DA1469x SDK

This document contains the release notes for Renesas Electronics' DA1469x Software Development Kit, version 10.0.16.153

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1. Terms and Definitions

API	Application Programming Interface
DMA	Direct Memory Access
DUSK	Device Unique Symmetric Key
FPGA	Field Programmable Gate Array
GA	General Availability
HCI	Host Controller Interface
IRQ	Interrupt Request
LA	Limited Availability
LLD	Low Level Driver
NVMS	Non-Volatile Memory Storage
OS	Operating System
OTP	One Time Programmable Memory
PLT	Production Line Tool
RED	Radio Equipment Directive
SDK	Software Development Kit
SNC	Sensor Node Controller
SUOTA	Software Update Over the Air
TRNG	True Random Number Generator
TX	Transmit
USB	Universal Serial Bus

2. Release Data

Table 1. Information table

Software	SDK10 (DA1469x SDK)
Device Number	DA14691, DA14695, DA14697, DA14699
Software Release Date	July 11, 2025
Software Version Number	10.0.16.153
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 SDK release are listed in the `license.txt` file in the SDK documents folder.

4. Related Documentation and References

[1] UM-B-090, DA1469x Getting Started with the Development Kit, Manual, Renesas Electronics.

[2] UM-B-092, DA1469x Software Platform Reference, Manual, Renesas Electronics.

[3] UM-B-105, DA1469x Application Porting Guide, Manual, Renesas Electronics.

[4] AN-B-066, DA1469x Application Hardware Design Guidelines, Application Note, Renesas Electronics.

Note 1 References are for the latest published version, unless otherwise indicated.

5. Release Description

5.1 Overview

This is a full release (GA) of SDK 10.0.16 for the DA1469x family of devices supporting RED compliance.

5.2 New and Updated Features of 10.0.16.153

Table 2. 10.0.16.153 new features

Feature number	Description
153_01	pxp_reporter: Added feature to enable SUOTA functionality from secure connection only.
153_02	Added SUOTA anti-rollback prevention.
153_03	Added secure store feature for Bluetooth® LE keys. It stores the Bluetooth LE keys exchanged with the peer in encrypted format using unique per device encryption key (DUSK).
153_04	pxp_reporter: Added an example to present how to securely store user data by encrypting battery measurement data with a unique per device encryption key (DUSK).
153_05	cli_programmer: Added command for generating and storing Device Unique Symmetric Key (DUSK) in the designated OTP location.
153_06	cli_programmer: Added command to send symmetric keys in encrypted format.

5.3 Fixes and Improvements since 10.0.14.146.4

Table 3. 10.0.16.153 fixes and improvements

Fix number	Description
153/01	Improved the cli programmer port detection.
153/02	Improved SEGGER Flash loader performance.
153/03	GPIO voltage level is restored to the correct level in case it is affected after ESD pulses
153/04	Sys_clock is restored to 32 MHz if PLL has been left as sys_clock by the booter.
153/05	OS mutexes are added in GPADC adapter and used for accessing shared resources.
153/06	Set Flash to Power-OFF mode if 1v8 is powered off during sleep and Flash is powered by 1v8.
153/07	Arm context is now saved in assertion.
153/08	CMAC is woken up to read its sleep capability after the 32k settling period.
153/09	Used OS_MALLOC() instead of malloc() and OS_FREE() instead of free() in dlg_suota.c in functions: ▪ safe_product_header_write() ▪ set_active_img_ptr()
153/10	UARTboot: Moved retention_mem_const section in data section.

5.4 Known Limitations of 10.0.16.153

You can find a list of known limitations maintained online:

DA1469x SDK Known Limitations

6. Release History

6.1 Overview 10.0.14.146.4

This is a full release (LA) of SDK 10.0.14 for the DA1469x family of devices supporting the new silicon version.

6.2 New and Updated Features of 10.0.14.146.4

Table 4. 10.0.14.146.4 new features

Feature number	Description
146.4_01	Support PCN2024_1233. The device version scheme is changed to get information from the CHIP_SWC_REG instead of the CHIP_TEST1_REG.

6.3 Fixes and Improvements since 10.0.12.146.3

Table 5. 10.0.12.146.4 fixes and improvements

Fix number	Description
	No new fixes or improvements.

6.4 Known Issues of 10.0.14.146.4

Table 6. 10.0.14.146.4 known issues

Issue number	Description
146.01	The Brown Out Detector (BOD) may generate false triggers due to a limitation in the hardware; therefore, it was disabled by default. It is advised to use the BOD during Development mode only and to disable it for devices in production (for information on BOD, see Ref. [4]).
146.02	ST_FW: HCI_LE_Transmitter_Test [v4] (0x207B), HCI_LE_Transmitter_Test [v3] (0x2050) commands are supported by st_fw application, but their description is missing in `st_fw readme.md` file.
105.04	Voltage monitoring service (sys_adc) always monitors temperature sensor near radio (sys_adc_config() temperature sensor selection is ignored).
28.04	Detaching from Eclipse Debugger is not always successful.

6.5 Known Limitations of 10.0.14.146.4

Table 7. 10.0.14.146.4 known limitations

Limitation number	Description
146.03	Operating at the highest SWD frequency may result in instability of the debug session. As a workaround, you can reduce the SWD frequency to 1 MHz.
146.04	Process spread may result in XTAL32K frequency deviations across silicon that may result in Bluetooth® link loss at low temperatures. You can increase the default XTAL32K ppm setting (dg_configLP_CLK_DRIFT) as a workaround.
146.05	The following voltage levels are no longer supported: ▪ 3V0 rail: 3V45 ▪ 1V2 rail during sleep: 0V95, 1V0 Deprecated the support of the respective API configuration options from hw_pmu_da1469x driver: ▪ HW_PMU_1V2_SLEEP_VOLTAGE_0V95

Limitation number	Description
	▪ HW_PMU_1V2_SLEEP_VOLTAGE_1V0 ▪ HW_PMU_3V0_VOLTAGE_3V45
105.07	Only eight sets of Identity Resolving Key (IRK) are supported in the resolving list at Link Layer when privacy feature is used.
105.08	Bluetooth Controller stack does not alter the minimum and maximum connection interval provided by the application for LL_CONNECTION_PARAM_REQ. This can lead to scheduling conflicts during multi-connection. As a workaround, you can: set identical value for minimum and maximum connection interval from application to trigger controller to choose a value with minimal scheduling conflicts in multi-connection scenarios.

6.6 Version 10.0.12.146.3

6.6.1 Overview

This is a full release of SDK 10.0.12 for the DA1469x family of devices fixing Secure Image's NONCE.

6.6.2 New and Updated Features of 10.0.12.146.3

No new or updated features.

6.6.3 Fixes and Improvements since 10.0.12.146.2

Table 8. 10.0.12.146.3 fixes and improvements

Fix number	Description
146.3/01	Fixed: Generate new NONCE every time a Secure Image is created.

6.6.4 Known Issues of 10.0.12.146.3

Table 9. 10.0.12.146.3 known issues

Issue number	Description
146.01	The Brown Out Detector (BOD) may generate false triggers due to a limitation in the hardware; hence, it was disabled by default. It is advised to use the BOD during the Development mode only and to disable it for devices in production (for information on BOD, see Ref. [4]).
146.02	ST_FW: HCI_LE_Transmitter_Test [v4] (0x207B), HCI_LE_Transmitter_Test [v3] (0x2050) commands are supported by st_fw application, but their description is missing in `st_fw readme.md` file.
105.04	Voltage monitoring service (sys_adc) always monitors temperature sensor near radio (sys_adc_config() temperature sensor selection is ignored).
28.04	Detaching from Eclipse Debugger is not always successful.

6.6.5 Known Limitations of 10.0.12.146.3

Table 10. 10.0.10.146.3 known limitations

Limitation number	Description
146.03	Operating at the highest SWD frequency may result in instability of the debug session. As a workaround, you can reduce the SWD frequency to 1 MHz.
146.04	Process spread may result in XTAL32K frequency deviations across silicon that may result in Bluetooth link loss at low temperatures. You can increase the default XTAL32K ppm setting (dg_configLP_CLK_DRIFT) as a workaround.
146.05	The following voltage levels are no longer supported: ▪ 3V0 rail: 3V45

Limitation number	Description
	▪ 1V2 rail during sleep: 0V95, 1V0 Deprecated the support of the respective API configuration options from hw_pmu_da1469x driver: ▪ HW_PMU_1V2_SLEEP_VOLTAGE_0V95 ▪ HW_PMU_1V2_SLEEP_VOLTAGE_1V0 ▪ HW_PMU_3V0_VOLTAGE_3V45
105.07	Only eight sets of Identity Resolving Key (IRK) are supported in the resolving list at Link Layer when privacy feature is used.
105.08	Bluetooth Controller stack does not alter the minimum and maximum connection interval provided by the application for LL_CONNECTION_PARAM_REQ. It can lead to scheduling conflicts during multi-connection. As a workaround, you can: set identical value for minimum and maximum connection interval from application to trigger controller to choose a value with minimal scheduling conflicts in multi-connection scenarios.

6.7 Version 10.0.12.146.2

6.7.1 Overview

This is a full release of SDK 10.0.12 for the DA1469x family of devices fixing XTAL32M trim support.

6.7.2 New and Updated Features of 10.0.12.146.2

No new or updated features.

6.7.3 Fixes and Improvements since 10.0.12.146.1

Table 11. 10.0.12.146.2 fixes and improvements

Fix number	Description
146.2/01	Fixed: Added PUYA P25Q32SL FLASH to the supported autodetect FLASH devices list. The PUYA P25Q32SL now is detected and used by the RENESAS build of SEGGER Flash Loader, the RENESAS Smart Snippets Studio scripts and the RENESAS Toolbox.
146.2/02	Updated: libmkimage, mkimage and libbo_crypto .cproject files are updated and synchronized with the latest changes for the SmartSnippets Studio (SSS) version 2.0.20. The previous .cproject files could cause build problems in automated project build environments, where the SSS is used from command line through scripts. Such environments are various CI and test automation setups.

6.7.4 Known Issues of 10.0.12.146.2

Table 12. 10.0.12.146.2 known issues

Issue number	Description
146.01	The Brown Out Detector (BOD) may generate false triggers due to a limitation in the hardware; hence, it is disabled by default. It is advised to use the BOD during the development mode only and to disable it for devices in production (for information on BOD, see Ref. [4]).
146.02	ST_FW: HCI_LE_Transmitter_Test [v4] (0x207B), HCI_LE_Transmitter_Test [v3] (0x2050) commands are supported by st_fw application yet their description is missing from st_fw readme.md file.
105.04	Voltage monitoring service (sys_adc) always monitors temperature sensor near radio (sys_adc_config() temperature sensor selection is ignored).
28.04	Detaching from Eclipse Debugger is not always successful.

