以dec-exp.c为例

```
1.          dec-exp {
2.                  pinctrl-0 = <&dec_exp_pins>;
3.                  pinctrl-names = "default";
4.  @@ -355,6 +360,8 @@
5.                          0x150  0x4   /* IO_PAD84, GPIOC[20], EXP_D[0] */
6.                          0x154  0x4   /* IO_PAD85, GPIOC[21], EXP_D[1] */
7.                          0x158  0x4   /* IO_PAD86, GPIOC[22], EXP_D[2] */
8.  +                       0x30C  0x0   /* IO_PAD188, GPIOF[28], borrow the MTO
    NE pin
9.  +                                       to control DEC-Expansion test kit */
10.                 >;
11.                 pinctrl-single,bias-pulldown = <PD_OFF>;
12.                 pinctrl-single,bias-pullup = <PU_OFF>;
```

借用了MTONE pin来用作dec-exp module控制io test kit的gpio pin.

in dec-exp.c

```
1.  static uint gpio = 0;
2.  module_param(gpio, uint, 0644);
```

gpio在module载入时接收MTONE对应的gpio number。

> insmod dec-exp.ko gpio=188

in dec_exp_probe()

```
    /*
     * Because the DEC expansion's signal is not compatible with the test kit,
     * we could not verify "input" functionality.
     * According to the engineer's advice, we make a workaround.
     *
     * Borrow a gpio pin to trigger the test kit sampling. Hope it could work.
    */

    gpio_mtone = gpio;

    err = devm_gpio_request_one(&pdev->dev, gpio_mtone, GPIOF_DIR_OUT, "trigger sampling"); ①
    if (err)
    {
        sysfs_remove_group(&pdev->dev.kobj, &dec_exp_group);
        dev_err(&pdev->dev, "fail to request mtone pin!\n");
        return  err;
    }

    // make the init state is HIGH
    gpio_set_value(gpio_mtone, 1);    ②
```

①

```
/**
 *  devm_gpio_request_one - request a single GPIO with initial setup
 *  @dev:   device to request for
 *  @gpio:  the GPIO number
 *  @flags: GPIO configuration as specified by GPIOF_*
 *  @label: a literal description string of this GPIO
 */
int devm_gpio_request_one(struct device *dev, unsigned gpio,
              unsigned long flags, const char *label)
```

②

> void gpio_set_value(unsigned int gpio, int value)
> 拉高拉低gpio pin。

```
static int dec_exp_sampling_trigger(unsigned pin, unsigned int delay)
{
    gpio_set_value(pin, 0);
    udelay(delay);
    gpio_set_value(pin, 1);

    return  0;
}
```