



PAN1070 CLKTRIM

PAN-CLT-VER-A0, Rev 0.1

PANCHIP

PanchipMicroelectronics

www.panchip.com



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1	4
2	5
2.1	5
2.2	5
2.2.1	5
2.2.1.1	5
2.2.1.2	5
2.2.2	5
3	6
3.1	6
3.2 CLKTRIM	6
3.3	6
3.4	6
3.4.1 CLKTRIM	6
3.4.2 CLKTRIM	6
3.4.3 CLKTRIM	.....	7
3.4.4 CLKTRIM	.....	9
3.4.5 CLKTRIM	.....	10
4	.....	13
5	.....	14
5.1	.....	14



1

1. CLKTRIM
2. CLKTRIM
3. CLKTRIMAPI
4. CLKTRIM

PANCHIP

2

2.1

- a)
- b)
- c)
- d)

2.2

2.2.1

2.2.1.1

<PAN1070-DK>\03_MCU\mcu_samples\CLK_TRIM\keil\clk_trim.uvprojx

<PAN1070-DK>\03_MCU\mcu_samples\CLK_TRIM\src

2.2.1.2

1	SecureCRT	PC	Test Board	log
2				

2.2.2

1. PAN1070 COB
 - a) UART0 TX P16 RX P17 921600
 - b) SWD SWDCLK: P00 SWDIO: P01
2. Secure CRT
- 3.

3

3.1

- 1
- 2 swd 2.2.2
- 3

3.2 CLKTRIM

User Manual

3.3

Test Board

Debug Port

```

+-----+
| PAN1080 CLK TRIM Sample Code. |
+-----+
| Press key to start specific testcase: |
| Input '0' Testcase 0: Register Default value Check. |
| Input '1' Testcase 1: measure function test. |
| Input '2' Testcase 2: tuning function test. |
| Input '3' Testcase 3: Interrupt Mode. |
+-----+
  
```

3.4

3.4.1 CLKTRIM

' 0'

CLKTRIM

```

+-----+
| 0 |
| clk trim default value check ok |
| TRIM Test OK, success case: 0 |
+-----+
  
```

PN108_RC

3.4.2 CLKTRIM

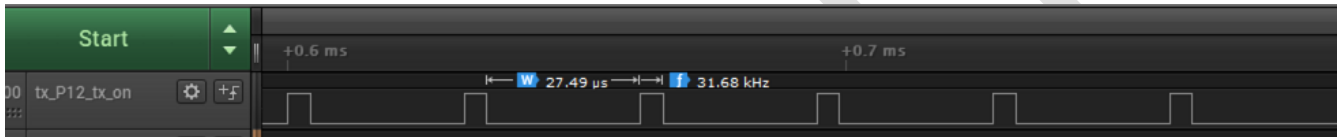
' 1'

cnt

```

1
input the wait count u want
4
input wait cnt value:4
input the clac count u want
100
input clac cnt value:100
real cnt :100990
TRIM Test OK, Success case: 1
  
```

32K



$100 \times 32M / 31.68K = 1010.10$ $100 \times 32M / 1009.9 = 31.686K$
 32M/31.68K = 1010.10 100 * 1010.10 = 101010
 100990 32M/1009.9=31.686K

3.4.3 CLKTRIM

' 2'

code

2

```

Press key to start specific testcase:
Input 'a'   coarse tuning test
Input 'b'   fine tuning test
Input 'c'   precision tuning test
Input 'd'   cp all tuning test
Press ESC key to back to the top level case list.
  
```

acoarse tuning test select
 real cnt :20219,c/f/p code:4,20,20,cur_freq:31653.396484



```

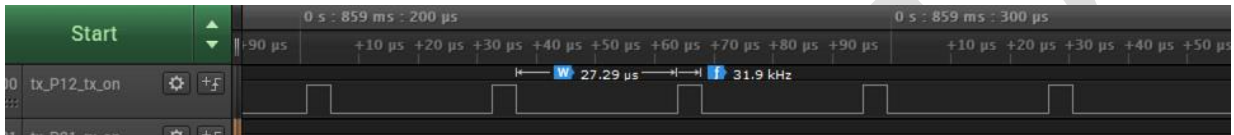
+-----+
| Press key to start specific testcase: |
| Input 'a' coarse tuning test         |
| Input 'b' fine tuning test           |
| Input 'c' precision tuning test      |
| Input 'd' cp all tuning test         |
| Press ESC key to back to the top level case list. |
+-----+