6.7.5 Known Limitations of 10.0.12.146.2

Table 13. 10.0.10.146.2 known limitations

Limitation number	Description
146.03	Operating at the highest SWD frequency may result in instability of the debug session. Reduced SWD frequency to 1 MHz as a workaround.
146.04	Process spread may result in XTAL32K frequency deviations across silicon that may result in Bluetooth link loss at low temperatures. Increased default XTAL32K ppm setting (dg_configLP_CLK_DRIFT) as a workaround.
146.05	The following voltage levels are no longer supported: ▪ 3V0 rail: 3V45 ▪ 1V2 rail during sleep: 0V95, 1V0 Deprecated the support of the respective API configuration options from hw_pmu_da1469x driver: ▪ HW_PMU_1V2_SLEEP_VOLTAGE_0V95 ▪ HW_PMU_1V2_SLEEP_VOLTAGE_1V0 ▪ HW_PMU_3V0_VOLTAGE_3V45
105.07	Only eight sets of Identity Resolving Key (IRK) are supported in the resolving list at Link Layer when privacy feature is used.
105.08	Bluetooth Controller stack does not alter the minimum and maximum connection interval provided by the application for LL_CONNECTION_PARAM_REQ. This can lead to scheduling conflicts during multi-connection. Workaround: Set identical value for minimum and maximum connection interval from application to trigger controller to choose a value with minimal scheduling conflicts in multi-connection scenarios.

6.8 Version 10.0.12.146.1

6.8.1 Overview

This is a full release of SDK 10.0.12 for the DA1469x family of devices fixing XTAL32M trim support.

6.8.2 New and Updated Features of 10.0.12.146.1

No new or updated features.

6.8.3 Fixes and Improvements since 10.0.12.146

Table 14. 10.0.12.146.1 fixes and improvements

Fix number	Description
146.1/01	Fixed: Missing initialization in auto_trim() function of st_fw project (Xtal_TRIM.c) may result in failing to trim XTAL32M crystal. Crystal trimming is used during production therefore the issue can potentially result in yield loss.

6.8.4 Known Issues of 10.0.12.146.1

Table 15. 10.0.12.146.1 known issues

Issue number	Description
146.01	The Brown Out Detector (BOD) may generate false triggers due to a limitation in the hardware; hence, it has been disabled by default. It is advised to use the BOD during the development mode only and to disable it for devices in production, (for information on BOD, see Ref. [4]).
146.02	ST_FW: HCI_LE_Transmitter_Test [v4] (0x207B), HCI_LE_Transmitter_Test [v3] (0x2050) commands are supported by st_fw application yet their description is missing from st_fw readme.md file.

Issue number	Description
105.04	Voltage monitoring service (sys_adc) always monitors temperature sensor near radio (sys_adc_config() temperature sensor selection is ignored).
28.04	Detaching from Eclipse Debugger is not always successful.

6.8.5 Known Limitations of 10.0.12.146.1

Table 16. 10.0.10.146.1 known limitations

Limitation number	Description
146.03	Operating at the highest SWD frequency may result in instability of the debug session. Reduced SWD frequency to 1 MHz as a workaround.
146.04	Process spread may result in XTAL32K frequency deviations across silicon that may result in Bluetooth link loss at low temperatures. Increased default XTAL32K ppm setting (dg_configLP_CLK_DRIFT) as a workaround.
146.05	The following voltage levels are no longer supported. ▪ 3V0 rail: 3V45 ▪ 1V2 rail during sleep: 0V95, 1V0 Deprecated the support of the respective API configuration options from hw_pmu_da1469x driver: - HW_PMU_1V2_SLEEP_VOLTAGE_0V95 - HW_PMU_1V2_SLEEP_VOLTAGE_1V0 - HW_PMU_3V0_VOLTAGE_3V45
105.07	Only eight sets of Identity Resolving Key (IRK) are supported in the resolving list at Link Layer when privacy feature is used.
105.08	Bluetooth Controller stack does not alter the minimum and maximum connection interval provided by the application for LL_CONNECTION_PARAM_REQ. This can lead to scheduling conflicts during multi-connection. Workaround: Set identical value for minimum and maximum connection interval from application to trigger controller to choose a value with minimal scheduling conflicts in multi-connection scenarios.

6.9 Version 10.0.12.146

6.9.1 Overview

This is a full release of SDK 10.0.12 for the DA1469x family of devices. It adds support for the PCN 2021_901 and a new Bluetooth® LE USB HID (device and dongle) application. It also adds a number of improvements and fixes as listed in the following tables.

6.9.2 New and Updated Features of 10.0.12.146

Table 17. 10.0.12.146 new features

Feature number	Description
146_01	Support PCN 2021_901.
146_02	Added USB HID (Device and Dongle) application.
146_03	Added support for USB remote wakeup.
146_04	Added support for configuring the list of supported QSPI devices when dg_configFLASH_AUTODETECT is used.
146_05	Added USB DMA support (enabled when dg_configUSE_USB_ENUMERATION is set also to 1).

6.9.3 Fixes and Improvements since 10.0.10.118

Table 18. 10.0.10.118 fixes and improvements

Fix number	Description
146/01	Improvement: For LE Secure Connections only mode, to reject a pairing request if the encryption key size is less than 128 bits, as defined in the Bluetooth 5.3 specification.
146/02	Additional checks are added in Security Manager protocol (SMP) of Bluetooth Host stack to detect reflected random values (Confirm value and Random value) during LE legacy pairing procedure. On detection of reflected random values, the pairing procedure fails. This fix addresses the security vulnerability reported by the researchers in ANSSI regarding the "Authentication of the LE Legacy Pairing Protocol".
146/03	On unexpected reception of Data Physical Channel PDU, the behavior of the Bluetooth Controller stack is changed. Instead of terminating the connection using Link Layer ACL Termination procedure, the Bluetooth Controller stack now abandons the connection. This behavior is as specified by the Link Layer part of Bluetooth core specification v5.2.
146/04	Improved the Bluetooth Controller stack behavior with respect to widening the receive window in relation to receiving a packet. This improvement optimizes the calculation of window windowing in accordance with the Link Layer part of Bluetooth core specification v5.2 and enhances the performance of the Bluetooth subsystem in receiving a packet.
146/05	Improved the stability of the Bluetooth Host stack when processing HCI_Encryption_Change event with status equal to CONNECTION TERMINATED DUE TO MIC FAILURE (0x3D) or UNSUPPORTED REMOTE FEATURE (0x1A).
146/06	Added L2CAP support in ble_cli application.
146/07	Fixed: assertion in hrp_collector Bluetooth® LE profile application which happens when disconnection occurs before pairing procedure is finished.
146/08	Fixed: Compilation error when dg_configBLE_SECURE_CONNECTIONS is set to 0
146/09	Fixed: To the LE Secure Connections pairing procedure to eliminate the "Impersonation in the Passkey Entry Protocol" vulnerability (CVE-2020-26558).
146/10	Improved the handling of Link Layer Procedure collisions preventing any potential deadlocks in Bluetooth Controller stack.
146/11	Fixed: Bluetooth Controller stack erroneously process the unsolicited/unexpected LL_FEATURE_RSP, LL_POWER_CONTROL_RSP and LL_LENGTH_RSP PDUs; this may lead to instability of the Bluetooth Controller stack and may result in strange behavior of Bluetooth subsystem.
146/12	Fixed: Bluetooth Controller stack may not abandon the ongoing connection when an unexcepted Link Layer Control PDU is received during the Link Layer Encryption procedure. This fix is in accordance with the Link Layer Part of Bluetooth core specification v5.2 .
146/13	Fixed: While operating as peripheral device, if Link Layer procedure collision involving Encryption procedure occurs, then the Link Layer does not restart the flow of LE-ACL Logical Transport in the direction from slave to master on completion of the Link Layer Encryption procedure. This can lead to connection being terminated unnecessarily or the clogging of application data transmission.
146/14	Fixed: When the host has not disabled reporting of HCI_LE_PHY_Update_Complete event, on transmit PHY change, the Bluetooth Controller stack fails to update the peer device with the power level management for active PHY through LL_POWER_CHANGE_IND PDU. This can happen only when external host stack is used.
146/15	Improved the handling of messages from the Bluetooth Manager event queue by synchronizing the message notification status between the OSAL notification status and state of the BLE Manager event queue. This improvement prevents any instability caused by the race between invoking the procedure to fetch the message from the queue and the message being added to the queue
146/16	Fixed: Lack of bandwidth to establish and maintain multiple connections might result in incorrect parameters in LL_CONNECTION_UPDATE_IND PDU during Link layer Connection

Fix number	Description
	Parameter Request procedure. This behavior is succeeded by instability of Bluetooth Controller stack.
146/17	Added dg_configBLE_UUID_SUOTA_SERVICE macro for configuring SUOTA Service ID.
146/18	Fixed: During interleaving of Advertising and Scanning Bluetooth® LE operational states, the Bluetooth Controller stack may become unstable.
146/19	Fixed: The Bluetooth® LE adapter fails to wake up the internal Bluetooth® LE stack scheduler while dispatching the request to perform radio calibration to the Bluetooth subsystem. In an environment where repeated request to perform radio calibration is generated, this can lead to exhaustion of heap memory segment.
146/20	The Bluetooth Host stack is enhanced to handle ATT_HANDLE_VALUE_IND PDU even when GATT is configured to operate as server only (i.e dg_configBLE_GATT_CLIENT set to zero); previously this PDU was handled only when dg_configBLE_GATT_CLIENT is set to 1. This change in behavior is as per Generic Attribute Profile (GATT) specification and improves the interoperability with some Android based phones.
146/21	[API CHANGE] Motor controller driver: Removed obsolete macros and renamed macros not complying with LLD's naming scheme.
146/22	▪ ST_FW: ▪ Fixed LED PWM frequency calculation used by hci_gpio_set command ▪ Added hci_get_die_temp (0xFE1F) command for reading die temperature
146/23	Consolidated adapters' IO handling by re-using a new set of IO configuration commands (added in ad.h)
146/24	Fixed: Interrupts are not disabled on M33 wake-up, allowing task execution before the system is fully restored from sleep. The issue could result in task execution if an IRQn > 32 fired on M33 wake-up
146/25	Added missing macro for 256 Mb qspi memory size (qspi_common.h).
146/26	Fixed: Calling of mkimage.py is not aligned with description in SDK documentation.
146/27	Added missing stub functions for _putc(), _putchar() resulting in system crash when CONFIG_RETARGET is undefined.
146/28	Renamed namespace to name_space in bas_battery_info_t struct used by the Bluetooth® LE BAS service, to resolve name conflict when using cpp compiler
146/29	Fixed: Compilation error (variable defined but not used) in ad_lcdc_wait_cs function() when -Werror is enabled
146/30	Fixed: libmkimage compilation errors with GCC version (9.3.0) or newer
146/31	Fixed: hw_sys.h API is missing from SDK doxygen documentation
146/32	I2C LLD API: Enable using RESTART flag in hw_i2c_write_then_read_async(), hw_i2c_read_buffer_dma() calls (also used by I2C adapter)
146/33	▪ plt_fw: ▪ Renamed plt_fw (Production Line Tool firmware) to st_fw (System Test firmware) as it describes better the scope of the application ▪ Use Timer1 instead of Timer2 (used by OS scheduler) in hci_gpio_wd command ▪ Fixed markdown rendering issues in readme file ▪ Improved GPIO configuration and pad latching during active/sleep
146/34	Updated ARM license file to CMSIS version 5 licensing scheme.
146/35	Fixed: hw_otpc_set_speed(), hw_otpc_convert_sys_clk_mhz() use different enumerations for setting OTPC frequency based on sys clock configuration. HW_OTPC_CLK_FREQ enumeration is now replaced by HW_OTPC_SYS_CLK_FREQ.
146/36	Improved RC32K accuracy by re-calibrating RC32K clock during runtime, on temperature drift.

