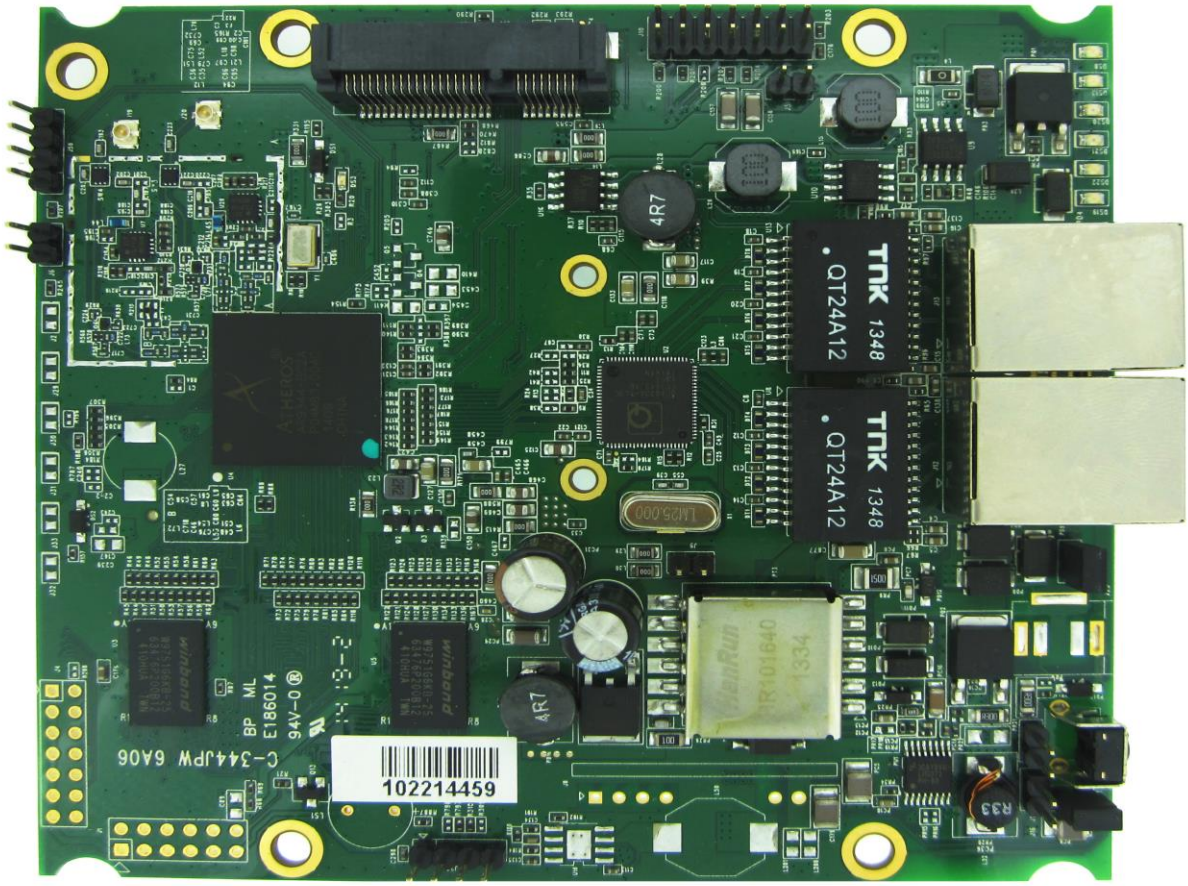

WPJ344 Hardware Manual

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Feedback

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Trademark Information

Disclaimer

Publication date and version

Published 4th Aug 2014. Manual version 1.0.2.

