

# OPTIGA<sup>™</sup> Trust B SLE95250

## **Evaluation Kit User Guide**

### About this document

#### Scope and purpose

This is the User Guide for  $OPTIGA^{TM}$  Trust B evaluation kit. It gives the detailed guideline of how to use  $OPTIGA^{TM}$  Trust B evaluation kit for demonstration and evaluation purpose.

#### Intended audience

This document is intended for the engineers who want to evaluate  $OPTIGA^{TM}$  Trust B. It can also be used to verify the customer system with  $OPTIGA^{TM}$  Trust B integrated.

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#### Hardware board

# 1 Hardware board

OPTIGA<sup>™</sup> Trust B evaluation kit comes with two boards in the kit. The main board with USB interface and a daughter board for external connection. The below picture is when the main board and daughter board is connected.

×201, JP201	RESET_N SHI EXT_SNS P14.4 P14.8	GN0 +3U3 EXT_EN P14.5 P14.9	
	P15.8	P15.9	
	HIB	HIB	0
X282	P3.0	P3.5	and the state of the state
	P0.5	P0.5	
a - 199	P0.£	-PØ.3	
a della della	POR	P0.11	
•	P0.4 mark	P0.0	

On the main board, JP2 is used to enable OPTIGA<sup>™</sup> Trust B device on the main board. On the daughter board, JP201 is used to enable OPTIGA<sup>™</sup> Trust B device on the daughter board. There are two sets of pin header X201 and X202 on the daughter board, which can be used to either connect external OPTIGA<sup>™</sup> Trust B devices or to probe the signal. The rest of the pin headers on the board are mapped to some of the commonly used external signals on the XMC controller.

When the main board is plugged into the USB interface of the computer, a green LED should light up followed by running orange LEDs. That means the firmware in XMC controller is executed properly. If both LEDs cannot be observed, please plug out and plug in the main board to reset the firmare.



# 2 PC GUI

PC GUI can be downloaded from www.infineon.com/optiga (OPTIGA™ Trust B Evaluation Kit). Upon running the executable file (OPTIGA Trust B.exe), below GUI should be shown on the desktop.

Infineon OPTIGA Trust B Evaluation k	Gt	
File Help		
Device Search	Device Unique ID	
SWI Bus     Device Search	Not Available     Not Available     Select Unique ID	and the second s
	Enhanced Authentication	
	Non Volatile Memory	
		infineon
Host is connected to PC		



### 2.1 Search devices on SWI bus

The first step before running authentication or NVM operations is to identify the devices connected to the SWI bus, and then select the device to communicate. This can be achieved by clicking the button "Device Search". After clicking the button, at least one device unique ID should be displayed. The GUI supports maximum of two device unique ID to be displayed.

Device Search		Device Unique ID	
SWI Bus	Q	18-2A-07-20-3B-66-00-82-B0-17-03-28	
	Device Search		Select Unique ID

#### Here is the example of two device unique IDs

Device Search		Device Unique ID	
SWI Bus	Q	00-03-00-01-38-AE-20-A3-02-14-05-33	
	Device Search	© 18-2A-07-20-3B-66-00-82-B0-17-03-28	Select Unique ID

In order to select the device to communicate, simply check the radio button of the corresponding Device Unique ID and click button "Select Unique ID". After this, you should see SLE95250 displayed and "Enhanced Authentication" and "Non-Volatile Memory" button enabled as below picture.



Infineon OPTIGA Trust B Evaluation	Kit	
File Help		
SWI Bus     Device Search     Device Search	Device Unique ID © 00-03-00-01-38-AE-20-A3-02-14-05-33 @ 18-2A-07-20-38-66-00-82-B0-17-03-28 Select Unique ID	
	Enhanced Authentication	SLE95250
	Non Volatile Memory	
		infineon
L8-2A-07-20-3B-66-00-82-B0-17-03-28		Soeaker/HP: Muteo

Now you are ready to start authentication and NVM operations.

### 2.2 Authentication

Click "Enhanced Authenticatin button, this brings you to the authentication GUI tab.