Fix number	Description
146/37	Fixed: DMA TX is not disabled in ad_uart_close() when force parameter is set to true
146/38	SEGGER emUSB library: ▪ Upgraded to version 3.36.1 ▪ Fixed disabling of RX path after SUSPEND/RESUME ▪ Renamed usb_cdc_smsd project to usb_cdc_vmsd
146/3	Improved implementation of ASSERT_* macros by calling functions (instead of adding inline code), reducing significantly code size
146/40	Fixed: Aborting the transmission of the encrypted packets may result in incorrect handling of crypto engine by the Bluetooth Controller stack. This can result in instability of the Bluetooth subsystem and may prevent the Bluetooth subsystem to enter into Sleep mode.
146/41	Fixed: SPI and UART adapters leave GPIO pins configured as function SPI/UART if they fail to configure the controller during ad_xxx_open() call.
146/42	Removed (not applicable for DA1469x) 512K and 2M partitioning configurations.
146/43	[API CHANGE] Refactored Flash/PSRAM driver structure to support: ▪ Configuration of erase/write suspend and resume delay ▪ Configuration of read and erase CS min latency ▪ Configuration of RESET delay ▪ Configuration of write instruction ▪ Update timing-dependent configurations when system clock changes (number of dummy bytes)
146/44	Switch VDD unconditionally to 1V2 (instead of asserting) and back, when calculating min current PLL value on system power up. The improvement resolves the assertion hitting on sw_reset, in case VDD level is not reset to 1V2.
146/45	Fixed: Compilation errors when DMA is disabled using dg_configUSE_HW_DMA, HW_xxx_DMA_SUPPORT macros.
146/46	Modified device_density configuration of AP PSRAM devices in order to use bits (instead of a byte) for differentiating between devices of the same family / different density.
146/47	Improved USB VMSD support by assigning a unique VSN (Volume Serial Number) per device instead of a fixed value to identify multiple devices attached to the same host.
146/48	Improved collect_debug_info script to support dynamic (instead of fixed) MTB configuration: ▪ The MTB size is read dynamically from MTB register ▪ The MTB start address is calculated based on the 'BASE', 'POINTER' and 'MASK' MTB fields
146/49	Fixed: I2C LLD permits requests for transmitting a single byte using DMA (not supported by the h/w).
146/50	Enabled (by default) FPU support (enable full access to CP10, CP11).
146/51	Fixed: Potential hardfault due to unaligned access on init_adapters() call.
146/52	Fixed: I2C lld boolean functions return numerical instead of bool values.
146/53	Fixed: Filtering of symbol list file fails when collect_debug_info is called using Python 3.
146/54	Fixed: I2C block is (unconditionally) enabled when setting slave address (during block initialization).
146/55	Fixed: USB communication with the host is dropped after resuming from suspend state.
146/56	Fixed: ad_i2c_write() returns successfully when HW_I2C_F_NONE flag is used and external device returns NACK.
146/57	[API CHANGE] Refactored AES/HASH crypto block, improving API and separating AES from HASH functionality.
146/58	Fixed: Enable I2C controller before checking busy status in ad_i2c_reconfig().

Fix number	Description
146/59	Improved killing of gdb_server process from libprogrogrammer in Windows platform.
146/60	Added validation check of system clock frequency before switching OTPC clock frequency.
146/61	Fixed: cli_programmer read/write OTP commands may access addresses outside OTP address space.
146/62	Added check for busy_status after updating WATCHDOG_CTRL_REG to allow updates happening in interrupt context.
146/63	Added assertion for checking that SRC clock is always 32 MHz (hardware requirement).
146/64	Added null pointer checks before calling user callback functions from UART adapter.
146/65	Fixed: Adesto QSPI/PSRAM devices require additional workarounds or are no longer supported. Removed support for Adesto devices.
146/66	Fixed closing of UDP connections when gdb_server is started (libprogrammer).
146/67	Fixed NULL pointer dereferences when ancs_client is disconnected and receives a button notification.
146/68	Clock and time calculation improvements: ▪ Improved XTAL32M clock settling checks ▪ Moved calculations of time spent during sleep in critical sections
146/69	Improved configuration of QSPIC2 data pads when controller is disabled.
146/70	Fixed the formatting of the message printed in handle_ble_evt_gap_numeric_request() and in gap_passkey_reply().
146/71	Fixed freeing up of wrong list entry in list_filter().
146/72	▪ Fixed missed charging event interrupt when USB is used only for charging (no enumeration) ▪ Fixed disabling the Charger detection before starting enumeration (when enumeration is used) ▪ Handle SD3 at the middleware level and return from the USB INT faster
146/73	Fixed power-off the 1V8P during deep sleep (not allowing system to wake up from GPIO).
146/74	Fixed overwriting of LRA_CTRL3_REG.DREF by the SNC while applying LRA_CTRL3_REG.VREF trim value.
146/75	USB support: ▪ Refactored USB lld driver to improve readability & maintenance ▪ Fixed USB pads & interrupt configuration during attach/detach resulting in generation of erroneous events ▪ Fixed wrong interrupt handling on resume that could lead in RX failure ▪ Improved sequence of handling sys_usb middleware events ▪ Improved usb_cdc, usb_cdc_vmsd examples
146/76	Set default USB suspend mode (dg_configUSB_SUSPEND_MODE) to idle state (USB_SUSPEND_MODE_IDLE) to achieve the USB spec requirement of 2.5mA in SUSPEND.
146/77	Removed redundunt WRITE_BUSY check after WATCHDOG_REG is modified (hw_watchdog.h).
146/78	Fixed unaligned access in hids_client.c (throwing warning in GCC V10.2.0).
146/79	Added missing watchdog freeze in fault handlers.
146/80	Fixed timeout when programming OTP over UART.
146/81	(Audio) Fixed pcm fsc calculations and support fsc polarity configuration in I2S mode.

Fix number	Description
146/82	Fixed incosistency in resource_acquire() return value (different value was returned if the resource is taken or not).
146/83	Fixed failure to discover included services (BLE_EVT_GATTC_DISCOVER_COMPLETED with status BLE_ERROR_FAILED is sent by the ble_manager when ble_gattc_discover_include() is called).
146/84	Fixed heap starvation of ANCS client during stress testing.
146/85	Segger flash loader: ▪ Fixed crashes observed with the built in support for DA1469x chips in latest SEGGER releases ▪ Improved integration with the SDK by adding product header configuration in QSPI driver files ▪ Improved performance of custom implementations of segger flash loader (for supporting new flash devices)
146/86	Added compilation warning message for the (already) deprecated functions ble_gattc_indication_cfm, hids_set_report_value, hids_set_boot_keyboard_input_value, hids_set_boot_mouse_input_value.
146/87	Fixed: Omit QSPI flash reset when dg_configFLASH_AUTODETECT is enabled in QSPI build configuration.
146/88	Fixed cli_programmer failing to compile with SmartSnippets Studio 2.0.20.
146/89	Reduced RAM footprint of SNC_ASSERT().
146/90	XTAL_TRIM.c : ▪ Cleaned up and refactored XTAL32M trim code ▪ XTAL auto trim implementation ▪ Moved systick counter reset in critical section and refactored code to improve readability & portability
146/91	Enabled parallel building of SDK projects.
146/92	Removed obsolete buildPath parameters from .cproject builder arguments.
146/93	Fixed: The minimum security level set by application through ble_gap_set_sec_level() for the connection which yet to be bonded is not used correctly in the pairing procedure. This may lead to bonding with the peer device with security level lower than set by the application.
146/94	When operating as Central device, if the application changes the minimum security level for the connection with bonded device to a security level higher than previously set prior to bonding procedure, the BLE Manager initiates a new pairing procedure only when the existing Long Term Key (LTK) does not meet to the requirements for the new security level. Prior to this improvement, the BLE Manager always initiated a new pairing procedure.
146/95	Fixed: Incorrect check while determining the keys to be distribution for encryption functionalities may erroneously result in pairing failure.
146/96	Improved the handling of L2CAP_DISCONNECTION_REQ PDU when received for invalid channel identifier (CID) by responding to peer device with L2CAP_COMMAND_REJECT_RSP PDU. This improvement is in accordance with the L2CAP part of Bluetooth core specification v5.2.
146/97	Improved the behavior of HCI vendor debug specific HCI_DBG_SET_CONN_TX_PW_CMD (OpCode 0xFC45) with respect to HCI command flow control in accordance with the Host Controller Interface part of Bluetooth core specification v5.2. Only HCI_Command_Complete event is generated by Bluetooth Controller when execution of HCI_DBG_SET_CONN_TX_PW_CMD is completed; prior to this improvement, both HCI_Command_Status and HCI_Command_Complete event were generated. Without this improvement, the Bluetooth Controller may incorrectly apply flow control to HCI command flow leading to rejection of subsequent HCI commands.
146/98	Fixed: Bluetooth Controller may become instable when deletion of Link Layer driver event is pre-empted by an interrupt service routine (ISR) related to another Link Layer driver event.

Fix number	Description
	This may rarely occur when Bluetooth Controller is set to perform concurrent operation of Link Layer operational states.
146/99	Fixed: Bluetooth Controller may become instable when preparation of advertising report is pre-empted by an interrupt service routine (ISR) related to the same scanning state.
146/100	Fixed: Incorrect number of connection event maybe skipped when the device is operating as Peripheral device with Peripheral latency is used; it may result in assertion of Bluetooth Controller.
146/101	Implement firmware workaround for the hardware defect where the bitstream may stop in rare occasion during sampling point calculation for correlation.
118.01	Fixed: Trim values are not used on first radio calibration.
118.02	Fixed: ANCS profile application hits assertion when Bluetooth® LE service on Apple Device is enabled/disabled while notifications are sent.
118.03	Fixed: While operating as peripheral device, if Link Layer procedure collision involving Encryption procedure occurs, then the Link Layer does not restart the flow of LE-ACL Logical Transport in the direction from slave to master on completion of the Link Layer Encryption procedure. This can lead to connection being terminated unnecessarily or the clogging of application data transmission.
118.04	Fixed: QSPI reset sequence fails if device operates in continuous or QPI mode.
118.05	Fixed: While operating as peripheral device, Bluetooth Host stack does not uphold the Security Manager Protocol Timeout (SMP Timeout) when sending SM_Security_Request Command. This may lead to more than one request to central device to initiate security (either pairing or encrypting) on the same connection. Improved the Security Manager protocol (SMP) from stalling due to non-responsive behavior of the peer device. This improvement is in accordance with the SMP Timeout specified in Bluetooth core specification v5.2.
118.06	Fixed: Bluetooth Host stack unnecessarily delays the start of Security Manager Protocol Timeout (SMP Timeout) when receiving SM_Pairing Request Command while operating as peripheral device or when receiving SM_Security_Request Command when operating as central. Improved the Security Manager protocol (SMP) from stalling due to non-responsive behavior of the application. This improvement is in accordance to the SMP Timeout specified in Bluetooth core specification v5.2.
118.07	Fixed Bluetooth Controller abnormalities with HCI_LE_Transmit_Power_Reporting event: ▪ PHY parameter may not correctly reflect the PHY for which the power level is reported. ▪ The event may be sent to Bluetooth Host stack with erroneous reason "Remote transmit power changed", when the remote transmit power level is not changed. ▪ The event may be missing as a response to host issued HCI_LE_Read_Remote_Transmit_Power_Level command when the peer device rejects the relevant Link Layer command or does not support LE Power Control
105.01	Fixed: ST_FW hci_gpio_wd and hci_gpio_set commands may result in unexpected behavior when PWM option is used. Also, hci_cmd_sleep command should not be called after these commands when PWM option is used.
105.02	Fixed: ST_FW hci_sensor_test command fails to write register values over the SPI bus.
105.03	PLL fixes: ▪ Fixed race condition happening when multiple tasks switch PLL on/off ▪ Addressed rare h/w metastability & locking issues by improving s/w handling of PLL lock
105.06	Fixed: ANCS application becomes unresponsive in out of range and stress tests.
105.11	Fixed: The APIs for supporting haptic and audio are no longer in beta state.
66.02	Fixed: Assertion hits during USB suspend/resume if reset is received before resume.
16.10	Fixed: Default version of Segger debugger does not support Watchpoints.

