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LAPIS Technology Co., Ltd.
October 1, 2020

ROHM GROUP
LAPIS
SEMICONDUCTOR

MK71050-03 Evaluation Kit
(MK71050-03USB-EK)
Hardware Manual

Initial Release (Official): June 11, 2015

ROHM
SEMICONDUCTOR

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[h] Use of the Products in places subject to dew condensation

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[b] Where the temperature or humidity exceeds those recommended by LAPIS Semiconductor
Temperature: 5°C to 40°C, Humidity 40% to 60%
[c] Storage in direct sunshine or condensation.
[d] Storage in high Electrostatic.

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Preface

This document outlines the hardware of MK71050-03 evaluation kit (MK71050-03USB-EK) which enables 2.4 GHz-band radio communication conforming to Bluetooth® LE on Windows PC via USB.

The following related documents are available for reference.

- MK71050-03 Data Sheet
- ML7105 Data Sheet
- ML7105 User's Manual
- Bluetooth Application Controller Interface (BACI) Command Manual

- BLE Evaluation Kit AT Command (VSSPP2 Edition) Reference Manual
- BLE TOOL User's Manual
- BLE Evaluation Kit Setting Utility (VSSPP2 AT Command Edition) Operation Manual

•Bluetooth® is a registered trademark of Bluetooth SIG, Inc.
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Table of Contents

Preface iv
Table of Contents v
1. MK71050-03USB-EK Overview 1
2. Configuration 2
2.1 System Configuration 2
2.2 Configuration of MK71050-03 USB Dongle 3
3. User Interface 4
3.1 Connection of uEASE 4
4. Circuit Diagram 5
4.1 MK71050-03 Evaluation Module 5
4.2 USB Conversion Board 7
Revision History 8

1. MK71050-03USB-EK Overview

When you receive MK71050-03USB-EK, make sure that all of the following components are included in the kit. Should there be any missing or broken part, contact our sales representative.

Contents

Components	Quantity
MK71050-03 USB dongle - MK71050-03 evaluation module + USB conversion board	1
uEASE pitch conversion board	1

MK71050-03USB-EK configuration

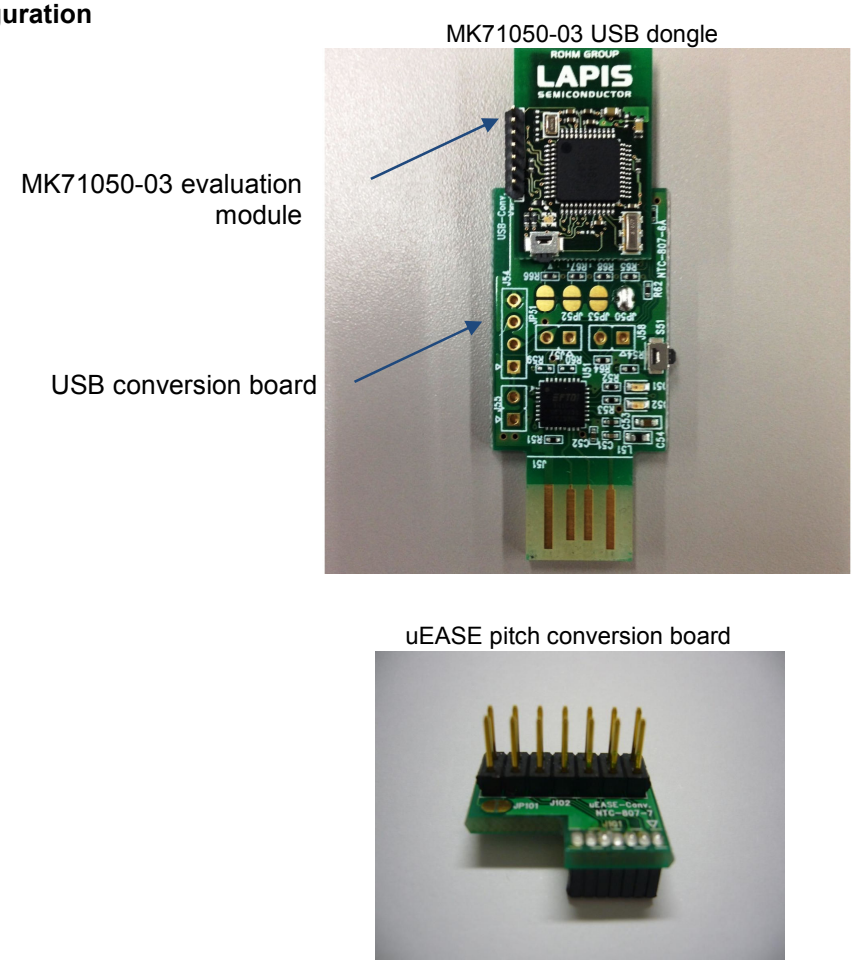


Figure 1-1 MK71050-03USB-EK

2. Configuration

2.1 System Configuration

MK71050-03 USB dongle can operate as Central (Master) or Peripheral (Salve) for the Bluetooth LE connection.