Contents

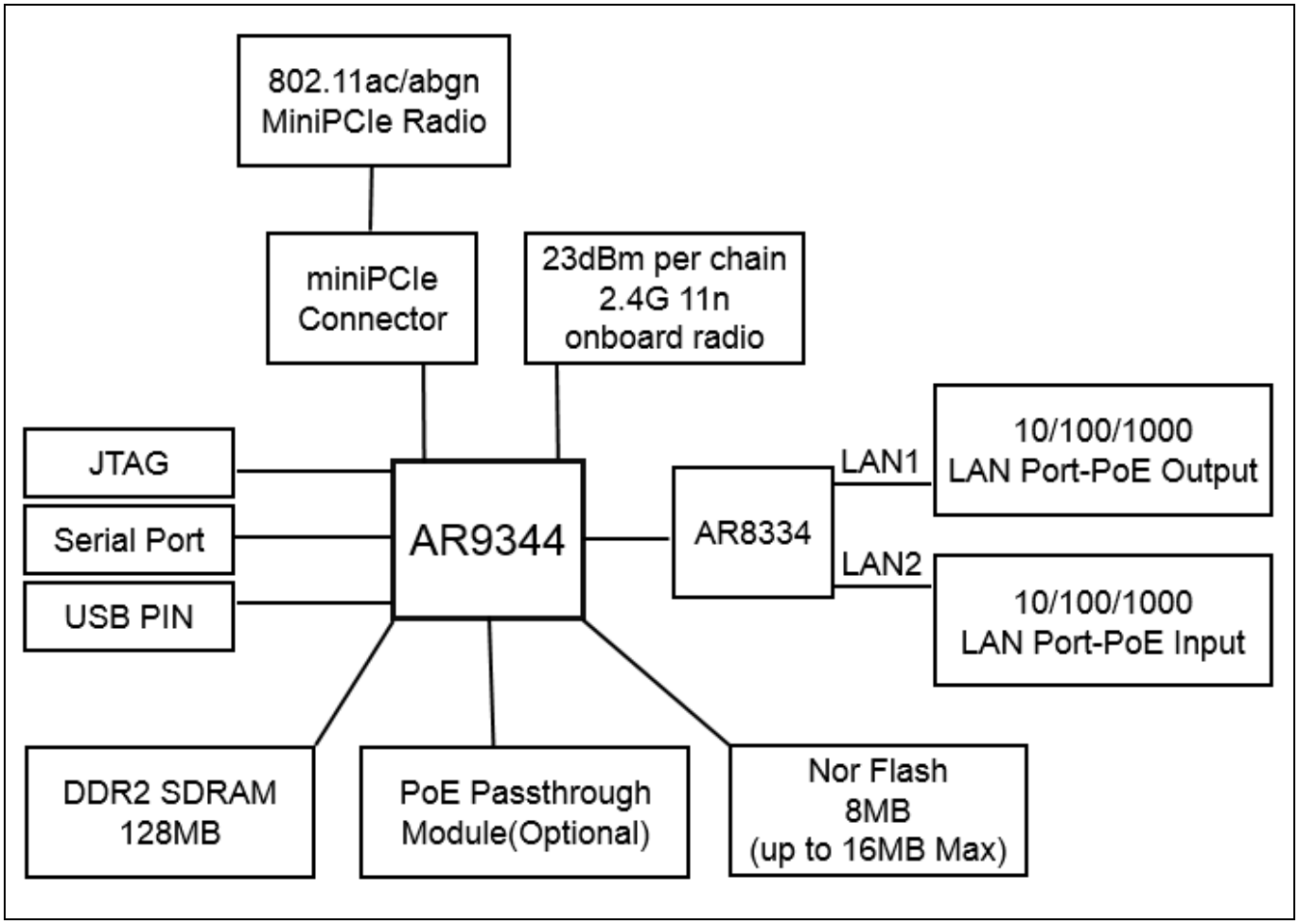
REVISION HISTORY

Revision	Information / Changes
Rev 1.0.0	First release for WPJ344 BareBoard
Rev 1.0.1	Update to 6A06 Version
Rev 1.0.2	Make some layout changes.

DEVELOPMENT KITS

The Development Kits consist of JTAG and Serial Converter. Please contact our sales team at sales@compex.com.sg for a quotation.