6.9.4 Known Issues of 10.0.12.146

Table 19. 10.0.12.146 known issues

Issue number	Description
146.01	The Brown Out Detector (BOD) may generate false triggers due to a limitation in the hardware; hence, it has been disabled by default. It is advised to use the BOD during the development mode only and to disable it for devices in production, (for information on BOD, see Ref. [4]).
146.02	ST_FW: HCI_LE_Transmitter_Test [v4] (0x207B), HCI_LE_Transmitter_Test [v3] (0x2050) commands are supported by st_fw application yet their description is missing from st_fw readme.md file.
105.04	Voltage monitoring service (sys_adc) always monitors temperature sensor near radio (sys_adc_config() temperature sensor selection is ignored).
28.04	Detaching from Eclipse Debugger is not always successful.

6.9.5 Known Limitations of 10.0.12.146

Table 20. 10.0.10.146 known limitations

Limitation number	Description
146.03	Operating at the highest SWD frequency may result in instability of the debug session. Reduced SWD frequency to 1MHz as a workaround.
146.04	Process spread may result in XTAL32K frequency deviations across silicon that may result in Bluetooth link loss at low temperatures. Increased default XTAL32K ppm setting (dg_configLP_CLK_DRIFT) as a workaround.
146.05	The following voltage levels are no longer supported ▪ 3V0 rail: 3V45 ▪ 1V2 rail during sleep : 0V95, 1V0 Deprecated the support of the respective API configuration options from hw_pmu_da1469x driver : ▪ HW_PMU_1V2_SLEEP_VOLTAGE_0V95 ▪ HW_PMU_1V2_SLEEP_VOLTAGE_1V0 ▪ HW_PMU_3V0_VOLTAGE_3V45
105.07	Only eight sets of Identity Resolving Key (IRK) are supported in the resolving list at Link Layer when privacy feature is used.
105.08	Bluetooth Controller stack does not alter the minimum and maximum connection interval provided by the application for LL_CONNECTION_PARAM_REQ. This can lead to scheduling conflicts during multi-connection. Workaround: Set identical value for minimum and maximum connection interval from application to trigger controller to choose a value with minimal scheduling conflicts in multi-connection scenarios.

6.10 Version 10.0.10.118

6.10.1 Overview

This is a full release of SDK 10.0.10 which supports the DA1469x device. It adds support of Bluetooth version 5.2, LE Power Control, Advertising Channel Index, Adesto flash device, new HCI commands and a Blood Pressure Sensor application. It also adds several improvements and fixes as listed in the following tables.

6.10.2 New and Updated Features of 10.0.10.118

Table 21. 10.0.10.118 new features

Feature number	Description
118_01	Blood Pressure Sensor application

Feature number	Description
118_02	Support for Adesto flash device AT25SL321
118_03	Support for LE Power Control feature. This is a v5.2 Bluetooth Low Energy feature. The feature allows the device to manage the transmit power by monitoring the received signal strength and changing the transmit power level of the connected devices to maintain an optimal receiver signal strength for both signal quality and low power perspective. Additionally, the Bluetooth Controller monitors and report path loss changes to the application using the concept of zones that can be useful in certain application related to proximity. Through this feature, the device benefits from : ▪ The reduction of overall power consumption during transmission, ▪ Improved reliability by actively maintaining the receiver signal strength within the optimal range of the receiver, ▪ Improved coexistence with other co-located 2.4 GHz wireless devices.
118_04	Support for Advertising Channel Index feature. This is a v5.1 Bluetooth Low Energy feature. The feature allows the device to send Advertising PDU on the primary advertising channel indices any order. The order can be specified by the application. Prior to this feature, the order of the primary advertising channel indices is fixed. Through this feature, the device benefit from improved reliability of Advertising PDUs in a congested environment where multiple devices simultaneously advertise.
118_05	Support for HCI_LE_Read_Transmit_Power (OGF 0x08, OCF 0x004B) command. This is a new HCI command specified since Bluetooth core specification v5.0, which allows the host to read the minimum and maximum transmit power supported by the Bluetooth Controller.
118_06	Support for HCI_LE_Transmitter_Test [v3] (OGF 0x08, OCF 0x0050) command. This is a new HCI command specified since Bluetooth core specification v5.1, which allows to start test by generating test reference packets at a fixed interval.
118_07	Support for HCI_LE_Transmitter_Test [v4] (OGF 0x08, OCF 0x007B) command. This is a new HCI command specified in Bluetooth core specification v5.2, which allows to start test by generating test reference packets at a fixed interval including Transmit Power Level

6.10.3 Fixes and Improvements since 10.0.8.105

Table 22. 10.0.10.118 fixes and improvements

Fix number	Description
118/01	Improved searching and filtering of PDC lookup table by intoducing hw_pdc_lut_keep() and hw_pdc_find_entry() API functions.
118/02	Fixed naming inconsistencies of hw_rtc driver data types and functions by replacing rtc_ prefix with hw_rtc_ .
118/03	The resolution of resolvable private address generation interval (TGAP(private_addr_int)) is changed from milliseconds to seconds to align the interval to the time range defined in Bluetooth core specification v5.2. The allowed range of intervals is 1 second -1 hour with the default interval set to 15 seconds in accordance with Bluetooth core specification v5.2. This improvement impacts the usage of ble_gap_address_set().
118/04	Added readme.md files for ble_adv and ble_external_host example applications (accessible through doxygen documentation).
118/05	Depreciated the support of HCI_Host_Number_Of_Completed_Packets (OGF 0x03, OCF 0x0035) command. Since the Bluetooth Controller does not support flow control in the direction of controller to host, this command is redundant. This command is classified as optional to support in Bluetooth core specification v5.2.
118/06	Fixed CMAC errors (CM_TS_ERR) while prolonged processing of certain Advertising PDUs.
118/07	Improved the stability of the system if the application erroneously calls ble_gap_adv_start() without calling relevant APIs to set the advertising parameters.
118/08	Improved radio calibration routines resulting in better radio performance.

Fix number	Description
118/09	Improved the handling of LL_UNKNOWN_RSP during collision caused by incompatible Link Layer procedures. Prior to this improvement, while operating as slave, the Link Layer may incorrectly handle the Link Layer Procedure Response timeout resulting in disconnection
118/10	Improved the behavior of the Bluetooth Controller stack if the peer device (master) erroneously perform Link Layer Channel Map Update procedure while Link Layer Connection Parameters Request procedure is ongoing by processing the LL_CHANNEL_MAP_IND PDU prior to completion of Connection Parameters Request procedure. This change in behavior may result in keeping the connection alive during this out-of-specification behavior of the smartphone. Prior to this change, the processing of such LL_CHANNEL_MAP_IND would result in termination of the connection.
118/11	Improved the stability of the MAC layer when Bluetooth Controller processing for disabling the Scanning state is interrupted for scheduling an Advertising or a Connection event.
118/12	Improved Adaptive Frequency Hopping (AFH) support which could result in system hang when operating as LE master (central) for more than one connection.
118/13	While operating as LE slave (peripheral role), the Link Layer validates the fields in the received LL_CONNECT_IND / LL_CONNECT_REQ PDU. The connection is considered lost if the received PDU contains one or more fields which are specified as Reserved for Future Use (RFU). This improvement is in accordance of the Link Layer Part of Bluetooth core specification v5.2.
118/14	Improved the handling of incorrect SM_Pairing_Request by ignoring the PDU without sending a response. This is in accordance with the recommendation stated in Bluetooth core specification v5.2 for handling invalid behavior of peer (remote) device.
118/15	Improved randomness of random number generator seed used by libmkimage utility when generating secure images.
118/16	Fixed PDC LUT handling when entering Deep Sleep and Hibernation modes. The LUT now includes entries only for the wake-up sources which are available in these modes, as follows: ▪ Deep Sleep: • All existing PDC entries are removed except: 1. GPIO wakeup trigger of any port and pin which wake up M33 2. RTC alarm and RTC timer peripheral trigger id that wakes up M33 • A PDC entry with type peripheral trigger, trigger id combo and wakeup master M33 is added ▪ Hibernation: • All existing PDC entries are removed • A PDC entry with type: peripheral trigger, trigger id: combo and wakeup master: M33 is added ▪ Notes: • Trigger id: combo refers to VBUS_IRQ or Debounced IO IRQ or JTAG_IRQ or CMAC2SYS_IRQ • In Deep Sleep mode, it is application's responsibility to add GPIO and/or RTC trigger PDC entries, if needed
118/17	Fixed default BOD configuration which disabled reset on BOD events. BOD detection & reset are now by default enabled on all power rails except V18F (which should be shorted with V18P, see Errata 294 - "V18F switch resistance too high""). Deprecated hw_bod_activate_on_wakeup(). hw_bod_configure() should be used instead.
118/18	Fixed high sleep current issue observed when 1V8P is disabled. In the context of this fix, GPADC usage (driver, adapter, SNC) was revisited and a few more issues were identified & resolved.
118/19	Fixed validity check of initial Bluetooth® LE TX power configuration (dg_configBLE_INITIAL_TX_POWER)

Fix number	Description
118/20	Fixed resetting of MX25U12832F flash device and improved reset sequence for all flash devices.
118/21	Fixed input validity checks of SDK Bluetooth LE applications' command line interface.
118/22	Fixed SDK example applications (pxp_reporter, wsp_weightscale, ble_peripheral) which attempted to start connectable advertising even after the maximum supported number of connections was reached.
118/23	Fixed watchdog expiration in hibernation when RCX is used as low power clock by disabling RCX when entering hibernation.
118/24	Fixed blocking forever in ble_gap_conn_rssi_get() when connection is lost.
118/25	Fixed SWRESET macro used for issuing a software reset
118/26	Fixed Bluetooth Controller failures in searching White List lookup table which affected Link Layer device filtering.
118/27	Fixed reporting of events from fewer scanned advertising channels when ble_gap_adv_chnl_map_set(0 is used for reducing number of channel index for advertising.
118/28	Fixed failures in generating a resolvable private address when resolvable private address generation interval is reached i.e. TGAP(private_addr_int).
118/29	Fixed not setting the local Identity Resolving Key (IRK) to all-zero if the device does not use private device address. The issue affects compliancy Generic Access Profile (GAP) part of Bluetooth core specification.
118/30	Fixed occasional erroneous use of L2CAP_CONNECTION_PARAMETER_UPDATE_REQ (instead of Link Layer Connection Update procedure) to request connection parameter update, when operating as peripheral device. The issue affects compliancy with Link Layer part of Bluetooth core specification.
118/31	Fixed outdated application/Bluetooth Host readings of peer resolvable private address from the Bluetooth Controller.
118/32	Fixed erroneous termination of the Link Layer Procedure Response timeout when receiving a LL_VERSION_IND during a different Link Layer procedure.
118/33	Interleaving of Advertising state and Initiating state may subsequently result in two connections, one as LE master (central role) and another as LE slave (Peripheral role) with same connection handle referenced to the local Bluetooth Host in HCI_LE_Connection_Complete Event. This may result in instability of the Bluetooth subsystem.
118/34	Fixed race between HCI_LE_Create_Connection_Cancel Command and HCI_LE_Connection_Complete Event which may result in instability of Bluetooth Host.
118/35	Fixed rare instability of the Bluetooth Controller caused by the Adaptive Frequency Hopping (AFH) Channel Assessment algorithm which either executes unnecessarily when operating as LE slave for all existing connection or fails to execute when operating as LE master for at least one connection.
105.05	Fixed: PMU adapter loads default settings to BOD.
105.09	Fixed: Bluetooth Controller stack reports hardware error and become unresponsive when the host sends an ACL data packet of length higher than the maximum size reported in the response of HCI_LE_Read_Buffer_Size command that the controller can receive from host. This can happen only when external host stack is used.
105.10	Fixed: Bluetooth Controller stack asserts when the ACL data packet is received from the host with the connection handle which is specified as Reserved for Future Use (RFU) in Bluetooth specification. This can happen only when external host stack is used.

