CUSTOMER INFORMATION FORM

(Rev. L – 8th Oct, 2013)

IMPORTANT NOTE

Texas Instruments (TI) – www.ti.com provides device verification and analysis services also referred to as "QTS" (Quality Tracking System) job. In order to perform a TI comprehensive analysis, all information as specified in this Request Form is required as best as possible. Incomplete information may result in the delay of analysis as well as the depth of the analysis might be limited.
For those customers who do not have direct customer status at Texas Instruments, should first involve their distributor to resolve problems and return samples via the distribution channel in order to stick to the distributor' business & return process.

Ship to Address: *This is the dedicated shipping address of the TI site doing initial verification / analysis.*	
	Customer Reference/Tracking #:
Customer Contact: *Please fill in your contact information in case additional information is required for TI verification and/or to share the TI reports.*	Company Name: ASG Luftfahrttechnik u. Sensorik GmbH Contact Person: Jloussi, Mannan Address: Junkersstrasse 2 - 69469 Weinheim Phone: +49 6201 603-165 E-Mail: Quality@asg-weinheim.de
Sales Channel: *First involve the distributor as your business partner to align with the distributor return process.*	☐ Parts were bought directly from Texas Instruments. TI Sales Contact Name: TI Sales Contact E-Mail Address:
	☒ Parts were bought from a TI authorized Distributor. Distributor Name: Mouser Electronics, Inc. Distributor Site / Location: Munich, Germany Distributor Contact E-Mail Address: munichorder.service@mouser.com Distributor PO# / Consumption Pull# Filled out by distributor Distributor RMA# / SCAR# Provided by Distributor
Board Manufacturer: *In the case of a 3rd party manufacturing the boards.*	☐ No board manufacturer (EMSI) is used.
	☒ Yes, a Board Manufacturer (EMSI) is used. Board Manufacturer Name: -- Board Manufacturer Site / Location: -- Board Manufacturer E-Mail Address: --

Customer Priority: *How urgent is this analysis?*	☐ **Standard:** *Manufacturing is inconvenienced* *Increase in field fallout* *Minor issue with product*	☒ **Major:** *Field fallout level of concern* *Major impact on throughput* *Production Stop*	☐ **Critical:** *Prevents product shipment* *Unacceptable field reliability* *Severely impacts product*

Product Details:

Texas Instruments Part Number (P/N): LM124DR	Customer Part Number (CP/N): 248052
Failure Rate: 0,28% 7 out of 2500	Ordered Quantity: 2500 Pcs
Returned Quantity: 7 *(limit = 3units)*	Failing LTC:
Failing Device Marking: *(top and backside - please attach pictures, if available)* Front: TI 32A4PFT / LMI124 Back: 407B31	Good Device Marking: Same *(top and backside - please attach pictures, if available)*

Customer Application:

☐ Consumer	☐ Computer	☐ Automotive
☐ Industrial	☐ Avionics / Military / Space	☒ Other *(please specify!)* agricultural machine
☐ Telecom	☐ Medical	

Customer Detection Place:

☐ Incoming Inspection	☐ Prototype	☐ 0 km / 0 hrs
☐ Reliability / Qual Test	☒ Production / Assembly	☐ Field Failure [mile / km]

Email an electronic copy of this failure verification request form to your distributor and your Texas Instruments contact.
Please print a hard copy and include with the sample return shipment.

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☐ In-Circuit Test (ICT)	☐ System Level Test	☐ Other *(please specify!)*
☒ Functional Test (FCT)	☐ Application	

Type of Failure:

Electrical:
- ☒ Functional Failure
- ☐ Parametric Failure
- ☐ Open / Short Circuit
- ☐ Impedance Measurement
- ☐ Programming Failure
  Additional Questionnaire!
- ☐ Memory (RAM/Flash)

Visual / Mechanical:
- ☐ Carrier (T&R, tube or tray)
- ☐ Pin(s) / Ball(s) Condition
- ☐ Package Damage
- ☐ Device Marking
- ☐ Solderability Problem
  Additional Questionnaire!

Other: *(please specify!)*

Shipping:
- ☐ Damaged Carton/Box
- ☐ Labeling
- ☐ Incomplete Seal
- ☐ Wrong Device / Quantity
- ☐ Document Missing

Failure Details and Description:

TI needs detailed information in order to duplicate the failure on a stand-alone device in the lab.
***Important:* Please provide schematics of the circuit along with measurement results & wave forms separately by email!**

Failure during final inspection: the capacity curve in the end device is out of tolerance.