BLOCK DIAGRAM



KEY FEATURES

General Information

PROCESSOR	Qualcomm Atheros AR9344 [WASP Series]
MEMORY	128MB DDR2 SDRAM
NOR FLASH	NOR Flash 8MB (Up to 16MB max.)
PHYSICAL PORTS	9.2mm height mini-PCIE slot 2 Gigabit ports with Auto-MDI/X
RADIO SUPPORTED	802.11a/b/g/n, 802.11ac E.g. WLE200NX, WLE350NX, WLE900VX, WLE900V5-23, WLE900V5-27
DEBUG INTERFACE	Serial (TTL) / JTAG (ARM-standard 14 pin) Optional JTAG Programmer**/ Serial Converter*** available
OPERATING TEMPERATURE	-20°C to 70°C
LED INDICATORS	7 LEDs total: Power, LAN1, LAN2, Signal LED 1,2,3,4
OTHER FEATURES	Push-Button Reset, Surge Arrestors, Buzzer*(Optional)
DIMENSIONS	117 mm x 105mm x 17 mm
ENCLOSURE	(Outdoor) MML, MMJ, MMS (Indoor) MMZ

Information on Power

POWER OVER ETHERNET	(HV) Passive PoE: 24-48V, / IEEE 802.3af/at [Refer to RMF] (LV) Passive PoE: 9-24V(LV)
TYPICAL OPERATING POWER	4W (onboard standby) & 3.7W(no onboard radio)
DC SUPPLY	(HV)24V ~ 48V DC Supply (LV) 9V~24V DC
MINIPCIE SLOTS	Supported Voltages： 3.3V and 5V Supports all Compex WLE Series

* Depend on Order Configuration.
** JTAG Programmer available to reprogram the flash in case of loader corruption.
*** Serial Converter available to change the TTL signals on board to RS232 signals for debugging.

CONFIGURATION AND INSTALLATION

GPIO Bit Mapping

GPIO Bit	Description	GPIO Bit	Description
0	JTAG	12	Reset button SW1 & SW2 & J10 11th pin
1	JTAG	13	J1 4th pin
2	JTAG	14	J32 2nd pin，DS19
3	JTAG	15	J30 2nd pin，DS20
4	J1 12th pin	16	J1 6th pin
5	SPI Flash	17	Reset button SW1 & SW2 & J10 11th pin
6	SPI Flash	18	J1 8th pin
7	SPI Flash	19	J1 10th pin
8	SPI Flash	20	J31 2nd pin，DS21
9	J23 third pin	21	J33 2nd pin，DS22
10	J23 2nd pin	22	J32 2nd pin，DS19
11	J1 2nd pin		

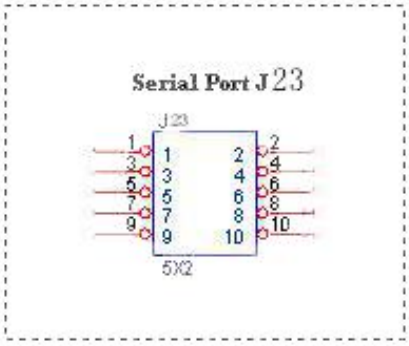
Interface Connectors

The board interface connector pin assignments and signal descriptions are included in the following sections. The connectors are listed in the section below and the connector locations are shown in the following diagrams.

Connector	Function	Connector	Function
J2	Power	J12/J13	Ethernet Ports
J50	USB signal	J5	JTAG Port
J9	5V	J14	Mini-PCIE Slot
J6	3.3V	J23	Serial Port
J25	Power Jack	SW2	Reset Button

Serial Port Header

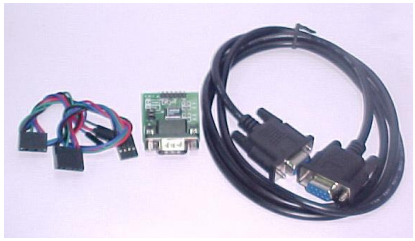
The Serial Port (J23) Header signaling is shown in the following table.



Pin	Signal
1	VCC – 3.3V
2	UART 0 Transmit Data
3	UART 0 Receive Data
4	GND

Note:

Our Serial port Implementation requires an external high-impedance serial port not usually available with the serial ports of the notebooks/computers. You will need a Serial Converter available in the market. For our customers' convenience, it is bundled together with the board Development Kit.



Serial Console Settings

The serial console settings used together with the serial port is given below.

This serial port uses TTL signals, and therefore you have to use serial converter using MAX-211 IC (or other IC in the market that convert TTL signals to RS232 signals) in order to use it with the PC.