```

```

bfine tuning test select
real cnt :50154,c/f/p code:4,21,20,cur_freq:31901.742188

```



```

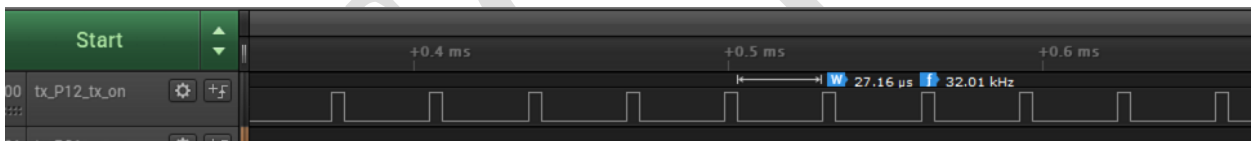
+-----+
| Press key to start specific testcase: |
| Input 'a' coarse tuning test         |
| Input 'b' fine tuning test           |
| Input 'c' precision tuning test      |
| Input 'd' cp all tuning test         |
| Press ESC key to back to the top level case list. |
+-----+

```

```

cprecision tuning test select
real cnt :99980,c/f/p code:4,21,30,cur_freq:32006.402344

```



Cp

```

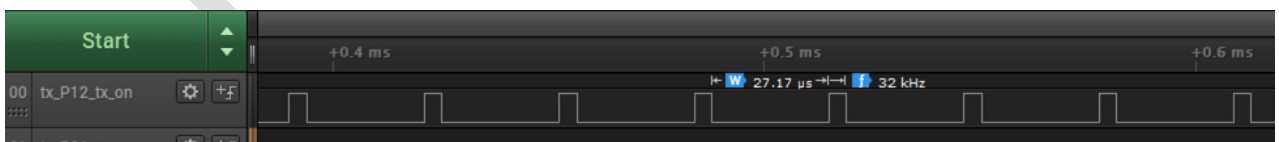
+-----+
| Press key to start specific testcase: |
| Input 'a' coarse tuning test         |
| Input 'b' fine tuning test           |
| Input 'c' precision tuning test      |
| Input 'd' cp all tuning test         |
| Press ESC key to back to the top level case list. |
+-----+

```

```

dall tuning test select
real cnt :99832,c/f/p code:4,22,15,cur_freq:32053.851563
real cnt :99831,c/f/p code:4,22,15,cur_freq:32054.171875
real cnt :100008,c/f/p code:4,22,e,cur_freq:31997.439453

```



code 0x4

code 0x4

31.653K



code	0x20	code	0x21	31.901K
code	0x20	code	0x30	32.006K
			0x4,0x20,0x20	
code	0x4,0x22,0xe			31.997K

3.4.4 CLKTRIM

' 3'

' A'

```

[13:55:42.161]发->◇A□
[13:55:42.167]收←◆coarse tuning test select
err range:15
1-TRIM->TRIM_CTRL:f0f02
c
2-TRIM->TRIM_REAL_CNT:4f4f
real cnt :20303, c/f code:8, b4, cur_freq:31520.000000

```

' B'

```

[13:57:27.969]发->◇B□
[13:57:27.978]收←◆fine tuning test select
err range:37
1-TRIM->TRIM_CTRL:250f02
f
2-TRIM->TRIM_REAL_CNT:c36f
real cnt :50031, c/f code:8, e0, cur_freq:31950.000000

```

' C'

Cp

```

[13:57:44.426]发->◇C□
[13:57:44.432]收←◆all tuning test select
1-TRIM->TRIM_CTRL:4b0f00
c
2-TRIM->TRIM_REAL_CNT:1815e
real cnt :98654, c/f code:a, 20, cur_freq:32400.000000

[13:57:44.472]收←◆1-TRIM->TRIM_CTRL:4b0f00
f
2-TRIM->TRIM_REAL_CNT:184ea
real cnt :99562, c/f code:a, 0, cur_freq:32100.000000

```

3.4.5 CLKTRIM

' 4'

```

Press key to start specific testcase:
Input 'a'   hardware tuning test
Input 'b'   hardware tuning after deepsleep test
Input 'c'   hardware tuning after standby m1 test
Press ESC key to back to the top level case list.
    
```

