

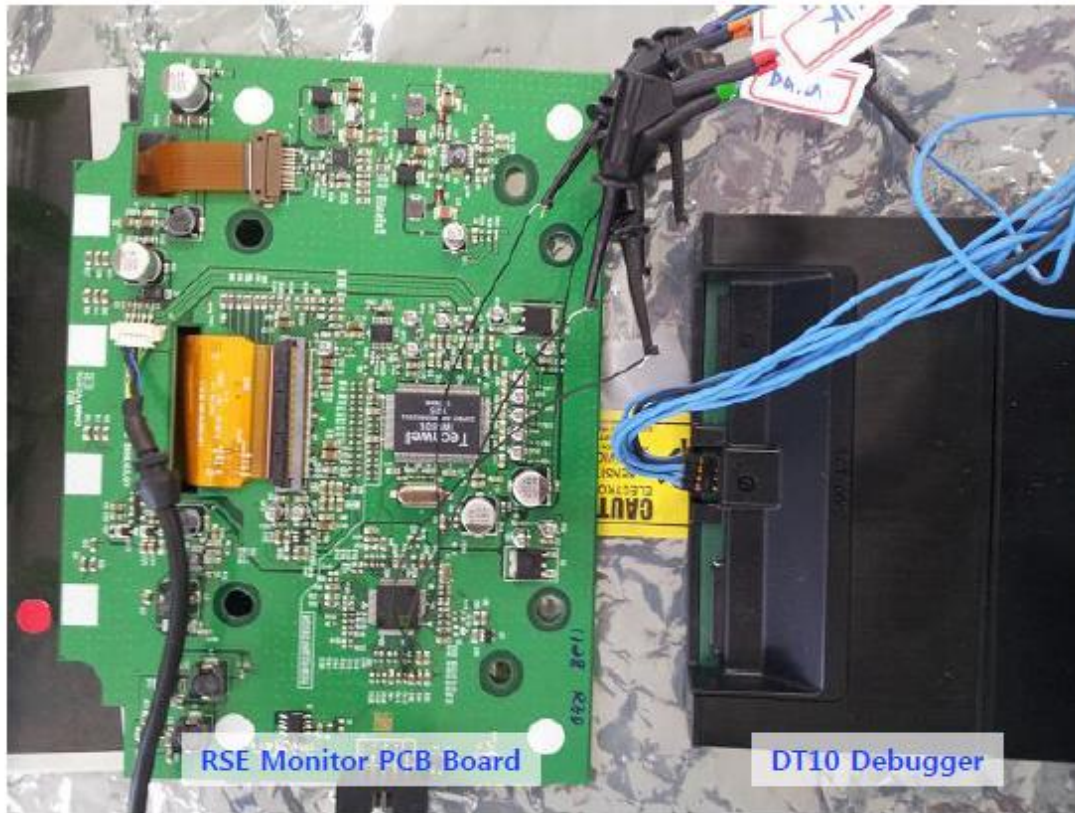


软件调试和测试工具

用户案例

T87 RSE 用户案例

A. 调试器 (Debugger) 的接线状态



GPIO 4 port

-Clock

-Data

-GND

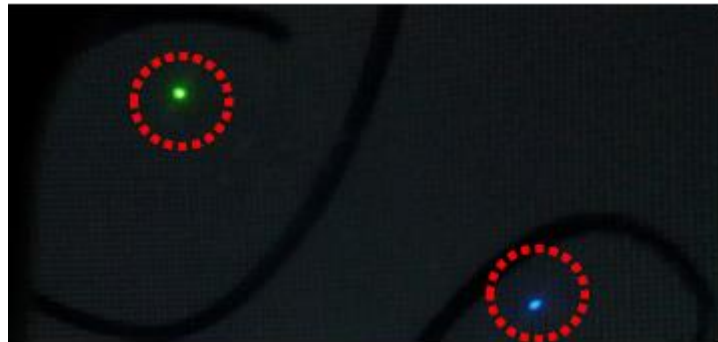
-CS(Chip select)

