

Release Notes

SmartBond Production Line Tool

SW-B-025

Abstract

This document contains the release notes for Dialog Semiconductor's SmartBond Production Line Tool, version 4.4.

SmartBond Production Line Tool

Contents

Abstract	1
1 Terms and Definitions	3
2 Release Data	3
3 License	3
4 Related Documentation and References	3
5 Release Description	4
5.1 Overview	4
5.2 New and Updated Features of Version 4v4	4
5.3 Fixes and Improvements since Version 4v3	4
5.4 Known Limitations of Version 4v4	4
6 Release History	7
6.1 Version 4v3	13
6.1.1 Overview	13
6.1.2 New and Updated Features of Version 4v3	13
6.1.3 Fixes and Improvements since Version 4v2	13
6.1.4 Known Limitations of Version 4v3	14
Appendix A Software Versioning Rules	15
Document Revision History	16

Figures

Figure 1: SmartBond™ Production Line Tool Configuration Version 4.4.2	4
Figure 2: SmartBond™ Production Line Tool GUI Version 4.4.2	5
Figure 3: SmartBond™ Production Line Tool Configuration	7
Figure 4: SmartBond™ Production Line Tool GUI	8

Tables

Table 1: Information Table	3
Table 2: Fixes and Improvements of Version 4.4.2	6
Table 3: Known Limitations of Version 4.4.2	6
Table 4: Version 4v4 New Features	8
Table 5: Fixes and Improvements since Version 4v4	11
Table 6: Known Limitations of Version 4v4	12
Table 7: Version 4v3 New Features	13
Table 8: Version 4v3 Fixes and Improvements	13
Table 9: Version 4v3 Known Limitations	14

SmartBond Production Line Tool

1 Terms and Definitions

ADC	Analog Digital Converter
CS	Configuration Script
DK	Development Kit
DMM	Digital Multi Meter
DUT	Device Under Test
GA	General Access
GPIO	General Purpose Input Output
HID	Human Interface Device
LA	Limited Access
OTP	One Time Programmable memory
PER	Packet Error Rate
PLT	Production Line Tool
RFCU	Radio Frequency Control Unit
SCPI	Standard Commands for Programmable Instruments
TCS	Trim and Calibration Settings
UART	Universal Asynchronous Receiver/Transmitter
XTAL	Crystal Oscillator

2 Release Data

Table 1: Information Table

Software	SmartBond™ Production Line Tool
Device Number	DA14531, DA1469x
Operating System	Windows 10
Operating System Version	10.0.17134 Build 17134
Software Release Date	04-Aug-2020
Software Version Number	4.4.2
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 software release are listed in the licensing.txt file in the SmartBond™ Production Line Tool main folder.

4 Related Documentation and References

[1] UM-B-041, Smartbond Production Line Tool, Revision 4.4, User Manual, Dialog Semiconductor.

SmartBond Production Line Tool

5 Release Description

5.1 Overview

This is a FULL (GA) release of SmartBond™ Production Line Tool (Note 1). It supports production testing and programming for products using DA14531 and DA1469x only.

Figure 1 shows the main screen of the SmartBond™ Production Line Tool Configuration.

