Manual of WiSoC-based 802.11g/b WLAN Pocket-Sized Print Server Module

Model name: OkiLAN 410w

Rev. 1.0

Product Description

Pocket-sized 802.11g/b 1-USB 2.0 High-speed-port print server Module

Draft Specifications

A. Hardware

WiSoC	ARM9-based highly-integrated WiSoC (Marvell 88W8510H), operating at 160MHz.
RF	Companion RF transceiver of WiSoC (Marvell 88W8000G)
Flash	(Default) 2Mbytes
SDRAM	(Default) 8Mbytes (2Mbits x 32)
USB Host Controller	USB 2.0 High-speed PCI-based host controller (NEC µPD720101) 1. Provides standard 5V, 500mA bus power 2. Supports 1.5Mbps (low speed), 12Mbps (full speed), and 480Mbps (high-speed) data transmission rates. This port automatically detects the make and model of the USB printer
Antenna	(Default) Internal PIFA antenna x 2 (Reserved) 1 IPEX antenna connector to external SMA antenna
LAN Port	(Optional) 10/100Mbps RJ-45 connector, with 2 LED lights, indicating 10 or 100Mbps network connectivity
Power	(Input) 5V DC, 2A (mini power jack)
LED Lights	Status, WLAN Active, USB Active, 10/100Mbps (on RJ-45 connector)
DIP Switch	Yes (Normal & Diagnostic modes)
PCB board	Type: Double-sided SMT 6-layered PCB Dimensions: 53.5 x 85 mm
EMI / Radio Frequency	CE/ETSI, FCC Class B, VCCI Class B, Telec
Others	Reset button

* This product does not support use of USB hubs for daisy-chained connection, USB-to-Parallel connectors, or USB cable extenders.
** The LAN port is not available due to the target size of the PCB board.

B. Hardware System Block Diagram
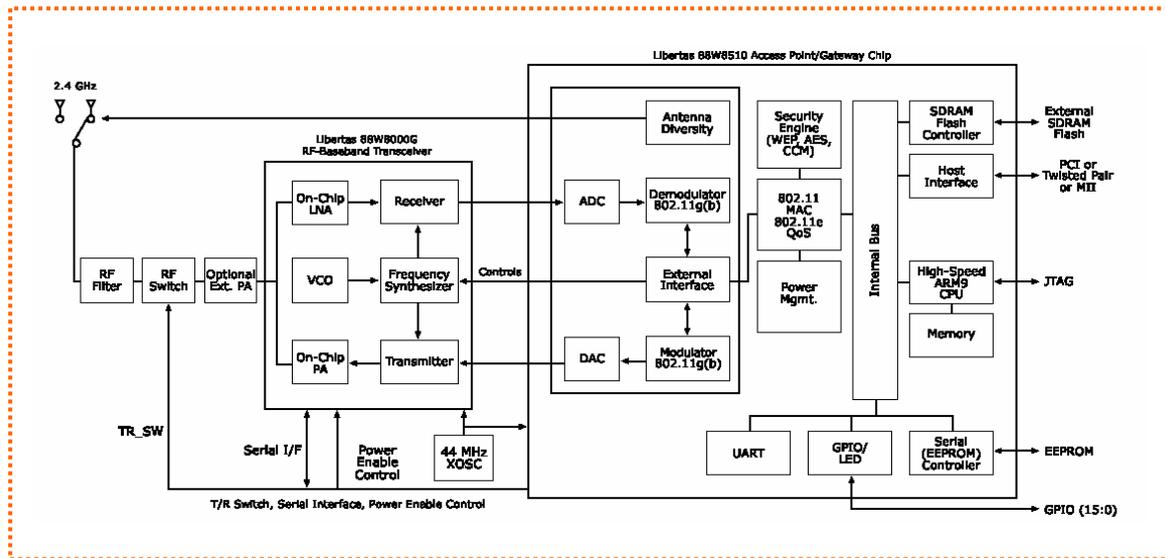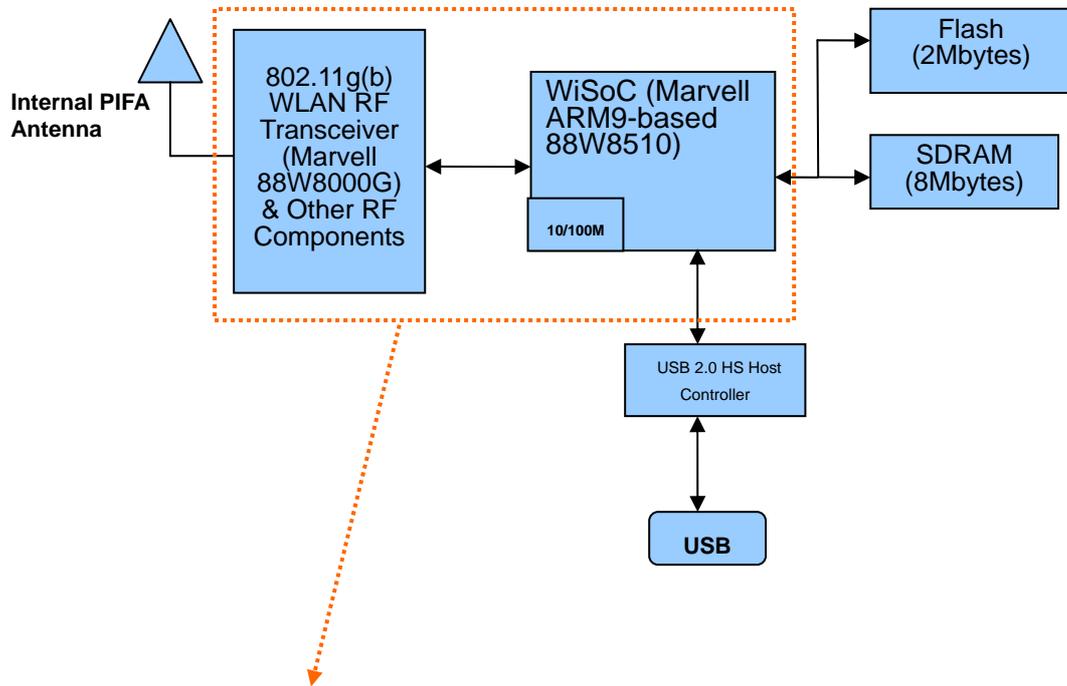
C. Connect 802.11 b/g Printer Server Module with Printer Mainboard

