[B-Family][PMIC] How to configure PMIC GPIO to output constant 0 or 1 in LA

Solution Number 00029639

Please Note:
If Qualcomm documentation is referenced in this solution, your access to it is based on your company's

Language Key Words

Detail Information

Solution Title [B-Family][PMIC] How to configure PMIC GPIO to output constant 0 or 1 in LA

Solution Details You should do following things to configure the PMIC GPIO. Please check section 3 to get the quick settings.

- Make sure the GPIO can be used
- Find out the dtsi setting
- Change the setting
- Verify the changes

1 GPIO setting check
Please make sure the gpio is not conflict with other modules.
Please check whether the gpio can output the required voltage level.
Please check whether the gpio can output enough current.
Please check whether you need to convert the output.

If you want to know the gpio parameters, you should search 80-*****-1 document to check. Please check "solution 00029636 [B-Family][PMIC] Detail info of the PMIC document" for the details.

2 Find out the GPIO setting in dtsi file
You should find out which dtsi file remember the GPIO settings by following steps:

- Find the PMIC GPIO address
- Search the dtsi files

2.1 Find the PMIC GPIO address
You should know the GPIO address before search. Please search the 80-*****-2 document to get the GPIO address.

Notice: The address in the PMIC GPIO contains the SID (first 4 bits) and the SPMI address (last 16 bits), so the address is 20 bits long. The gpio address in the dtsi file is divided into 2 part, the SID is in the much upper layer. Please check section 2 for more details.

2.2 Search the dtsi files
You can grep the SPMI address in kernel/arch/arm/boot/dts/ to find out the setting position. Please notice it does not contain SID.

```
grep -r "gpio@c000" .
```

Notice: The setting can exist in several files.
Notice: You should check the SID number in up layer.
Notice: Please check section *.* to find the correct dts file and dtsi file.

3 Change the setting
Here is the sample:

```
gpio@c700 { /* GPIO 8 */
        qcom,mode = <1>;                /* Digital output */
        qcom,output-type = <0>;         /* CMOS logic */
        qcom,invert = <0>;              /* Do not invert the output */
        qcom,vin-sel = <2>;             /* PMA8084 S4 = 1.8V */
        qcom,src-sel = <0>;             /* Constant output 0 or 1 */
        qcom,out-strength = <3>;        /* High drive Strength*/
        qcom,master-en = <1>;
};
```

Comments:
`qcom,mode` The value must be 1 to choose digital output.

`qcom,output-type` The GPIO work mode. Choose the push-pull mode or the open drain mode.
`qcom,vin-sel` This parameter is the index of the V_G which can finally map to a power source. It sets the output voltage level if the above qcom,output-type is push-pull mode.
`qcom,out-strength` Choose the output current.
`qcom,src-sel` The value must set to 0 to constant output 0 or 1.

Please check "solution 00029637 [B-Family][PMIC] Detail info of the PMIC GPIO settings" to know how to choose the output-type, vin-sel and out-strength.

4 Verify changes
You can dump the PMIC registers to check whether the settings are correct or not.
Please check "00029640 [B-Family][PMIC] Detail info of PMIC dts setting to registers" to know how the parameters map to the registers.

5 Relative document
Please check kernel/Documentation/devicetree/bindings/gpio/qpnp-pin.txt for more details.
solution:
00029636 [B-Family][PMIC] Detail info of the PMIC document
00029637 [B-Family][PMIC] Detail info of the PMIC GPIO settings
00029640 [B-Family][PMIC] Detail info of PMIC dts setting to registers
00029634 [B-Family][PMIC] Detail guide to configure PMIC GPIO in LA

Applicable Products PM8110, PM8226, PM8841, PM8909, PM8916, PM8926, PM8941, PM8994, PMD9635, PMD9645, PMI8994