6.10.4 Known Issues of 10.0.10.118

Table 23. 10.0.10.118 known issues

Issue number	Description
118.01	Trim values are not used on first radio calibration. Workaround when using plt_fw: Trigger a calibration using HCI command.
118.02	ANCS Bluetooth® LE profile application hits assertion when Bluetooth® LE service on Apple Device is enabled/disabled while notifications are sent.
118.03	While operating as peripheral device, if Link Layer procedure collision involving Encryption procedure occurs, then the Link Layer does not restart the flow of LE-ACL Logical Transport in the direction from slave to master on completion of the Link Layer Encryption procedure. This can lead to connection being terminated unnecessarily or the clogging of application data transmission.
118.04	QSPI reset sequence fails if device operates in continuous or QPI mode.
105.01	PLT_FW hci_gpio_wd and hci_gpio_set commands may result in unexpected behavior when PWM option is used. Also, hci_cmd_sleep command should not be called after these commands when PWM option is used.
105.02	PLT_FW hci_sensor_test command fails to write register values over the SPI bus.
105.03	Changing system clock speed is not thread safe (cm_sys_clk_set() should not be concurrently called by multiple tasks).
105.04	Voltage monitoring service (sys_adc) always monitors temperature sensor near radio (sys_adc_config() temperature sensor selection is ignored).
105.06	ANCS application becomes unresponsive in out of range and stress tests.
66.02	Assertion hits during USB suspend/resume if reset is received before resume.
28.04	Detaching from Eclipse Debugger is not always successful.

6.10.5 Known Limitations of 10.0.10.118

Table 24. 10.0.10.118 known limitations

Limitation number	Description
118.05	While operating as peripheral device, Bluetooth Host stack does not uphold the Security Manager Protocol Timeout (SMP Timeout) when sending SM_Security_Request Command. This may lead to more than one request to central device to initiate security (either pairing or encrypting) on the same connection. This behavior does not compromise the security aspects of the product.
118.06	Bluetooth Host stack unnecessarily delays the start of Security Manager Protocol Timeout (SMP Timeout) when receiving SM_Pairing Request Command while operating as peripheral device or when receiving SM_Security_Request Command when operating as central.
118.07	Abnormalities with HCI_LE_Transmit_Power_Reporting event: ▪ PHY parameter may not correctly reflect the PHY for which the power level is reported. ▪ The event may be sent to Bluetooth Host stack with erroneous reason ""Remote transmit power changed"", when the remote transmit power level is not changed. ▪ The event may be missing as a response to host issued. HCI_LE_Read_Remote_Transmit_Power_Level command when the peer device rejects the relevant Link Layer command or does not support LE Power Control.
105.07	Only eight sets of Identity Resolving Key (IRK) are supported in the resolving list at Link Layer when privacy feature is used.
105.08	Controller stack does not alter the minimum and maximum connection interval provided by the application for LL_CONNECTION_PARAM_REQ. This can lead to scheduling conflicts during multi-connection. Workaround: Set identical value for minimum and maximum connection interval from application to trigger controller to choose a value with minimal scheduling conflicts in multi-connection scenarios.

Limitation number	Description
105.11	The APIs for supporting haptic and audio are in beta state. API's may change in future SDK releases.
16.10	Default version of Segger debugger does not support Watchpoints.

6.11 Version 10.0.8.105

6.11.1 Overview

This is a full release of SDK 10.0.8 which supports the DA1469x device. It adds support from Bluetooth version 5.1, the PLT firmware project, support for haptics and audio and a number of improvements and fixes as listed in the following tables.

6.11.2 New and Updated Features of 10.0.8.105

Table 25. 10.0.8.105 new features

Feature number	Description
105_01	Added PLT_FW (Production Line Tool) application
105_02	Added Audio Manager middleware component for configuring audio paths. A demo application (apu_demo) demonstrating its' usage was also included
105_03	Added Smartdrive and Waveform playback support for Haptics
105_04	Support for HCI_LE_Generate_DHKey [v2]. This is a new HCI command introduced as part of v5.1 Bluetooth specification, which enhances the device to initiate generation of a Diffie-Hellman key in the Controller using a pre-defined debug private key when the Security Manager is operated in Debug Mode
105_05	Support for Link Layer Privacy feature added. This is v4.2 Bluetooth feature which allows the Bluetooth Controller to generate and resolve the resolvable private address (RPA) during various Bluetooth® LE operational states. Future SDK release provides necessary support in Bluetooth Host
105_06	Support for interleaving of non-connected Bluetooth LE operational states (Advertising, Initiating, Scanning). This allows application to simultaneously enable all these operations
105_07	Automatic generation of Public-Private Key generation during Phase 1 of the pairing process resulting in fresh key pair at every pairing procedure and thereby increases the security of the product. This is in line with the recommendation of Bluetooth specification
105_08	New stack versioning scheme reflecting unique value for each stack library implementation that is reflected in LL_VERSION_IND
105_09	Bluetooth Controller and Host stack has been upgraded to Core Specification v5.1
105_10	Controller Subsystem: Compliant to Core Specification v5.1 with the requirements set by Test Case Reference List (TCRL) 2019-1. QDID: 139842
105_11	Host Subsystem: Compliant to Core Specification v5.1 with the requirements set by Test Case Reference List (TCRL) 2019-1. QDID: 125630

6.11.3 Fixes and Improvements since 10.0.6.90

Table 26. 10.0.8.105 fixes and improvements

Fix number	Description
105/01	Improved the system behavior of the stack while sending packets during connection establishment procedure to reduce the possibility of link loss
105/02	Improved SNC API for getting uptime ticks
105/03	Improved GD25LE series flash devices current consumption in standby mode
105/04	Improved USB port and data contact detection

Fix number	Description
105/05	Improved IS_OTP_ADDRESS macro implementation
105/06	Fixed bus error in SDADC adapter
105/07	Fixed system not going to sleep when adapters fail to open (return error)
105/08	Fixed P0_23 GPIO pin configuration as external LP_CLK input
105/09	Extended QSPI memory configuration API for setting fast read opcode
105/10	Fixed OTP CS BD_ADDRESS mapping in SmartSnippets Toolbox
105/11	Removed configurations which are not applicable for the DA1469x family of devices from SDK application configuration files
105/12	Fixed breakpoints not set when debugging in PRODUCTION MODE
105/13	Aligned Hibernation and Deep Sleep power configuration with datasheet description
105/14	Removed ASSERT_WARNING halting execution (in Development Mode) when an unknown CS group id is found in OTP
105/15	Improved device configuration: split BSP defaults per device and refactored device selection (dg_configDEVICE macro)
105/16	Set cli_programmer default UART baudrate to 1MBps
105/17	Improved GPADC driver implementation and fixed API typos
105/18	Fixed ad_sdadc input validity checks
105/19	Fixed program_qspi_nvparam script failing to program nv params when no application specific NV parameters exist
105/20	Fixed wrong calculation of watchdog margin resulting in spontaneous ASSERT_WARNING hit when going to sleep
105/21	Fixed SDK Bluetooth® LE applications requesting to start adevertise when max supported number of connections is reached
105/22	Improved the stack behavior during setting of data length (HCI_Set_Data_Length command) and Data Length Update procedure to address to improve interoperability
105/23	Improved the system behavior of the stack to address the collisions during link layer Procedures using Instants
105/24	Improved the handling of LL_REJECT_IND and LL_REJECT_EXT_IND PDUs during various Link layer procedures resulting in better interoperability against the devices which rejects the link layer commands
105/25	Added a true number generated from TRNG block as a seed to the random number generator for CMAC. This prevents the controller to generate same random private device address.
105/26	In RF Test mode, only packets with correct CRC is used for estimating RSSI
105/27	The upper limit (maximum length) of duplicate filtering list is added to the CMAC Configuration table allowing SDK to set the value statically from dg_configBLE_DUPLICATE_FILTER_MAX. This means the upper limit (maximum length) of duplicate filtering list cannot be set through HCI_DBG_Wr_Filt_Dup_Size command
105/28	Initiation of Link layer procedures honors the remote device Link layer Feature Set
105/29	Re-initiation of LE Ping Procedure even after receiving LL_UNKNOWN_RSP PDU for previously initiated LL_PING_REQ (Bluetooth Specification v5.1 Errata 12901)
105/30	Optimal usage of Connection Event to allow maximum time between receiving and transmitting packet within an connection event when operating in slave role for a Bluetooth® LE connection. This increases the data throughput while receiving bulk data in slave role for a Bluetooth® LE connection
105/31	Fixed issue: Possible occurrence of hard fault in CMAC, when the LL_CONNECTION_PARAM_REQ for the second Bluetooth® LE connection was sent immediately after the connection establishment and was rejected by the peer device
105/32	Fixed issue: Bluetooth® LE Connection was deemed as lost (i.e. link lost) even before the expiry of link supervision timeout due to 10 ms resolution of the timer

Fix number	Description
105/33	Fixed issue: Termination of Pairing Procedure due to DH Key mismatch is not communicated to peer device
105/34	Fixed issue: A Data Physical Channel Packet was not considered as "received" when the Access Address is correct but fails CRC. This can lead to Bluetooth® LE Connection prematurely classified as lost, that islink lost.
105/35	Fixed issue: Incorrect handling of Link Layer Procedure collisions resulting in abnormal handling of future Link Layer procedure which rarely can lead to link loss
105/36	Fixed issue: Incorrect usage of variable/operator results in assertion of PLT firmware immediately after HCI_DBG_GET_CAL_RESULT command
105/37	Fixed issue: As master of the Bluetooth® LE Connection, the slave's symmetrical PHY request is incorrectly handled during PHY Update Procedure
105/38	Fixed issue: Premature changing of internal state prior to validating all the parameters of Test command in PLT firmware can lead to incorrect or missing response for HCI_DBG_Tx_Test_Enh command
105/39	Fixed issue: Crossover (allowed collision) of Link layer procedures can lead to non-handling of link layer PDU
105/40	Fixed issue: Initial full RF calibration is performed when XTAL32M is in TRACKING mode rather than in HOLD mode. This may affect RF calibration if booting of CMAC happens under low temperatures
105/41	Fixed issue: Incorrect response sent for the ATT PDU Requests received with unsupported Attribute Opcode
105/42	Fixed issue: Incorrect handling on reception of wrongly formed Security Manager Protocol PDU (i.e packet which are less than what is expected for a specific opcode but with correct L2CAP length)
105/43	Fixed issue: Pairing may succeed with peer device supporting only lower security levels when Secure Connections Only Mode (Security Mode 1 Level 4 as defined by GAP specification) is selected
105/44	Fixed issue: When LE Secure Connection is used for pairing, the pairing succeeds even if the required key size of 16 bytes is not met
105/45	Fixed issue: When privacy feature is enabled, the host stack asserted if a wrong device addressing (static device address) is set during passive scanning
105/46	Fixed issue: Minimum and maximum connection interval parameter specified in LL_CONNECTION_PARAM_REQ may be different to that specified by the application
88.01	Compensate RTC when RCX is used as LP clock
88.02	Fixed generation of same Private Random Resolvable Address after system reset