Baud Rate	115200
Data	8 Bit
Parity	None
Stop	1 Bit
Flow Control	None

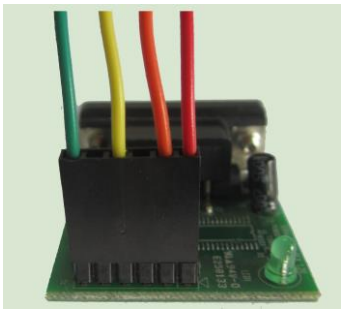
Precaution when using Serial Converter

Please attach the serial converter first on the board serial header, before attaching the power supply. This is to ensure that there is no surge of power to the serial converter, and prevent any damage the chipset on the serial converter.

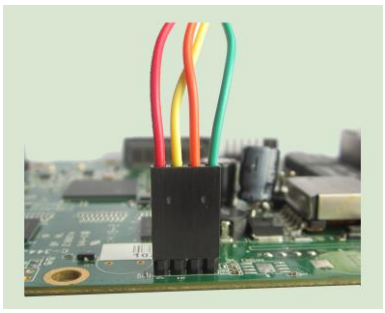
Serial Converter Pin Layouts

Cables on the serial converters are provided. You can use the 6 Pin (Fixed) to 4 Pin (Fixed) provided. The pin layouts of the serial converters for use with the board are as follows:

Pin Assignment (Serial Converters)	Signal (Serial Converters)	Connected to Pin on WPJ344	Signal (WPJ344)
Pin 1	VCC(3.3V) – Red	Pin 1	VCC (3.3V) – Red
Pin 2	TX – Orange	Pin 5	RX – Yellow
Pin 4	RX – Yellow	Pin 3	TX – Orange
Pin 6	GND – Green	Pin 7	GND – Green



Arrangement of Cables on Serial Converter to the board



Arrangement of Cables on the board itself

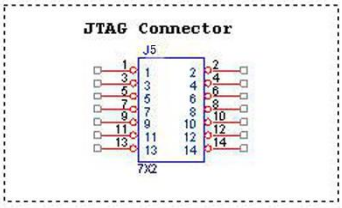
JTAG Port Header

The primary purpose of the board JTAG Port Header is to facilitate program download into Flash memory.

PIN	SIGNAL	PIN	SIGNAL
1	TRST_N	2	GND
3	TDI	4	GND
5	TDO	6	GND
7	TMS	8	GND
9	TCK	10	GND
11	RESET	12	NC
13	DINT	14	3V3

Note:

Normally, it has a JTAG Programmer compatible with the board. It is bundled with the board Development Kit. This JTAG programmer is able to download file onto the Flash, and thus recover a corrupted loader.



Ethernet Connectors

The board contains 2 X 10/100/1000 Base-T Ethernet Channels. The Ethernet Channels are available through standard 8-pin RJ45 connectors.

Ethernet Connectors(P1/P2) signals is shown below.

