

External report

Known Software Issue List

ER-B-001

Abstract

This document contains the collection of known issues in the current SDK 1.0.12 including a description and possible work-around(s) and/or solution(s).

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1 Terms and definitions

SDK	Software Development Kit
BOD	Brown Out Detector
TCS	Trim and Calibration Section

2 References

- [1] DA14681-01_DS_v2.1.pdf (Datasheet)
- [2] DA1468x_SDK_BTLE_SW_Release_Notes_v_1_0_8_1050.1.pdf
- [3] DA1468x_DA15xxx_SDK_Release_Notes_v_1_0_10_1072.pdf
- [4] DA1468x_DA15xxx_SDK_Release_Notes_v_1_0_12_1078.pdf

3 Introduction

This document contains known issues, limitations and troubleshooting tips not covered in the DA1468x and SDK documents, including SmartSnippets Studio.

Dialog Semiconductor identified the following issues after the time the SDK 1.0.12 and SmartSnippets Studio 1.6.3 were released.

The Release Notes [4] cover issues that were noted before or at the time of release.

4 Known issues in the SDK 1.0.12

4.1 Macronix QSPIflash MX25U51245G is put in a strange state by SUoUSB_loader

Description:

The RAM version of the SUoUSB_loader puts the Macronix QSPIflash MX25U51245G in a strange state and (the flash) needs a power cycle to get functional again. This phenomena is mainly encountered when the program is run out of the OTP (in mirror mode).

Solution/Workaround:

Change flash_mx25u51245_initialize() to also call flash_mx_configure_dummy_cycles(6) to set the Flash in 6 dummy cycle mode.

Status:

Will be fixed in SDK 1.0.14.

4.2 Sporadic disconnects when DA1468x used as Central.

Description:

See 'Known issue in the SDK 1.0.10.

4.3 BLE disconnects due to low power clock drift (RCX).

Description

RCX calibration is not performed in active mode, resulting in Low Power clock drifting when RCX is used as Low Power Clock and BLE connection may be dropped.

Solution/Workaround:

Need to change the RCX calibration logic and add a timer to trigger an RCX calibration not later than every 4seconds. Too much calibration will have negative impact on power consumption. For sub-zero temperatures it is advised to have calibration every second or faster if there are extreme temperature changes within very short time interval (e.g. more than 3 degrees/second). Do not calibrate faster than every 100ms.

For application having large temperatures changes in a short time, it is advised to use the XTAL32K for LP clock. RCX is a low cost alternative to XTAL32K while the XTAL32K is the recommended LP clock.

Status:

Will be fixed in SDK 1.0.14.

5 Known issues in the SDK 1.0.10

5.1 Sporadic disconnects when DA1468x used as Central.

Description:

An issue has been discovered in the BLE stack when using the DA1468x device as **central**. After sending the CONN_IND packet to establish a connection, the central might send out the first data packet in the 2nd hopping channel instead of the 1st one. This will cause an immediate disconnection with reason 3E as the channel hopping is incorrect. This issue happens in rate of 1/50 randomly through DA1468x DK-DK test with SDK1.0.10. This issue is also seen with other BLE chips as peripheral.

This issue is not fatal and it happens in a very rare case.

Solution/Workaround:

The central can just reconnect after knowing the immediate disconnection with reason 3E.

Status:

Not yet fixed.

5.2 Flash erase fails occasionally due to racing condition getting an interrupt.

Description:

There is a racing condition which can appear only with ERASE operation. The racing condition is to get an interrupt just before initiating the ERASE while in IDLE and checking the conditions to start the ERASE.

Solution/Workaround:

No (easy) workaround

Status:

Fixed in SDK 1.0.12

6 Known issues in the SDK 1.0.8

6.1 High current consumption in sleep mode when using NTC.

Description:

On the SDK 1.0.8 there is an issue causing high current leakage (50-90 uA) when the NTC is mounted to protect the charging battery from too low or too high temperature.

The two GPIOs P1_4 and P1_6 need to be configured to input_pull down before entering sleep mode. The active state of P1_4 is input-pull down while P1_6 is input-pull up, causing a current leakage on the NTC circuit.

