

AN12234

Bluetooth LE Qualification and Listing Process Guide

Rev. 1 — March 2019

Application note

Document information

Info	Content
Keywords	QN908x, BLE, Qualification, Listing, Declaration
Abstract	This application note describes how to qualify and list an end product using QN908x.



Revision history

Rev	Date	Description
0	09/2018	Initial release
1	03/2019	Changed the Application Note name Qualification and Listing Process to Bluetooth LE Qualification and Listing Process Guide

Contact information

For more information, please visit: <http://www.nxp.com>

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1. Introduction

This document describes how to complete the Bluetooth™ qualification and listing process using Launch Studio. This document only applies to products that use the QN908x chip. Launch Studio is the new test plan generator designed to help you get your product to market faster.

2. Project preparation

2.1 Design and product information

Before starting a project, gather the information shown in [Table 1](#). These information are used in the process.

Table 1. Qualification information

—	Project name	—
—	Previously qualified design used in this qualification	105465, 102633
Design information	Listing date	—
	Design name	—
	Model number	—
	Design description	—
	Hardware version	—
	Software version	—
Product information	Product full name	—
	Product website	—
	Publish date	—
	Description	—
	Model number	—

- The project name is defined freely and does not require the same product name.
- The “Previously qualified design used in this qualification” field must be 105465 or 102633. 105465 is the declaration ID of the 908x BLE 5.0 host. 102633 is the declaration ID of the 908x BLE 5.0 controller.
- The “Listing date” field must be equal to (or earlier than) the “Publish date” field. The public data are not older than 90 days from the date of submitting the qualification project.
- One design project can list many products, so the “Model number” field in the “Design information” section and the “Model number” field in the “Product information” section can be different.
- Other information are defined by you.

2.2 Hardware requirements for Certification Lab

- Product PCBA with UART.
- Downloaded “hci_black_box” project.

3. Qualification and listing process

There are two types of qualification and listing:

- **Path 1:** Qualification without testing—if your product uses an already qualified chip or design and you do not make any design changes or if you simply resell an already qualified product.
- **Path 2:** Qualification with testing—if you create a new design or make modifications to an already qualified chip or design.

The design with QN908x adopts Path 2, and the process in the Launch Studio is shown in [Fig 1](#).

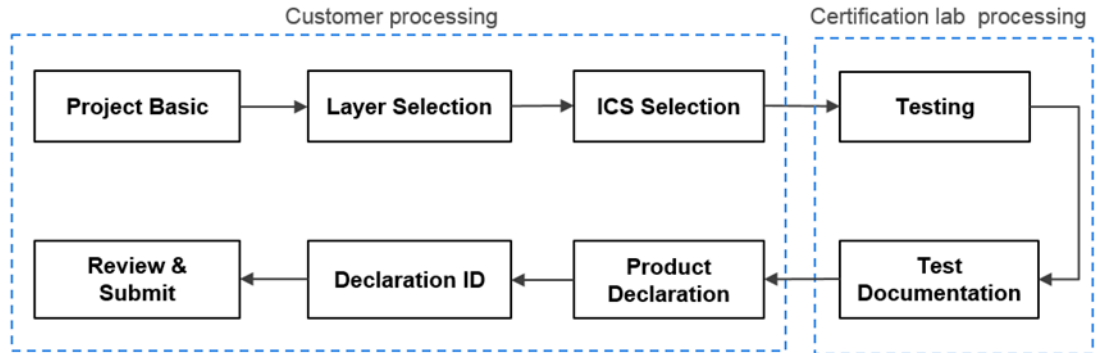


Fig 1. Qualification process

The “Customer processing” box is completed by you. The “Certification lab processing” box is completed by the certification lab and contains the test process and uploads the test evidence.

3.1 Entering Launch Studio

Firstly, register as a SIG member at www.bluetooth.com/develop-with-bluetooth/qualification-listing.

Select Path 2, enter the Launch Studio, and start a project.