6.11.4 Known Issues of 10.0.8.105

Table 27. 10.0.8.105 known issues

Issue number	Description
105.01	PLT_FW hci_gpio_wd and hci_gpio_set commands may result in unexpected behavior when PWM option is used. Also, hci_cmd_sleep command should not be called after these commands when PWM option is used
105.02	PLT_FW hci_sensor_test command fails to write register values over the SPI bus
105.03	Changing system clock speed is not thread safe (cm_sys_clk_set() should not be concurrently called by multiple tasks)
105.04	Voltage monitoring service (sys_adc) always monitors temperature sensor near radio (sys_adc_config() temperature sensor selection is ignored)
105.05	PMU adapter loads default settings to BOD

Issue number	Description
105.06	ANCS application becomes unresponsive in out of range and stress tests
66.02	Assertion hits during USB suspend/resume if reset is received before resume
28.04	Detaching from Eclipse Debugger is not always successful

6.11.5 Known Limitations of 10.0.8.105

Table 28. 10.0.8.105 known limitations

Limitation number	Description
105.07	Only eight sets of Identity Resolving Key (IRK) are supported in the resolving list at Link Layer when privacy feature is used
105.08	Controller stack does not alter the minimum and maximum connection interval provided by the application for LL_CONNECTION_PARAM_REQ. This can lead to scheduling conflicts during multi-connection. Workaround: Set identical value for minimum and maximum connection interval from application to trigger controller to choose a value with minimal scheduling conflicts in multi-connection scenarios
105.09	Controller stack reports hardware error and become unresponsive when the host sends an ACL data packet of length higher than the maximum size reported in the response of HCI_LE_Read_Buffer_Size command that the controller can receive from host. This can happen only when external host stack is used
105.10	Controller stack asserts when the ACL data packet is received from the host with the connection handle which is specified as Reserved for Future Use (RFU) in Bluetooth specification. This can happen only when external host stack is used
105.11	The APIs for supporting haptic and audio are in beta state. API's may change in future SDK releases
16.10	Default version of Segger debugger does not support Watchpoints

6.12 Version 10.0.6.90

6.12.1 Overview

This is a full release of SDK 10.0.6 which supports the DA1469x device. It adds support in the OTP configuration script for XTAL trim values and BD address.

6.12.2 Fixes and Improvements since 10.0.6.88

Table 29. 10.0.6.90 fixes and improvements

Fix number	Description
0066/01	Support XTAL32M trim settings from OTP Configuration Script
0090.02	Bluetooth BD Address can be stored in OTP Configuration Script

6.12.3 Known Issues of 10.0.6.90

Table 30. 10.0.6.90 known issues

Issue number	Description
0088.01	When RCX is used as an LP clock, the RTC is not compensated according to the calculated frequency of the RCX.
0066.02	Assertion hits during USB suspend/resume if reset is received before resume
0028.04	Detaching from Eclipse Debugger is not always successful

6.12.4 Known Limitations of 10.0.6.90

Table 31. 10.0.6.90 known limitations

Limitation number	Description
0088.02	After system reset the same Private Random Resolvable Address is generated
0016.10	Watchpoints not yet supported by Segger debugger

6.13 Version 10.0.6.88

Version 10.0.4.88 of SDK was released on Aug 2, 2019

6.13.1 Overview

This is a full release (Note 1) of 10.0.6 SDK that runs on the DA1469x devices. It can be used for application development, testing and production.

6.13.2 New and Updated Features of 10.0.6.88

Table 32. 10.0.6.88 new features

Feature number	Description
320_03	Added support for using RCX as low power clock
322_03	Added API for controlling radio TX power
114_07	Added support for Bluetooth® LE (CMAC) reset

6.13.3 Fixes and Improvements since 10.0.4.66.2

Table 33. 10.0.6.88 fixes and improvements

Fix number	Description
0088/01	Added ble_cli demo project
0088/02	Added MTB contents in memory dump (collect_debug_info script)
0088/03	Use same ccc value length (2) in all services
0088/04	Upgrade to CMSIS v5.5.1
0088/05	Improve power consumption by dynamically adjusting the level of the V12 rail.
0088/06	Improve the measurements for all the GPADC temperature channels using empirical calibration data.
0088/07	Extend the Stack Pointer (SP) range check in HardFault_Handler() taking into account the PSRAM presence.
0088/08	Allow user to explicitly issue an I2C RESTART regardless of whether or not the transfer direction is changing.
0088/09	Add flow control to Bluetooth® LE security requests
0088/10	Improve hogp_host by being able to provide the connection id as user input
0088/11	Handle improper BD address user input in ble_multi_link project
0088/12	Update the register CMSIS files to match the datasheet description
0088/13	Fixed image flashing using Toolbox
0088/14	Fixed charger's EoC current threshold values (align with chip characterization data)
0088/15	Fixed overflow in portCONVERT_MS_2_TICKS, portCONVERT_TICKS_2_MS macro calculations for timer values over 4.295 seconds (at a typical tick-rate of 1KHz).
0088/16	Fixed low level driver hw_smotor_get_fifo_command(uint8_t index) API reading of Step Motor Controller FIFO contents
0088/17	Fixed double issuing of flash power down command when entering extended sleep

Fix number	Description
0088/18	Fixed bus-fault upon re-configuration of SDADC adapter when HW_SDADC_VREF_INTERNAL is used as vref_voltage
0088/19	Fixed check for active PLL in Power Management Unit low level driver when shutting down 1V4 rail is requested
0088/20	Fixed race condition in DMA configuration resulting in clearing DMA INT enable
0088/21	Fixed the procedure for detecting the VBUS state (attach or detach).
0088/22	Fixed overflow when converting XTAL32M Ready IRQ counter cycles to LP clock cycles
0088/23	Fixed misconfiguration of LRA haptic block improving driving performance
0088/24	Fixed hw_i2c_write_buffer_sync() to block until all bytes have been transmitted.
0088/25	Fixed not being able to start advertising for a 2nd time when a PRIVATE_RANDOM_RESOLVABLE_ADDRESS address is used.
0088/26	Fixed not being able for an application to get a BLE_EVT_GAP_CONNECTED event, if a disconnection happens while the address resolution is in progress.
0088/27	Fixed a pending update request for one connection preventing a new update procedure on another.
0088/28	Fixed hw_timer_configure_pwm() not enabling correctly the TIMER and TIMER2 PWM output pin during sleep.
0088/29	Fixed clock configuration in SNC I2C driver in order to support a transaction with high speed configuration.
0066.03	Fixed issue with L2CAP start fragments with length < 4 bytes

6.13.4 Known Issues and Limitations of 10.0.6.88

Table 34. 10.0.6.88 known issues

Issue number	Description
0088.01	When RCX is used as an LP clock, the RTC is not compensated according to the calculated frequency of the RCX.
0088.02	After system reset the same Private Random Resolvable Address is generated
0066.01	OTP XTAL trim values get overwritten by default values
0066.02	Assertion hits during USB suspend/resume if reset is received before resume
0028.04	Detaching from Eclipse Debugger is not always successful
0016.10	Watchpoints not yet supported by Segger debugger

6.14 Version 10.0.4.66.2

Version 10.0.4.66.2 of SDK was released on Apr 24, 2019

6.14.1 Overview

This was a full release of 10.0.4 SDK, which added support for the DA1469x device. It can be used for application development, testing and production. This release included source code labelling corrections and updates.

6.14.2 New and Updated Features of 10.0.4.66.2

Table 35. 10.0.4.66.2 new features

Feature number	Description
-	No new features were added in this release

6.14.3 Fixes and Improvements since 10.0.4.66.1

Table 36. 10.0.4.66.2 fixes and improvements

Fix number	Description
0066.2/01	Added workaround for errata issue 304 ("PLL calibration does not work properly")

6.14.4 Known Issues and Limitations of 10.0.4.66.2

Table 37. 10.0.4.66.2 known issues

Issue number	Description
0066.01	OTP XTAL trim values get overwritten by default values
0066.02	Assertion hits during USB suspend/resume if reset is received before resume
0066.03	L2CAP start fragments with length < 4 bytes is ignored
0028.04	Detaching from Eclipse Debugger is not always successful
0016.10	Watchpoints not yet supported by Segger debugger

6.15 Version 10.0.4.66.1

Version 10.0.4.66.1 of SDK was released on Apr 17, 2019.

6.15.1 Overview

This was a full release of 10.0.4 SDK, which added support for the DA1469x device. It can be used for application development, testing and production. This release included source code labelling corrections and updates.

6.15.2 New and Updated Features of 10.0.4.66.1

Table 38. 10.0.4.66.1 new features

Feature number	Description
-	No new features were added in this release

6.15.3 Fixes and Improvements since 10.0.4.66

Table 39. 10.0.4.66.1 fixes and improvements

Fix number	Description
0066.1/01	Source code labelling corrections and updates
0066.1/02	Remove obsolete SD-ADC clock selection option HW_SDADC_CLOCK

6.15.4 Known Issues and Limitations of 10.0.4.66.1

Table 40. 10.0.4.66.1 known issues

Issue number	Description
0066.01	OTP XTAL trim values get overwritten by default values
0066.02	Assertion hits during USB suspend/resume if reset is received before resume
0066.03	L2CAP start fragments with length < 4 bytes is ignored
0028.04	Detaching from Eclipse Debugger is not always successful
0016.10	Watchpoints not yet supported by Segger debugger

6.16 Version 10.0.4.66

Version 10.0.4.66 of SDK was released on Feb 22, 2019.

6.16.1 Overview

This was a full release of 10.0.4 SDK, which added support for the DA1469x device. It can be used for application development, testing and production. This release included several fixes and improvements, as listed below.

