# Release Notes

## DA14531/DA14585/DA14586 SDK v. 6.0.12.1020.2

### SW-B-002


## Abstract

*This document contains the release notes for Dialog Semiconductor's DA14531/DA14585/DA14586 Software Development Kit, version 6.0.12.1020.2*

# Contents



# Tables



 

# 1 Terms and Definitions

| | |
|---|---|
| GA | General access |
| LA | Limited access |
| BLE | Bluetooth Low Energy |
| SDK | Software Development Kit |
| SUOTA | Software Update Over The Air |
| TRNG | True Random Number Generator |
| FW | Firmware |
| API | Application Programming Interface |

# 2 Release Data

**Table 1: Information Table**

| | |
|---|---|
| **Software** | DA14585 DA14531 SDK |
| **Device Number** | DA14531, DA14585, DA14586 |
| **Software Release Date** | 9 December 2019 |
| **Software Version Number** | 6.0.12.1020.2 |
| **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 doc folder.

# 4 Related Documentation and References

| | |
|---|---|
| DA14531 Getting Started Guide User Manual | UM-B-117 |
| DA14585/DA14531 SDK Porting Guide | UM-B-118 |
| DA14585/DA14531 SW Platform Reference Manual | UM-B-119 |

# 5 Release Description

## 5.1 Overview

This is a GA release of SDK6 that runs on the DA14531 and DA14585/6 devices.This release can be used for application development.

## 5.2 Fixes and Improvements since 6.0.12.1020

**Table 2: 6.0.12.1020.2 Fixes and Improvements**

| Fix Number | Description |
|---|---|
| 1020.02.01 | DA14531: Updated calibration for improved radio functionality in applications with fast temperature swings |

## 5.3 Known Issues of 6.0.12.1020.2

**Table 3: 6.0.12.1020.2 Known Issues**

| Issue Number | Description |
|---|---|
| 1020.01 | DA14531: Wrong TX power level value is returned by Tx Power GATT service. Returned value is the setting of the register, not the dBm. Furthermore, the returned value refers to the advertising power, even if the connection power is different. |
| 1020.02 | DA14585/586/531: In external processor configuration the GPIO used for waking up is not programmed immediately after UART flow off. This may lead to missing the communication over UART with the external processor, if the external processor tries to wake up the device too soon. |
| 1020.03 | The prod_test.hex file might have memory alignment issues preventing its usage In SmartSnippets Toolbox RF Master or with Bluetooth tester equipment. The corresponding prod_test.bin files should be used instead. |
| 1020.04 | DA14531: when *_EXCLUDE_ROM_PRF_* is not defined and no BLE profiles are used in the application context, BLE_NB_USED_PROFILES must be set to 0. If not, the first four addresses of the executable – initial Stack Pointer, Reset Handler, NMI Handler and HardFault Handler – will be overwritten with zeros. Affected SDK projects: hci; ble_app_noncon; prod_test. |
| 933.04 | DA14585/586/531: Default system rand() function is not true random (not NIST compliant). It is suggested to use the alternative chacha20() function, when true random numbers are required (NIST compliant). |

## 5.4 Known Limitations of 6.0.12.1020.2

**Table 4: 6.0.12.1020.2 Known Limitations**

| Issue Number | Description |
|---|---|
| 1020.05 | DA14531: The peripheral examples inside the SDK do not work in boost mode due to the deactivation of the internal DCDC converter in the system initialization function. |

## 5.5 Comments

It is recommended to migrate DA14531 projects from 6.0.12.1020 to this release.

# 6 Release History

## 6.1 Version 6.0.12.1020

Version 6.0.12.1020 of SDK6 was released on 31-Oct-2019.

### 6.1.1 Overview

This was the 1st GA release of SDK6 that run on the DA14531 devices. It also supported DA14585/6 devices.This release can used for application development.