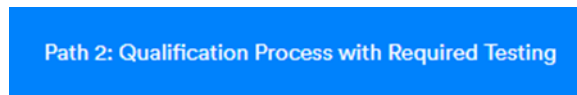


Fig 2. Path 2 button

3.2 “Project Basics” tab

Fill in the information in [Fig 3](#).

- Fill in the project name and reference QDID in fields 1 and 2 according to [Table 1](#). After entering a QDID, wait a moment and a dialog box appears. Select it, to enter more QDIDs.
- Set the boxes in fields 3 to 6 as shown in [Fig 3](#).
- Click the “Save All Changes” button.

Project Basics Layer Selection ICS Selection Testing Test Documentation Product Declaration Declaration ID

Review & Submit

Qualification Project with Required Testing

[Get help on this step](#)

Project Name * 1

Previously Qualified Design Used in this Qualification 2 ?

If you don't have this number, ask your supplier or [Search Listings](#).

TCRL Version * 3

Product Types * 4 ?

- [1/2] Component (Tested)
- [1/3] Component (Non-Tested)
- [1/4] Host Subsystem
- [1/5] Controller Subsystem
- [1/6] Profile Subsystem
- [1/7] Test Equipment
- [1/8] Development Tool

Controller Core Configuration * 5

- [2/1] BR Controller
- [2/2] BR/EDR Controller
- [2/3] BR/EDR/HS Controller
- [2/5] BR/EDR/LE Combined Controller
- [2/6] BR/EDR/HS/LE Combined Controller

Host Core Configuration * 6

- [3/1] BR Host
- [3/2] BR/HS Host
- [3/4] BR/LE Host
- [3/5] BR/HS/LE Host

7

Fig 3.

Configure the red box as shown in Fig 4 and click the "Save All Changes" button.

Note: The "Use my own selection" option is required only for Low-Energy RF PHY, where the antenna is designed by you. The RF design with QN908x then must pass the certification.

Project Basics Layer Selection ICS Selection Testing Test Documentation Product Declaration Declaration ID
Review & Submit

Qualification Project with Required Testing
[Get help on this step](#)

Project Name *

Previously Qualified Design Used in this Qualification
 ?
If you don't have this number, ask your supplier or [Search Listings](#).

Generic Access Profile Use my own selection
 105465 - QN908x BLE 5.0 Host

Logical Link Control and Adaption Protocol Use my own selection
 105465 - QN908x BLE 5.0 Host

Low Energy Link Layer Use my own selection
 102633 - QN908x BLE 5.0 Controller

Low Energy RF PHY Use my own selection
 102633 - QN908x BLE 5.0 Controller

Generic Attribute Profile Use my own selection
 105465 - QN908x BLE 5.0 Host

Security Manager Protocol Use my own selection
 105465 - QN908x BLE 5.0 Host

Attribute Protocol Use my own selection
 105465 - QN908x BLE 5.0 Host

TCRL Version TCRL 2017-2 (Recommended)

Product Types * [1/1] End Product ?
 [1/2] Component (Tested)
 [1/3] Component (Non-Tested)
 [1/4] Host Subsystem
 [1/5] Controller Subsystem
 [1/6] Profile Subsystem
 [1/7] Test Equipment
 [1/8] Development Tool

Controller Core Configuration * [2/1] BR Controller
 [2/2] BR/EDR Controller
 [2/3] BR/EDR/HS Controller
 [2/4] LE Controller
 [2/5] BR/EDR/LE Combined Controller
 [2/6] BR/EDR/HS/LE Combined Controller

Host Core Configuration * [3/1] BR Host
 [3/2] BR/HS Host
 [3/3] LE Host
 [3/4] BR/LE Host
 [3/5] BR/HS/LE Host

Fig 4.

The properly configured “Project Basics” tab is shown in [Fig 5](#).

Project Basics Layer Selection ICS Selection Testing Test Documentation Product Declaration Declaration ID

Review & Submit

Qualification Project with Required Testing
[Get help on this step](#)

Project Name *

Previously Qualified Design Used in this Qualification

If you don't have this number, ask your supplier or [Search Listings](#).

