CC1070
Reliability Report

CONCLUSION
The CC1070 meets the Chipcon product reliability qualification standards based on the procedures and tests documented in the following.

Design phase
Design is made for robustness using extensive corner simulations for:
-Process variations.
-Minimum/maximum operating temperature
-Minimum/maximum operating voltage
-Minimum/maximum process limitations.

Process
The CC1070 is derived from the CC1020, and is based on the Chipcon SmartRF®-02 platform. It is designed in an industry standard 0.35μm mixed signal 3.3V CMOS process with 2 poly layers and 4 metal layers.

Package reliability

Moisture Sensitivity Level:	JEDEC Level 3
Temp Cycling	-65/150°C, 1000 cycles
Thermal Shock Test	-65/150°C, 500 cycles
HAST	130°C/85% r.h. 168 hrs.
Autoclave	121°C / Sat. steam, 15 PSI, 168 hrs

Transfer to production
First Article Inspection (testing at –40/+25/+85°C)
Production test limits extraction based on statistical methods.
ESD test according to AEC - Q100-002 Human Body Model.
Minimum immunity level: 1kV: all combination of pins, except:
- 500V Pin 10 to all other pins except RF out
- 300V Pin 13 to all other pins except RF out
- 300V RF out to all other pins

Latch-up test according to AEC – Q100-004.
- Over voltage test:
  - All pins passed 5.31V
- I Test:
  - All pins passed +/- 100mA except:
  - Pin 4 passed +/- 68mA
  - Pin 6 passed +/- 58mA

Accelerated lifetime test is based on the CC1020 HTOL tests. Minimum expected lifetime (*): 10 years at 58°C, 1.4 years at 85°C, FIT approximately 30 (at room temp) with 60% confidence level.
(*) based on test of 20 devices at 125°C in 1080 hours, 0 failures.

Production test
Wafer sort, +85°C (not yet implemented)
Final test, +25°C

QA sampling (+25°C/+105°C)

Tape & Reel specification

Package: QFN 20 - RoHS compatible
Tape Width: 12 mm
Component Pitch: 8 mm
Hole Pitch: 4 mm
13inch tape with 5000 pcs.
Carrier tape and reel is in accordance with EIA specification 481.

Solderability

Recommended soldering profile is according to IPC/JEDEC J-STD-020C July 2004

Summary

The above data show that device CC1070 meets Chipcon qualification standards and has an acceptable level of reliability.

Revision history

1.0 Initial document
1.1 Updated with ESD and Latch up results

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