QUINEL
QUALITY IN ELECTRONICS

TEST REPORT

Environmental Testing
EN 60068-2-64:2008
Test Fh: "Vibration broad-band random"

Report reference no:	**U2243-21a-18**
Simulation carried out by:	B. Belegu
Approved by:	D. Vonarburg, Technical Manager
Date of issue:	25 May 2018
Number of pages:	4 pages
Testing laboratory:	**QUINEL AG**
Address:	Elsihof 3, CH-6035 Perlen
Testing location:	QUINEL Bern
Applicant's name:	**Toradex AG,** Mr Diego Petracca
Address:	Altsagenstrasse 5, CH-6048 Horw
Manufacturer:	**Toradex AG**
Address:	Altsagenstrasse 5, CH-6048 Horw
Test Report Form originator:	QUINEL (Copyright reserved to QUINEL)
Test specimen description:	Computer Modules and Carrier Boards
Trademark:	Toradex AG
Model and/or type reference:	Apalis TK1 2GB mounted on Ixora with the Apalis Heatsink Colibri T30 1GB IT mounted on Viola Plus with screws Colibri T30 1GB IT mounted on Iris with Colibri Fasteners Colibri iMX6ULL 512MB WB IT mounted on Viola Plus with screws Colibri iMX6DL 512MB IT mounted on Iris with no additional fastening Colibri iMX6DL 512MB IT mounted on Iris with Colibri Fasteners Colibri iMX7D 512MB mounted on Viola Plus with screws Apalis iMX6Q 1GB mounted on Ixora with the Apalis Heatsink Apalis iMX6D 1GB IT mounted on Ixora with screws Apalis iMX8QM 4GB WB mounted on Ixora with screws
Rating:	12V/5VDC
Number of tested specimens:	15 specimens
Date of receipt of the test specimen(s):	16 May 2018

STS 0037

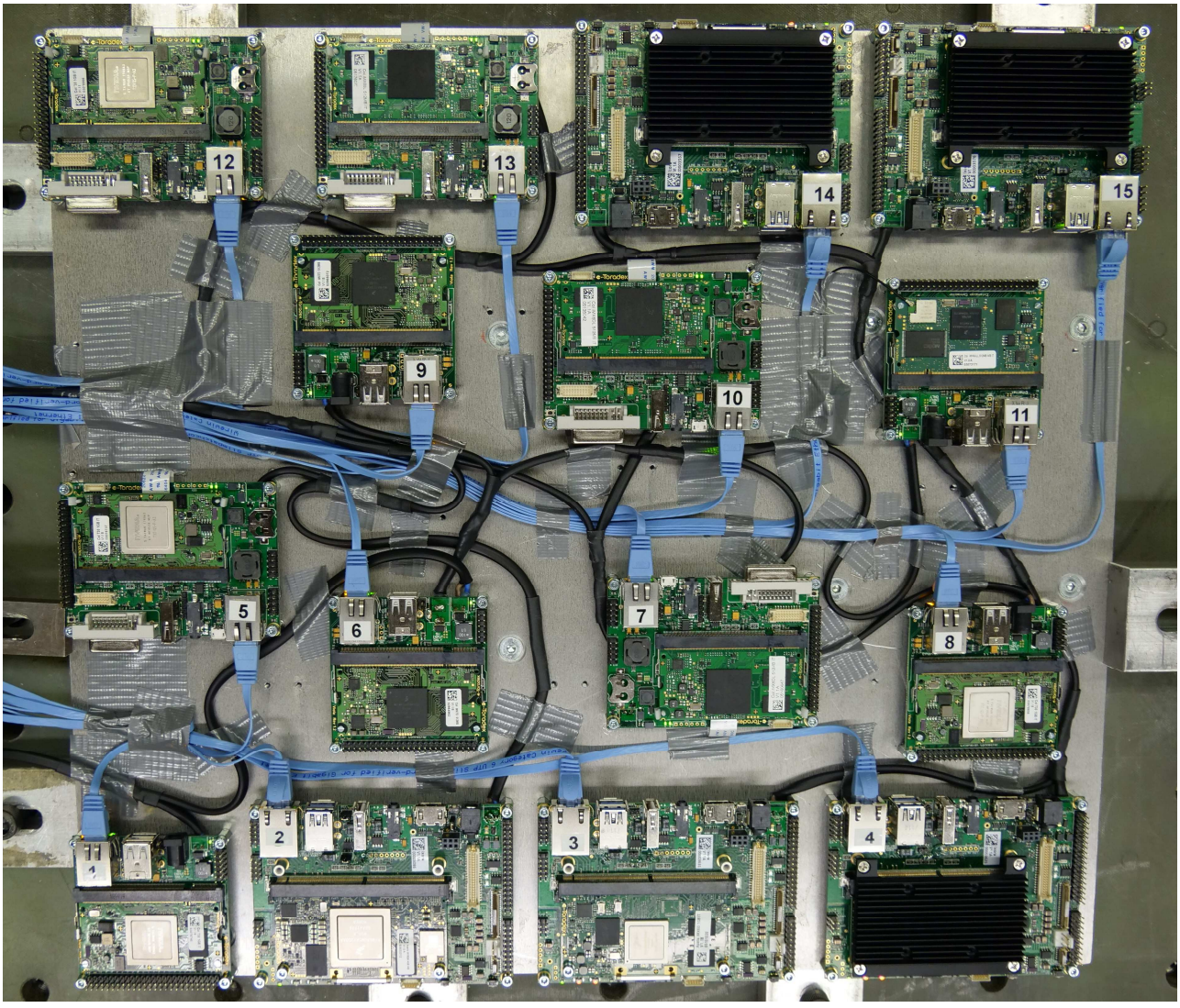
S Schweizerischer Prüfstellendienst
T Service Suisse d' essai
S Servizio di prova in Svizzera
Swiss testing service