T87 RSE 用户案例

B. 视频信号在进行启用/禁用切换的时候，会有暗点暗化处理的问题



无信号状态。暗点经过暗化处理，所以几乎看不到不良的画面。



在对视频信号进行启用/禁用切换时，会发生无信号状态中，暗点未被暗化处理的问题。所以会看到不良的画面。

T87 RSE 用户案例

C. DT10 分析结果 - 1/3

Test Report - Repo_120405_164551

No.	Source	Function	Step	Description	M...	V...	Execution ...
6430 (6430)	function.c	VIDEO_PRESENT	00 FuncIn				10,832,538
6431 (6431)	function.c	VIDEO_PRESENT	01 if				10,833,704
6432 (6432)	function.c	VIDEO_PRESENT	02 if				10,834,846
6432 (6432)	function.c	VIDEO_PRESENT	02 if				10,836,590
6434 (6434)	function.c	VIDEO_PRESENT	05 if				10,837,756
6435 (6435)	tw8806_reg_data.c	OSD_NOSIGNAL_DISABLE	00 FuncIn				10,838,983
6436 (6436)	tw8806_reg_data.c	OSD_NOSIGNAL_DISABLE	01 if				10,842,220
6437 (6437)	tw8806_reg_data.c	OSD_NOSIGNAL_DISABLE	02 FuncOut				10,844,852
6438 (6438)	function.c	VIDEO_PRESENT	12 FuncOut				10,845,003
6439 (6439)	function.c	VIDEO_PRESENT	12 FuncOut				10,849,338
6440 (6440)	function.c	VIDEO_PRESENT	12 FuncOut				10,850,479
6441 (6441)	function.c	VIDEO_PRESENT	12 FuncOut				10,851,646
6442 (6442)	function.c	VIDEO_PRESENT	03 if				10,853,391
6443 (6443)	function.c	VIDEO_PRESENT	06 if				10,854,533
6444 (6444)	function.c	VIDEO_PRESENT	13 FuncOut				10,855,698
6445 (6445)	function.c	VIDEO_PRESENT	00 FuncIn				10,858,850
6446 (6446)	function.c	VIDEO_PRESENT	01 if				10,859,991
6447 (6447)	function.c	VIDEO_PRESENT	02 if				10,861,133
6448 (6448)	function.c	VIDEO_PRESENT	03 if				10,862,902
6449 (6449)	function.c	VIDEO_PRESENT	06 if				10,864,044
6450 (6450)	function.c	VIDEO_PRESENT	13 FuncOut				10,865,182
6451 (6451)	function.c	VIDEO_PRESENT	00 FuncIn				10,868,869
6452 (6452)	function.c	VIDEO_PRESENT	01 if				10,870,010
6453 (6453)	function.c	VIDEO_PRESENT	02 if				10,871,151
6454 (6454)	function.c	VIDEO_PRESENT	03 if				10,872,921
6455 (6455)	function.c	VIDEO_PRESENT	06 if				10,874,063
6456 (6456)	function.c	VIDEO_PRESENT	13 FuncOut				10,875,201
6457 (6457)	function.c	VIDEO_PRESENT	00 FuncIn				10,878,887

视频信号被启用之后，会禁用无信号状态。在那之后，会进行视频设置。

T87 RSE 用户案例

D. DT10 分析结果 - 2/3

视频信号被启用之后，会禁用无信号状态。
在那之后，会进行视频设置。

No.	function	VIDEO_PRESENT	execution ...
6870 (6870)	function.c		11,558,526
6871 (6871)	function.c	VIDEO_PRESENT	11,560,298
6872 (6872)	function.c	10 if	11,561,444
6873 (6873)	tw8806_reg_data.c	VIDEODATA_DISABLE	11,562,669
6874 (6874)	tw8806_reg_data.c	VIDEODATA_DISABLE	11,565,308
6875 (6875)	tw8806_reg_data.c	DarkDotDisable	11,566,525
6876 (6876)	tw8806_reg_data.c	DarkDotDisable	11,570,562
6877 (6877)	tw8806_reg_data.c	OSD_NOSIGNAL_ENABLE	11,571,780
6878 (6878)	tw8806_reg_data.c	OSD_NOSIGNAL_ENABLE	11,575,046
6879 (6879)	tw8806_reg_data.c	OSD_NOSIGNAL_ENABLE	11,577,653
6880 (6880)	function.c	VIDEO_PRESENT	11,578,704
6881 (6881)	tw8806_reg_data.c	TW8806_PAL_BGHD_DATA	11,580,711
6882 (6882)	tw8806_reg_data.c	TW8806_PAL_BGHD_DATA	11,581,952
6883 (6883)	function.c	VIDEO_PRESENT	11,583,835
6884 (6884)	function.c		11,585,002
6885 (6885)	function.c		11,586,143
6886 (6886)	function.c		11,587,889
6887 (6887)	function.c		11,589,060
6888 (6888)	function.c	VIDEO_PRESENT	11,590,200
6889 (6889)	tw8806_reg_data.c	TW8806_PAL_BGHD_DATA	11,592,212
6890 (6890)	tw8806_reg_data.c	TW8806_PAL_BGHD_DATA	11,593,427
6891 (6891)	function.c	VIDEO_PRESENT	11,595,337
6892 (6892)	function.c	VIDEO_PRESENT	11,596,478
6893 (6893)	function.c	VIDEO_PRESENT	11,597,620
6894 (6894)	function.c	VIDEO_PRESENT	11,599,393
6895 (6895)	function.c	VIDEO_PRESENT	11,600,538
6896 (6896)	function.c	VIDEO_PRESENT	11,601,678
6897 (6897)	tw8806_reg_data.c	TW8806_PAL_BGHD_DATA	11,603,598
6898 (6898)	tw8806_reg_data.c	TW8806_PAL_BGHD_DATA	11,604,813
6899 (6899)	function.c	VIDEO_PRESENT	11,606,723