1) Connect 802.11 b/g printer server module with printer mainboard via USB 2.0 cable with Type A connectors on both sides.

11 b/g Printer Server Module

Power Jack (Input: 5VDC, 2A)

DIP Switch **Reset**

USB Type A Connector

PIFA Antenna - S

Marvell RF Transceiver & Other RF parts (Shielded)

Marvell 88W8510 WiSoc

Flash (2Mbytes)

SDRAM (8Mbytes)

PIFA Antenna - P

LAN board Connector

Printer Mainboard

USB Type A Connector

Main board connector

10/100Mbps RJ-45 Connector

Bottom side H:2mm
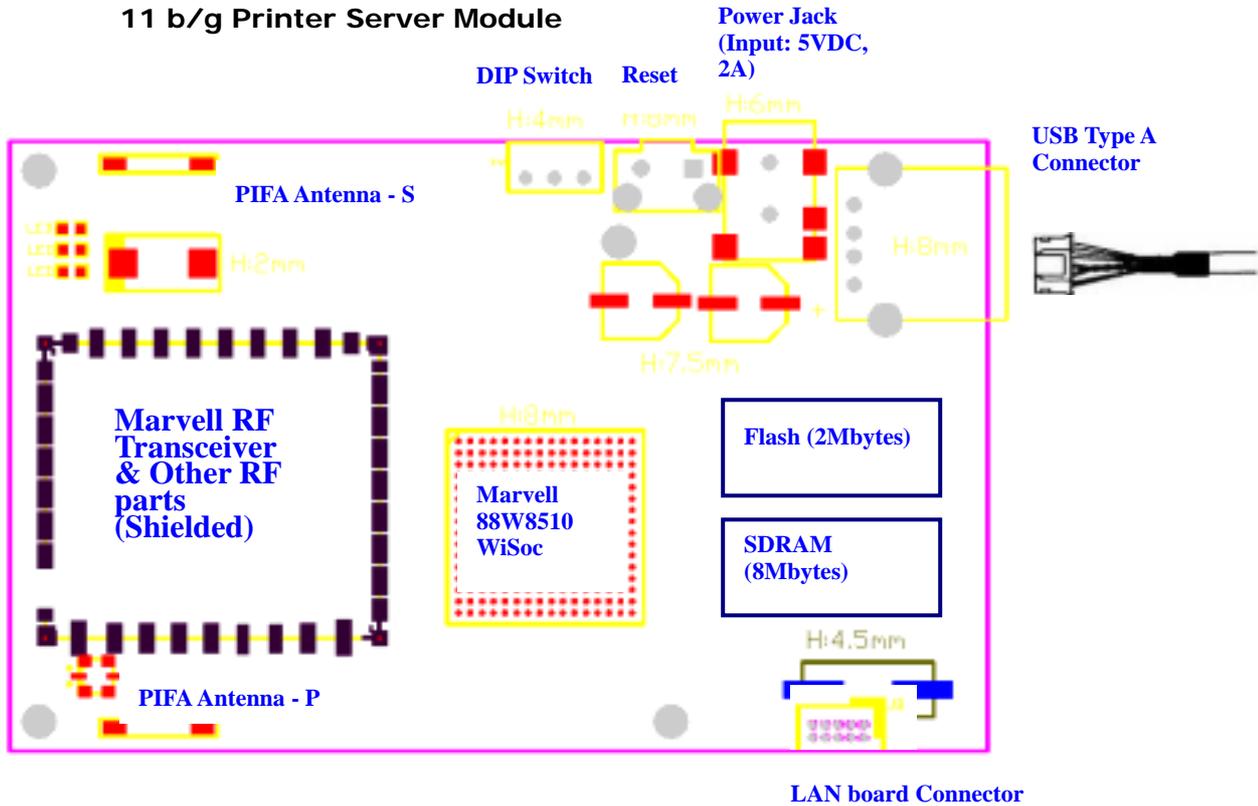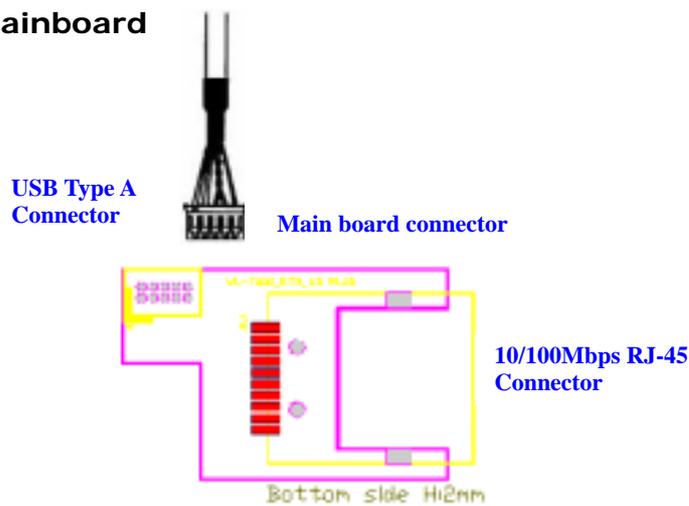
802.11g(b) Wireless

