Release Notes

DA1458x/DA1453x SPS

SW-B-022

Abstract

This document contains the release notes for Renesas' SPS reference application for DA1458x and DA1453x, version 6.150.6.77.

Contents

Tables

1 Terms and Definitions

API	Application Programming Interface
BLE	Bluetooth Low Energy (Bluetooth Smart)
CRC	Cyclic Redundancy Check
GA	General access
GAP	Generic Access Profile
GATT	Generic ATTribute profile
GTL	Generic Transport Layer
LA	Limited access
MTU	Maximum Transmission Unit
RAM	Random Access Memory

2 Release Data

Table 1: Information Table

Software	SPS application
Device Number	DA14585, DA14586, DA14531-00, DA14531-01, DA14531MOD, DA14535
Software Release Date	30-Nov-2023
Software Version Number	6.150.6.77
Software SDK Number	6.0.20.1338
Software Release Type (Note 1)	FULL (GA)

Note 1 Releases can be of the following types: FULL (GA), FULL (LA), RELEASE CANDIDATE, ENGINEERING, PATCH or BINARY

3 License

Licenses covering this release of Renesas Serial Port Service application are listed in the licensing.txt file

`SPS_6.150.6.77.zip\DA145xx_SPS\6.150.6.77\doc`

4 Related Documentation and References

[1] UM-B-88, DA14585/ DA14531 Serial Port Service Reference Application, Revision 1.2, User Manual, Renesas.

5 Release Description

5.1 Overview

This is a full (GA) release of the SPS reference application for the DA14531 / DA14535 / DA14585 / DA14586 line of products. This is a release following the previous full (GA) release 6.150.4.50. In this version of SPS fixes and improvements have taken place since the previous release. Apart from migrating SPS to the latest SDK (6.0.20.1338), an additional target has been added supporting the DA14535 IC. As of this release, the Arm® GCC compiler along with SmartSnippets Studio® can be used to build and run the SPS reference design. Several fixes and improvements have taken place as well. Focus has been given to reliability, stability and interoperability with both state-of-the-art and older mobile phone models. Detailed information is provided below.

5.2 New and Updated Features of 6.150.6.77

Table 2: 6.150.6.77 Updated Features

Feature Number	Description
1	Added support of the SPS reference design in DA14535 IC.
2	Added GCC support for selected SPS targets: The Arm® GCC compiler and the SmartSnippets Studio® can be used to build and run SPS for supported targets. DA14531-00 target is not supported for the device project due to memory constraints.
3	Added support for security in both SPS device and host projects.

5.3 Fixes and Improvements since 6.150.4.50

Table 3: 6.150.6.77 Fixes and Improvements

Fix Number	Description
1	SDK: The SPS reference design has been migrated to the latest SDK (6.0.20.1338)
2	Fixed external flash power consumption issue when in extended sleep
3	Fixed reconnection issues in SPS device when the mobile phone moves out of advertising range
4	Fixed the callback for generating the random static address
5	Fixed the default size of the external flash when the flash memory is not recognized
6	Fixed service discovery issue in DA14531-01 when sleep is enabled
7	Fixed issue with frequent CTS state changes which was leading to heap exhaustion
8	Fixed build issue when DLE is disabled
9	Improved flash un-protect to be performed only when needed by reading the current state of the flash
10	Added support for BLE flow control for DA14585

5.4 Known Issues of 6.150.6.77

Table 4: 6.150.6.77 Known Issues

Issue Number	Description
-	-No known issues-

5.5 Known Limitations of 6.150.6.77

Table 5: 6.150.6.77 Known Limitations

Issue Number	Description
-	-No known limitations-

5.6 SDK Modifications of 6.150.6.77

In addition to the modifications described in version 6.150.4.50 the following sdk files have been modified:

Table 6: 6.150.6.77 SDK Modifications

Issue Num	File	Description
1	/sdk/app_modules/src/app_bond_db/app_bond_db.c	• Change flash configuration sequence and add flash initialization
2	/sdk/app_modules/src/app_common/app_task.c	• Modify handling of GAPC_LE_PKT_SIZE_IND event
3	/sdk/ble_stack/profiles/prf_utils.c	• Change start / end handles in prf_register_atthdl2gatt
4	/sdk/ble_stack/profiles/suota/suotar/apo/suotar.h	• Reduce the SUOTA buffer size from 512 bytes to 256 bytes
5	/sdk/common_project_files/scatterfiles/DA14531_all_ram_ret.sct	• Use a memory hole at the end of system RAM • Use exchange memory for initialization functions that run only once • Add option to move stack below exchange memory
6	/sdk/platform/arch/main/arch_sleep.c	• Ensure that SPI flash powers down during sleep
7	/sdk/platform/arch/main/arch_system.c	• Add the system_init function in the exchange memory section • Optimize ADC related code
8	/sdk/platform/arch/main/jump_table.c	• Always use ROM functions l2cc_pdu_unpack_func and l2cc_pdu_recv_ind_handler_func
9	/sdk/platform/battery.c	• Modify the file to save up RAM
10	/sdk/platform/core_modules/arch_console/arch_console.c /sdk/platform/core_modules/arch_console/arch_console.h	• Change functions arch_strlen, arch_vsnprintf and arch_snprintf to non-static
11	/sdk/platform/core_modules/rf/rf_531.h /sdk/platform/core_modules/rf/rf_531.c	• Add a macro to remove the unused rf calibration struct and the respective code • Reduce ram footprint by optimizing the files
12	/sdk/platform/core_modules/rf/src/ble_arp.c	• Optimize source code to reduce memory footprint

Issue Num	File	Description
13	/sdk/platform/driver/adc/adc_531.c /sdk/platform/driver/adc/adc_531.h	• Add support for the CFG_ADC_DISABLE_CALIBRATION macro • Optimize source code to reduce memory footprint
14	/sdk/platform/driver/gpio.c /sdk/platform/driver/gpio.h	• Optimize the GPIO driver for DA14531 (GPIO port is always zero) to save up RAM
15	/sdk/platform/driver/spi_flash/spi_flash.c	• Set a default size for SPI flash when the memory is not in the list of known memories • Perform flash detection before memory protection configuration • Fix some JEDEC IDs • Avoid performing flash autodetect when flash is already configured / detected • Remove memory protection only when flash is protected • Special handling of AT25xy021A flash in memory protection configuration
16	/sdk/platform/driver/syscntl/syscntl.c	• Perform a small ram optimization
17	/sdk/platform/include/sdk_defs.h	• Reduce secondary bootloader load image size by 32 bytes
18	/sdk/platform/utilities/otp_cs/otp_cs.c /sdk/platform/utilities/otp_cs/otp_cs.h	• Add support for the CFG_ADC_DISABLE_CALIBRATION macro • Optimize ADC related source code

6 Release History

6.1 6.150.4.50

Version 6.150.4.50 of SPS application was released on 11-Jun-2020.

6.1.1 New and Updated Features of 6.150.4.50

Table 7: 6.150.4.50 New Features

Feature Number	Description
1	cli_flash_programmer added
2	DISS support
3	CRC of configuration structure data check/update

6.1.2 Fixes and Improvements since 6.150.3.45

Table 8: 6.150.4.50 Fixes and Improvements

Fix Number	Description
1	Fix stability and performance issues
2	Code cleanup
3	Move RAM initialization to exchange memory

6.1.3 Known Issues of 6.150.4.50

Table 9: 6.150.4.50 Known Issues

Issue Number	Description

6.1.4 Known Limitations of 6.150.4.50

Table 10: 6.150.4.50 Known Limitations

Issue Number	Description

6.1.5 SDK Modifications of 6.150.4.50

Table 11: 6.150.4.50 SDK Modifications

Issue Num	File	Description
1	/sdk/app_modules/api/app.h	• Change in append_device_name() for configurable device name • Support for BLE_SPS_SERVER and BLE_SPS_CLIENT
2	/sdk/app_modules/api/app_callback.h	• Changes in app_callbacks parameters
3	/sdk/app_modules/api/app_suotar.h	• Make SPI and Product header position independent of SUOTA

