LMX9838 Bluetooth® (PRD 2.0) Qualification Guideline

1.0 Introduction

The National Semiconductor LMX9838Bluetooth® Serial Port module is a highly integrated module including radio, baseband controller, memory device, crystal, antenna and loop filter and internal EEPROM. All hardware and the on-chip ROM firmware is included to provide a complete solution from antenna through the complete lower and upper layers of the Bluetooth stack, up to the application including the Generic Access Profile (GAP), the Service Discovery Application Profile (SDAP), and the Serial Port Profile (SPP).

This document describes some qualification guidelines of the LMX9838 module, based on the PRD 2.0 specification, For more detailed information consult the www.bluetooth.org website.

All numbers, screenshots and links are based on the bluetooth SIG website as of September 2007 and are subject to change.

2.0 Using the LMX9838 as SPP module

If the end product requires the SPP profile only (e.g. Typical cable replacement application) the LMX9838 module can be integrated as is into the end product.

2.1 TO BE DONE

List of the qualification requirements for using the LMX9838 as SPP module:

- The End Product Manufacturer must be signed up as a Bluetooth SIG Adopter. This is free of charge. See Section 4.1 BLUETOOTH MEMBERSHIP REGISTRATION.
- Perform End Product Listing (EPL). This is a free listing. See Section 4.4 on page 4 for details.

2.2 NOT REQUIRED

The following point is not required for this specific system.

LMX9838 is already QDL listed as an SPP module. By relabeling, the End Product can refer to the LMX9838 QD ID.

Qualified Design Listing (QDL) not required: The

2.3 PRODUCT INFORMATION

National Semiconductor

Application Note 1709

Markus Roemer September 2007

The product can be characterized by the following entries:

TABLE 1. End Product Information

Design Information	
Product Name	End Product Name
Bluetooth Qualified Design ID (QD ID)	B012394
Bluetooth Product Type	End Product
Product Name	LMX9838

3.0 Implementing Additional Profiles on the LMX9838

If the end product requires additional profile(s) implemented on the host device (e.g. Headset, OBEX..) a few more qualification requirements will be required for the end product.

3.1 TO BE DONE

List of the qualification requirements:

- The End Product Manufacturer must be signed up as a Bluetooth SIG Adopter. This is free of charge. See Section 4.1 BLUETOOTH MEMBERSHIP REGISTRATION.
- Perform additional profile(s) Qualification and Tests. Price will depend on the Bluetooth Qualification Tests Facility.
- The qualification and tests needed should be lowered to a minimum as the LMX9838 is already SPP module
- Use the Bluetooth test plan generator as described Section 4.2 BLUETOOTH TEST PLAN GENERATOR to define the required tests.
- QDL listing (\$10000 for Adopter). See Section 4.3 QUALIFICATION LISTING INTERFACE for how to obtain a new QD ID and details on the Qualification Listing Interface (QLI).

4.0 References

All references are based on the Bluetooth SIG website as of September 2007 and are subject to change. Refer to qualweb.bluetooth.org as a general link to the Bluetooth Qualification Program.

4.1 BLUETOOTH MEMBERSHIP REGISTRATION

To become member of the Bluetooth SIG, go on the following link:

https://programs.bluetooth.org/login/register/

Fill in the required information of the following form and send.

Bluetooth SIG Shop | Bluetooth.com search site enter keywords here search > Membership Registration Thank you for your interest in becoming a member of the Bluetooth Special Interest Group (SIG) Universities/Students/Education Membership within the Bluetooth SIG is reserved at the company level; however, employees of At this time, students and companies are also encouraged to register as users associated with their member company. As universities are not eligible for a member of the Bluetooth SIG, your company will join thousands of companies who share a membership within the common interest - building and promoting devices that incorporate Bluetooth wireless technology. Bluetooth SIG. If you are looking To register your company for membership, please select the Adopter Member option below. If your for information on Bluetooth company is interested in Associate membership, please send an email to member.relations@bluetooth.com after you have registered your company for Adopter wireless technology for a project, please visit Learn membership. If you are an employee of a company that is already a member and would like to register as a user, please select the Existing Member option below. Individual Users Not Associated with a Company Please choose your registration option -The Bluetooth SIG does not accept individuals for Adopter Member membership. As such, if you are Adopter membership is a free level of membership. All new companies must register as an not associated with a valid Adopter member first. If your company is interested in upgrading to Associate membership, company or if you are using a please email member.relations@bluetooth.com after you have completed Adopter public email domain, your membership registration. View the benefits of Associate membership. membership will not be accepted. If you are an • Choose Adopter Membership individual looking for information on Bluetooth Existing Member wireless technology, please If you are an employee of a current member company, please select this option. As an visit www.bluetooth.com. If you have any questions in regard to employee of an existing member company you will automatically be associated with your notential membership within the company's membership and have the opportunity to further get involved with Bluetooth Bluetooth SIG, please email wireless technology. Member Relations. O New User from a Member Company About you * Indicates required field First Name * Middle Initial Last Name * Company * Job Title* Mobile Email * Verify Email *

30037001

4.2 BLUETOOTH TEST PLAN GENERATOR

To start a new test plan generator, go on the link:

https://programs.bluetooth.org/tpg/testplan.cfm

And follow the steps of the test plan.