With the LAPIS VSSPP(*) software, it supports the following functions in addition to a simple communication between PCs.

- ○Master/slave switching
- ○Up to five pairings
- ○Communication with smartphones with Android 4.3 or later
- ○Connection to iPhone beacon application with iBeacon operation

The online shopping-only new GUI (PC) can easily change various parameters of BLE.

(*)VSSPP: Vender Specific Serial Port Profile

See the following related manuals for details.

- BLE Evaluation Kit AT Command (VSSPP2 Edition) Reference Manual
- BLE TOOL User's Manual
- BLE Evaluation Kit Setting Utility (VSSPP2 AT Command Edition) Operation Manual

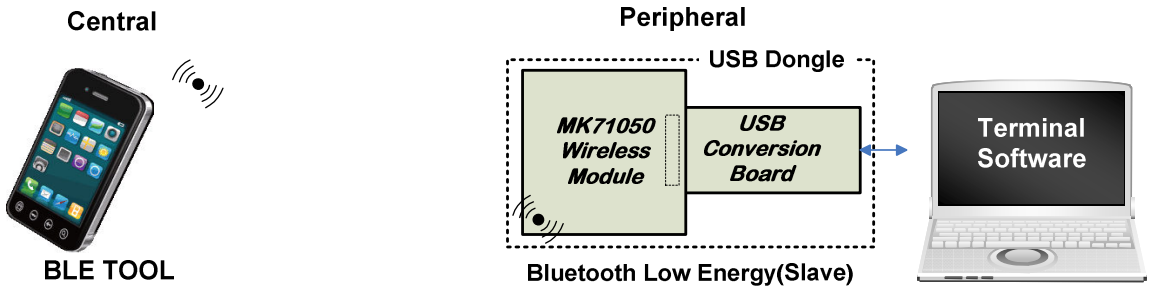


Figure 2-1 Example 1 of System Configuration with MK71050-03USB-EK

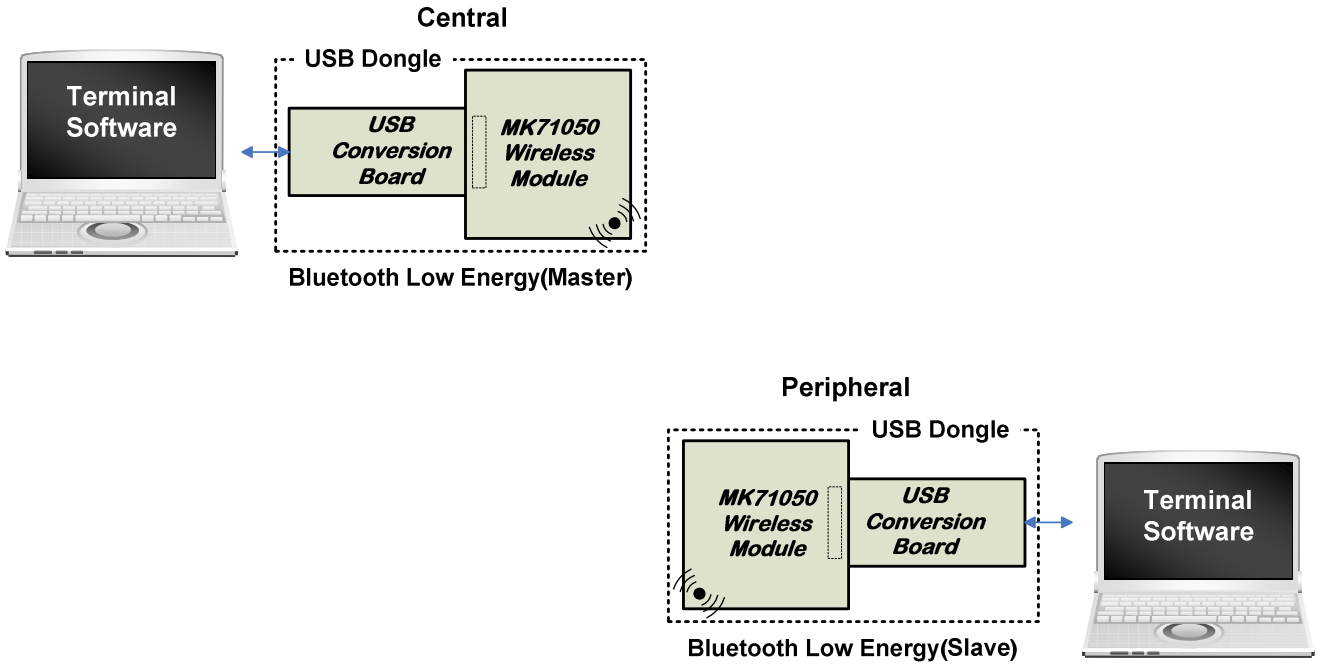


Figure 2-2 Example 2 of System Configuration with MK71050-03USB-EK

(Note) The configuration example 2 requires two kits of MK71050-03USB-EK.

2.2 Configuration of MK71050-03 USB Dongle

Figure 2-2 shows the appearance of MK71050-03 USB dongle, and Table 2-1 shows its configuration.