Solution/Workaround:

Add the following changes to function `apply_wfi` in file `sys_power_mgr.c`:

```

--- a/sdk/bsp/system/sys_man/sys_power_mgr.c
+++ b/sdk/bsp/system/sys_man/sys_power_mgr.c
@@ -1329,6 +1329,13 @@
     */
     pm_system_sleeping = sys_powered_down;

+
+    // if ntc is enabled, re-configure P1_4/P1_6 to avoid leakage current
+#if 0==dg_configBATTERY_CHARGE_NTC
+    hw_gpio_set_pin_function(HW_GPIO_PORT_1, HW_GPIO_PIN_4, \
+        HW_GPIO_MODE_INPUT_PULLDOWN, HW_GPIO_FUNC_GPIO);
+    hw_gpio_set_pin_function(HW_GPIO_PORT_1, HW_GPIO_PIN_6, \
+        HW_GPIO_MODE_INPUT_PULLDOWN, HW_GPIO_FUNC_GPIO);
+#endif
+
+
+    DBG_SET_LOW(CPM_USE_FUNCTIONAL_DEBUG, CPMDBG_POWERUP);
+
+    /*

```

Status:

Not yet fixed.

6.2 Function `hw_wkup_emulate_key_hit` does not work as described.

Description:

The `hw_wkup_emulate_key_hit` function does not seem to work properly if the debounce timer is set to a value greater than 1 (as stated in the comment lines).

Solution/Workaround:

Adding a (software) timer function inside the `hw_wkup_emulate_key_hit` function can also emulate the debounce time.

Status:

Fixed in SDK 1.0.10

6.3 Programming DA14681 Basic Kit through UART can be unsuccessful.

Description:

When programming the DA14681 Basic Kit over UART, the programming may fail the first attempt (there is no problem when using the JTAG interface):

Error: "Write executable failed: 2nd stage bootloader rejected (-105)"

Solution/Workaround:

1/ If one try to program the board again after an unsuccessful attempt (without hitting the reset button) or if you have the reset pressed and release it when the tool indicates "Connecting to device....." the board will be programmed successfully.

2/ Modify `scripts\qspi\program_qspi_serial.bat` to

```
--- a/utilities/scripts/qspi/program_qspi_serial.bat
+++ b/utilities/scripts/qspi/program_qspi_serial.bat
@@ -26,6 +26,8 @@
 @set /p comprtnr=-^>
 @echo.
 @echo COMPORT=COM%comprtnr%
+@echo a > COM%comprtnr%
+
 @echo on
 CALL "..\..\binaries\cli_programmer.exe" --prod-id %PRODUCT_ID% %RAM_SHUFFLING%
 COM%comprtnr% write_qspi_exec "%IMAGE%"
 @echo off
```

Status:

Fixed in SDK 1.0.10

7 Known issues in the SDK 1.0.6

7.1 BOD circuitry is activated late in the start-up sequence.

Description:

The SDK assumes that the BOD_CTRL_REG will have been set by the bootloader via the TCS. This action will be performed when an entry has been added in the TCS section with the proper value of the BOD_CTRL_REG.

If this is not done, then the SDK will not activate the BOD during the system initialization but quite later, when the RF is turned on. So, the BOD protection will be activated quite late.

Solution/Workaround:

Program the proper value in the BOD_CTRL_REG in the TSC section of the OTP header.

Status:

Fixed in SDK 1.0.8

7.2 System can crash after a couple of seconds when RCX is used.

Description:

The SDK assumes that the frequency of the RCX (sleep clock) oscillator will not exceed 12.1 kHz, else the system will stop working (even in the case when the system doesn't go to sleep). (An RCX frequency above 12.1kHz is observed on approximately 1% of devices.)

Solution/Workaround:

Replace 2 lines of code in **sys_clock_mgr.c**:

```
diff --git a/sdk/bsp/system/sys_man/sys_clock_mgr.c b/sdk/bsp/system/sys_man/sys_clock_mgr.c
index 5de5f04..83b29c0 100644
--- a/sdk/bsp/system/sys_man/sys_clock_mgr.c
+++ b/sdk/bsp/system/sys_man/sys_clock_mgr.c
@@ -58,8 +58,8 @@

#define RCX_MIN_HZ                450
#define RCX_MAX_HZ                550
-#define RCX_MIN_TICK_CYCLES      19
-#define RCX_MAX_TICK_CYCLES      23
+#define RCX_MIN_TICK_CYCLES      17
+#define RCX_MAX_TICK_CYCLES      30

/* ~4.4 msec for the 1st calibration. This is the maximum allowed value when the 96MHz clock is
 * used. It can be increased when the sys_clk has lower frequency (i.e. multiplied by 2 for 48MHz,
```

Status:

Fixed in SDK 1.0.8

7.3 Pairing request fails when maximum number of devices is reached.

Description:

When the bonding count reaches maximum "defaultBLE_MAX_BONDED" value, all following pairing requests will fail. There is no automatic mechanism that takes care of this by erasing one or more entries.