### 6.1.2 Features of 6.0.12.1020

**Table 5: 6.0.12.1020 Features**

| Feature Number | Description |
|---|---|
| 1020/001 | Supports DA14531, DA14585 and DA14586 devices. |
| 1020/002 | Includes Eclipse/GCC project example (prox_reporter). |
| 1020/003 | Supported by SmartSnippets tools version 2.0.10. |
| 1020/004 | Doxygen documentation of all API functions. |
| 1020/011 | Updated 531 radio driver. |
| 1020/012 | RF driver for DA14531. |
| 1020/013 | DA14531: API function to dynamically control radio TX power. |
| 1020/014 | DA14531: RF power control -20 ...3dbm. |
| 1020/015 | SPI driver for DA14531 (master/slave buffered and DMA driven transactions). |
| 1020/016 | I2C driver for DA14585/586/531. |
| 1020/017 | RTC driver for DA14531. |
| 1020/018 | OTP driver for DA14531. |
| 1020/019 | Support for OTP configuration script in 531. |
| 1020/020 | Support for DA14531 ROM functions. |
| 1020/021 | Near field mode API for DA14531. |
| 1020/022 | API function to enable/disable the H/W Reset pin in DA14531. |
| 1020/023 | DA14531 support in Wakeup & Quadrature Decoder driver. |
| 1020/024 | DA14531 support in GPIO driver. |
| 1020/025 | Added DA14531 target in project : ble_app_peripheral. |
| 1020/026 | Added DA14531 target in project : ble_app_profile. |
| 1020/027 | Added DA14531 target in project : ble_app_barebone. |
| 1020/028 | Added DA14531 target in project : prox_monitor_ext . |
| 1020/029 | Added DA14531 target in project : hci. |
| 1020/030 | Peripheral examples ported to DA14531. |
| 1020/031 | Batt_lvl peripheral example project DA14531. |
| 1020/032 | DA14531: Support for 1-wire UART (driver & flash programmer). |
| 1020/033 | Temperature sensor driver. |
| 1020/034 | Readout of internal temperature. |
| 1020/035 | AES driver (data and link). |

| Feature Number | Description |
|---|---|
| 1020/036 | DCDC converter API to control VBAT_H for OTP and GPIOs in Boost mode. |
| 1020/037 | Use of temperature sensor to trigger RF calibration during run-time. |
| 1020/038 | Secondary bootloader project. |
| 1020/039 | Proximity reporter example. |
| 1020/040 | Prox_reporter application wakeup using RTC or Timer 1 (apart from GPIO). |
| 1020/041 | Template example. |
| 1020/042 | Prod_Test firmware. |
| 1020/043 | OTA example project. |
| 1020/044 | Security example. |
| 1020/045 | Sleep Example. |
| 1020/046 | Add support for shipping (hibernation) mode. |
| 1020/047 | ADC Driver with DMA support. |
| 1020/048 | RCX-only operation - no need for XTAL32K. |
| 1020/049 | Added extra power optimization method using the XTAL16M adaptive settling time algorithm. It is enabled by default and can offer power savings of up to 10% for 10ms connection interval. |
| 1020/050 | Used the default XTAL16M trim value when the XTAL16M is uncalibrated. |
| 1020/051 | POR on Vbat high / low Voltage Monitor. |
| 1020/052 | Deep sleep support. |
| 1020/053 | Timer1/2 support. |
| 1020/054 | Disabled DC-DC auto calibration (Buck and Boost mode). |
| 1020/055 | Added 38K4 baud rate support in production test f/w. |
| 1020/056 | Added support for Boost mode. |
| 1020/057 | Added API for AES-CCM, AES-CBC and AES-CMAC operations. |
| 1020/101 | Compliant to BLE 5.0 (DA14585/6) and BLE 5.1 (DA14531) Core specification. |
| 1020/102 | Data Packet length Extension. |
| 1020/103 | Enhanced Privacy 1.2. |
| 1020/104 | Efficient non connectable advertising. |
| 1020/105 | Added API to support controller privacy (peripheral role). |
| 1020/106 | BLE LE Secure Connections. |
| 1020/107 | Function for the unique static random BD address generation using OTP header values. |
| 1020/108 | Adds a key renewal command that can be called after a number of failed pairing attempts |
| 1020/109 | Added support to disable the ROM ECC key generation calculations if the Secure Connections feature is not used. |
| 1020/110 | Added support for URI advertising data type. |
| 1020/111 | Added support for GATT service layer changed characteristic to application layer. |

### 6.1.3 Known Issues of 6.0.12.1020

**Table 6: 6.0.12.1020 Known Issues**

| Issue Number | Description |
|---|---|
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**Table 7: 6.0.12.1020 Known Limitations**

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# Appendix A Software Versioning Rules

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

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

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

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

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

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

## Document Revision History

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

| Revision | Date | Description |
|---|---|---|
| 6.0.12.1020.3 | 03-Feb-2022 | Rebranded to Renesas. |
| 6.0.12.1020.2 | 9-Dec-2019 | Improves radio calibration on DA14531 release. GA |
| ○ This is the second release of this document. | | |
| 6.0.12.1020 | 31-Oct-2019 | Release supporting final DA14531 silicon and DA14585/6. GA |
| ○ This is the first release of this document. | | |

## Status Definitions

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

## RoHS Compliance

Dialog Semiconductor's suppliers certify that its products are in compliance with the requirements of Directive 2011/65/EU of the European Parliament on the restriction of the use of certain hazardous substances in electrical and electronic equipment. RoHS certificates from our suppliers are available on request.