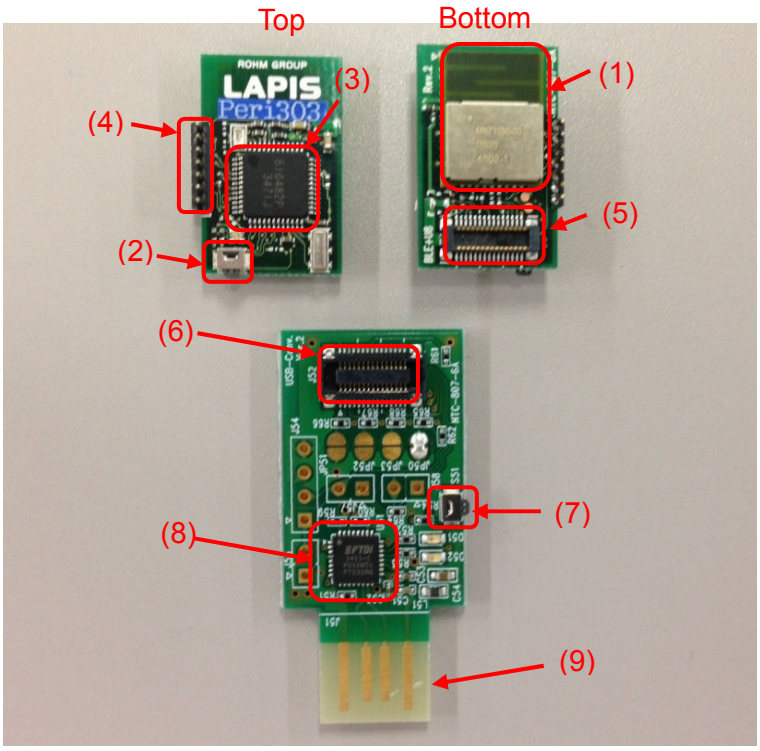


Figure 2-2 Appearance of MK71050-03 USB Dongle

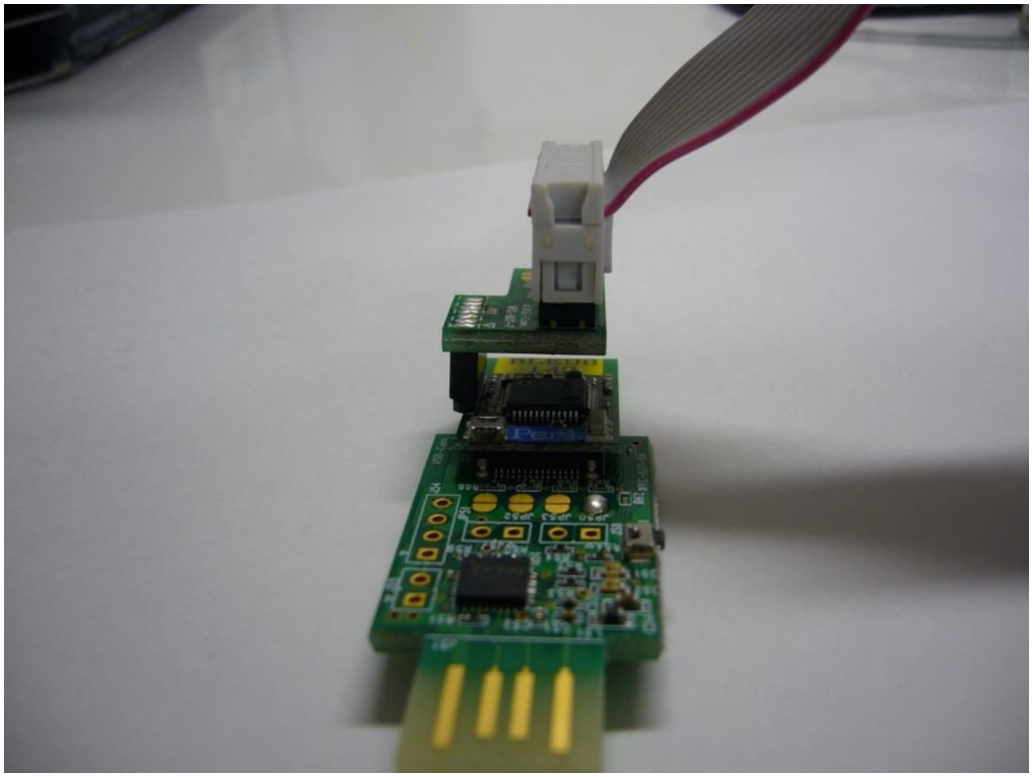
Table 2-1 Configuration of MK71050-03 USB Dongle

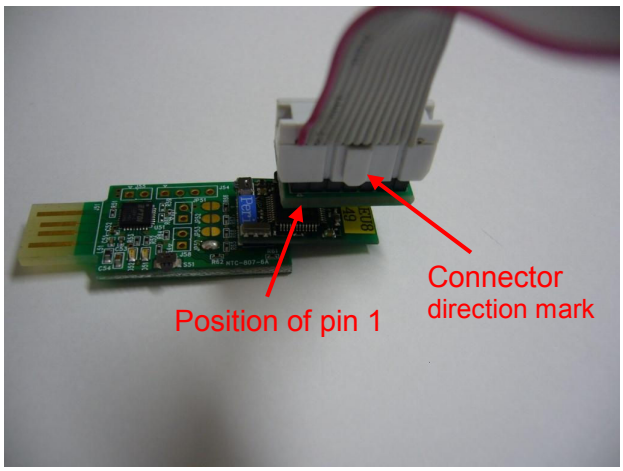
No.	Name	Symbol	Description
MK71050-03 evaluation module			
(1)	MK71050-03	U1	Bluetooth LE radio communication module
(2)	B3U-3000P(M)	S1	MK71050-03 reset switch
(3)	ML610Q482	U2	U8 microcontroller
(4)	Half pitch pin header	J2	Connector port for uEASE pitch conversion board
(5)	55650-0388	J1	0.5 mm pitch BtoB connector (plug) by Molex
USB conversion board			
(6)	54363-0389	J52	0.5 mm pitch BtoB connector (receptacle) by Molex
(7)	B3U-3000P(M)-B	S51	Reset switch