PIN	SIGNAL	PIN	SIGNAL
1	TX+/POE+	5	TX-/POE+
2	TX-/POE+	6	RX-/POE-
3	RX+/POE-	7	RX+/POE-
4	TX+/POE+	8	RX-/POE-

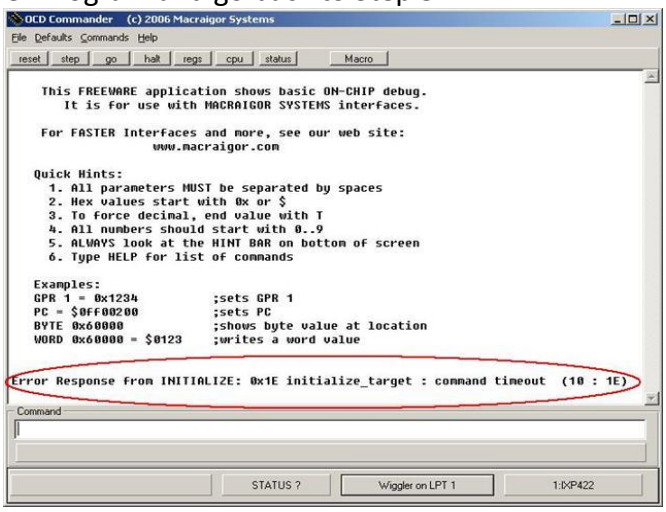
JTAG PROCESS

Minimum Requirement

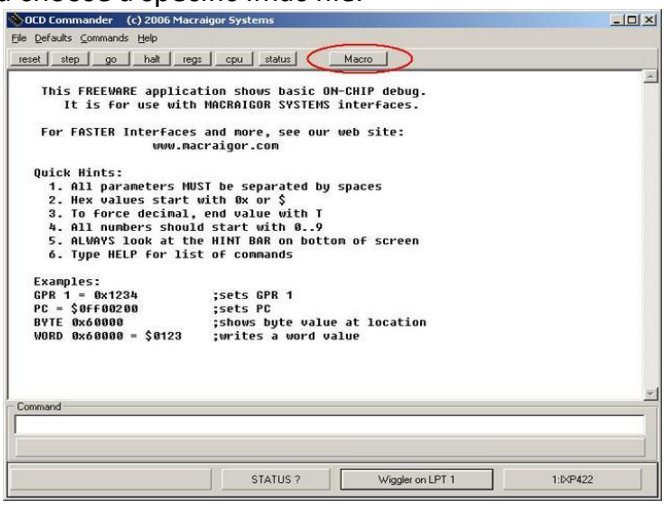
1. OCD Commander Ver2.5.4
2. upbios.tst file (same for all Compex device)
3. uboot.bin file
4. JTAG cable

Steps

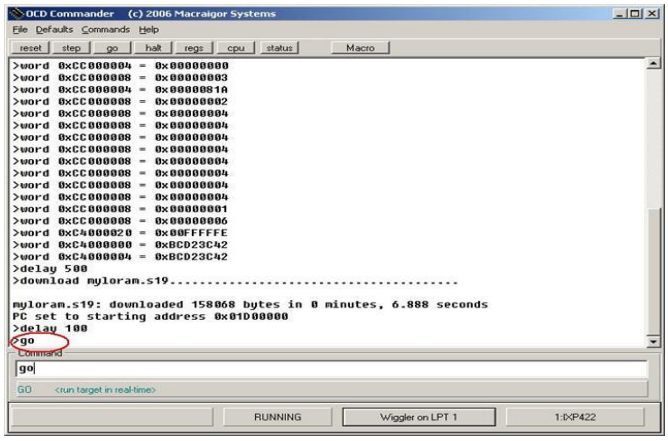
1. Install the OCD Commander to your PC
2. Plug the JTAG cable to the JTAG port of the device
3. Run OCD Commander Program, Set "Target Processor" for the particular device, Click "OK"
4. If there is this error message “Error Response from INITIALIZE....”, please check the JTAG cable connection. Close the OCD Commander Program and go back to Step 3.



5. Click on the “Macro” and choose a specific .mac file.



6. Let it run until u see “go”



7. Open command prompt
8. tftp upbios.tst
9. tftp uboot.bin (please observe the DIAG LED is off)
10. If either step 9 or step 10 fail, please start from step 3 again.
11. Power off the device and unplug JTAG cable
12. Power on the device and tftp the firmware into the device.
13. Reboot when done.

FIRMWARE

CompexWRT Firmware

CompexWRT is a combination of advanced Qualcomm Atheros wireless driver into OpenWRT latest Attitude Adjustment 12.09, with the open-source Luci webpages. All the features have been tested and customers are able to put in “packages” from the OpenWRT into CompexWRT easily with the SDK provided.

CompexWRT Firmware: Please download from www.compex.com.sg
CompexWRT Firmware (with no Compex Logo): Please contact the sales person in charge for your account.
CompexWRT Usermanual: Please download from www.compex.com.sg
CompexWRT SDK: Please contact the sales person in charge for your account.