Create a Test Plan

STEP 1: Create/Select a Project

Before you can generate a test plan, you must <u>Create a Project</u>. Projects contain general information about the design you are planning to qualify to and allow you to declare which features you plan on implementing.

search site

enter keywords here

To create a test plan from an existing project, choose from your projects below to edit PICS documents.

PRD 2.0 Projects

» test3

» Testproject2

» Testproject

STEP 2: Declaration Summary

The declaration summary allows you to choose which layers you will be supporting.

STEP 3: Edit Core PICS

The Core PICS consist of (RF), (BB), (LMP), (L2CAP), (SDP), and (GAP).

For an End Product, all mandatory requirements of these layers must be supported.

For a Host Sub-system, all mandatory requirements of (L2ĆAP) (SDP) and (GAP) must be supported. For a Controller Sub-system, all mandatory requirements of (RF) (BB) and (LMP) must be supported.

Total controller can ejetern, an manager, regardin

STEP 4: Edit Profile PICS

Any profiles that your product contains can be edited here.

STEP 5: Consistency Check

Before a correct test plan can be generated, a static consistency check needs to be performed to ensure that the proper features are supported. Many features have prerequistes, dependencies, or groupings that are required if they are supported.

STEP 6: Generate the Test Plan

The Test Plan is the final step. Here you are issued a report of all the test cases that need to be performed in order to qualify your project.

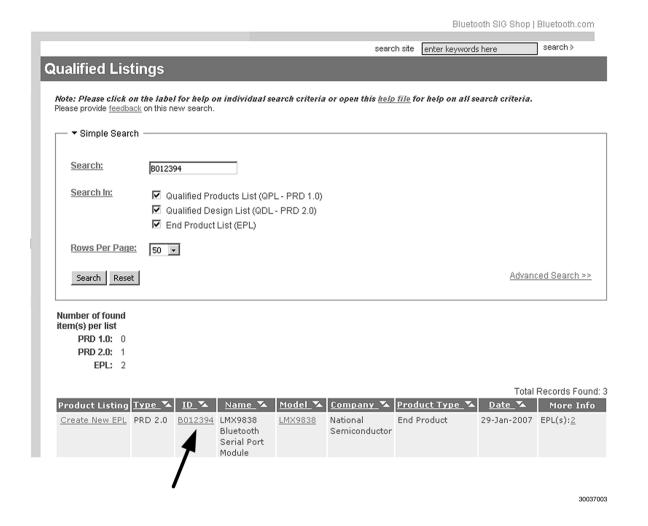
30037002

search >

To create a new project, the LMX9838 PICS information might be necessary. To get those information go on the link.

https://programs.bluetooth.org/tpg/QLI_AII_Designs.cfm

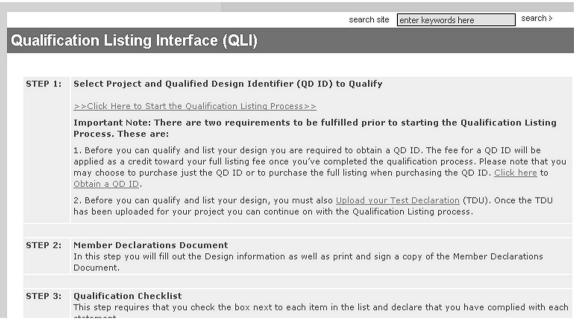
Enter the QD ID number B012394 in the search field. The LMX9838 module appears in the result field. Click on "profiles" then "display PICS details" to get the PICS information needed.



4.3 QUALIFICATION LISTING INTERFACE

Once a project is created, the next point should be to follow the Qualification Listing Interface (QLI) steps to obtain a QD ID and proceed the qualification checklist. All details are on the following link:

https://programs.bluetooth.org/tpg/QLI_Landing.cfm



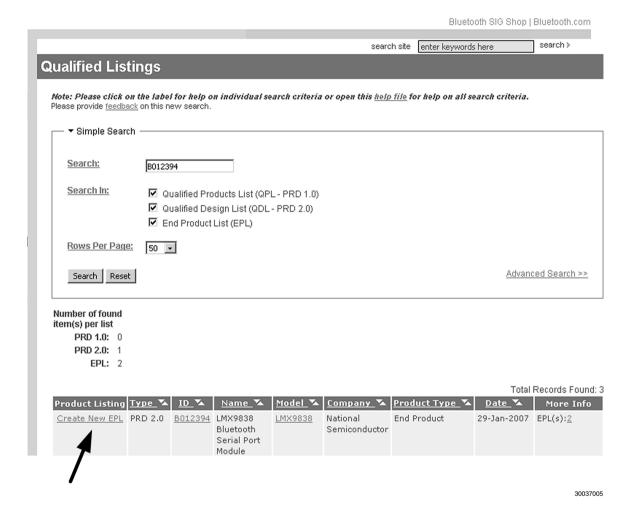
30037004

4.4 EPL LISTING

To create an End Product Listing, go on the following link once registered:

https://programs.bluetooth.org/tpg/QLI_All_Designs.cfm

Find next the product to be listed as EPL. To do so, enter the QD ID number B012394 in the search field. The LMX9838 module appears in the result field. Click on Create New EPL. Fill in the information required and send.