Low Energy RF PHY Use my own selection
 102633 - QN908x BLE 5.0 Controller

TCRL Version * TCRL 2017-2 (Recommended)

Product Types * [1/1] End Product
 [1/2] Component (Tested)
 [1/3] Component (Non-Tested)
 [1/4] Host Subsystem
 [1/5] Controller Subsystem
 [1/6] Profile Subsystem
 [1/7] Test Equipment
 [1/8] Development Tool

Controller Core Configuration * [2/1] BR Controller
 [2/2] BR/EDR Controller
 [2/3] BR/EDR/HS Controller
 [2/4] LE Controller
 [2/5] BR/EDR/LE Combined Controller
 [2/6] BR/EDR/HS/LE Combined Controller

Host Core Configuration * [3/1] BR Host
 [3/2] BR/HS Host
 [3/3] LE Host
 [3/4] BR/LE Host
 [3/5] BR/HS/LE Host

Fig 5.

3.3 “Layer Selection” tab

You do not have to modify the “Layer Selection” tab. Click the “Save All Changes” button.

Layer Selection

Select the layers used in your Design

[Get help on this step](#)

[Index of all Layers and Implementation Conformance Statements](#)

Core Specification layers are required based upon your Product Type and Core Configurations. Profiles and Services are discrete pieces of functionality that can be added to your Design.

Core Specification

Protocol/Profile	Name	
<input checked="" type="checkbox"/> 4.0HCI	4.0 Host Controller Interface	Combined from 102633, QN908x BLE 5.0 Controller
<input type="checkbox"/> 80211 MAC-PHY	802.11 MAC-PHY	
<input type="checkbox"/> 80211PAL	802.11 Protocol Adaptation Layer	
<input type="checkbox"/> A2MP	AMP Manager Protocol	
<input type="checkbox"/> AMPHCI	AMP Host Controller Interface	
<input checked="" type="checkbox"/> ATT	Attribute Protocol	Combined from 105465, QN908x BLE 5.0 Host
<input type="checkbox"/> BB	Baseband Conformance	
<input checked="" type="checkbox"/> GAP	Generic Access Profile	Combined from 105465, QN908x BLE 5.0 Host
<input checked="" type="checkbox"/> GATT	Generic Attribute Profile	Combined from 105465, QN908x BLE 5.0 Host
<input type="checkbox"/> HCI	Host Controller Interface	
<input checked="" type="checkbox"/> L2CAP	Logical Link Control and Adaption Protocol	Combined from 105465, QN908x BLE 5.0 Host
<input checked="" type="checkbox"/> LL	Low Energy Link Layer	Combined from 102633, QN908x BLE 5.0 Controller
<input type="checkbox"/> LMP	Link Manager	
<input checked="" type="checkbox"/> PROD	Product Type	
<input type="checkbox"/> RF	Radio	
<input checked="" type="checkbox"/> RFPHY	Low Energy RF PHY	
<input type="checkbox"/> SDP	Service Discovery Protocol	
<input checked="" type="checkbox"/> SM	Security Manager Protocol	Combined from 105465, QN908x BLE 5.0 Host
<input checked="" type="checkbox"/> SUM ICS	Summary ICS	

Fig 6.

3.4 “ICS Selection” tab

Select the “ICS Selection” tab, select “RFPHY (Low Energy RF PHY)” in the “Core Protocol Layers” field, and tick the check boxes according to fields 2 and 3. Click the “Consistency Check” button. If the content that appears matches field 5, the ICS selection is set correctly and you can click the “Save All Changes” button.

Project Basics Layer Selection **ICS Selection** Testing Test Documentation Product Declaration Declaration ID

Review & Submit

ICS Selection

Select supported capabilities for each layer.

