CC1111 USB Evaluation Kit 868/915 MHz Quick Start Guide

1. Kit Contents

- 1 x CC1111 USB Dongle (CC1111Dongle-868)
- This Quick Start Guide

The hardware in this kit is designed to comply with ETSI, FCC and IC regulatory requirements over temperature from 0 to +35°C.

2. Getting Started

The CC1111 USB Dongle can be used as a development platform for USB and RF applications.

An external development board or debugger, like the CC Debugger, SmartRF04EB or SmartRF05EB, is required to program and debug software running on the CC1111.

Note that the CC1111 USB Dongle is pre-programmed with the packet sniffer firmware.

This Quick Start Guide will describe how to use the dongle with the packet sniffer and what would be the next steps for developing your own software.

3. Preparations

Before proceeding, please download and install the following tools:

SmartRF Flash Programmer
www.ti.com/tool/flash-programmer

You will need this tool to program the packet capture firmware on the CC1111 USB dongle

SmartRF Packet Sniffer
www.ti.com/packetsniffer

This is the PC tool that displays and parses the packets received by the capture device.

4. Programming the Dongle

For the USB dongle to operate as a packet capture device, it must be programmed with the packet sniffer firmware. By default, the dongle comes pre-programmed with this firmware.

Connect the USB dongle to the debugger or the development board with an appropriate 10 pin flat cable. The dongle must also be powered via the USB bus. Refer to picture below for an example.

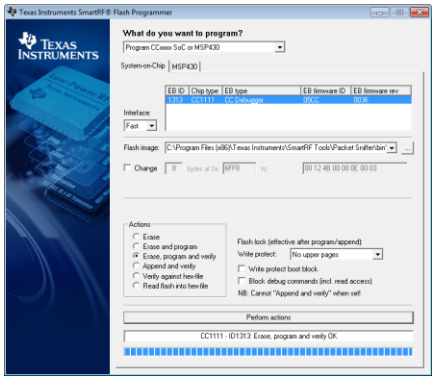
Caution! Avoid using other power sources for the dongle than a regular USB voltage source at max 5.5V, 500 mA.

5. Programming the Dongle

Launch the SmartRF Flash Programmer and make sure you select the “System-on-Chip” tab. The tool should show a line with CC1111 connected to a SmartRF04EB.

Next, locate the flash image **sniffer_fw_ccxx11.hex** in

“C:\Program Files\Texas Instruments\SmartRF Tools\Packet Sniffer\bin\general\firmware”



Select “Erase, program and verify” and press the “Perform Actions” button.

6. Install USB Driver

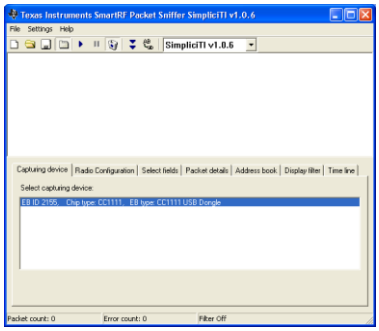
After programming the device, disconnect the dongle from the programming board and plug it into the PC. Windows’ new hardware wizard will appear.

Select the options for automatic installation and wait for the driver installation to complete. If the Wizard asks for a specific driver, point it to the cebal2.inf file located in “C:\Program Files\Texas Instruments\SmartRF Tools\Drivers\cebal\win_<arch-specific>\”

After installation of the driver, the Packet Sniffer capture device is ready for use.

7. Packet Sniffer (1)

Launch the Packet Sniffer. A dialog will request the user to select a protocol. The CC1111 capture device can be used with the SimpliciTI or the Generic (no parsing) protocols. A new window will appear.

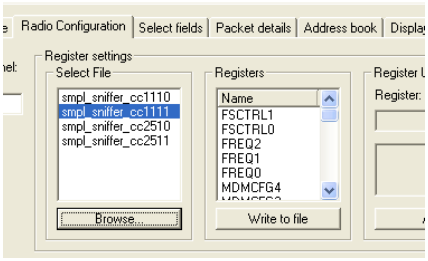


The USB dongle should be listed with chip type CC1111 and EB type CC1111 USB dongle in the “Capturing Device” tab.