Standard	Complies with IEEE 802.11g and 802.11b standard
Radio Frequency	2.4GHz ISM Band
Radio Frequency Band	2400 - 2483.5 MHz (U. S., Canada ; Channel 1 ~ 11) 2400 – 2483.5 MHz (Europe ; Channel 1 ~ 13) 2400 – 2497 MHz (Japan; 802.11b: Channel 1 ~ 14; 802.11g: Channel 1 ~ 13)
Media Access Control Method	Carrier Sense Multiple Access / Collision Avoidance (CSMA/CA), with ACK
Modulation Types	**802.11g:** OFDM (64QAM, 16QAM, QPSK, BPSK) **802.11b:** CCK (11 & 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps)
Operating Channels	11 Channels (U. S. & Canada); 13 Channels (Europe) ; 14 Channels (Japan)
Output Power	**802.11g:** 13 +/- 1 dBm **802.11b:** 13 +/- 1 dBm
Sensitivity	**802.11g 54Mbps:** -69 ~ -70dBm @PER<10% **802.11b 11Mbps:** -85dBm @PER<8%
Modes	802.11b Ad-Hoc and 802.11g/b Infrastructure (User-definable via Web management interface)
Supported Data Transmission Rate	1Mbps, 2Mbps, 5.5Mbps, 6Mbps, 9Mbps, 11Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps

D. Software

Real-time OS & Protocol Stack	eCos-based RTOS/BSD-based Protocol Stack
WLAN Security	1. WEP Encryption: 40- and 104-bit (alphanumeric & hexadecimal key format) 2. WPA (Wi-Fi Protected Access): WPA-Preshared Key (PSK) and WPA2-Preshared Key, including TKIP / AES - CCMP encryption (compliant with IEEE 802.11i standard)
Advanced 802.11 Settings	Authentication methods (Open System / Shared Key), Beacon Interval, Preamble
Easy-to-Use Windows Setup Wizard	Yes (Print Server Setup Wizard)
Network Operating System Support	Windows 95/98/98SE/Me, Windows NT 4.0/2000/XP/2003, Mac OS 8.1 or higher, UNIX/Linux LPR printing (RFC1179), NetWare (Bindery/NDS)

Network Protocol Support	TCP/IP, IPX, NetBEUI, AppleTalk, LPR, RAW TCP Port 9100
Internet Printing Protocol (IPP) Support	Yes
Windows Print Monitor Technology	Yes
DHCP (client) Support	Yes
Management Interfaces	1. Web Interface 2. Windows-based Setup Program
Software Upgradeable	Yes (Web browser, Windows-based Setup Program, and TFTP)
SNMP & HP Web JetAdmin Support	Yes

Federal Communication Commission Interference 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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:
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.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

This device is intended only for OEM integrators under the following conditions:

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2) The transmitter module may not be co-located with any other transmitter or antenna,
3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further <u>transmitter</u> test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, Printer server, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions <u>can not be met</u> (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID <u>can not</u> be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: PPQ-OKILAN410W".

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Canadian Regulatory Wireless Notice

This device complies with RSS-210 of the Industry Canada Rules. 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

IMPORTANT NOTE:

IC 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 and your body.