CC1000 Errata Note 001, rev. 1.0

Switching between certain combinations of frequency words (FREQ) in CC1000 may cause the PLL never to be able to lock. This is most likely to occur in frequency hopping systems. A software fix solves the problem.

Description and reason for the problem

When a new frequency is selected by updating the FREQ registers or changing the MAIN.F_REG bit, a non-valid value can be latched due to internal clock skew. This non-valid value may put the PLL in a deadlock situation and prevent the PLL from locking.

The deadlock situation can happen if the 3 most significant bits of the FREQ words are different for the two frequencies. If the 3 most significant bits are equal, the deadlock will not occur. To ensure that the most significant bits are equal, use the same reference frequency divider value (REFDIV) for all channels.

Suggested workarounds

Alternative 1:

As the problem only rise when the MSBs of the FREQ words are different, the first solution is to select the same reference frequency divider value (REFDIV) for all channels. Using a crystal frequency of 14.7456 MHz or above make it possible to generate 50 channels with the same REFDIV value, see AN011.

Alternative 2:

If the three MSBs of the FREQ words cannot be made the same for all channels, a software workaround must be used.

Alternative 2a:

The general software workaround is to write a “safe” frequency value to the FREQ register before the new frequency is written. The “safe” frequency word is FREQ_2A (or FREQ_2B) = E0h. This workaround involves only one additional write operation:

This is the suggestion for a software workaround:

1. Write FREQ_2A (register 01h) = E0h. (Presuming that frequency A is used.)
2. Write new frequency word to FREQ_A, or set MAIN.F_REG = 1 in order to swap the frequency word and use FREQ_B.

Alternative 2b:

An alternative software workaround is to reset the frequency synthesiser. After the new frequency word is programmed, the FS_RESET_N bit must be toggled by writing to the FSCTRL register, first setting the bit low, then high. This means two write operations to the register.

This is the suggestion for a software workaround:

1. Write new frequency word to FREQ_A or FREQ_B
2. First write FSCTRL (register 13h) = 00h
3. Then write FSCTRL (register 13h) = 01h

Fix
This problem is solved by a software workaround.

Batches affected
This errata note applies to all chip batches and revisions of the chip.

CHIPCON,
Tel. +47-22958544, Fax +47-22958546
www.chipcon.com
wireless@chipcon.com

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		**Applications**	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
		Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments
Post Office Box 655303 Dallas, Texas 75265