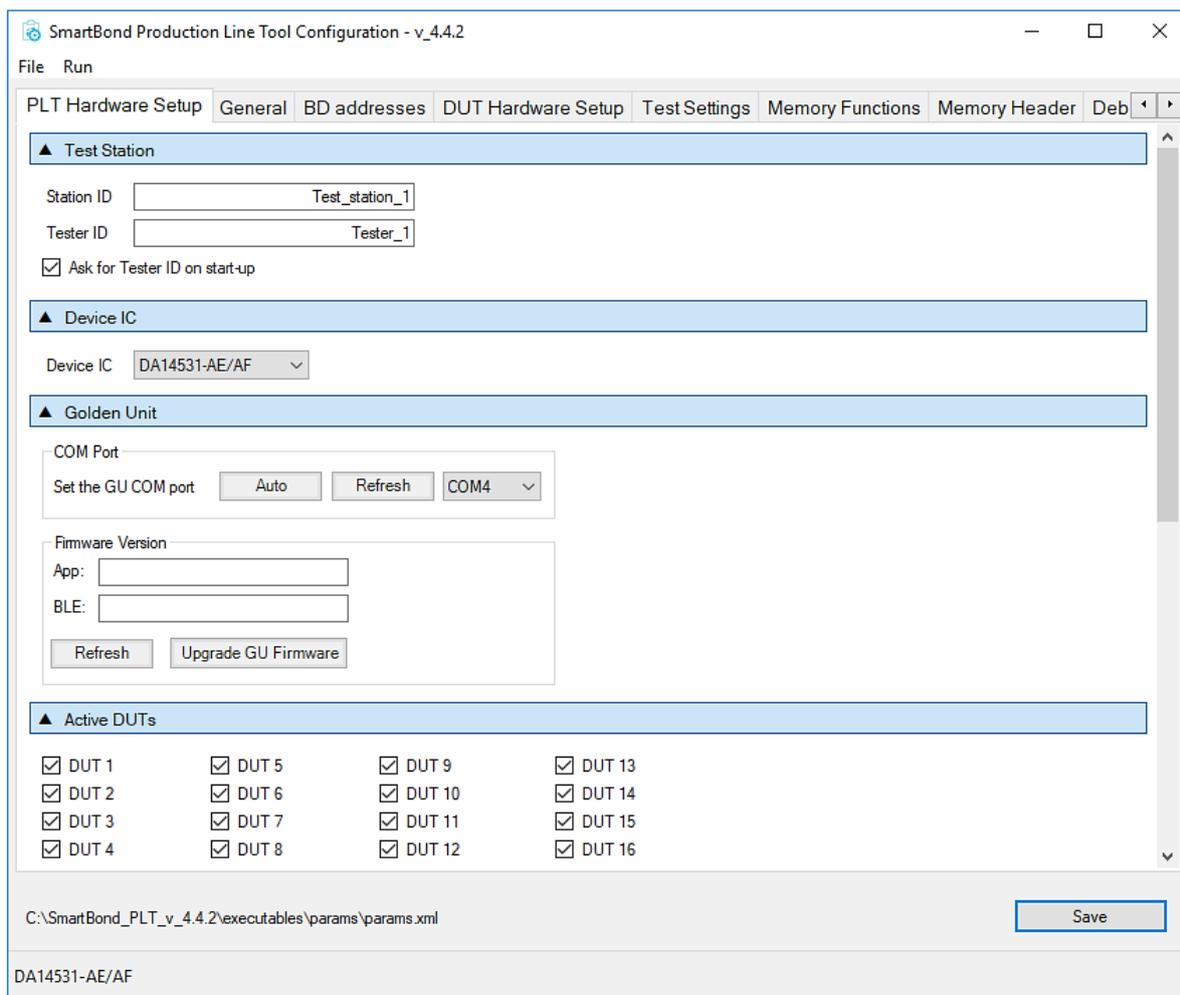


Figure 1: SmartBond™ Production Line Tool Configuration Version 4.4.2

Figure 2 shows the main screen of the SmartBond™ Production Line Tool GUI.