Customer Failure Conditions:

Temperature [°C]	25°C	Frequency [f]	1Mhz	Vcc / Vdd [V]	12V DC	Vout [V]	5V DC

Failure Isolation & Application Information from the Customer:

What is the condition of the failed device(s)?	☒ Repeatable	☐ Sporadic
Was the failure verified on device level outside the application?	☒ Yes / ☐ No	
Did replacing the "failing" device with a new one resolve the problem?	☒ Yes / ☐ No	
Was the "failing" device installed onto another passing board causing that board to fail (A-B-A swap)? Means did the failure follow the "failing" device? *This is an essential part of the troubleshooting analysis. Pls ensure this has been performed!*	☒ Yes / ☐ No	
Is the "failing" device used in more than one location on the circuit board?	☐ Yes / ☒ No	
If yes, how many locations?		
Which locations are causing the failure?	Please see failure details and description	
Is this a new application? When was device designed into this application?	☐ Yes / ☒ No	
Was the application/design changed or modified recently?	☐ Yes / ☒ No	
Did the same problem occur in the past? If yes, please provide the reference TI QTS# or National PQA#.	☐ Yes / ☒ No	

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Programmable Products

Is the device protected by a Security Key Code? ☐ Yes / ☒ No

Which Firmware Version is used?

Low-Power RF (Chipcon) Radio Products

Device Register Settings? No, its not a a low Power RF-Device

MSP430™ Ultra-Low Power 16-Bit Microcontrollers:

JTAG access? ☐ Yes / ☒ No

Security fuse blown? If yes please provide the customer code! ☐ Yes / ☒ No

In case a FRAM device needs to be replaced on an application board the customer must be aware that the memory content can be changed by the de-soldering process. Therefore it is recommended to analyze any wrong application behavior directly on the application board or read out the memory content of the device before de-soldering.

Handling & Process Recommendations

1. Any sample return for verification/analysis (**if not requested by TI**) need to be sent de-soldered from its PCB/board/application.
   Note: TI normally does not recommend hand soldering of any SMD but recommends use of a SMD rework station.
   TI components that are considered moisture sensitive (> MSL-1) are sealed in moisture barrier bags at delivery. Due to the hygroscopic nature of the plastic encapsulants, the plastic ICs absorb a certain amount of moisture. When subjecting a SMT device to soldering process, the entrapped moisture inside the package can create excessive internal pressure resulting in delamination or even cracked package (popcorn effect).

In addition, depending on the MSL level of the component and if the floor life time from initial reflow soldering process to the repair or de-soldering process is exceeded, **a baking process is required** with parameters provided in IPC/JEDEC J-STD-033. Otherwise, the accumulated moisture can cause damaged as described above.

In case repair or even replacement of a component is needed, it is important that the temperature used for repairing, de-soldering or replacing the component, needs to be selected as low as possible to avoid any damage to the adjacent components or PC board.
The repair profile should be similar to the actual reflow profile, common rework tools are either hot gun or available rework machines.

- When reworking Electronic Assemblies Texas Instruments recommends utilization a SMD rework station whenever possible as well utilization of industry standard IPC-771.
- When Hand soldering is utilized solder iron can start at 315°C (as noted within IPC-771) and be adjusted as required to liquefy solder used at mount. Dwell time per lead should not exceed 4~5 seconds and encapsulated device should never exceed a temperature of 260°C.

A white paper report has been published as an application note on our SC Quality External Website:
http://focus.ti.com/lit/an/slva439a/slva439a.pdf

2. Furthermore the samples must be returned in testable condition (avoid bending leads, solder bridging) and in proper containers (units not free to move). Please see below recommended ESD packing methodology.
3. If multiple samples are returned, each sample should be uniquely marked.
4. For devices where the observed failure requires FLASH validation and FLASH is locked with a “password”, the “password” MUST be provided to enable FLASH failure analysis.

ESD Packing Methodology

The electronic industry has placed a growing emphasis on reliability and quality assurance. ESD damage to parts and assemblies can be minimized by using ESD controlled handling. **EIA-625** (Requirements for handling Electrostatic Discharge Sensitive Devices) is a good specification to use as reference.

Add comments on rejecting job if not proper ESD packaging is followed….

- Handle electrostatic discharge sensitive devices (ESDS) only in an ESD protected area (EPA).
- Avoid electrostatic potential differences and electrostatic discharges.
- No electrostatic generating materials (normal PE, PVC, PS, etc.) are allowed.
- Use only approved ESD protective packaging materials such as **Electrically Shielding Bags**, **Hinged Utility Boxes** and **Adhesive Grid Tape** to return parts for analysis to TI.

Electrically Shielding Bags

Hinged Utility Boxes

Adhesive Grid Tape

Any customer sample return received at TI with **Non ESD conform** packing will be rejected from verification and physical failure analysis as TI is unable to determine if any issues found are related to the customer observation or an ESD event.

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