' A'



```

[16:21:58.053]发->◇A□
[16:21:58.059]收←◆hardware tuning test
    
```

```

[16:21:59.060]收←◆1-TRIM->TRIM_CTRL: 70402
2-TRIM->TRIM_CTRL: 70402
success
real cnt :30004, c/f code:8, e2
    
```

```

Press key to start specific testcase:
Input 'a'   hardware tuning test
Input 'b'   hardware tuning after deepsleep test
Input 'c'   hardware tuning after standby m1 test
Press ESC key to back to the top level case list.
    
```

```

[16:22:00.011]收←◆1-TRIM->TRIM_CTRL: 70402
2-TRIM->TRIM_CTRL: 70402
    
```

```

[16:22:00.975]收←◆1-TRIM->TRIM_CTRL: 70402
2-TRIM->TRIM_CTRL: 70402
    
```

```

[16:22:01.935]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

```

[16:22:02.896]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

```

[16:22:03.851]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

```

[16:22:04.811]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

```

[16:22:05.772]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

```

[16:22:06.732]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

```

[16:22:07.696]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

```

[16:22:08.652]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

```

[16:22:09.616]收←◆1-TRIM->TRIM_CTRL: 70406
2-TRIM->TRIM_CTRL: 70406
    
```

' B'

Deepsleep

```
[14:02:53.031]收←◆Deepsleep
deep sleep mode run continue
1→TRIM→TRIM_CTRL: 70402
2→TRIM→TRIM_REAL_CNT: 752e
success
real cnt :29998, c/f code:8, e2
```

```
Press key to start specific testcase:
Input 'a' hardware tuning test
Input 'b' hardware tuning after deepsleep test
Input 'c' hardware tuning after standby m1 test
Press ESC key to back to the top level case list.
```

```
[14:02:53.992]收←◆1→TRIM→TRIM_CTRL: 70402
2→TRIM→TRIM_REAL_CNT: 752c
```

```
[14:02:54.956]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 753f
```

```
[14:02:55.914]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 752d
```

```
[14:02:56.876]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 753f
```

```
[14:02:57.835]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 7529
```

```
[14:02:58.793]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 752b
```

```
[14:02:59.753]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 752c
```

```
[14:03:00.712]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 752a
```

```
[14:03:01.673]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 752e
```

```
[14:03:02.633]收←◆1→TRIM→TRIM_CTRL: 70406
2→TRIM→TRIM_REAL_CNT: 7530
```

' C '

Standby M0

```
[14:03:39.777]发→◇C□
[14:03:39.782]收←◆hardware tuning after standby test

wake up by rol 32k
```

```
[14:03:40.771]收←◆Standby M1
1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 7522
```

```
CPU @ 48000000Hz
code :7e308
```

PAN1070 CLK TRIM Sample Code.

```
Press key to start specific testcase:
Input '0' Testcase 0: Register Default Value Check.
Input '1' Testcase 1: measure function test.
Input '2' Testcase 2: tuning function test.
Input '3' Testcase 3: Interrupt Mode.
Input '4' Testcase 4: hardware tuning function test.
```

```
[14:03:41.735]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 753c
```

```
[14:03:42.692]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 753d
```

```
[14:03:43.652]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 753d
```

```
[14:03:44.613]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 753b
```

```
[14:03:45.574]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 7537
```

```
[14:03:46.533]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 753d
```

```
[14:03:47.498]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 752b
```

```
[14:03:48.454]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 7525
```

```
[14:03:49.414]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 752a
```

```
[14:03:50.374]收←◆1→TRIM→TRIM_CTRL: 80802
2→TRIM→TRIM_REAL_CNT: 7528
```

```
[16:27:21.889]发->◇□  
[16:27:21.895]收<-◆hardware tuning after standby test
```

```
wake up  
[16:27:22.885]收<-◆standby M1  
1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
CPU @ 48000000Hz  
code :7e308
```

```
-----  
PAN1070 CLK TRIM Sample Code.  
-----  
Press key to start specific testcase:  
Input '0' Testcase 0: Register Default Value Check.  
Input '1' Testcase 1: measure function test.  
Input '2' Testcase 2: tuning function test.  
Input '3' Testcase 3: Interrupt Mode.  
Input '4' Testcase 4: hardware tuning function test.  
-----
```

```
[16:27:23.851]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:24.807]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:25.772]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:26.727]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:27.687]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:28.647]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:29.606]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:30.566]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:31.526]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:32.485]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