SmartBond Production Line Tool

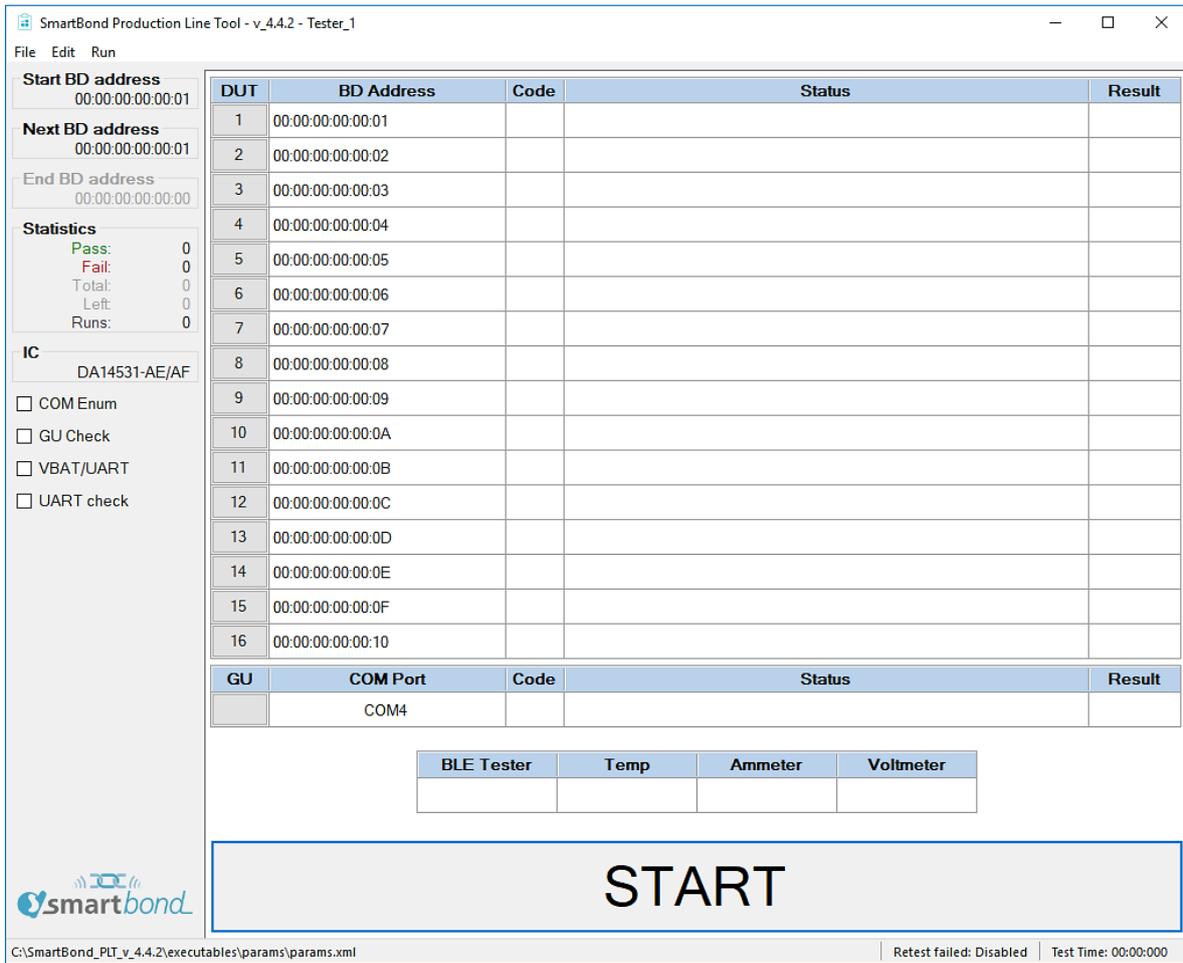


Figure 2: SmartBond™ Production Line Tool GUI Version 4.4.2

5.2 New and Updated Features of Version 4.4.2

No new features were added.

SmartBond Production Line Tool

5.2.1 Fixes and Improvements since Version 4v4

Table 2: Fixes and Improvements of Version 4.4.2

Fix Number	Issue Title	Chipset	Description
1	OTP CS burn	DA1469x and DA14531	<p>In SmartBond™ PLT 4v4 if the OTP CS of either DA14531 or DA1469x has an entry with 0xFFFFFFFF, PLT will consider it as the end of the OTP CS and use it as the first empty slot to burn XTAL trim, BD address and other CS entries. Thus, PLT will overwrite already written OTP CS calibration data, resulting in a silicon with unpredictable behavior. PLT will give FAIL result because OTP CS readback verification will fail. But there are two cases where it could still PASS if:</p> <ul style="list-style-type: none"> • OTP CS Verify option has been disabled by user. It is ON by default. • “Re-test failed DUTs” has been enabled by user. In such case PLT may give a PASS under certain cases after the re-test. Re-test is OFF by default <p>This issue has been solved in SmartBond™ PLT v4.4.2.</p>
2	System calibration	DA1469x	<p>In SmartBond™ PLT 4v4 the trim values, taken from the OTP CS section, were used after the initial full calibration was executed after system start-up. This could cause an unstable RF test operation.</p> <p>This issue has been solved in SmartBond™ PLT v4.4.2.</p>
3	External memory in JTAG pins	DA14531	<p>If a JTAG pin is used for an external memory, SmartBond™ PLT 4v4 could not access it to program it.</p> <p>This issue has been solved in SmartBond™ PLT v4.4.2.</p>