To generate a test plan for your project, you must select the supported capabilities for each layer that you selected on the previous screen. Not all layers and supported capabilities are compatible—please refer to the [Qualification Test Requirements](#) for compatibility information. You can identify and resolve inconsistencies by using the “Consistency Check” tool. The list of capabilities you select during this stage of the project for each layer constitute the “Implementation Conformance Statement,” or “ICS,” referenced in the Qualification PRD. All ICS inconsistencies must be resolved or approved by Bluetooth SIG in order for your product to complete the Bluetooth Qualification Process.

[Get help on this step](#) [Index of all Layers and Implementation Conformance Statements](#)

Consistency Check -

[Refresh consistency report](#)

Feature Count: 592
Using a deprecated feature: false

Grouping Invalid
All group selection prerequisites are being met.

Dependency Invalid
All dependencies are being met.

[Close](#)

Core Protocol Layers

- [GAP \(Generic Access Profile\)](#)
- [L2CAP \(Logical Link Control and Adaption Protocol\)](#)
- [SUM ICS \(Summary ICS\)](#)
- [PROD \(Product Type\)](#)
- [LL \(Low Energy Link Layer\)](#)
- [RFPHY \(Low Energy RF PHY\)](#)**
- [4.0HCI \(4.0 Host Controller Interface\)](#)
- [GATT \(Generic Attribute Profile\)](#)
- [SM \(Security Manager Protocol\)](#)
- [ATT \(Attribute Protocol\)](#)
- GATT Profiles and Services**
- Traditional Profiles**

Low Energy RF PHY

Capability Statement

Table 1: Bluetooth LE RF Capabilities

Support	Item	Capability	System Spec Reference	Status	Comment
☑	1/1	LE Transmitter (Non-connectable, Broadcaster)	[2], 3	C.1	C.1: Mandatory to support at least one of these capabilities.
☑	1/2	LE Receiver (Non-connectable, Observer)	[2], 4	C.1	C.1: Mandatory to support at least one of these capabilities.
☑	1/3	LE Transceiver (Connectable, Peripheral/Central)	[2], 3, 4	C.1	C.1: Mandatory to support at least one of these capabilities.
☐	2	1/4 LE 2M PHY	3, 4	C.2	C.2: Optional IF SUM ICS 21/16 “Core 5.0” AND RF PHY 1/3 “LE Transceiver” are supported, otherwise Excluded.
☐	1/5	Stable Modulation Index - Transmitter	3.1.1	C.3	C.3: Optional IF SUM ICS 21/16 “Core 5.0” AND (RF PHY 1/1 “LE Transmitter” OR RF PHY 1/3 “LE Transceiver”) are supported, otherwise Excluded.
☐	1/6	Stable Modulation Index - Receiver	3.1.1	C.4	C.4: Optional IF SUM ICS 21/16 “Core 5.0” AND (RF PHY 1/2 “LE Receiver” OR RF PHY 1/3 “LE Transceiver”) are supported, otherwise Excluded.
☐	1/7	LE Coded PHY	3, 4	C.2	C.2: Optional IF SUM ICS 21/16 “Core 5.0” AND RF PHY 1/3 “LE Transceiver” are supported, otherwise Excluded.

Capability Statement

Table 2: Bluetooth LE Test Interface Capabilities

Support	Item	Capability	System Spec Reference	Status	Comment
☑	2/1	HCI Test Interface	[3], 2	C.1	C.1: At least one of the capabilities shall be supported.
☑	2/2	UART Test Interface	[3], 3	C.1	C.1: At least one of the capabilities shall be supported.

[Save and return to Layer Selection](#)
[Return to ICS Selection: Previous Layer](#)
[Continue to ICS Selection: Next Layer](#)
[Save and continue to Testing](#)

[Save All Changes](#)

Fig 7.

3.5 “Testing” tab

Select the “Testing” tab. You can download the test plan file or export it to a .pts file (field 2). The two files are going to be exported to the certification lab.

You can also take a simpler way and directly let the certification lab perform the operation on this item.