Highlight the device to make it your capture device.

8. Packet Sniffer (2)

Next, select the Radio Configuration tab and make sure the radio registers on the device are set according to the format of the radio signals you are sniffing.



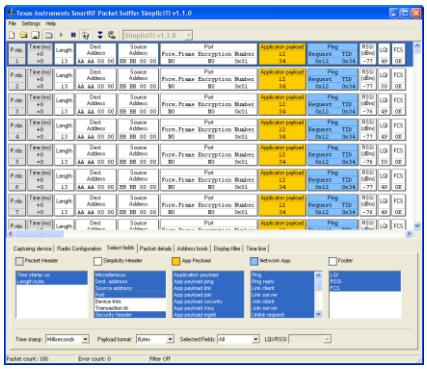
If this is the first time you use the tool, press the browse button to locate a .prs file with packet sniffer register settings for CC1111.

You can generate your own .prs files with the “Register Export” function in SmartRF Studio

9. Packet Sniffer (3)

Finally, press the small “play” icon on the tool bar to start sniffing packets.

If there are radio packets on the air, and the CC1111 has the appropriate radio settings, the captured packets will be displayed in the packet sniffer display window.



Enjoy!

10. Developing USB Software

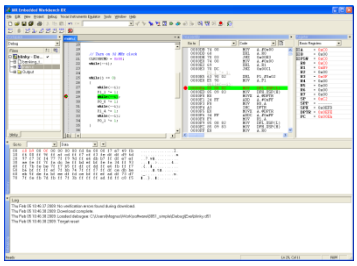
A good start for developing your own USB application for the CC1111 USB dongle would be the “CC USB Firmware Library and Examples” software package.

The Library contains a complete USB framework that allows the user to develop any USB device type. Examples showing implementations of a HID device and a CDC device are included.

The software can be downloaded from the CC1111EMK web page or directly from
www.ti.com/lit/zip/swrc088

11. Development Tools

The preferred tool for developing software for CC1111 and for single stepping and debugging is IAR Embedded Workbench for 8051.



A free, code size limited version can be downloaded from the web. See www.iar.com/ew8051

12. Thank You!

We hope you will enjoy working with the CC1111 device and related Low-Power RF products from Texas Instruments.

The Low Power RF Online Community has forums, blogs and videos. Use the forums to find information, discuss and get help with your design. Join us at www.ti.com/lprf-forum

Caution! The kit contains ESD sensitive components. Handle with care to prevent permanent damage.

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3.1.1 *Notice applicable to EVMs not FCC-Approved:*

FCC NOTICE: This kit is designed to allow product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and software developers to write software applications for use with the end product. This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of this chapter, the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under part 5 of this chapter.

3.1.2 *For EVMs annotated as FCC – FEDERAL COMMUNICATIONS COMMISSION Part 15 Compliant:*

CAUTION

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

FCC Interference Statement for Class A EVM devices

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Interference Statement for Class B EVM devices

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the 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 and, if not installed and used in accordance with the instructions, 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 turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

3.2 *Canada*

3.2.1 *For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210 or RSS-247*

Concerning EVMs Including Radio Transmitters:

This device complies with Industry Canada license-exempt RSSs. 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 the device.

Concernant les EVMs avec appareils radio:

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Concerning EVMs Including Detachable Antennas:

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Concernant les EVMs avec antennes détachables

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur

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https://www.ti.com/ja-jp/legal/notice-for-evaluation-kits-delivered-in-japan.html

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1. Use EVMs in a shielded room or any other test facility as defined in the notification #173 issued by Ministry of Internal Affairs and Communications on March 28, 2006, based on Sub-section 1.1 of Article 6 of the Ministry's Rule for Enforcement of Radio Law of Japan,
2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
3. Use of EVMs only after User obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless User gives the same notice above to the transferee. Please note that if User does not follow the instructions above, User will be subject to penalties of Radio Law of Japan.

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