6.16.2 New and Updated Features of 10.0.4.66

Table 41. 10.0.4.66 new features

Feature number	Description
-	No new features were added in this release

6.16.3 Fixes and Improvements since 10.0.2.60

Table 42. 10.0.4.66 fixes and improvements

Fix number	Description
0066/01	Added support for USB Development Kit
0066/02	Support maximum image size loading over serial boot (128Kb)
0066/03	Fixed unhandled pending read event in UART adapter
0066/04	Fix PM sleep_mode handling
0066/05	Fixed handling of charging events on sys_charger
0066/06	Fixed GPADC channel enumeration
0066/07	Fixed cscp heap issues
0066/08	Fixed waiting forever in I2C adapter forced close
0066/09	Fixed BLE_EVT_GAP_DATA_LENGTH_SET_FAILED event in ble/mgr/gap
0066/10	Improved robustness of Bluetooth® LE controller
0066/11	Removed -wnocpp compilation flag from projects
0066/12	Fixed static code analysis errors
0066/13	Fixed endianness issue when writing to OTP from Toolbox
0066/14	Fixed qspi_is_valid_addr() to execute from RAM
0066/15	Fixed possible race condition in SDADC/UART drivers
0066/16	Fixed wake-up from K1 in hrp_sensor
0066/17	Fixed secure SUOTA failures with CRC mismatch
0066/18	Added sleep support in DGTL
0066/19	Fixed unregistering interrupt callback when force closing slave in I2C adapter
0066/20	Fixed GPIO power configuration in I2C/SPI/LCD adapters
0066/21	Added program_qspi_nvparam launcher
0066/22	Added support for FreeRTOS thread aware debugging in eclipse
0066/23	Added protection for race condition on XTAL32M_CTRL0_REG
0066/24	Fixed cache configuration errors
0066/25	Refactored cache initialization
0066/26	Add check for LDO_PLL_OK signal before enabling PLL
0066/27	Fix VDD voltage (0.828 V) in hibernation mode

Fix number	Description
0066/28	Fix not protecting ble_storage_remove() functions
0066/29	Add API to retrieve low level stats in Bluetooth® LE adapter
0066/30	Fix issue while changing properties permission of Bluetooth® LE characteristics

6.16.4 Known Issues and Limitations of 10.0.4.66

Table 43. 10.0.4.66 known issues

Issue number	Description
0066.01	OTP XTAL trim values get overwritten by default values
0066.02	Assertion hits during USB suspend/resume if reset is received before resume
0066.03	L2CAP start fragments with length < 4 bytes is ignored
0028.04	Detaching from Eclipse Debugger is not always successful
0016.10	Watchpoints not yet supported by Segger debugger

6.17 Version 10.0.2.60

Version 10.0.2.60 of SDK was released on Jan 14, 2019.

6.17.1 Overview

This was a full release of 10.0.2 SDK, which added support for the DA1469x device. It can be used for application development, testing and production. This release included a number of fixes and improvements, as listed below.

6.17.2 New and Updated Features of 10.0.2.60

Table 44. 10.0.2.60 new features

Feature number	Description
912_02	Refactored Peripheral Adapters API
322_01	Updated radio driver

6.17.3 Fixes and Improvements since 10.0.1.52

Table 45. 10.0.2.60 fixes and improvements

Fix Number	Description
0060/01	Set default Vdd to 1V2
0060/02	Added automatic Bluetooth® LE security key renewal for DA1469x
0060/03	Added support for UART 3 in UART adapter
0060/04	Added SDADC adapter
0060/05	Enabled static GPIO power configuration support when SNC is used
0060/06	Added create flash image python script
0060/07	Fixed OSAL calls depending on execution context (simple task or ISR)
0060/08	Support Bluetooth® LE 2 Mbit high performance radio mode
0060/09	Improved robustness of Bluetooth® LE controller / host
0060/10	Use HW_SPI_FIFO_RX_TX in SPI adapter write calls
0028.09	SDK uses TRNG for generating random numbers
0028.07	Bond Management Service (BMS) example gives a new random key after reset
0052.01	Added support for SCA and other Bluetooth® LE parameters in NVPARAMS

6.17.4 Known Issues and Limitations of 10.0.2.60

Table 46. 10.0.2.60 known issues

Issue Number	Description
0060.01	Removed plt_fw project from release files
0028.04	Detaching from Eclipse Debugger is not always successful.
0028.06	Parameter Update sometimes fails with LMP LL Response Timeout.
0016.10	Watchpoints not yet supported by Segger debugger.

6.18 Version 10.0.1.52

Version 10.0.1.52 of SDK was released on Dec 7, 2018.

6.18.1 Overview

This was an engineering release of 10.0.1 SDK, which added support for the DA1469x device. It can be used for application development and testing.

Renesas makes every effort to maintain API compatibility. However, developed code may have to be ported to run on the official SDK release once that becomes available.

This release included a number of fixes and improvements, as well as a number of new features, as listed below.

6.18.2 New and Updated Features of 10.0.1.52

Table 47. 10.0.1.52 new features

Feature Number	Description
131_02	AMS Client Profile
120_14	HID Service
130_14	CSCP 1.0: Cycling Speed and Cadence Profile - Collector
510_08	Micro Trace Buffer support
450_04	Support USB charging, including enumeration
440_01	CDC serial over USB
440_03	MSD over USB
420_04	Added security framework for AES/Hash/ECC/TRNG algorithms

6.18.3 Fixes and Improvements since 10.0.1.39

Table 48. 10.0.1.52 fixes and improvements

Fix number	Description
0028.03	SUOTA stability issues have been observed with stress tests.
0028.05	Removed unneeded clock pulses after byte read command in SPI adapter.
0031.02	Improved stability of pxp_reporter application under stress testing.
0031.04	Improved robustness in ble_multi_link application.
0039.02	Sleep is now blocked while a DMA transfer is in progress
0039.03	Fixed transaction abort issue in Sensor Node Controller driver for I2C
0052/01	Improved robustness of Bluetooth LE Controller & Host
0052/02	Updated Power and clock management for stability
0052/03	Updated NMVS to add power-safety
0052/04	Improved radio performance

Fix number	Description
0052/05	Added a board abstraction layer
0052/06	Refactored USB Framework
0052/07	Added support for external OSC as LP clock
0052/08	Extend & refactor SENIS API
0052/09	Support USB suspend/resume
0052/10	Extend ERM driver API
0052/11	Added support for JLink Flashing tool
0052/12	Added support for secure boot in python scripts
0052/13	Restored GPADC configuration after sleep
0052/14	plt_fw: Fixed code location in custom_config_ram
0052/15	aes_hash: Added support for reading keys form OTP
0052/16	Support new 4 MB flash partition layout

6.18.4 Known Issues and Limitations of 10.0.1.52

Table 49. 10.0.1.52 known issues

Issue number	Description
0052.01	Sleep clock accuracy can only be configured compile time, not through NVMS
0028.04	Detaching from Eclipse Debugger is not always successful.
0028.06	Parameter Update sometimes fails with LMP LL Response Timeout.
0028.07	Bond Management Service (BMS) example gives the same pin key after reset.
0028.09	TRNG is not used by the SDK for generating random numbers.
0016.10	Watchpoints not yet supported by Segger debugger.

6.19 Version 10.0.1.39

Version 10.0.1.39 of SDK was released on Sep 28, 2018.

6.19.1 Overview

This was an engineering release of 10.0.1 SDK, which added support for the DA1469x device. It can be used for application development and functional testing. It is not yet fully evaluated, and it cannot be used for testing final products.

Renesas makes every effort to maintain API compatibility. However, developed code may have to be ported to the official SDK release once that becomes available.

It included code for low level access to the LRA and Motor Controller peripherals, moves to the GCC v7 and improves overall maturity.

6.19.2 New and Updated Features of 10.0.1.39

Table 50. 10.0.1.52 known issues

Feature number	Description
112_04	Support for Channel Selection Algorithm #2
328_01	Initial implementation of a low level driver for LRA
328_06	Initial implementation of a low level driver fo Motor Controller
460_03	QSPI Flash/RAM Adapter
510_02	Upgrade to GNU/GCC version 7

6.19.3 Fixes and Improvements since 10.0.1.32

Table 51. 10.0.1.39 fixes and improvements

Fix number	Description
0031.01	Configuration option allows to select TX power of 0dB or 6dB for a project
0031.03	Increased application stability seen in stress tests.
0016.04	Cleanup of release files to minimize references to DA1468x SDK.
0016.05	Restructured Doxygen documentation
0016.09	Added calibration support for values returned by the GPADC driver.
0039/01	Improved RSSI read command
0039/02	Upgraded to latest version of Bluetooth® LE Stack Library
0039/03	Enabled reading configuration data from OTP as default.
0039/04	Restructured SDK folders
0039/05	Fixed high speed transaction issue in SNC i2c driver

6.19.4 Known Issues and Limitations of 10.0.1.39

Table 52. 10.0.1.39 known issues

Issue number	Description
0039.01	Qspi LLD Api changed to support QSPI2 interface (impacts backwards compatibility)
0039.02	Sleep is not blocked while a DMA transfer is in progress.
0039.03	Issue in Sensor Node Controller driver for I2C with transaction abort.
0031.02	pxp_reporter application stability issues have been observed in stress tests.
0031.04	ble_multi_link application sometimes fail to report device disconnection.
0028.01	Charger configuration is only tested with wall plug adapters at room temperature.
0028.03	SUOTA stability issues have been observed with stress tests.
0028.04	Detaching from Eclipse Debugger is not always successful.
0028.05	SPI adapter creates unneeded clock pulses after byte read command.
0028.06	Parameter Update sometimes fails with LMP LL Response Timeout.
0028.07	Bond Management Service (BMS) example gives the same pin key after reset.
0028.09	TRNG is not used by the SDK for generating random numbers.
0016.10	Watchpoint support for debugging is not included.

6.20 Version 10.0.1.32

Version 10.0.1.32 of SDK was released on May 25, 2018.

6.20.1 Overview

This was an engineering release of 10.0.1 SDK, which added support for the DA1469x device. It can be used for application development and functional testing. It is not yet fully evaluated, and it cannot be used for testing final products.

Renesas makes every effort to maintain API compatibility. However, developed code may have to be ported to the official SDK release once that becomes available.

It included more Bluetooth® LE examples, moves to the latest FreeRTOS v10.0.1 and improves overall maturity. A detailed list of new features is given below.

6.20.2 New and Updated Features of 10.0.1.32

Table 53. 10.0.1.32 new features

Feature number	Description
111_04	Efficient non connectable advertising – CSSv6
111_01	LE Secure Connection
112_05	High duty cycle non connectable advertising
114_01	Multilink support
400_01	Update to FreeRTOS 10.0.1
120_09	CSCS 1.0: Cycling Speed and Cadence Profile
130_24	HRP 1.0: Heart Rate Profile - Collector
130_21	HOGP 1.0: HID Over GATT Profile - HID Device
130_22	HOGP 1.0: HID Over GATT Profile - Host
520_01	Production test firmware Bluetooth LE test commands
610_07	Bluetooth® LE Multilink
610_06	Bluetooth® LE External Host

6.20.3 Fixes and Improvements since 10.0.1.28

Table 54. 10.0.1.32 fixes and improvements

Fix Number	Description
0031/01	Enabled –error (warnings are reported as errors) compiler option and cleaned up warnings in SDK apps.
0028.08	Fixed BMS stability issues observed when more than 1 connection is active.
0028.10	Fixed support for PRODUCTION mode.
0028.11	Fixed waking up from button in SDK apps.
0016.07	Added temperature-triggered calibration in Radio driver.