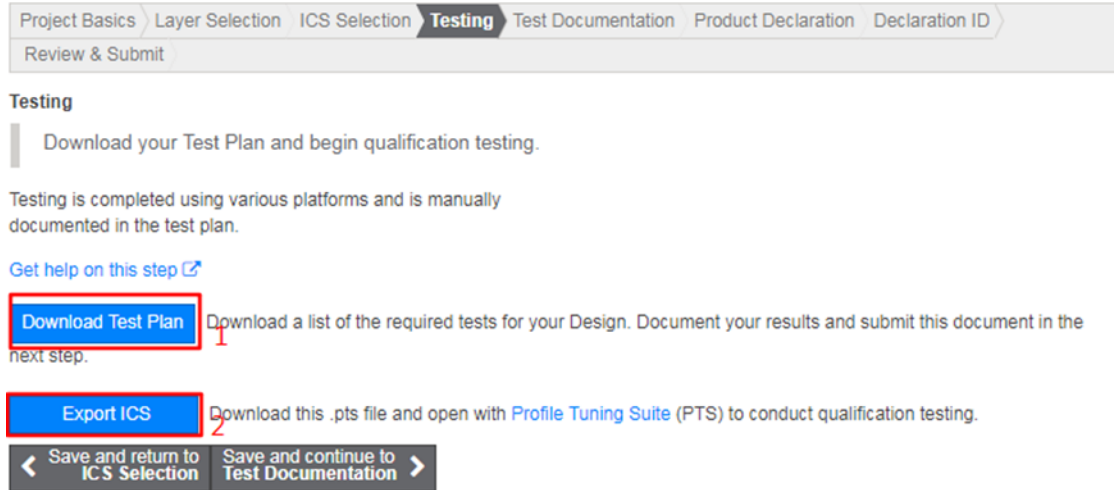


Fig 8.

3.6 “Test Documentation” tab

When the certification lab finishes the certification and passes all tests required by the test plan, select the “Test Documentation” tab and upload all test evidence by clicking the “Add Test Evidence” button.

You can also take a simpler way and directly let the certification lab perform the operation on this item.