Solution/Workaround:

The application layer should handle this situations.

Status:

Explanation will be added in the next revision of the documentation.

7.4 DA14681-01 cannot operate with certain QSPI flash types.**Description:**

Although the ROMbooter supports various QSPI flash types from Winbond, Macronix and Giga_Devices, the SDK software is optimized to supports certain Winbond devices (W25Qx0EW, W25Qx0CL).

Solution/Workaround:

No immediate solution.

Status:

SDK 1.08 is restructured in order to make it possible to add other QSPI flash types. Software and an application note are created how to implement additional QSPI flash types.

7.5 Clamp issue using hibernation mode, system may crash.**Description:**

The hibernation mode uses the clamp and not the LDO_VBAT_RET. The clamp may not be stable enough, so the hibernation mode is buggy since the 3.3V level is not guaranteed and, also the chip may crash due to this clamp issue.

Solution/Workaround:

The code must be changed to use the LDO_VBAT_RET. More specifically, `dg_configLOW_VBAT_HANDLING` must be set to 1 and the following part of the code in `apply_wfi()`, `sys_power_mgr.c`, must be commented out:

```
diff --git a/sdk/bsp/system/sys_man/sys_power_mgr.c b/sdk/bsp/system/sys_man/sys_power_mgr.c
index 079de9b..cca5177 100644
--- a/sdk/bsp/system/sys_man/sys_power_mgr.c
+++ b/sdk/bsp/system/sys_man/sys_power_mgr.c
@@ -1274,13 +1274,13 @@
                                     hw_cpm_no_retmem();
                                     hw_cpm_enable_reset_on_wup();

-                                     if (dg_configPOWER_CONFIG != POWER_CONFIGURATION_1) {
-                                     // Give power to 3V3 (GPIOs) during sleep.
-                                     hw_cpm_3v3_clamp_on();
-
-                                     // Disable VBAT_ret since 3V3 is provided by the Clamp.
-                                     hw_cpm_ldo_vbat_ret_off();
-                                     }
+                                     if (dg_configPOWER_CONFIG != POWER_CONFIGURATION_1) {
+                                     // Give power to 3V3 (GPIOs) during sleep.
+                                     hw_cpm_3v3_clamp_on();
+
+                                     // Disable VBAT_ret since 3V3 is provided by the Clamp.
+                                     hw_cpm_ldo_vbat_ret_off();
+                                     }

                                     hw_cpm_lp_set_rc32k();
```

Status:

Fixed in SDK 1.0.8

7.6 The CPU may be stuck in the hard fault handler.

Description:

During development or testing the CPU may be stuck in the hardfault handler. Looks like execution will be coming from a point in code with no obvious reason for error, only indication: R4 is used to access memory.

Solution/Workaround:

Apply the following patch to use R2 instead of R4 in file *startup_ARMCM0.S*.

```
diff --git a/sdk/bsp/startup/startup_ARMCM0.S b/sdk/bsp/startup/startup_ARMCM0.S
index d7dc07b91bf2..5b116cbeef4 100644
--- a/sdk/bsp/startup/startup_ARMCM0.S
+++ b/sdk/bsp/startup/startup_ARMCM0.S
@@ -434,8 +434,8 @@ stack_check:
     cmp     r0, r2
     blt     Wrong_SP
     /* Check SYS_CTRL_REG:CACHERAM_MUX */
-    ldr     r4, =0x50000012
-    ldrh    r2, [r4]
+    ldr     r2, =0x50000012
+    ldrh    r2, [r2]
     movs   r3, #1
     lsls   r3, r3, #10
     ands   r2, r2, r3
```

Status:

Fixed in SDK 1.0.8

8 Known issues with SmartSnippets Studio

8.1 Error message showing the linker cannot find certain files

Description:

The GCC compiler / linker shows a message that it cannot find certain files : No such file or directory. This is a limitation of the GCC tools when the path names exceed 128 characters.