5.2.2 Known Limitations of Version 4.4.2

Table 3: Known Limitations of Version 4.4.2

Issue Number	Description
1	VBAT as Reset is not supported
2	DA14531 and DA1469x test firmware cannot go into sleep unless a specific amount of time passes after boot. Therefore, PLT counts the time from booting the device until the sleep test and waits appropriate time to execute it, if needed.

SmartBond Production Line Tool

6 Release History

6.1 Version 4v4

Version 4v4 of SmartBond Production Line Tool for DA14531 and DA1469x was released on 30 Apr 2020.

6.1.1 Overview

This is a FULL (GA) release of SmartBond™ Production Line Tool (Note 1). It supports production testing and programming for products using DA14531 and DA1469x only.

Figure 3 shows the main screen of the SmartBond™ Production Line Tool Configuration.

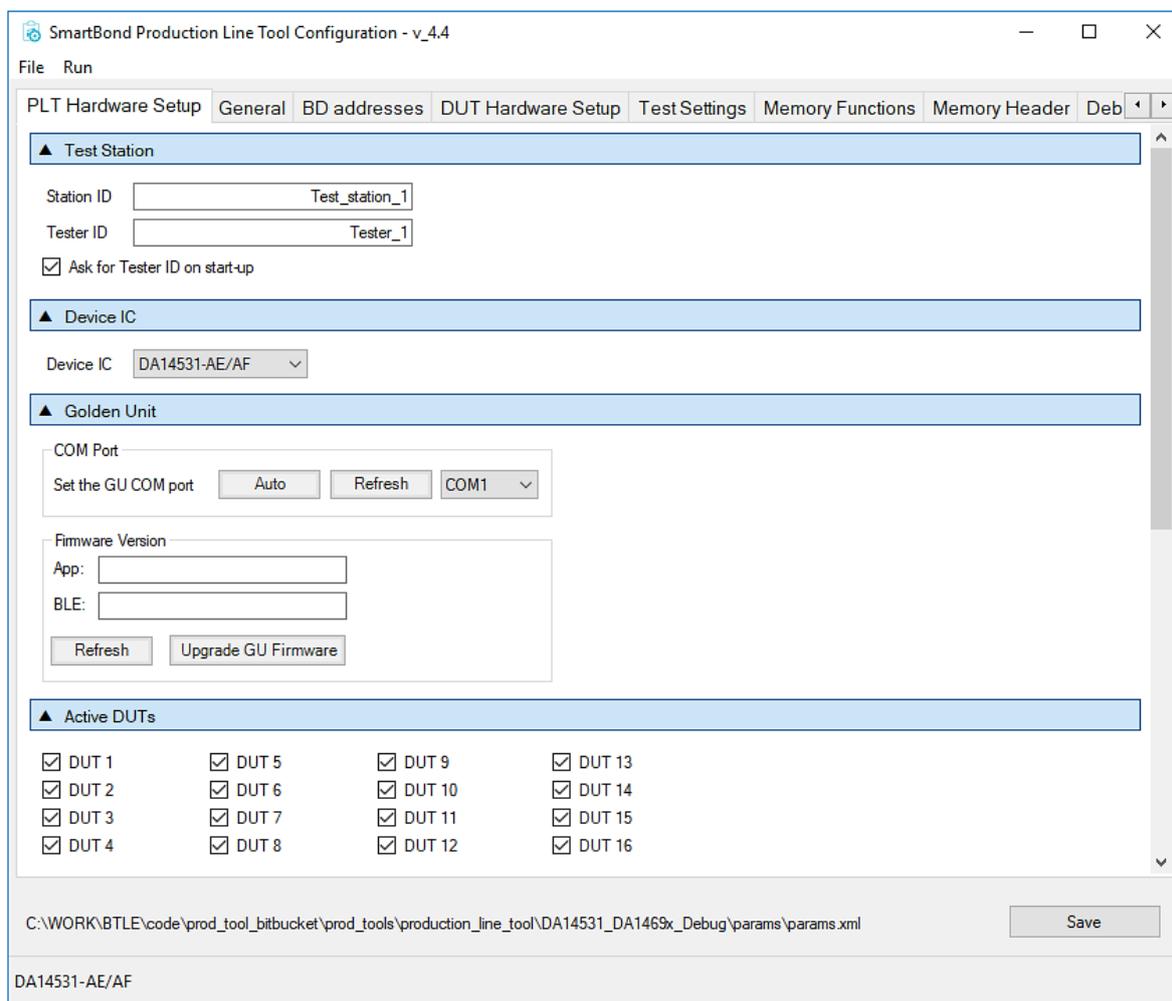


Figure 3: SmartBond™ Production Line Tool Configuration

SmartBond Production Line Tool

Figure 4 shows main screen of the SmartBond™ Production Line Tool GUI.

