

## **CC1021**

# **Reliability Report**

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### **CONCLUSION**

The CC1021 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 CC1021 is based on the Chipcon SmartRF<sup>®</sup>-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 Mil. Std. 883E 3015 Human Body Model.

Minimum immunity level: 1kV: all combination of pins, except: 500V all RF pins, except: 400V at AVDD\_RF1 to AVDD\_LNA and AVDD\_RF1 to Pin 21.

Latch-up testing according to JEDEC 17.

Minimum immunity level: ± 100mA at all pins. VDD abs. max. rating + 20% at all supply pins.

Accelerated lifetime test. Minimum expected lifetime (\*): 10 years at 58°C, 1.4 years at 85°C, FIT less than 40 (at room temp).

(\*) based on test of 20 devices at 125°C in 1070 hours, 0 failures.

### **Production test**

Wafer sort, +85°C (not yet implemented)

Final test, +25°C

QA sampling (+25°C)

### **Tape & Reel specification**

Package: QFN 32 - RoHS Compatible

Tape Width: 16,0mm

Component Pitch: 12,0mm

Hole Pitch: 4,0mm

13inch tape with 4000 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 CC1021 meets Chipcon qualification standards and has an acceptable level of reliability.

## **Revision history**

- 1.0 Initial document
- 1.1 Updated no. of units delivered (Echo version)
- 1.2 Updated wrt. Pb-free package qualification data