(8)	FT232RQ	U51	USB-UART (USB serial conversion) IC by FTDI
(9)	USB connector	J51	PCB pattern for USB connector A

3. User Interface

3.1 Connection of uEASE

uEASE is an incircuit emulator (ICE) module for the U8 microcontroller ML610Q482 implemented on the MK71050-03 evaluation module. Connect the MK71050-03 evaluation module with uEASE as shown in the following figure. Because the pin pitch of the uEASE connector is different from that of the uEASE cable, the uEASE pitch conversion board is necessary.





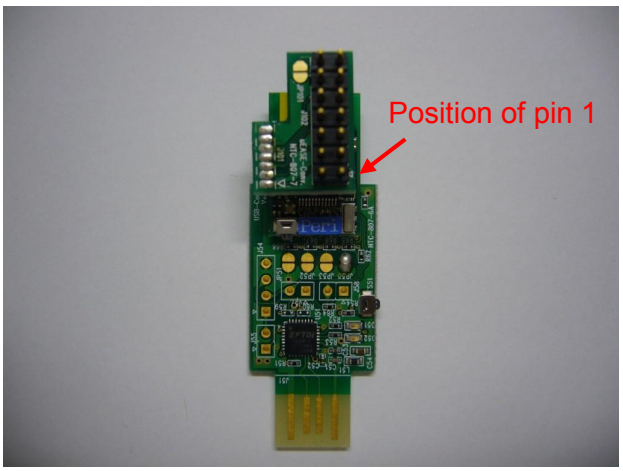


Figure 3-1 Connection of MK71050-03 Evaluation Module and uEASE

The uEASE module enables the following functions.