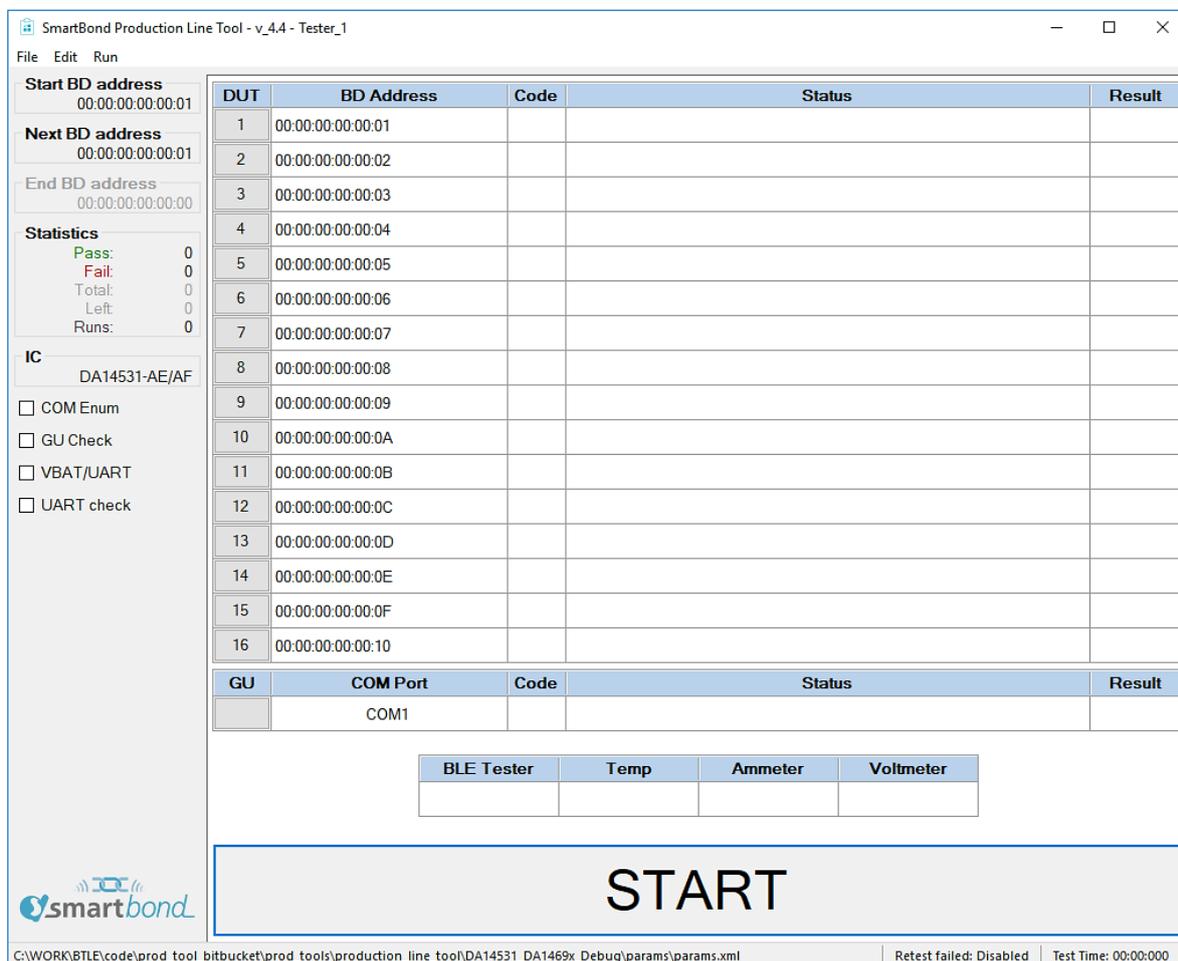


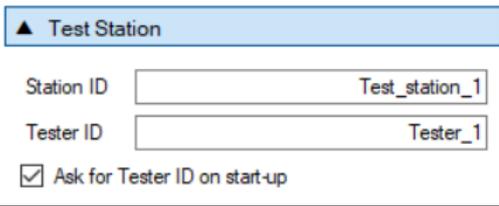
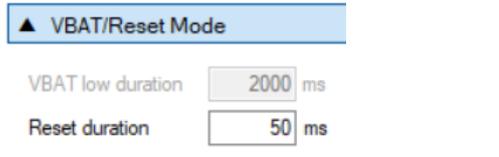
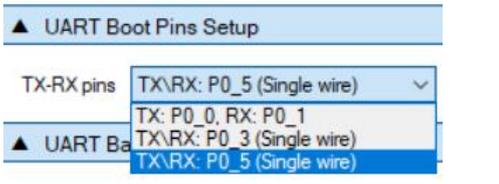
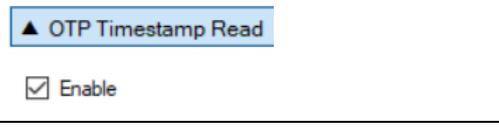
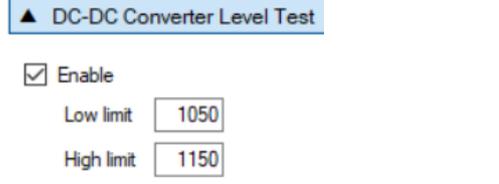
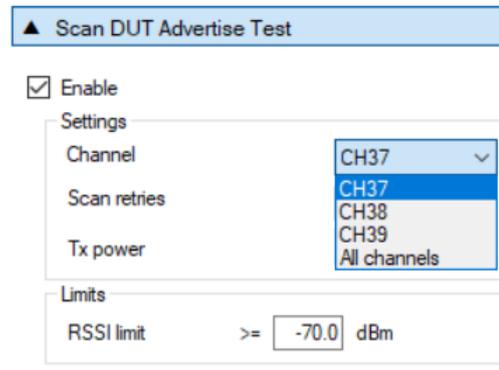
Figure 4: SmartBond™ Production Line Tool GUI

6.1.2 New and Updated Features of Version 4v4

Table 4: Version 4v4 New Features

Feature Number	Description	Picture
1	DA14531-AE/AF support	
2	DA1469x support	

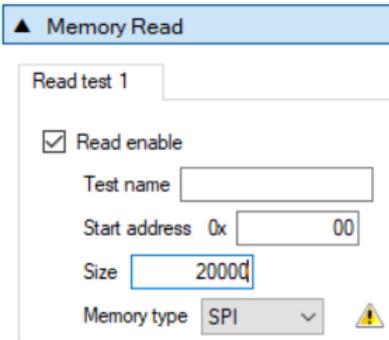
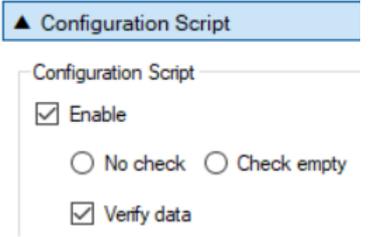
SmartBond Production Line Tool