Issue Num	File	Description
4	/sdk/app_modules/api/app_task.h	• Using gapc_cmp_evt_handler() from RAM to avoid assertion in ROM
5	/sdk/app_modules/api/app_user_config.h	• Add scan_configuration struct
6	/sdk/app_modules/src/app_common/app.c	• Support for BLE_SPS_SERVER, BLE_SPS_CLIENT and REMOTE_CONFIG. • Change in append_device_name() for configurable device name
7	/sdk/app_modules/src/app_common/app_task.c	• Using gapc_cmp_evt_handler() from RAM to avoid assertion in ROM • Minor changes in connection disconnection request handlers
8	/sdk/app_modules/src/app_default_hnd/app_default_handlers.c	• Support for BLE_SPS_SERVER and BLE_SPS_CLIENT • CFG_ADC_CALIBRATION_DISABLE support
9	/sdk/app_modules/src/app_entry/app_entry_point.c	• Support for BLE_SPS_SERVER, BLE_SPS_CLIENT and REMOTE_CONFIG
10	/sdk/app_modules/src/app_suotar/app_suotar.c	• Support configuration structure update in SUOTA • Generic handling of SPI functions
11	/sdk/ble_stack/profiles/prf.c	• Support for BLE_SPS_SERVER, BLE_SPS_CLIENT and REMOTE_CONFIG
12	/sdk/ble_stack/profiles/prf_utils.c	• Remove unused profile related functions
13	/sdk/ble_stack/profiles/prf_utils_128.c	• Remove unused profile related functions
14	/sdk/ble_stack/profiles/ rwprf_config.h	• Support for BLE_SPS_SERVER, BLE_SPS_CLIENT and REMOTE_CONFIG
15	/sdk/ble_stack/profiles/rwble/rwble.c	• Added BLE flow control functionality in BLE ISRs
16	/sdk/common_project_files/da1458x_scatter_config.h	• Tx buffers changed to 8
17	/sdk/common_project_files/scatterfiles/DA14531.sct	• Reduce size of patch_new_table and patch_orig_table in library
18	/sdk/platform/arch/main/arch_main.c	• Support for EXTERNAL_WAKEUP • Add BLE flow control mechanism in scheduler • Move RAM initialization to exchange memory
19	/sdk/platform/arch/main/arch_rom.c	• Decision when patch functions from system library should be included • Create new function for moving RAM

Issue Num	File	Description
		initialization to exchange memory
20	/sdk/platform/arch/main/arch_system.c	• Support for EXTERNAL_WAKEUP • Configure SPI earlier than configuration storage usage • Changes for moving RAM initialization to exchange memory
21	/sdk/platform/arch/main/arch_system.h	• Changes for moving RAM initialization to exchange memory
22	/sdk/platform/arch/main/arch_rom.h	• Changes for moving RAM initialization to exchange memory
23	/sdk/platform/arch/main/jump_table.c	• Change Rx interrupt threshold to 2
24	/sdk/platform/arch/arch.h	• Support for BLE flow control • Support for EXTERNAL_WAKEUP
25	/sdk/platform/arch/arch_api.h	• Add members to ble_metrics struct
26	/sdk/platform/core_modules/common/api/co_bt.h	• Add more members in adv_channel_map enumeration
27	/sdk/platform/core_modules/rwip/api/rwip_config.h	• Support for BLE_SPS_SERVER, BLE_SPS_CLIENT and REMOTE_CONFIG
28	/sdk/platform/core_modules/rwip/src/rwip.c	• Support for EXTERNAL_WAKEUP
29	/sdk/platform/core_modules/rf/src/ble_arp.c	• Changes for moving RAM initialization to exchange memory
30	/sdk/platform/driver/adc/adc_531.c	• CFG_ADC_CALIBRATION_DISABLE support
31	/sdk/platform/driver/dma/dma.c	• Change DMA_IRQ priority from 2 to 0
32	/sdk/platform/driver/gpio/gpio.c	• Changes for moving RAM initialization to exchange memory
33	/sdk/platform/driver/gpio/gpio.h	• Added definition for GPIO invalid port and pin
34	/sdk/platform/driver/trng/trng.c	• Changes for moving RAM initialization to exchange memory
35	/sdk/platform/driver/spi/spi_531.h	• Generic handling of SPI functions
36	/sdk/platform/driver/spi/spi_58x.h	• Generic handling of SPI functions
37	/sdk/platform/driver/spi_flash/spi_flash.c	• Add 531 module's flash to known devices
38	/sdk/platform/driver/spi_flash/spi_flash.h	• Add 531 module's flash to known devices
39	/sdk/platform/driver/uart/uart.h	• Added uart_fifo_error_getf()
40	/sdk/platform/driver/uart/uart.c	• Added size optimizations for GPIO and ADC calibration
41	/sdk/platform/system_library/include/ble_flow_control.h	• Add header file for ble flow control mechanism