Infineon OPTIGA Trust B Ev	aluation Kit	station in the last day Manual St.		
File Help	Enhanced Authentication		OPTIGA™ Trust B	
2.Verify ODC 3.Generate	Device Public Key Random Value	1.Read ODC		
Random Value 4.Generate Challenge	Challenge Value	6.Send Challenge	7.Generate Response ECC Computation based on device private key	
5.Generate Check	Check Value	8.Read Response	X Response	
9.Verify Response	Authentication		Z Response	J
Clear Ali			< Back	
10-2A-07-20-3B-00-00-62-B0-	1/-05-20			



Simply click "Authentication" button on the left bottom of the GUI, the complete authentication sequence will be executed and displayed. Actual value of all the algorithm flow can be viewed in the edit box. If the authentication passes, "Authentic" will be printed, otherwise "Couterfeit" will be printed.



#### Infineon OPTIGA Trust B Evaluation Kit

Host Cortex* M4	Enhanced Authentication		OPTIGA <sup>™</sup> Trust B
	Device Public Key	1.Read ODC	
2.Verify ODC	0x,0x,0x,0x,0x		
3.Generate Random Value	Random Value 0x56A74868,0xD43FB7FF,0x8AF1A528,0x6FD941FC,0x00		
4.Generate	Challenge Value	6.Send Challenge	7.Generate Response
Challenge	0x4078B8DF,0x833F626C,0x22E6C397,0xFC53D1F9,0x94		
5.Generate Check 9.Verify Response	Check Value DxFF6D34DC,0x7804741F,0xEA8BED90,0x94B59ACB,0x07 Counterfeit Authentication	8.Read Response	X Response           0x7FCF73CA_0x91E85710           Z Response           0x5D268881_0xD835DA84_0x94FE7FB6_0x66E8944A_0x80
Clear All			< Back



### 2.3 Non-Volatile Memory

Click Non-Volatile Memory brings you to NVM operation tab. The Unique ID (UID) is displayed with vendor ID and product ID decoded. Current value of life span counter is shown as well. The value of the counter can be decremented once at a time by clicking "Decrease" button.

Initieon OF IOA Trust b Evaluation Kit										
File Help										
										Life Span Counter:
	Unique Chip ID:	38	AE	20	A3	02	14	05	33	Actual Value: 79120669
	Vendor ID:	00	03				Product ID:	00	01	Decrease
User NVM										
NVM Data										Read NVM
A										Write NVM
										Ŧ
							_			
							<b>C</b> •			
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						V				
								-		

#### NVM read and write operation can be verified by "Read NVM" and "Write NVM" button.

Infineon C	ΟΡΤΙGΑ Τ	rust B Evalu	ation Kit																
e Help																			
	ſ	Ì																Life Span	Counter:
						U	nique Chip	ID:	3B	66	00	82	2	во	17	03	28	Actual Value	99988
	<u>a</u>	9					Vendor	ID:	18	2A					Product ID:	07	20		Decrease
								_			, 								
Jser NVM	0																		
NVM D	ata																		Deed NIVA4
	0	1	2	3	4	5	6	7	8	9	A	в	с	D	E	F	Dump		Read INVIVI
0x0000	00	00	00	00	00	00	00	12	00	00	00	00	00	00	00	00		*	Write NVM
0x0010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00			
0x0020	00	00	00	00	00	FF	00	00	00	FF	00	00	00	00	00	00			
0x0030	00	00	00	00	00	00	00	00	31	31	32	33	00	00	00	00	11	.23	
																		Ŧ	
													(	in	fin	eo	n		< Back

18-2A-07-20-3B-66-00-82-B0-17-03-28

NVM read successful



#### **Test external devices**

### 3 Test external devices

External devices can be connected to X201 or X202 on the daughter board. JP201 needs to be shorted and JP2 is recommended to be left open to avoid confusion.

By connecting to X201 or X202, the customer device can be searched by the GUI, proper Unique ID can be displayed, and NVM operation can be verified as well. However authentication test might fail due to mismatch of the key.

In order to test authentication, a proper customer key and curve parameter needs to be loaded. This can be achieved by importing a configuration xml file. The default configuration xml file is located in the GUI folder, named config.xml. Edit the file so that proper customer specific curve parameter and public key is loaded. After editing, under file menu, select "Import Parameters" and select Config.xml in the GUI software folder to load the parameters.





### **Revision History**

### Major changes since the last revision

Page or Reference	Description of change
	Initial revision

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