Texas Instruments, C2000 MCU Group
12203 S.W Freeway, Stafford,
Texas, 77477
USA

Offenbach, 2013-09-06

Your ref. 2011-11-15  Our ref. – please indicate 5014898-4970-0001/160391
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PRÜFBERICHT
t zur Information des Auftragnehmers

Test Report for the Information of the applicant

Manufacturer : Texas Instruments, C2000 MCU Group
12203 S.W Freeway, Stafford, Texas, 77477

Typ / Type : Version 1.0

Software Klasse: B / R1
Software class

Sehr geehrte Damen und Herren,


This test report contains the result of a singular investigation carried out on the product submitted. A sample of this product was tested to found the accordance with the thereafter listed standards or clauses of standards resp. The testing was carried out from 2011-11-21 to 2012-01-30.
Der Prüfbericht berechtigt Sie nicht zur Benutzung eines Zertifizierungszeichens des VDE und berücksichtigt ausschließlich die Anforderungen der unten genannten Regelwerke.

The test report does not entitle for the use of a VDE Certification Mark and considers solely the requirements of the specifications mentioned below.

Wenn gegenüber Dritten auf diesen Prüfbericht Bezug genommen wird, muss dieser Prüfbericht in voller Länge an gleicher Stelle verfügbar gemacht werden.

Whenever reference is made to this test report towards third party, this test report shall be made available on the very spot in full length.

I   Beschreibung / Description

Gegenstand / Object:  
SW-Module zum Aufbau einer Selbstdiagnose-Library für Mikrocontroller  
SW-Modules to setup a self-diagnostic library for micro controllers

Familie / family:  
Texas Instruments C2000 MCU Family

Familie Subtypes
Piccolo MCU  
TMS320F2806x/5x/3x/2x
Delfino MCU  
TMS320F28335/F28235

Hersteller / Manufacturer:  
Texas Instruments, C2000 MCU Group  
12203 S.W Freeway, Stafford, Texas, 77477

II   Prüfbestimmungen / Test Specifications

Standard  
EN/IEC 60335-1 (5.Ed) Anhang R  
EN/IEC 60335-1 (5.Ed) Annex R  
EN/IEC 60335-1 (5.Ed) Anhang R

Zusätzlich abgedeckt  
Tabelle R1  
Table R1  
R.3  
Maßnahmen zur Fehlervermeidung  
Measures to avoid errors

Additional coverage  
EN/IEC 60335-1 (5.Ed) Annex R

Standard  
EN/IEC 60730-1 (4.Ed) Anhang H

Zusätzlich abgedeckt  
Tabelle H.1

H.11.12.3  
Maßnahmen zur Fehlervermeidung  
H.11.12.3
III  Anmerkungen / Remarks

Die zur Prüfung vorgelegten SW-Module für die Mikrocontroller internen Selbstdiagnosen wurden hinsichtlich ihrer Fehlerabdeckung nach Standard überprüft.

The shown SW modules for micro controller internal self-diagnostics have been tested for standard conform failure coverage.

Die Prüfungen wurden an einem Versuchsboard mit dem Mikrocontroller Typ TMS320F2806x stellvertretend für die Familien TMS320F2806x/5/3x/2x & TMS320F28335/F28235 durchgeführt.

The testing have been performed on a evaluation board with the microcontroller type TMS320F2806x representative for the families TMS320F2806x/5/3x/2x & TMS320F28335/F28235.

Die Module sind zur Einbindung in ein übergeordnetes Selbstdiagnoseprogramm vorgesehen, welches vom Hersteller der Steuerung zur Prüfung vorzulegen ist.

The modules are intended to be included in a supervisory self-diagnostic program which has to be presented for approval by the manufacturer of the electronic control.

Die geprüften Module wurden zur Referenz beim VDE hinterlegt.

The tested modules are deposited at the VDE as reference files.

IV  Ergebnis / Result

Die geprüften Module erfüllen die Anforderungen gemäß der unter II genannten Prüfbestimmungen für Software-Klasse B/R1

Die Einbindung der Module ist in der jeweiligen Applikation zu prüfen.

The tested modules fulfil the requirements according the test specifications referred in chapter II for software class B/R1

The implementation of the modules has to be tested in the final application.

Die applikations-spezifische Fehlerbehandlung ist innerhalb der finalen Applikation zu realisieren.

The application specific failure handling has to be implemented in the final application.
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<th>C2000 MCU</th>
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<th>Source Description</th>
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Measures to avoid errors

- Development methodology
- Test process
- Document structure

Are following the requirements of EN/IEC 60335-1 & EN/IEC 60730-1 as far as possible.

Static analysis has been performed using LDRA testbed.

TI uses MISRA rules with some logical exceptions.

Special features (English only)

The C2000 MCUs include a special hardware element – parallel signature analysis (PSA) – that allows for a 40-bit cyclic redundancy check (CRC) of the data bus on a cycle-by-cycle basis for additional safety without affecting the main CPU or software application.

Clock measurement is done on-chip using hi-resolution PWM calibration based logic, which is common on in most of the C2000 MCUs. A special function call to calculate the scale factor that is measure of system clock is called to compare the variation of system clock. If the system clock varies abnormally due to system conditions, it can be detected easily.

The internal watchdog has a separate oscillator and can create an interrupt or reset, the watchdog has to be enabled after boot sequence, once enabled it cannot be easily disabled (several steps necessary)

The MCU's features a "missing clock" detection.

Best regards

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Washing, Dishwashing, Drying

Ingo Schäler
Christoph Türk

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