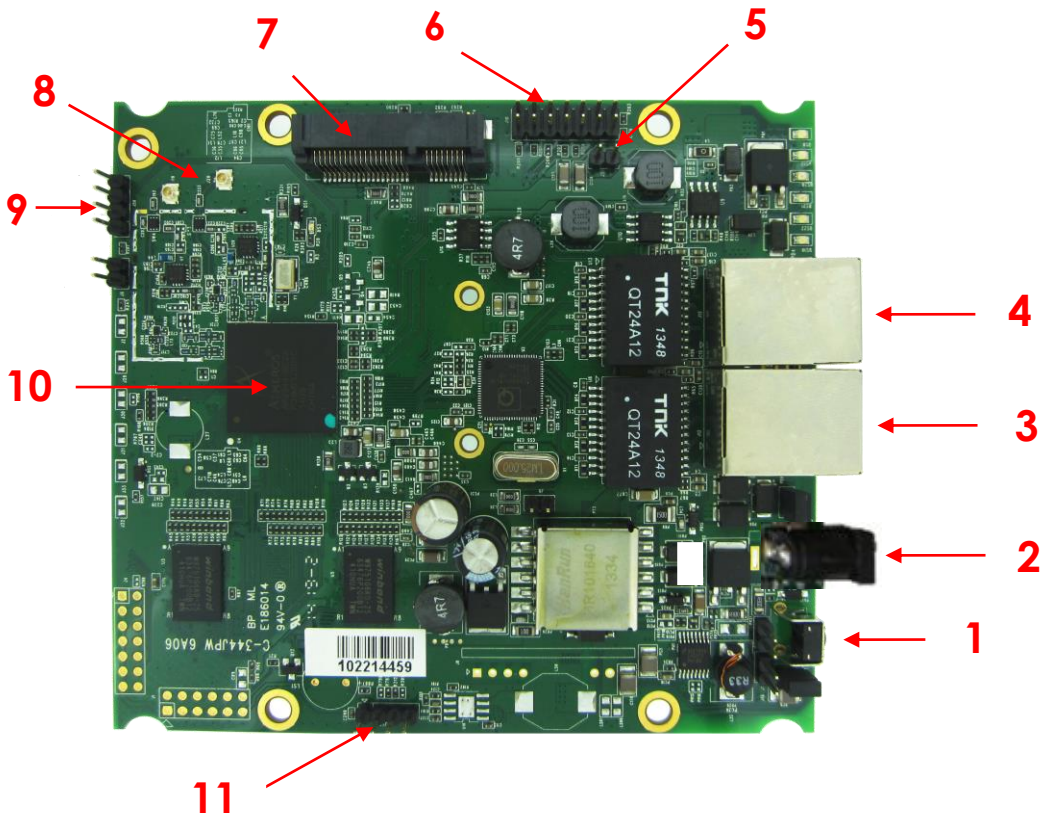
OpenWRT Firmware

OpenWRT Firmware is supported on this board. We provide an SDK and instruction on how to compile the SDK on our webpage.

OpenWRT+ath9K/ath10K Firmware: Please download from www.compex.com.sg, after registration.
OpenWRT SDK: Please download from www.compex.com.sg, after registration.
OpenWRT Build Instructions and FAQ Please download from www.compex.com.sg, after registration.

Appendix I

Board Features



Top Side Of Board

No	Feature	Descriptions
1	Reset button	For board reset and startup mode control
2	DC Jack	(HV) 24V ~ 48V DC Supply (LV) 9V~24V DC
3	LAN port	①10/100/1000 Base T Ethernet port - PoE Output with PoE Passthrough. ②Can change to WAN port in CompexWRT firmware.
4	LAN port	①10/100/1000 Base T Ethernet port - PoE Input. ②Can change to WAN port in CompexWRT firmware.
5	5V Pin	①After connecting this two pin with Jumper, the board can provide on-board 5V to the radio card. ②Plug 5V cable to the 5V pin, the cable can provide external 5V power. Refer to RMF.

6	JTAG port	JTAG jumper header for programming
7	mini-PCIE slot	9.2mm height mini-PCIE slot
8	Radio	2.4GHz On-board radio(23dBm/perchain)
9	USB Pin	Support USB Port and USB Extension
10	AR9344	Main Chipset
11	Serial port	Serial port connection header

FAQ

1. The Ethernet ports are two LAN port in default， WAN port is defined by software， so you can change any Ethernet port to WAN port in Luci interface.