就算无信号状态被启用，而且暗点化处理也结束了，
还会一直重复进行视频设置，所以才在视频设置的处理过程中，
导致暗点化的问题发生。

T87 RSE 用户案例

E. DT10 分析结果 - 3/3

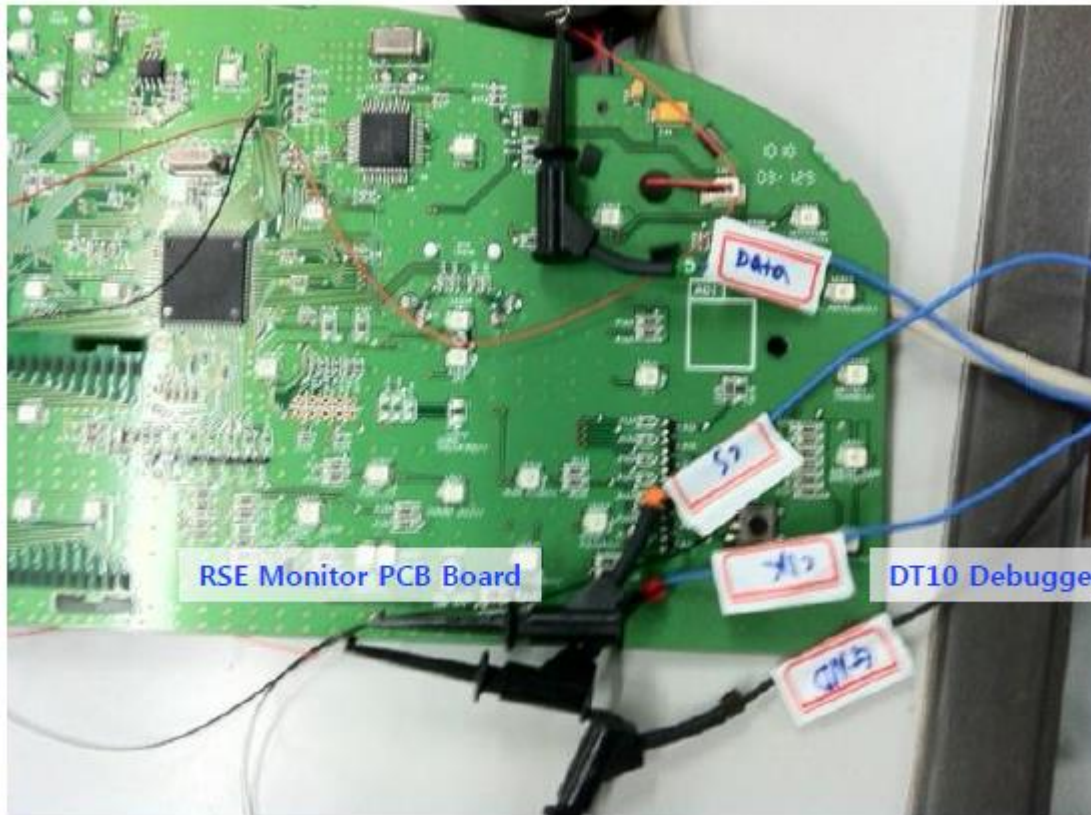
Test Report : Repo_120405_170542

No.	Source	Function	Step	Description	M...	V...	Execution ...
0623 (10623)	function.c	VIDEO_PRESENT	13 FuncOut				18,054,152
0624 (10624)	function.c	VIDEO_PRESENT	00 FuncIn				18,058,783
0625 (10625)	function.c	VIDEO_PRESENT	01 if				18,059,950
0626 (10626)	function.c	VIDEO_PRESENT	02 if				18,061,092
0627 (10627)	function.c	VIDEO_PRESENT	07 if				18,062,865
0628 (10628)	function.c	VIDEO_PRESENT	10 if				18,064,016
0629 (10629)	tw8806_reg_data.c	VIDEODATA_DISABLE	00 FuncIn				18,065,226
0630 (10630)	tw8806_reg_data.c	VIDEODATA_DISABLE	01 FuncOut				18,067,865
0631 (10631)	tw8806_reg_data.c	OSD_NOSIGNAL_ENABLE	00 FuncIn				18,069,083
0632 (10632)	tw8806_reg_data.c	OSD_NOSIGNAL_ENABLE	01 if				18,072,324
0633 (10633)	tw8806_reg_data.c	OSD_NOSIGNAL_ENABLE	02 FuncOut				18,074,956
0634 (10634)	tw8806_reg_data.c	DarkDotDisable	00 FuncIn				18,076,184
0635 (10635)	tw8806_reg_data.c	DarkDotDisable	01 FuncOut				18,080,221
0636 (10636)	function.c	VIDEO_PRESENT	13 FuncOut				18,081,361
0637 (10637)	funct						18,084,011
0638 (10638)	funct						18,085,152
0639 (10639)	funct						18,086,293
0640 (10640)	funct						18,088,066
0641 (10641)	funct						18,089,211
0642 (10642)	function.c	VIDEO_PRESENT	13 FuncOut				18,090,350
0643 (10643)	function.c	VIDEO_PRESENT	00 FuncIn				18,093,805
