Quick Guide for Wake on WLAN

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Quick Start Guide for Wake on Lan

(1) Support list:

    .) USB interface: 8188EU, 8188CU, 8192DU, 8192EU, 8723BU, 8812AU.

    .) SDIO interface: 8189ES, 8723BS, 8192ES

(2) Requirements of wakeup via in-band and out-band methods:

    .) In-band requirements:

- SDIO Interface:
    - ✓ SDIO host MUST support remote wakeup feature.
    - ✓ SDIO data1 MUST be wakeup source in the host platform.
    - ✓ The platform MUST keep power to WiFi chip in suspend state.
    - ✓ The platform MSUT work fine between suspend and resume.

- USB Interface:
    - ✓ USB host MUST support remote wakeup feature.
    - ✓ The platform MUST keep power to WiFi chip in suspend state.
    - ✓ The platform MSUT work fine between suspend and resume.

    .) Out-band requirements:

- ✓ The GPIOof the **PLATFORM** MUST be wakeup source.
- ✓ The platform MUST keep power to WiFi chip in suspend state.
- ✓ The platform MSUT work fine between suspend and resume.
- ✓ The WIFI module MUST have the GPIO wakeup pin.

(3) Driver Configuration for Wake on Lan:

    .) In-band configuration:

If using **SDIO DATA1 pin** or **USB protocol D+/D- toggle** in-band method to wakeup the host, driver need to do is only switch **CONFIG_WOWLAN** from "n" to "y" in Makefile as figure 1.

```
CONFIG_EXT_CLK = n
CONFIG_WOWLAN = y
CONFIG_GPIO_WAKEUP = n
```
(figure 1)

.) Out-band configuration:

 If using out-band method, driver need to do is modify Makefile and config GPIO. The detail is as following:

■ Makefile Configuration:

 Switch **CONFIG_WOWLAN** and **CONFIG_GPIO_WAKEUP** from "n" to "y" as figure 2.

```
CONFIG_EXT_CLK = n
CONFIG_WOWLAN = y
CONFIG_GPIO_WAKEUP = y
```

■ GPIO Configuration:

 Please contact with RTK technical support team.

.) Set up the specific wake up pattern:

 ✓ iw:

  ■ **iw phyX wowlan enable patterns <pattern>**

 ✓ iwpriv:

  ■ **iwpriv wlanX wow_set_pattern pattern=<pattern>**

 ✓ Patter Format:

  IP filter This pattern if for a frame containing a ip packet:

  AA:AA:AA:AA:AA:AA:BB:BB:BB:BB:BB:BB:CC:CC:DD:-:-:-:-:-:-:-:EE:-:-:
  FF:FF:FF:FF:GG:GG:GG:GG:HH:HH:II:II

  A: Ethernet destination address

  B: Ethernet source address

  C: Ethernet protocol type

  D: IP header VER+Hlen, use: 0x45 (4 ??is for ver 4, 5 is for len 20)

  E: IP protocol

  F: IP source address (192.168.0.4: C0:A8:00:2C)

  G: IP destination address (192.168.0.4: C0:A8:00:2C)

  H: Source port (1024: 04:00)

  I: Destination port (1024: 04:00)

 ✓ Examples

  ■ **Wake up on any packet sent to MAC 00:E0:4C:01:F0:EE**

   1. iw phyX wowlan enable patterns 00:E0:4C:01:F0:EE

   2. iwpriv wlanX wow_set_pattern pattern=00:E0:4C:01:F0:EE

■ **Wake up on any ICMP packet sent to MAC 00:E0:4C:01:F0:EE IP 192.168.11.4**

1. iw phyX wowlan enable patterns 00:E0:4C:01:F0:EE:-:-:-:-:-:-:08:00:45:-:-:-:-:-:-:-:-:01:-:-:-:-:-:-:c0:a8:0b:04:-:-:-:-

2. iwpriv wlanX wow_set_pattern pattern=00:E0:4C:01:F0:EE:-:-:-:-:-:-:08:00:45:-:-:-:-:-:-:-:-:01:-:-:-:-:-:-:c0:a8:0b:04:-:-:-:-

(4) The wake yo reasib table:

The DUT could be waked up by the WIFI chip with the following reasons:

Reason Value	Description	Note
0x01	Receive pairwise key change packet.	
0x02	Receive group key change packet.	GTK offload support list: 8723BS/BU, 8192ES/EU, 8812AU
0x04	Receive disassociate packet.	
0x08	Receive de-auth. Packet.	
0x10	AP power off, or could not receive AP's beacon in a period time	
0x21	Receive magic packet.	
0x22	Receive unicast packet.	The unicast packet included IP level.
0x23	Pattern Match	The device could be waked up by specific pattern.