Feature Number	Description	Picture
3	Added Tester ID . Tester ID is shown in the SmartBond™ Production Line Tool GUI, in the DUT logs and in the CSV log file.	
4	Reset duration can now be more than 50 ms. In previous versions the reset duration was fixed to 50 ms. Now, this can be adjusted between 10ms and 1000 ms.	
5	Single wire UART support for DA14531 devices, at either P03 or P05 GPIOs.	
6	Measure VBAT and log it, using internal ADC.	
7	Read IC specific OTP timestamp and log it.	
8	DA14531 DC-DC converter level test.	
9	BLE scan test at all advertisement channels. If 'All channels' is selected, three different tests are performed, at CH37, CH38 and at CH39. Before, if 'All channels' was selected, the Bluetooth LE stack was selecting the advertisement channel according to the Bluetooth® specification.	

SmartBond Production Line Tool

Feature Number	Description	Picture
10	Added 'No short' GPIO connection test. If 'No short' checkbox is selected, the tool will return an error if the two GPIOs are found to be shorted.	
11	Added TX power control for DA14531 devices. The TX power control can be adjusted in the 'Scan DUT Advertise Test' and in all TX Bluetooth LE tester tests.	
12	The UART RX pin can now be selected as XTAL trim GPIO input pulse pin. Before user had to select the specific GPIO (e.g. P05).	
13	Added 'Single Device' current measurement test. This is to be used during PLT production setup and not in the actual production line, in order to find the average current measurement limits, by first measuring multiple devices.	
14	Added 'Skip if written' in all OTP writes. If this option is selected the tool will first read the OTP area to be written. If the area contains data, it will not write new data and proceed to the next operation without error.	

SmartBond Production Line Tool

Feature Number	Description	Picture
15	The memory read size has been extended by more than 256 bytes to 64 Mbytes. If the size to be read is more than 256 bytes, the read data will be saved on a file under 'mem_read_test' folder.	 <p>▲ Memory Read</p> <p>Read test 1</p> <p><input checked="" type="checkbox"/> Read enable</p> <p>Test name <input type="text"/></p> <p>Start address 0x <input type="text"/> 00</p> <p>Size <input type="text" value="20000"/></p> <p>Memory type <input type="text" value="SPI"/> </p>
16	OTP configuration script support for DA14531 and DA1469x.	 <p>▲ Configuration Script</p> <p>Configuration Script</p> <p><input checked="" type="checkbox"/> Enable</p> <p><input type="radio"/> No check <input type="radio"/> Check empty</p> <p><input checked="" type="checkbox"/> Verify data</p>

6.1.3 Fixes and Improvements since Version 4v3

Table 5: Fixes and Improvements since Version 4v4

Fix Number	Description
1	Application names changed to SmartBond_CFG_PLT.exe, SmartBond_CLI_PLT.exe and SmartBond_GUI_PLT.exe.
2	Changed IDE to from Visual Studio 2015 to Visual Studio 2017.
3	Improve current measurement tests. Fixed bugs in retry.
4	Instrument DLLs can now be built without prior installation of NI VISA. This is because linking to NI libraries is done dynamically and not during build. However, installation of NI VISA is needed and a valid license in order to use the ammeter_scpi.dll, ni_usb_tc01.dll and volt_meter_scpi.dll.
5	Fix GPIO incorrect GPIO prints in DUT logs.
6	Fix an issue in peripheral current measurement with LED1/2 are used.
7	Fix a bug in ammeter_scpi.dll for Rigol DM3058E DMM.
8	Improve the OTP address ranges in tooltips in the configuration tool, SmartBond_CFG_PLT.exe.
9	Added the OTP CS value and address to be programmed in DUT logs and CSV.
10	Improve code documentation, accessed in the help folder.
11	Fix an issue with the log file name, that ended with FAILED even in tests succeeded.
12	Fix a bug in the debug console. Once opened it could not be closed unless the main application was closed.
13	Improved speed when performing QSPI operations in DA1469x.
14	DA14531 and DA1469x test firmware cannot go into sleep unless.
15	Fix a bug in CSV header when exceeding 2000 letters.