6.20.4 Known Issues and Limitations of 10.0.1.32

Table 55. 10.0.1.32 known issues

Issue number	Description
0031.01	Radio TX power is fixed to 0dB.
0031.02	pxp_reporter application stability issues have been observed in stress tests.
0031.03	hogp_device application stability issues have been observed in stress tests.
0031.04	ble_multi_link application sometimes fail to report device disconnection.
0028.01	Charger configuration is only tested with wall plug adapters at room temperature.
0028.03	SUOTA stability issues are observed with stress tests.
0028.04	Detaching from Eclipse Debugger is not always successful.
0028.05	SPI adapter creates unneeded clock pulses after byte read command.
0028.06	Parameter Update sometimes fails with LMP LL Response Timeout.
0028.07	Bond Management Service (BMS) example gives the same pin key after reset.
0028.09	TRNG is not used by the SDK for generating random numbers.
0016.04	Release files may include code copied from DA1468x SDK, not yet ported for DA1469x.
0016.05	Doxygen documentation still includes references to DA1468x SDK.

Issue number	Description
0016.09	Values returned by the GPADC driver are not calibrated.
0016.10	Watchpoint support for debugging is not included.

6.21 Version 10.0.1.28

Version 10.0.1.28 of SDK was released on Mar 22, 2018.

6.21.1 Overview

This was an engineering release of 10.0.1 SDK, which added support for the DA1469x device. It can be used for application development and functional testing. It is not yet fully evaluated, and it cannot be used for testing final products.

Renesas makes every effort to maintain API compatibility. However, developed code may have to be ported to the official SDK release once that becomes available.

It included more Bluetooth® LE features, a set of crypto algorithms, and more low level drivers for peripherals on DA1469x, It also adds configuration of the integrated hardware charger and system support for sleep mode. A detailed list of delivered features is shown below.

6.21.2 New and Updated Features of 10.0.1.28

Table 56. 10.0.1.28 new features

Feature number	Description
110_01	LE Scatter net.
111_01	LE Secure Connection.
111_03	Enhanced Privacy 1.2.
120_32	WSS 1.0 : Weight Scale Service.
130_23	HRP 1.0: Heart Rate Profile.
130_43	WSP 1.0: Weight Scale Profile.
131_01	Apple Notification Center Service (ANCS) Client.
320_01	Clock and Power Management Low Level Driver.
320_02	Charger Low Level Driver.
321_02	AES Low Level Driver.
321_03	HASH Low Level Driver.
321_04	TRNG Low Level Driver.
326_06	USB Charger Low Level Support.
326_09	UART3 Low Level Driver.
328_06	ADC 1 Low Level Driver.
328_07	ERM Low Level Driver.
328_08	ADC 2 Low Level Driver.
400_02	FreeRTOS Tick-less Mode.
420_04	Security Framework (AES/ECC Crypto, TRNG).
420_05	Algo - Random Number Generation.
420_06	Algo - Hash Bytes.
420_07	Algo - Hash - Key Derivation.
420_08	Algo - Hash - HMAC Generation.
420_09	Algo - AES - Encrypt/Decrypt.

Feature number	Description
420_12	Algo – ECDH Generate/Verify Public/Session Key
450_03	System Management – Watchdog Service.
450_04	System Management – Charger Service.
460_02	Crypto Adapter.

6.21.3 Fixes and Improvements since 10.0.1.16

Table 57. 10.0.1.28 fixes and improvements

Fix number	Description
0016.01	Added support for Sleep mode. Demonstrated in pxp_reporter example.
0016.02	Improved test coverage for the Bluetooth Framework.
0016.03	Improved test coverage for drivers and SDK core.
0016.08	Added implementation of Bluetooth®LE Secure Connections and Enhanced Privacy features.
0016.06	Added support for multiple Bluetooth®LE connections.

6.21.4 Known Issues and Limitations of 10.0.1.28

Table 58. 10.0.1.28 known issues

Issue number	Description
0028.01	Charger configuration is only tested with wall plug adapters at room temperature.
0028.02	Radio TX power is fixed to 6 dB.
0028.03	SUOTA stability issues have been observed with stress tests.
0028.04	Detaching from Eclipse Debugger is not always successful.
0028.05	SPI adapter creates unneeded clock pulses after byte read command.
0028.06	Parameter Update sometimes fails with LMP LL Response Timeout.
0028.07	Bond Management Service (BMS) example gives the same pin key after reset.
0028.08	BMS stability issues have been observed when more than 1 connections are active.
0028.09	TRNG is not used by the SDK for generating random numbers.
0028.10	PRODUCTION mode is not supported and should not be used.
0028.11	Waking up from button is not supported in SDK apps.
0016.04	Release files may include code copied from DA1468x SDK, not yet ported for DA1469x.
0016.05	Doxygen documentation still includes references to DA1468x SDK.
0016.07	Radio driver does not yet include calibration. Performance may be suboptimal.
0016.09	Values returned by the GPADC driver are not calibrated.
0016.10	Watchpoint support for debugging is not included.

6.22 Version 10.0.1.16

Version 10.0.1.16 of DA1469x SDK was released on Feb 7, 2018.

6.22.1 Overview

This was the first internal engineering release of 10.0.1 SDK that runs on the DA1469x devices. It should only be used for enabling silicon to bring up and getting familiar with the SDK structure.

Please do not use this release for application development because APIs might change. Renesas makes every effort to maintain API compatibility. However, developed code may have to be ported to the official SDK release once that becomes available.

The DA1469x SDK is based on the Black Orca SDK architecture that supports DA1468x devices.

Similar constructs with the DA1468x SW architecture include:

1. FreeRTOS Operating System.
2. Code execution in-place from QSPI Flash.
3. Bluetooth® LE Framework that reuses the Adapter/Manager Layers and exposes the same API.
4. Abstraction layer with low level drivers and adapters for peripheral devices.

This release implements basic SDK architecture, including the Bluetooth®LE framework and support for the Sensor Node Controller. A detailed list of delivered features is given below.

6.22.2 New and Updated Features of 10.0.1.16

Table 59. 10.0.1.16 new features

Feature number	Description
110_02	L2CAP COC
110_03	Low Duty Cycle Advertising
111_02	LE Data Packet Length Extension
112_01	LE 2 Mbps
114_02	Bluetooth Host subsystem can be updated as part of full application SUOTA
114_03	Bluetooth Controller subsystem can be updated as part of full application SUOTA
120_03	BAS 1.0: Battery Service
120_04	BCS 1.0: Body Composition Service
120_06	BMS 1.0: Bond Management Service
120_10	CTS 1.1: Current Time Service
120_11	DIS 1.1: Device Information Service
120_18	IAS 1.0: Immediate Alert Service
120_16	HRS 1.0: Heart Rate Service
120_20	LLS 1.0.1: Link Loss Service
120_28	ScPS 1.0: Scan Parameters Service
120_30	TPS 1.0: Tx Power Service
121_03	Renesas Debug Service 1.1
310_04	XiP (cached) from Flash
323_06	QSPI Flash Driver
323_10	NVMS partitions
325_01	Timers Low-Level Driver
325_02	RTC Low-Level Driver
325_03	Watchdog Low-Level Driver
326_01	GPIO Low-Level Driver
326_02	SPI 1/2/3 Low-Level Driver
326_03	I2C 1/2 Low-Level Driver
326_04	UART 1/2 Low-Level Driver
326_07	CMAC Mailbox driver included in Bluetooth®LE library
326_08	LCD Low Level Driver
328_02	White LED Low-Level Driver

Feature number	Description
328_05	Sensor Node Controller Low-Level Driver
400_01	FreeRTOS v9
400_07	OS Abstraction Layer
400_08	OS Abstraction Layer - Resource Management
430_04	Software Upgrade over Bluetooth® LE (SUOTA)
460_03	Flash Adapter
460_04	LCD Adapter
460_05	GPADC Adapter
460_06	I2C Adapter
460_07	NVMS Adapter
460_11	SPI Adapter
460_13	UART Adapter
460_16	Sensor Node Controller Adapter
510_02	Supported by GNU / GCC toolset
510_03	Supported by JTAG debugger
510_04	Supported from Eclipse-based IDE
510_06	Sensor node controller programming
530_01	Works with SmartSnippets Studio & Toolbox (version 2.0)
610_02	PXP Reporter, including SUOTA example
620_01	SUOTA example works with Renesas Android SUOTA App

6.22.3 Known Issues and Limitations of 10.0.1.16

Table 60. 10.0.1.16 known issues

Issue number	Description
0016.01	SDK does not support Sleep mode, all projects run in always-active configuration.
0016.02	Bluetooth Framework is only tested for basic BLE4.2 functionality.
0016.03	Evaluation is limited to functional testing of the demo applications delivered with the SDK.
0016.04	Release files may include code copied from DA1468x SDK, not yet ported for DA1469x.
0016.05	Doxygen documentation still includes references to DA1468x SDK.
0016.06	Bluetooth® LE stack may be confused if two or more connections are active. Use only one connection.
0016.07	Radio driver does not yet include calibration. Performance may be suboptimal.
0016.08	Bluetooth® LE Secure Connections and Enhanced Privacy features are not yet supported.
0016.09	Values returned by the GPADC driver are not calibrated.
0016.10	Watchpoint support for debugging is not included.

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. and so on. 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.

7. Document Revision History

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

Revision	Date	Description
20	July 11, 2025	Full Release 10.0.16.153.
19	Feb 14, 2025	Full Release 10.0.14.146.4.
Change details: ▪ Added support of PCN2024_1233.		
18	May 31, 2024	Full Release 10.0.12.146.3.
Change details: ▪ Bug fixes. ▪ Applied Renesas template. Editorial changes.		
17	July 11, 2023	Full Release 10.0.12.146.2.
Change details: ▪ Bug fixes.		
16	Nov 15, 2022	Full Release 10.0.12.146.1.
Change details: ▪ Bug fixes.		
15	July 22, 2022	Full Release 10.0.12.146.
Change details: ▪ New Features, including support of PCN 2021_901. ▪ Bug fixes and internal improvements. ▪ Moved 105.05 to 10.0.10.118 list of fixed issues.		
14	July 24, 2020	Full Release 10.0.10.118.
Change details: ▪ New Features, including compliance with Bluetooth® LE 5.2. ▪ Bug fixes and internal improvements.		
13	Jan 17, 2020	Fixed typos.
12	Dec 23, 2019	Full Release 10.0.8.105.
Change details: ▪ New features (Haptic, Audio, Bluetooth® LE 5.1). ▪ Bug fixes and internal improvements. ▪ Document Includes more detail on the description of findings and improvements.		
11	Sep 27, 2019	Full Release 10.0.6.90.
Change details: ▪ Added OTP CS settings for XTAL Trim and BD Address. ▪ Split Issues and Limitations in two tables.		

Revision	Date	Description
10	Aug 2, 2019	Full Release 10.0.6.88.
9	Apr 24, 2019	Added workaround for errata issue 304. Updated Disclaimer Text. Full release 10.0.4.66.2.
8	Apr 17, 2019	▪ Removed mistaken reference to Cycling Power profile. ▪ Code Labeling fixes. Full release 10.0.4.66.1.
7	Feb 22, 2019	Launch of DA1469x Family of Devices. Full release 10.0.4.66.
6	Jan 14, 2019	Product Development Ready. Full release 10.0.2.60.
5	Dec 7, 2018	Product Development Ready. Engineering 10.0.1.52.
4	Sep 28, 2018	Improved Maturity. Engineering 10.0.1.39.
3	May 25, 2018	Migrated to FreeRTOS v10. Engineering 10.0.1.32.
2	Mar 22, 2018	Updated with more features. Engineering 10.0.1.28.
1	Feb 7, 2018	Initial version. Engineering release 10.0.1.16.

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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