35				NAND Flash Write Enable
49	ND_D6	GPIO#39				NAND Flash Data6
50	ND_D5	GPIO#38				NAND Flash Data5
51	GND					Ground
52	ND_D7	GPIO#40				NAND Flash Data7
53	ESW_TN_D_P4	Ethernet port #4				Port #4 MDI Transceivers
54	ESW_TP_D_P4	Ethernet port #4				Port #4 MDI Transceivers
55	ESW_TN_C_P4	Ethernet				Port #4 MDI Transceivers

Pin number	Name	I/O Type	I/O Pull	I/O Def	I/O Voltage(Unit: V)	Function
		port #4				
56	ESW_TP_C_P4	Ethernet port #4				Port #4 MDI Transceivers
57	ESW_TN_B_P4	Ethernet port #4				Port #4 MDI Transceivers
58	ESW_TP_B_P4	Ethernet port #4				Port #4 MDI Transceivers
59	ESW_TN_A_P4	Ethernet port #4				Port #4 MDI Transceivers
60	ESW_TP_A_P4	Ethernet port #4				Port #4 MDI Transceivers
61	GND					Ground
62	GND					Ground
63	ESW_TN_D_P3	Ethernet port #3				Port #3 MDI Transceivers
64	ESW_TP_D_P3	Ethernet port #3				Port #3 MDI Transceivers
65	ESW_TN_C_P3	Ethernet port #3				Port #3 MDI Transceivers
66	ESW_TP_C_P3	Ethernet port #3				Port #3 MDI Transceivers
67	ESW_TN_B_P3	Ethernet port #3				Port #3 MDI Transceivers
68	ESW_TP_B_P3	Ethernet port #3				Port #3 MDI Transceivers
69	ESW_TN_A_P3	Ethernet port #3				Port #3 MDI Transceivers
70	ESW_TP_A_P3	Ethernet port #3				Port #3 MDI Transceivers
71	GND					Ground
72	GND					Ground
73	ESW_TN_D_P2	Ethernet port #2				Port #2 MDI Transceivers

Pin number	Name	I/O Type	I/O Pull	I/O Def	I/O Voltage(Unit: V)	Function
74	ESW_TP_D_P2	Ethernet port #2				Port #2 MDI Transceivers
75	ESW_TN_C_P2	Ethernet port #2				Port #2 MDI Transceivers
76	ESW_TP_C_P2	Ethernet port #2				Port #2 MDI Transceivers
77	ESW_TN_B_P2	Ethernet port #2				Port #2 MDI Transceivers
78	ESW_TP_B_P2	Ethernet port #2				Port #2 MDI Transceivers
79	ESW_TN_A_P2	Ethernet port #2				Port #2 MDI Transceivers
80	ESW_TP_A_P2	Ethernet port #2				Port #2 MDI Transceivers
81	GND					Ground
82	GND					Ground
83	ESW_TN_D_P1	Ethernet port #1				Port #1 MDI Transceivers
84	ESW_TP_D_P1	Ethernet port #1				Port #1 MDI Transceivers
85	ESW_TN_C_P1	Ethernet port #1				Port #1 MDI Transceivers
86	ESW_TP_C_P1	Ethernet port #1				Port #1 MDI Transceivers
87	ESW_TN_B_P1	Ethernet port #1				Port #1 MDI Transceivers
88	ESW_TP_B_P1	Ethernet port #1				Port #1 MDI Transceivers
89	ESW_TN_A_P1	Ethernet port #1				Port #1 MDI Transceivers
90	ESW_TP_A_P1	Ethernet port #1				Port #1 MDI Transceivers
91	GND					Ground

Pin number	Name	I/O Type	I/O Pull	I/O Def	I/O Voltage(Unit: V)	Function
92	GND					Ground
93	ESW_TN_D_P0	Ethernet port #0				Port #0 MDI Transceivers
94	ESW_TP_D_P0	Ethernet port #0				Port #0 MDI Transceivers
95	ESW_TN_C_P0	Ethernet port #0				Port #0 MDI Transceivers
96	ESW_TP_C_P0	Ethernet port #0				Port #0 MDI Transceivers
97	ESW_TN_B_P0	Ethernet port #0				Port #0 MDI Transceivers
98	ESW_TP_B_P0	Ethernet port #0				Port #0 MDI Transceivers
99	ESW_TN_A_P0	Ethernet port #0				Port #0 MDI Transceivers
100	ESW_TP_A_P0	Ethernet port #0				Port #0 MDI Transceivers
101	GND					Ground
102	GND					Ground
103	VIN					POWER
104	VIN					POWER