SmartBond Production Line Tool

Fix Number	Description
16	Increase VBAT low time.
17	Improve input range in IQXelm Bluetooth tester support.
18	OTP customer field programming became a separate test operation. Before it was written together with the rest of the OTP header fields. This change helps to identify problems.
19	Improve printing of BD addresses in CLI at the end, if BD address read or compare operations are enabled.
20	Fix 'DUT RF path losses' group-box enable state in in the configuration tool, SmartBond_CFG_PLT.exe.
21	Fix bug in ammeter SCPI commands causing incompatibility with some DMMs when serial communication protocol was used through UART. Line feed was added at the end of all SCPI commands.

6.1.4 Known Limitations of Version 4v4.

Table 6: Known Limitations of Version 4v4

Issue Number	Description
1	VBAT as Reset is not anymore supported
2	DA14531 and DA1469x test firmware cannot go into sleep unless a specific amount of time passes after boot. Therefore, PLT counts the time from booting the device until the sleep test and waits appropriate time to execute it, if needed.

SmartBond Production Line Tool

6.2 Version 4v3

Version 4v3 of DA1458x/DA1468x Production Line Tool was released on 16 Jul 2018.

6.2.1 Overview

This is a GA release of DA1458x/DA1468x Production Line Tool, which added various test and programming features for products having DA1458x and DA1468x devices.

6.2.2 New and Updated Features of Version 4v3

Table 7: Version 4v3 New Features

Feature Number	Description
1	Automated GU firmware upgrade.
2	External 32KHz connection test.
3	HID barcode scanner support.
4	DA14585 range extender tests.
5	Option to burn OTP image and header as a single binary.
7	Improvements for DA14683 secure boot.
8	DA14683 32MHz hardware support.
9	Warning pop-up window when any OTP write is enabled.
10	Peripheral current measurements.
11	GPIO toggle for external watchdog.
12	DA1468x DK power profiler as current measurement instrument.
13	Set/Get GPIO status test.
14	DA1458x configurable SPI and EEPROM memories.
15	DA1458x memory enable GPIO.
16	DA1458x sleep clock selection (needed for boost mode).
17	OTP TCS section write.
18	Scan advertisements using the production test firmware.
19	Added PER limits in RF RSSI tests.

6.2.3 Fixes and Improvements since Version 4v2

Table 8: Version 4v3 Fixes and Improvements

Fix/Improvement Number	Description
1	Updated Homekit setup code generator.
2	Configurable firmware download retries.
3	CSV OTP re-burn protection.
4	Support latest Anritsu MT8852B firmware (5.00.009).
5	Barcode scanner improvements.
6	Increase QSPI operation timeouts.

SmartBond Production Line Tool

Fix/Improvement Number	Description
7	Remove all DA1468x QSPI dependencies from production test firmware.
8	DA1468x uartboot QSPI initialization only when required. Uartboot and plt_fw now operate even with no QSPI mounted.
9	Improve external script execution.
10	Idle current measurement removed.
11	Added DUT IC name in DUT logs.
12	DA14585 SPI boot header fix.
13	Fix DA1468x configurable UART boot pins.

6.2.4 Known Limitations of Version 4v3

Table 9: Version 4v3 Known Limitations

Issue Number	Description
1	DA1458x_DA1468x_CLI_PLT.exe needs all fields in params.xml configuration file to be filled-in even if these are not actually used by the current test setup.
2	The DA1458x memory programming may fail at 1M UART baud rate at some specific PCs and at a rate of around 1-2%. This is solved by splitting the data to be burned into chunks (3960bytes is a good tested chunk) or lowering the UART baud rate to 115200. This PLT version has configurable chunk sizes through the PLT configuration tool, with the default set to 3960 bytes and tested to be safe to operate at 1M UART baud rate.
3	Sleep current measurement tests need production test firmware changes in order to power down the external peripherals used (e.g. sensors, memory flashes, etc.).

SmartBond Production Line Tool

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.

SmartBond Production Line Tool**Document Revision History**

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

Revision	Date	Description
4.5	05-Aug-2020	Bug fixes
4.4	29-Apr-2020	Added description for 4v4 FULL (GA) release.
4.3	18-Jul-2020	Added description for 4v3 FULL (GA) release.

SmartBond Production Line Tool

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.

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