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# IP806SM Operation Principle

1. CPU, U6, 88W8510 have a 32-bit RISC processor integrated, operation frequency is 160MHz. It needs an external 44MHz crystal for reference frequency; this crystal is also used for RF module. This chip is responsible to control RF-Baseband Transceiver (88W8000G), Flash IC and LED. This chip also has MII interface integrated to communicate with 10/100 Ethernet Switch.
2. FLASH, U13, AM29LV800BT-70EC, 8Mbits Flash, bottom sector, 70ns. It is used to store the normal and test firmware.
3. Integrated 2.4GHz ISM Band RF-Baseband Transceiver, U9, 88W8000G which is integrated all RF-Baseband receive and Transmit function. On-Chip Power Amplifier (PA) with up to +20 dBm output power at the antenna port. It is also integrated programmable frequency synthesizers with integrated VCOs, I/Q generation and CMOS up/down conversion mixers.
4. 10/100 Ethernet Switch, U10, 88E6060 support automatic MDI/MDIX crossover for 100BASE-TX and 10 BASE-T ports. Port 5 has dedicated, always on, MAC Mode (Forward) and PHY Mode (Reverse) RMII/MII/SNI interface for management and firewall applications. Each port works at 10Mbps or 100Mbp, full-duplex or half-duplex mode (forced or auto-negotiated). Flexible LED support for Link, Speed, Duplex Mode, Collision, and TX/RX Activities.
5. Power part: there are several regulators are used on the board.U18,HW2596 is used to transfer DC12V to DC5V,U17, AZ1084S-3 is used to transfer DC5V to DC3V3; U1, U8 AME8805 are used to transfer DC3V3 to DC2V5; U20, 1117-ADJ is used to transfer DC3V3 to DC1V62. The core of CPU is operate at 1.5V.

6. LED part:

| LED | | Color | Controlled by | Description |
|---|---|---|---|---|
| Power | | Green | FW | **On** - power on<br>**Off** - no power |
| Status | | Red | FW | **On** - Error condition.<br>**Off** - Normal operation<br>**Blinking** - This LED blinks during start up. |
| LAN | 100 | Orange | HW | **On** - Link at 100Mbps<br>**Off** - Link at 10Mbps |
| | Link/Act | Green | HW | **Blinking** - receiving/ transmitting data |
| WAN | | Green | HW | **On** - WAN connection is established<br>**Off** - No WAN connection available<br>**Blinking** - data is being transmitted or received via the WAN port. |
| WLAN | | Green | FW | **On** - Wireless connection available; Wireless Access Point is ready for use.<br>**Off** - No Wireless connection available.<br>**Blinking** - Data is transmitted or received via the Wireless access point. This includes "network traffic" as well as user data. |

7. Switch button, SW1, it is used to reset the 88W8510.

8. Multi-layer Chip Band-Pass Filters, BP2,BP1, BF2520-B2R4CABT, Freq. Range: 2.4~2.5GHz; IL@BW: 2.5dB

9. GaAs IC SPDT Switch, U7, HWS314, features low insertion loss and positive voltage operation with very low DC power consumption.