Issue Num	File	Description
42	/sdk/platform/system_library/include/system_library.h	• Decision when patch functions from system library should be included
43	/sdk/platform/utilities/otp_cs/otp_cs.c	• CFG_ADC_CALIBRATION_DISABLE support • Changes for moving RAM initialization to exchange memory
44	/sdk/platform/utilities/otp_hdr/otp_hdr.h	• Changes for moving RAM initialization to exchange memory
45	/sdk/platform/utilities/otp_hdr/otp_hdr.c	• Delete this file , move code to otp_hdr.h , due to RAM initialization to exchange memory
46	/sdk/platform/system_library/output/Keil_5/da14531.lib	• Added file for BLE flow control mechanism • Patch kmalloc() and kfree() to support BLE flow control related to heap usage • Add mechanism to monitor heap usage • Changes in order to reduce size of system library • Remove a patch in library due to memory limitation of DA14531

6.2 6.150.3.45

Version 6.150.3.45 of SPS application was released on 3-Apr-2020.

6.2.1 New and Updated Features of 6.150.3.45

Table 12: 6.150.3.45 New Features

Feature Number	Description
1	Support of DA14531
2	Application configuration in SPI Flash and Remote configuration service for Run time setup and corresponding applications and utilities.
3	Support of BLE flow control in DA14531 (not supported in DA14585)

6.2.2 Fixes and Improvements since 6.150.2

Table 13: 6.150.3.45 Fixes and Improvements

Fix Number	Description
1	

6.2.3 Known Issues of 6.150.3.45

Table 14: 6.150.3.45 Known Issues

Issue Number	Description
1	In dual path data transfer, one path may be stalled until the other is completed

6.2.4 Known Limitations of 6.150.3.45

Table 15: 6.150.3.45 Known Limitations

Issue Number	Description
1	Wakeup external host via RTS signal is not supported
2	Not all compilation switches are verified

6.3 6.150.2

Version 6.150.2 of SPS application was released on 24-Nov-2017.

6.3.1 Overview

This was a FULL (GA) release of SPS application for DA14585 device.

6.3.2 New and Updated Features of 6.150.2

Table 16: 6.150.2 New Features

Feature Number	Description
1	Initial version

6.3.3 Known Issues of 6.150.2

Table 17: 6.150.2 Known Issues

Issue Number	Description
1	For the Interrupt driven project S/W flow control method can be used with Extended Sleep mode only if the device connected on UART interface does send Xon/Xoff flow control bytes during sleep period, DA14585 flows off UART data traffic but control bytes can be sent during the flow off period. The flow off signal will be lost in this case.
2	Binary files cannot be transferred with S/W flow control method
3	DMA driven project does not support S/W flow control method

6.3.4 Known Limitations of 6.150.2

Table 18: 6.150.2 Known Limitations

Issue Number	Description

Appendix A Software Versioning Rules

This describes the software version numbers and does not apply to documentation version numbers (as found in the footer of this document).

Each software version number string consists of four numbers: MAJOR. BRANCH. MINOR. and BUILD.

#MAJOR: It is increased (by one only) if the project undergoes a major modification, for example major ROM changes. It usually changes only when the project sources undergo major restructuring affecting most of the repository. It is initialized at 1.

#BRANCH: Used in the case of concurrent projects that for special reasons need to be spun off the major repository. It corresponds to different versions of the repository code that have to be supported concurrently. In this case each branch number corresponds to a different GIT branch. The basic project has BRANCH id 0.

#MINOR: Odd numbers indicate Engineering (or Patch or Binary) versions, even numbers indicate Full release versions or Release Candidates of Full versions. Each Full release increases this number by one. After the Full release, the number is increased by one again. Therefore, Project releases correspond to release numbers like 2.0.1.xxx, 2.0.2.xxx. etc. The #MINOR number is initialized at 1.

#BUILD: The # BUILD number increases by one at every repository update and thus indicates the total number of changes since repository initialization. The BUILD number is initialized at 1.

Document Revision History

This section summarizes the changes made to this document and not to the Software that this document describes.

Revision	Date	Description
3.0	30-Nov-2023	FULL(GA) Release - v.6.150.6.77
2.0	11-Jun_2020	FULL(GA) Release - v.6.150.4.50
1.0	3-April-2020	Initial version - v.6.150.3.45

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.

RoHS Compliance

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