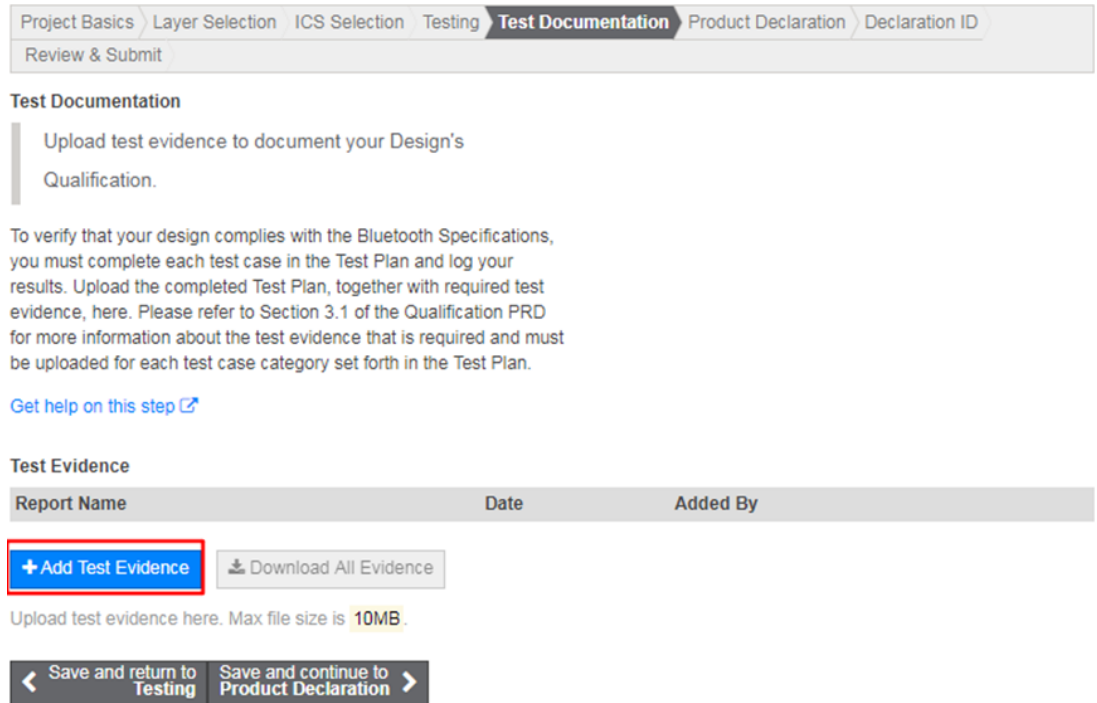


Fig 9.

3.7 Product declaration

The product declaration does not have to wait until the certification completes. In this section, you can fill in the design details and describe your products that implement the Bluetooth technology. The fields marked by an asterisk must be filled with the reference design information listed in [Table 1](#). The other fields are optional.

Fig 10.

Click the “Add a Product” button and the dialog shown in [Fig 12](#) appears. The fields marked by an asterisk must be filled in with the product information listed in [Table 1](#). The “Category” field must be selected according to the product type. If the existing type

is sufficient to describe the product type, select “Unique Products”. Click the “Save All Changes” button.

Product Listing

List all Products that use this Design (or combination of Designs) and that are distributed under a name that identifies your company as the source of the Product. Please refer to the [Bluetooth Launch Studio Terms of Use](#) for the definition of “Product.” Color variations are not considered as separate Product. Any other change (e.g., form factor, model name, Design, etc.) is considered a separate Product. All Products must complete the Qualification Process by adding a separate Product listing. Certain changes to the Design portion of a Product will require a new Design qualification and Declaration ID (as set forth in the [Bluetooth Qualification Program Reference Document \(PRD\)](#)).

Bluetooth SIG maintains a publicly available database of information submitted through Launch Studio. Customs officials often use the database to identify unlicensed Bluetooth products. If a product implements Bluetooth technology or bears the Bluetooth® trademark and it is not listed in Bluetooth SIG’s database, customs officials may seize or block the import of the product. You can delay the inclusion of certain information about your product in the publicly available database for up to 90 days after you submit your project (see [Bluetooth Launch Studio Terms of Use](#), Section 5) by selecting a Publish Date in the “Add a Product” modal up to 90 days after the date you submit your project.

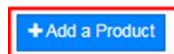


Fig 11.

The screenshot shows a web form titled "Add/Edit products" with a close button (x) in the top right corner. The form contains several input fields and a dropdown menu:

- Product Full Name** (required, marked with a red asterisk): An empty text input field. Below it, the text "(Including Trademark)" is displayed.
- Category**: A dropdown menu with the text "Select a Category" and a downward arrow. This field is highlighted with a red rectangular border.
- Product Website**: An empty text input field.
- Publish Date** (required, marked with a red asterisk): A date input field containing "2018-06-08". Below this field is a paragraph of text: "Certain product information becomes visible to the public in Bluetooth SIG's database at 00:00 GMT-5 Central Time (US & Canada) on the Publish Date you select. The Publish Date must be on or after the Listing Date, but no later than 90 days from the date this project is submitted."
- Description** (required, marked with a red asterisk): A large empty text area with a diagonal slash icon in the bottom right corner.
- Model Number** (required, marked with a red asterisk): A large empty text area with a diagonal slash icon in the bottom right corner.

At the bottom of the form, there are two buttons: a grey "Cancel" button and a blue "Save" button.

Fig 12.

3.8 Declaration ID


Select the "Declaration ID" field and click the "Purchase a Declaration ID" button, as shown in Fig 13. Fill in the credit card information. The cost of a declaration ID is as follows:

- If you are an associate member, one declaration ID fee costs 4000 USD.
- If you are an adopter member, one declaration ID fee costs 8000 USD.