5.0 Regulatory Compliance

The LMX9838 has been tested and approved to be compliant to the following regulatory standards:

CE Compliance:

- EN 300 328 v1.7.1
- EN 301 489-17 v1.2.1

IC Compliance:

- RSS-GEN Issue 1
- RSS-210 Issue 7 Annex 8 and RSS-GEN issue 2

FCC Compliance:

FCC Part 15 Subpart C

5.1 FCC INSTRUCTIONS

5.1.1 Safety Information For RF Exposure

5.1.1.1 FCC Radiation Exposure Statement:

This module may only be installed by the OEM or an OEM integrator. The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. OEM integrators and End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Only the antenna filed under FCC ID: ED9LMX9838 can be used with this device.

5.1.1.2 End Product Labeling

FCC ID label on the final system must be labeled with

"Contains TX FCC ID: ED9LMX9838 "or

"Contains transmitter module FCC ID: ED9LMX9838".

IC label on the final system must be labeled with

"Contains TX IC: 1520A-LMX9838" or

"Contains transmitter module IC: 1520A-LMX9838".

5.1.1.3 End Product Manual Information

In the user manual, final system integrator must ensure that there is no instruction provided in the user manual to install or remove the transmitter module.

LMX9838 must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

The following information is required to be incorporated in the user manual of final system:

a) USA-Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- · Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Caution: Exposure to Radio Frequency Radiation.

This device must not be co-located or operating in conjunction with any other antenna or transmitter.

b) Canada - Industry Canada (IC)

This device complies with RSS 210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device."

L ' utilisation de ce dispositif est autorisée seulement aux conditions suivantes : (1) il ne doit pas produire d'interference et (2) l' utilisateur du dispositif doit étre pr?t ? accepter toute interference radioélectrique reçu, m?me si celle-ci est susceptible de compromettre le fonctionnement du dispositif.

Caution: Exposure to Radio Frequency Radiation.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website http://www.hc-sc.gc.ca/rpb.

Notes

THE CONTENTS OF THIS DOCUMENT ARE PROVIDED IN CONNECTION WITH NATIONAL SEMICONDUCTOR CORPORATION ("NATIONAL") PRODUCTS. NATIONAL MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS OF THIS PUBLICATION AND RESERVES THE RIGHT TO MAKE CHANGES TO SPECIFICATIONS AND PRODUCT DESCRIPTIONS AT ANY TIME WITHOUT NOTICE. NO LICENSE, WHETHER EXPRESS, IMPLIED, ARISING BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT.

TESTING AND OTHER QUALITY CONTROLS ARE USED TO THE EXTENT NATIONAL DEEMS NECESSARY TO SUPPORT NATIONAL'S PRODUCT WARRANTY. EXCEPT WHERE MANDATED BY GOVERNMENT REQUIREMENTS, TESTING OF ALL PARAMETERS OF EACH PRODUCT IS NOT NECESSARILY PERFORMED. NATIONAL ASSUMES NO LIABILITY FOR APPLICATIONS ASSISTANCE OR BUYER PRODUCT DESIGN. BUYERS ARE RESPONSIBLE FOR THEIR PRODUCTS AND APPLICATIONS USING NATIONAL COMPONENTS. PRIOR TO USING OR DISTRIBUTING ANY PRODUCTS THAT INCLUDE NATIONAL COMPONENTS, BUYERS SHOULD PROVIDE ADEQUATE DESIGN, TESTING AND OPERATING SAFEGUARDS.

EXCEPT AS PROVIDED IN NATIONAL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, NATIONAL ASSUMES NO LIABILITY WHATSOEVER, AND NATIONAL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY RELATING TO THE SALE AND/OR USE OF NATIONAL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE CHIEF EXECUTIVE OFFICER AND GENERAL COUNSEL OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

Life support devices or systems are devices which (a) are intended for surgical implant into the body, or (b) support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in a significant injury to the user. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.

National Semiconductor and the National Semiconductor logo are registered trademarks of National Semiconductor Corporation. All other brand or product names may be trademarks or registered trademarks of their respective holders.

Copyright© 2007 National Semiconductor Corporation

For the most current product information visit us at www.national.com



National Semiconductor Americas Customer Support Center Email: new.feedback@nsc.com Tel: 1-800-272-9959 National Semiconductor Europe Customer Support Center Fax: +49 (0) 180-530-85-86 Email: europe.support@nsc.com Deutsch Tel: +49 (0) 69 9508 6208 English Tel: +49 (0) 870 24 0 2171 Français Tel: +33 (0) 1 41 91 8790 National Semiconductor Asia Pacific Customer Support Center Email: ap.support@nsc.com

National Semiconductor Japan Customer Support Center Fax: 81-3-5639-7507 Email: jpn.feedback@nsc.com Tel: 81-3-5639-7560