Solution/Workaround:

Keep the Workspace names short so that the total length of the path from the home directory to the Release/Debug folder does not exceed 128 characters.

Status:

A note will be added in the next release of the SmartSnippets documentation.

8.2 Segger's Systemview software not starting

Description:

During installation of the SmartSnippets Studio the installer asks to download and install Segger's Systemview software (if not already present). When starting the Systemviewer from the SmartSnippets Studio home page, it will not start.

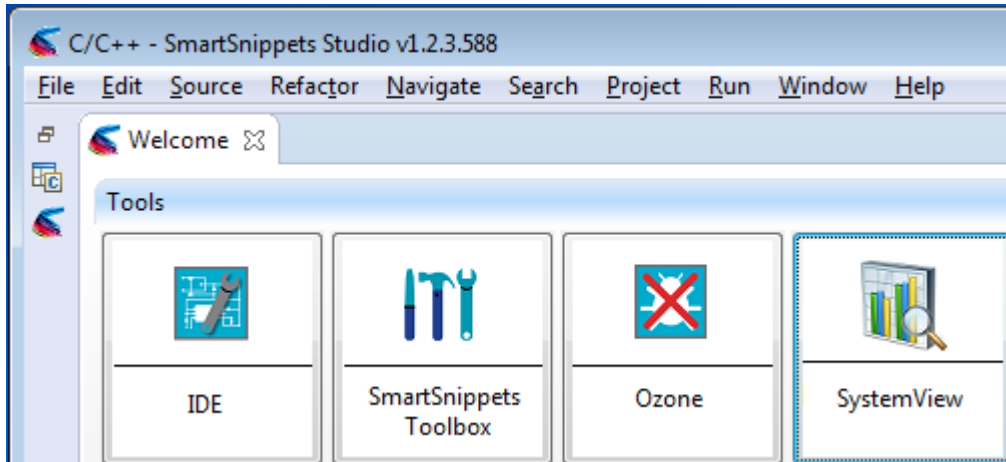


Figure 1

Solution/Workaround:

In certain cases 2 *.dll files are missing: msvcp100.dll and mscrt100.dll. These 2 files are present in Segger's Ozone software directory and can be copied either to the Systemview directory or Windows System32 directory.

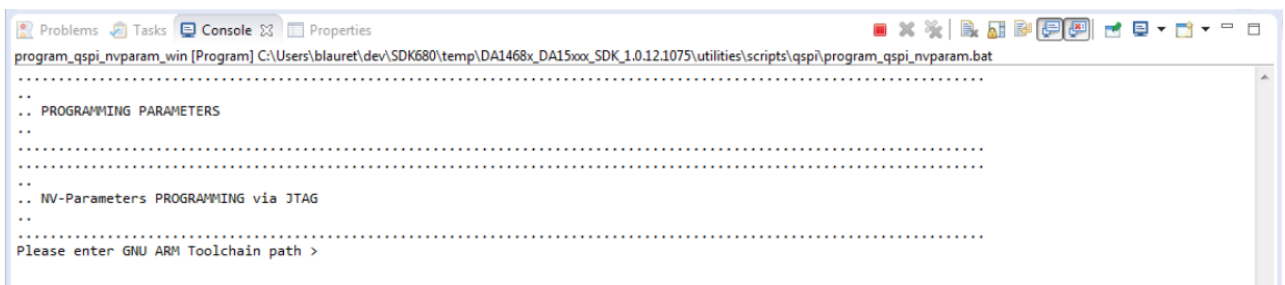
Status:

Not yet fixed.

8.3 Tool path discovery may fail when programming nvparam for the first time

Description:

On a brand new installation of a new SDK, it appears that trying to program the nvparams, the tools fail to find the arm gcc and request for the path:



Solution/Workaround:

Restart Eclipse and the path will be found as expected.

Status:

Not yet fixed.

Revision history

Revision	Date	Description
1.0	28-Sep-2016	Initial version.
2.0	24-Jan-2017	Updated to SDK 1.0.8
2.2	09-Feb-2018	Updated to SDK 1.0.12
2.3	14-Jun-2018	Added chapter 8.3

Status definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
APPROVED or unmarked	The content of this document has been approved for publication.

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