Test specification:	
Standards:	EN 60068-2-64:2008
Test purpose:	Type testing for Swiss and EU legal requirements
Procedure deviation:	none
Specimen:	unpacked
Specimen is operating:	yes
Fixing points, choice of ref. and control points:	see photograph
Frequency range:	10Hz.....2kHz
RMS level:	57.9m/s^2
Duration of exposure:	32h / axis
Pre-conditioning:	(see relevant specifications)
Testing axes and order of testing:	in all 3 main axes,
Recovery	(see relevant specifications)
Test procedure and measurements:	
Date of testing:	16 May-24 May 2018
Details of mounting or support	see photographs
Initial test: - visual inspection: - mechanical and electrical measurements:	 **Passed** All the DUTs have been tested by the customer with the default functional testing (FCT): **no issues detected.**
Intermediate measurements:	While the DUTs are exposed to vibrations the devices execute software to detect discontinuities in the edge connector or failures on the module and carrier boards. This is achieved by detecting GPIOs interrupts, network issues, UART communication loopback problems.
Final test: - visual inspection: - comparison initial/final tests:	 **Passed** Several investigations have been carried by the customer to identify effects of the test on the module - carrier board interface: **no issues detected.** Computer modules have been tested with the default functional testing (FCT): **no issues detected.**
Relevant specifications to be met during/after the test (acceptance criteria): The module – carrier board interface is not affected at all from the vibration test. The computer modules have no damage and worked correctly during and after the test (verified by visual inspection and default functional testing FCT).	
Conclusion:	**Test Passed**

Used test equipment:

Test equipment	Manufacturer / Type	QUINEL Inventory No.	Calibration last	Calibration next
Vibrator	RMS / SW 8100	903682/00	Oct 16	Oct 18
Acceleration meter	Kistler / 8702B500M1 and 5134	C110844	Sep 16	Sep 18

Photograph of the tested item:



General Remarks:
The test results presented in this test report relate only to the tested objects.
This test report shall not be reproduced except in full.
We returned the test item together with the test report to the applicant.

Photographs:

Vibration axes:

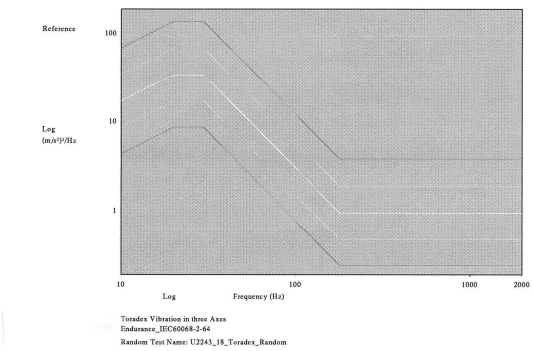
Axis 1

Axis 2

Axis 3

Vibration diagrams:

Reference



Test