0644 (10644)	function.c	VIDEO_PRESENT	01 if				18,094,972
0645 (10645)	function.c	VIDEO_PRESENT	02 if				18,096,114
0646 (10646)	function.c	VIDEO_PRESENT	07 if				18,097,886
0647 (10647)	function.c	VIDEO_PRESENT	11 if				18,099,031
0648 (10648)	function.c	VIDEO_PRESENT	13 FuncOut				18,100,171
0649 (10649)	function.c	VIDEO_PRESENT	00 FuncIn				18,103,912
0650 (10650)	function.c	VIDEO_PRESENT	01 if				18,105,053

已经锁定问题点，以上为修正后再确认的结果。视频信号被禁用、然后再启用无信号状态，会进行暗点暗化处理。在那之后，重复进行视频，就没有再发生任何问题了。

T87 RSE 用户案例

A. 调试器 (Debugger) 的接线状态



GPIO 4 port

-Clock

-Data

-GND

-CS(Chip select)

T87 RSE 用户案例

B. 调试 (Debugging) - 1/3

➤ 插入测试点

```
UINT8 g_DoorAjarChimeMode = 0 ;
#define C_DOORAJAR_CHIME_OFF 0
#define C_DOORAJAR_CHIME_ON 1
void Ap_DOOR_AJAR_Run(void)
{
    static UINT8 oldBulbCheck=0;
    static UINT8 oldDoorAjarChimeMode = 0 ;
    ///////////////////////////////////////////////////////////////////
    //C140
    // any siganls above that are not received by the end of bulb check
    // shall be considered to have been received with data = Closed.
    __DtTestPoint(__DtFunc_Ap_DOOR_AJAR_Run, __DtStep_0)
    if ((oldBulbCheck==1) && (g_bBulbCheck==0))
    {
        __DtTestPoint(__DtFunc_Ap_DOOR_AJAR_Run, __DtStep_1)
        if (g_Rcv_RRDoorAjarSwAct==0)    ap_RRDoorAjarSwAct=0;
        if (g_Rcv_RLDoorAjarSwAct==0)    ap_RLDoorAjarSwAct=0;
        if (g_Rcv_PDajrSwAtv==0)        ap_PDajrSwAtv=0;
        if (g_Rcv_DDajrSwAtv==0)        ap_DDajrSwAtv=0;
    }
}
```