For detailed cost information, visit <https://www.bluetooth.com/develop-with-bluetooth/qualification-listing/qualification-listing-fees>.

Purchase a Declaration ID

Declaration Type Standard
\$4000 USD
Standard Declaration Fee

Payment Method Credit Card  Invoice

Card Number *

Expiration Date * 07 - J 2018

Cardholder Name

Member Company NXP Semiconductors

Billing Address * 11/F, SCC Tower A, No.88

Suite #

City * shenzhen

State/Province * guangdong

Postal Code * 518054

Country/Region * China

By clicking on the "Purchase Declaration ID" button below, you agree: (1) to pay Bluetooth SIG the amount shown above according to the terms of Bluetooth SIG's invoice or, if you have entered credit card information above, that Bluetooth SIG may charge the card in the amount shown above immediately when you click the Purchase Declaration ID button below; (2) that Bluetooth SIG will not issue a Declaration ID until payment has been processed; and (3) to the [Bluetooth Launch Studio Terms of Use](#).

Purchase Declaration ID Cancel

Fig 13.

3.9 Review and submit

After the above items are completed, go to the "Review and Submit" field. Firstly, the Launch Studio automatically checks the status. If the four items shown in [Fig 14](#) pass, proceed to the next step.

Status	Task
✓ ICS Selection	All Layers Consistent
✗ Test Documentation	Upload Test Evidence
✓ Product Declaration	Complete
✗ Declaration ID	Purchase a Declaration ID

Fig 14.

Tick all options in field 1, sign the project leader’s name in field 2, and submit the project by clicking the button in field 3. The certification process is completed and waits for an approval from SIG.

Complete the Project and Submit Product(s) for Qualification

All status alerts must be resolved before submitting your project, provided that you may submit your project with an ICS inconsistency if you also submit a Test Case Waiver applicable to this project. See above “Project Status” section.

By typing my name or other symbol of my signature into the “Signature” field below, I agree on behalf of NXP Semiconductors (“Company”) to [Bluetooth Launch Studio Terms of Use](#), and I make the following representations and warranties personally and on behalf of Company. The following representations and warranties, together with all project information and the [Bluetooth Launch Studio Terms of Use](#), are the Supplier Declaration of Conformity and Declaration of Compliance described in the [Program Reference Document \(PRD\)](#) and [Declaration Process Document \(DPD\)](#).

- I am authorized by Company to submit all of the information and materials included in this project and all information and materials are true, complete, and accurate.
- Company does not, by its governing documents or other applicable law, require more than one signatory, a stamp or seal, or a witnessed signature to be legally bound.
- I agree on behalf of Company to contract in English and electronically, and adopt the characters and symbols input in the signature field below as my signature, with the same effect as an ink signature.
- ¹ The products included in this project are owned by Company and, if marketed or distributed, are done so under a name that uniquely identifies Company as the source of the Product.
- The product(s) included in this project and the corresponding Qualified Designs comply with the [Bluetooth Launch Studio Terms of Use](#) and the versions of the Bluetooth Specifications referenced in the project.

If any of the foregoing is not correct or you do not agree, you must exit this form without signing.

Signature: ²

³

Submit your project and documentation to the Bluetooth SIG.

Fig 15.

4. Core specification timelines

To encourage the members to gradually deprecate the old version of the Bluetooth core specification and switch to the new Bluetooth core specification, SIG launched a deprecation and withdrawal plan for the Bluetooth core specification. The section on BLE states the following:

- BT4.1/ 4.0 will be deprecated in 2019.1.1 and withdrawn in 2020.1.1.
- There are no plans for BT4.2/5.0.

For more information, visit www.bluetooth.com/specifications/bluetooth-core-specification/archived-specifications.

If you want to certificate a deprecated version of the Bluetooth core specification, the declaration ID fee is 25000 USD (for each).

5. References

[1] PRD.PROC.2.3.0.pdf

[2] DPD.PROC.1.0.0.pdf

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