- Writing an application code to the flash memory included in ML610Q482 (*)
- On-chip debug function (reset, step run, break point, etc.)

(*) A sample application for VSP software is written at shipment.

For details of the debug function, see the manuals of uEASE.

4. Circuit Diagram

4.1 MK71050-03 Evaluation Module

See the next page.

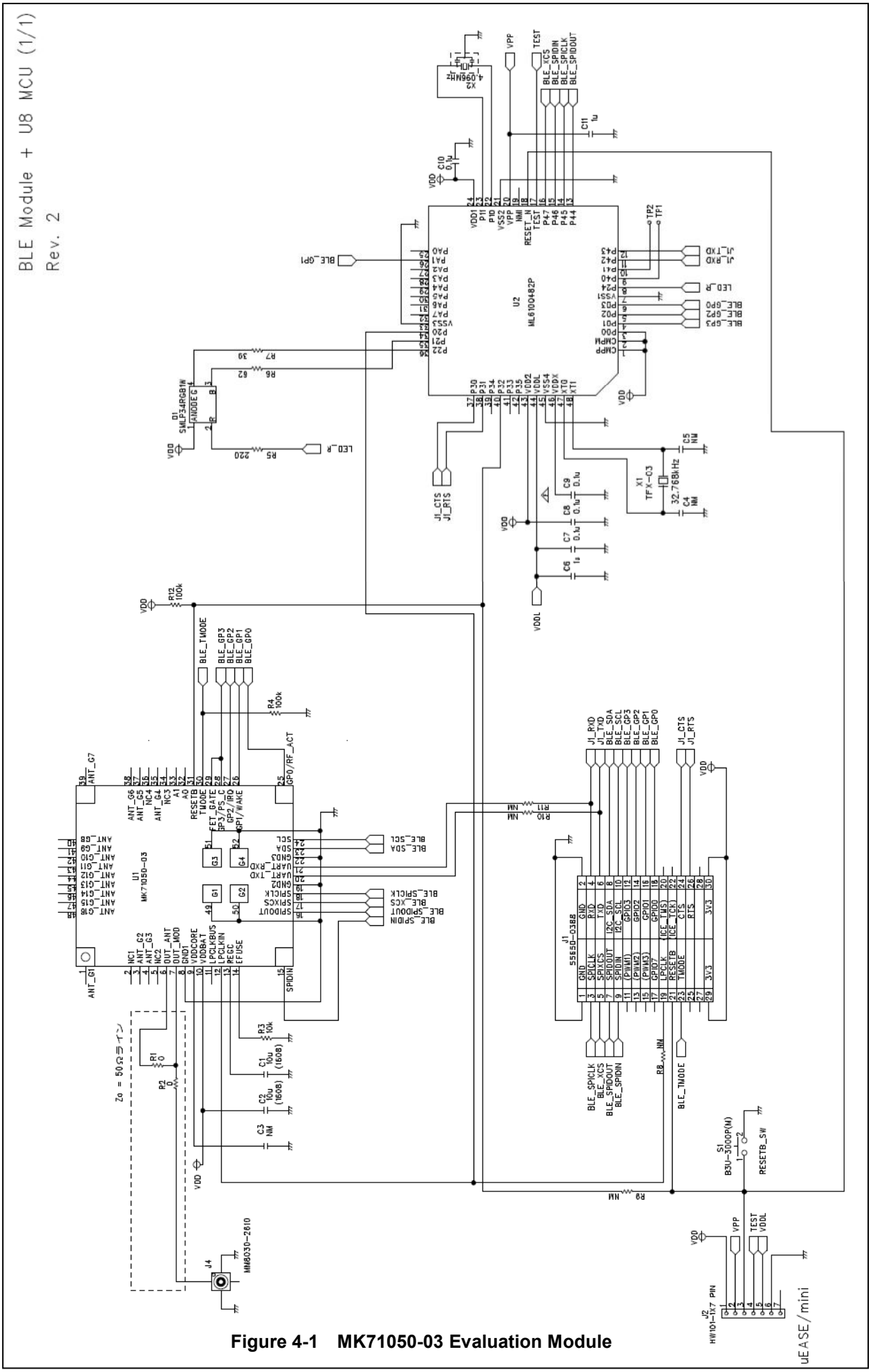


Figure 4-1 MK71050-03 Evaluation Module

4.2 USB Conversion Board

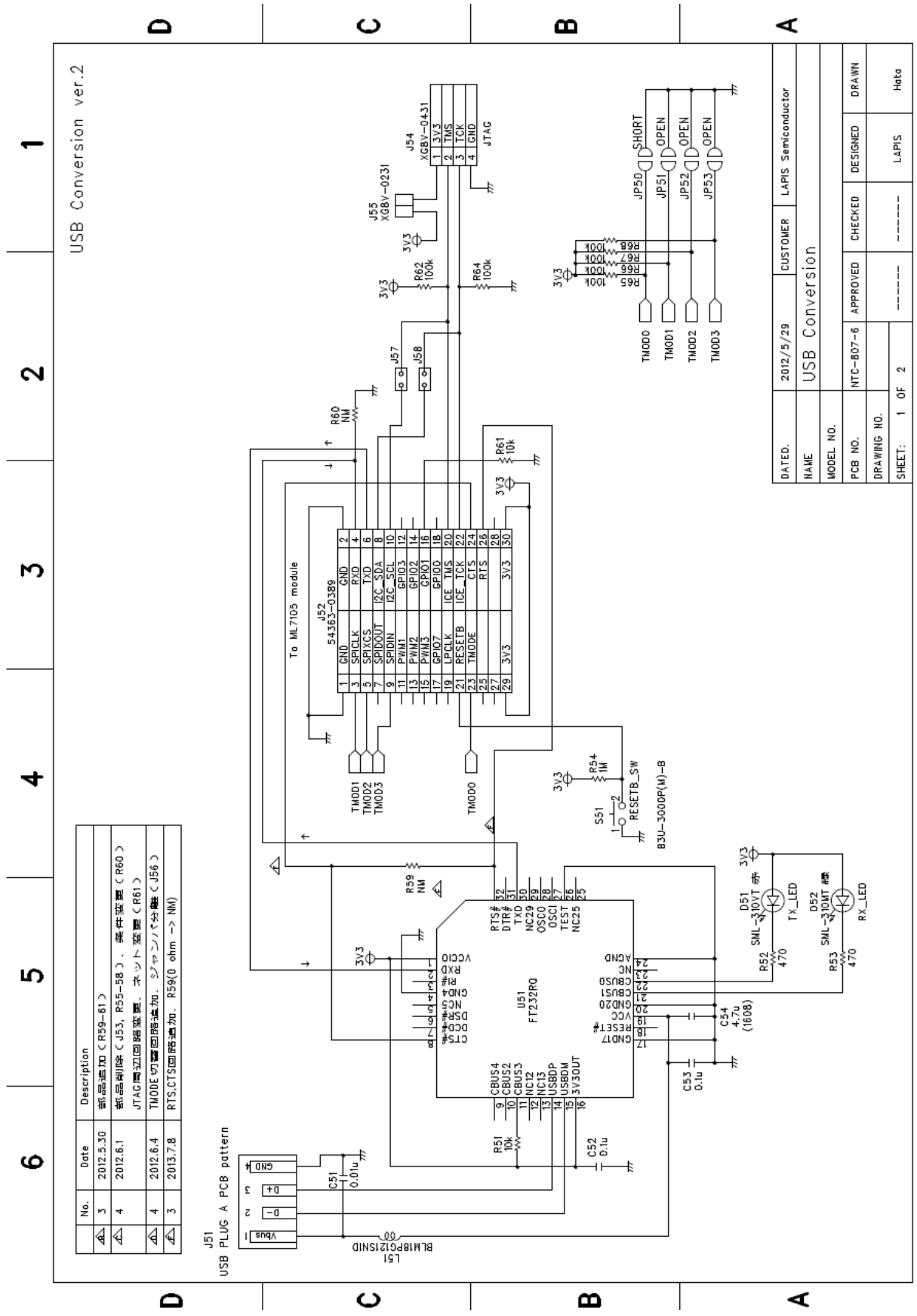


Figure 4-2 USB Conversion Board

Revision History

Document No.	Issue date	Page		Revision description
		Before revision	After revision	
FEXK71050-03_USB-EK_HardManual-01	June 11, 2015	-	-	Initial release (official)