MT7986 LED Application Note

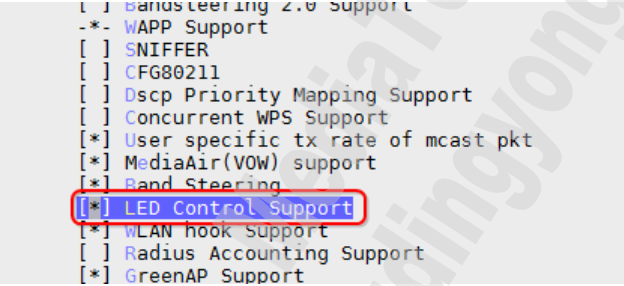
2021/08/19

Version History

Version	Date	Author (Optional)	Description
1.0	2021-08-19	Freddy	External version

Compile Flag

- #CONFIG_LED_CONTROL_SUPPORT
- make kernel_menuconfig
  - Device Drivers
    > Network device support
    > Wireless LAN
    > Mediatek Wireless LAN support
    > WiFi Driver Support
    > WiFi Operation Modes



MT7986 LED GPIO Mapping

- GPIO1 : WF2G_LED
- GPIO2 : WF5G_LED

Ball name	GPIO Reset Default Mode	EINT	Aux Func.0	Aux Func.1	Aux Func.2	Aux Func.3	Aux Func.4	Aux Func.5	Aux Func.6	Aux Func.7
SYS_WATCHDOG	1	EINT0	B:GPIO0	O:SYS_WATCHDOG						
WF2G_LED	1	EINT1	B:GPIO1	O:WF2G_LED					O:dbg_mon_a0	
WF5G_LED	1	EINT2	B:GPIO2	O:WF5G_LED					O:dbg_mon_a1	

MT7986 Led Command Setting

- iwpriv command
  - iwpriv ra0 set led_setting=AA-BB-CC-DD-EE-FF-GG-HH

    AA: LED index (00: 2G_LED, 01:5G_LED)

    BB: TX blink over fix blink (00: Disable, 01: Enable)

    CC: Reverse polarity (00: Disable, 01: Enable)

    DD: Band selection (00: Band 0, 01: Band 1)

    EE: Tx Blink mode (00: All packets, 01: All Tx packets except Beacon, 02: Only Data frames)

    FF: Generic fix blinking off time (unit :10ms)

    GG: Generic fix blinking on time (unit :10ms)

    HH: LED behavior Index

MT7986 LED Command Parameters

- **Enhanced Command structure**
  - **TX blink over fix blink**
    - Driver enable two functions (slow blinking and TX blinking). If TX happens, we can see LED triggered by TX blink. If TX idle, we can see LED is slow blinking.
    - Driver can set the bit to 1 if it wants to enable the function.
  - **Reverse polarity**
    - Set the bit to reverse polarity. The function is used only if factory production inverse the polarity uncarefully.
    - We recommend not to enable this function unless you need.
  - **Band selection**
    - LED can be configured to band 0/1 to support DBDC. Driver can set the bit to 1 to configure the LED to Band 1 and reset the bit to 0 to configure LED to Band 0.

MT7986 LED Command Parameters

- **Enhanced Command structure (cont.)**
  - **Tx Blink mode**
    - Select Tx Blink mode of LED. LED can be configured to blink for :
      - 00: All Tx packets
      - 01: All Tx packets except Beacon frames
      - 02: Only Data frames
- **Generic fix blinking**
  - **Support generic fix blinking LED behavior. Driver could specify the fixed blinking on/off time interval by itself.**
  - **We can assign behavior to “Generic fix blinking format”, and then apply the generic fix blinking parameter.**
    - The time unit of on/off interval is 10 ms, so the max value is 2^8*10ms = 2560 ms.
    - The generic fix blinking parameter is meaningless if the LED behavior index is not correct.

MT7986 LED Command Parameters

- **LED Command behavior**

Value	Behavior	Note
0	Solid Off	Common
1	Solid On	Common
2	TX Blinking	Common
3	Blinking_500ms_On_500ms_Off (1 blink/sec)	Blinking
4	Blinking_250ms_On_250ms_Off (2 blink/sec)	Blinking
5	Blinking_170ms_On_170ms_Off (3 blink/sec)	Blinking
6	Blinking_500ms_Off_100ms_On	Blinking
7	Blinking_500ms_Off_700ms_On	Blinking
16	3 blink/sec for 4 seconds	WPS
17	5sec_Off_3sec_On then TX Blinking	WPS
18	5sec_Off	WPS
31	Generic fix blinking format	Others

MT7986 Led Setting Samples

- **Sample 1: Tx blink**
  - **LED0 Tx blink when tx data frames.**

    iwpriv ra0 set led_setting=00-00-00-00-02-00-00-02
- **Sample 2: Tx over Fix Blink**
  - **If MAC TX happened, apply to LED0 TX blinking. If TX idle, apply to slow blinking for 2 blink per second.**

    iwpriv ra0 set led_setting=00-00-00-00-00-00-00-04

    iwpriv ra0 set led_setting=00-01-00-00-00-00-00-02
- **Sample 3: Reverse Polarity**
  - **Reverse polarity in solid on command.**

    iwpriv ra0 set led_setting=00-00-01-00-00-00-00-01
- **Sample 4: Tx Blink mode selection**
  - **Configure LED0 to blink for all data frames of band1.**

    iwpriv ra0 set led_setting=00-00-00-01-02-00-00-02
- **Sample 5: Generic Fix Blinking Operation**
  - **Configure LED0 to 2000 ms on, 2000 ms off.**

    iwpriv ra0 set led_setting=00-00-00-00-00-200-200-31
- **Sample 6: LED1 WPS Blinking**
  - **Configure LED1 to 5sec_Off_3sec_On then TX Blinking.**

    iwpriv ra0 set led_setting=01-00-00-00-00-00-00-17