```
[16:27:33.445]收<-◆1-TRIM->TRIM_CTRL: f0f02  
2-TRIM->TRIM_CTRL: f0f02
```

LOG success



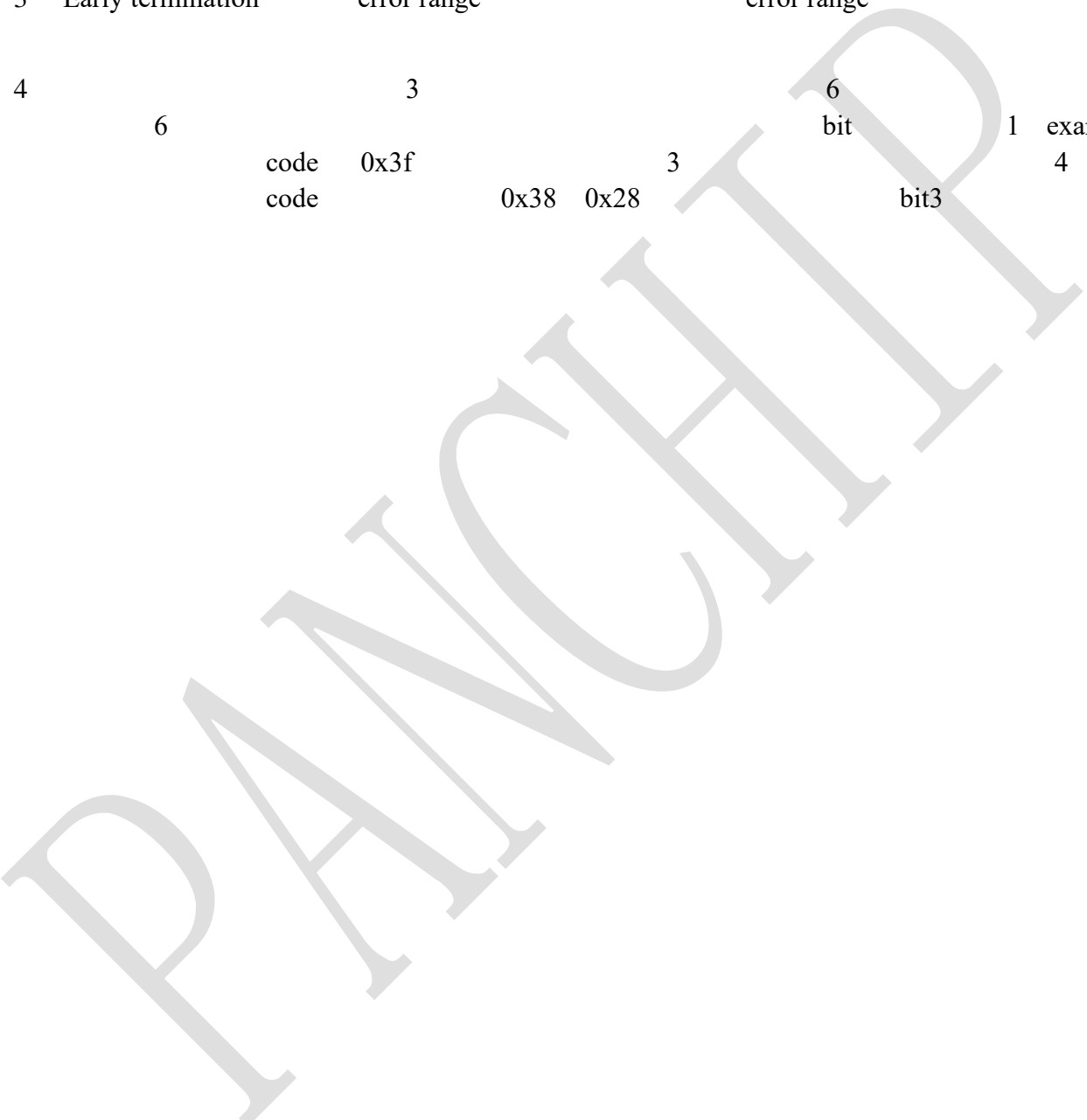
4

1 = + 1

2 reference cnt cnt = cnt + 1

3 Early termination error range error range

4 6 3 6 bit 1 example
 code 0x3f 3 4
 code 0x38 0x28 bit3 1



5

5.1

Modular	Test mode	Test Result	
CLKTRIM	CLKTRIM_Register	OK	
	CLKTRIM_MeasureTest	OK	
	CLKTRIM_TuningTest		OK
			OK
			OK
			OK
	CLKTRIM_InterruptTest	OK	