登录你要调试的源代码后，在各个 function in/ out, branch, loop 中都会自动插入测试点。

T87 RSE 用户案例

B. 调试 (Debugging) - 2/3

➤ 函数调用

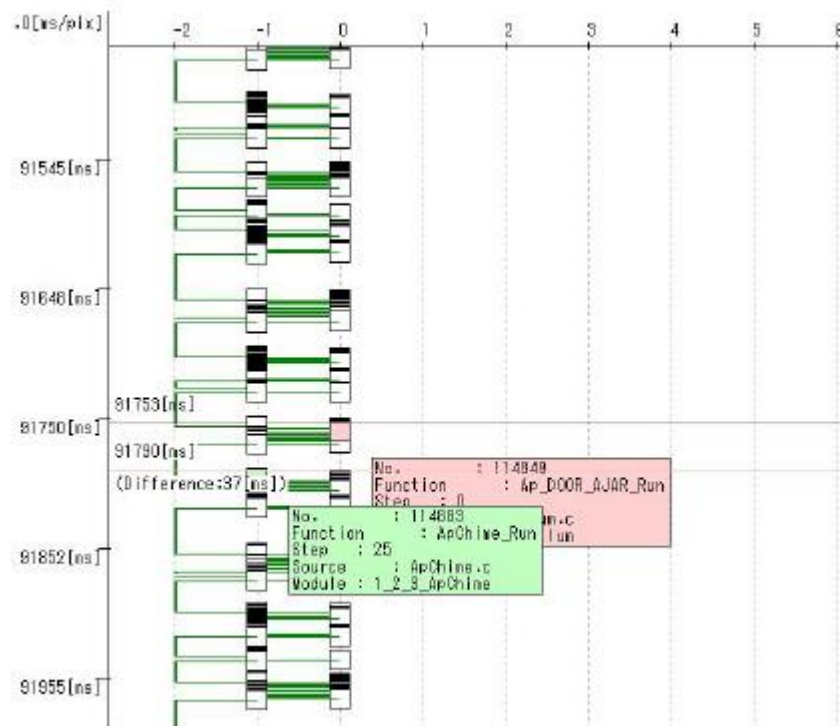
3766 (43766)	dbResetPower.c	Timer_2	05 if			26,109,881	309	1_1_2_dbResetPower	
3767 (43767)	dbResetPower.c	Timer_2	07 if			26,110,191	310	1_1_2_dbResetPower	
3768 (43768)	dbResetPower.c	Timer_2	11 FuncOut			26,110,502	310	1_1_2_dbResetPower	
3769 (43769)	Apillum.c	Ap_HoodOpen_Run	00 FuncIn			26,116,073	5,571	1_2_1_Apillum	
3770 (43770)	Apillum.c	Ap_HoodOpen_Run	01 if			26,116,368	294	1_2_1_Apillum	
3771 (43771)	Apillum.c	Ap_HoodOpen_Run	03 if			26,116,663	295	1_2_1_Apillum	
3772 (43772)	Apillum.c	Ap_HoodOpen_Run	09 FuncOut			26,116,961	297	1_2_1_Apillum	
3773 (43773)	dbResetPower.c	Timer_2	00 FuncIn			26,120,823	3,862	1_1_2_dbResetPower	
3774 (43774)	dbResetPower.c	GetADCResult	00 FuncIn			26,121,140	317	1_1_2_dbResetPower	
3775 (43775)	dbResetPower.c	GetADCResult	01 while			26,121,456	315	1_1_2_dbResetPower	
3776 (43776)	dbResetPower.c	GetADCResult	02 FuncOut			26,121,766	310	1_1_2_dbResetPower	
3777 (43777)	dbResetPower.c	Reading_ADC	01 switch			26,122,079	312	1_1_2_dbResetPower	
3778 (43778)	dbResetPower.c	Reading_ADC	08 FuncOut			26,122,390	311	1_1_2_dbResetPower	
3779 (43779)	dbResetPower.c	Timer_2	03 if			26,121,701	310	1_1_2_dbResetPower	

可以确认：插过测试点的函数被调用的时间
每个函数内的分支执行路径
每个函数的处理时间

T87 RSE 用户案例

B. 调试 (Debugging) - 3/3

➤ 函数调用的时间图



- ◆ 可以通过时间表来确认函数被调用的时间顺序
- ◆ 确认 Door Ajar function 被调用 37 ms 后, 被 Chime function 调用的 chime 会执行

T87 RSE 用户案例

C. DT10 使用调试功能的结果评审

➤ DT10 调试工具的优势

1. 对于复杂的逻辑来说，可以确认变量对于验证的过程帮助很大

(ex: Row Gage values VS Filtering Gage values)

2. 可以确认周期消息的时间

(ex : Distance Rolling Count - odometer 积算)

3. 很容易可以确认周期性发生的信号丢失和信号重复

(ex : Continuous Chime Issue - 70msec 周期)

4. 很容易可以确认事件函数被调用的时间和被执行的时间

(ex : 警报信息)