



Product Compliance Center

Mechanical Test Report

Equipment under **D3243-S (D3243-S10)**
Test (EUT):

Applicant: FUJITSU TECHNOLOGY SOLUTIONS GmbH
 FTS PDG WPS R&D OEM
 Mr. Mertes, Wilbert
 Bürgermeister-Ulrich-Strasse 100
 86199 Augsburg

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Result: Passed

Prepared by: Michael Röthinger
 Technician

Signature

Reviewed by: Alexander Gerum
 Deputy Head of LAB E

Signature

The results in this report apply only to the tested sample(s).
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Fujitsu Technology Solutions GmbH, Product Compliance Center , D-86199 Augsburg,
Buergermeister-Ulrich-Str. 100, Germany, Phone (+49-821) 804-3692, Fax (+49-821) 804-2675.

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3. Summary of standards and results

The system was tested according to the applicable standards as referenced below.

3.1. Reason for qualification

Approval Measuring

3.2. Classification of mechanical conditions

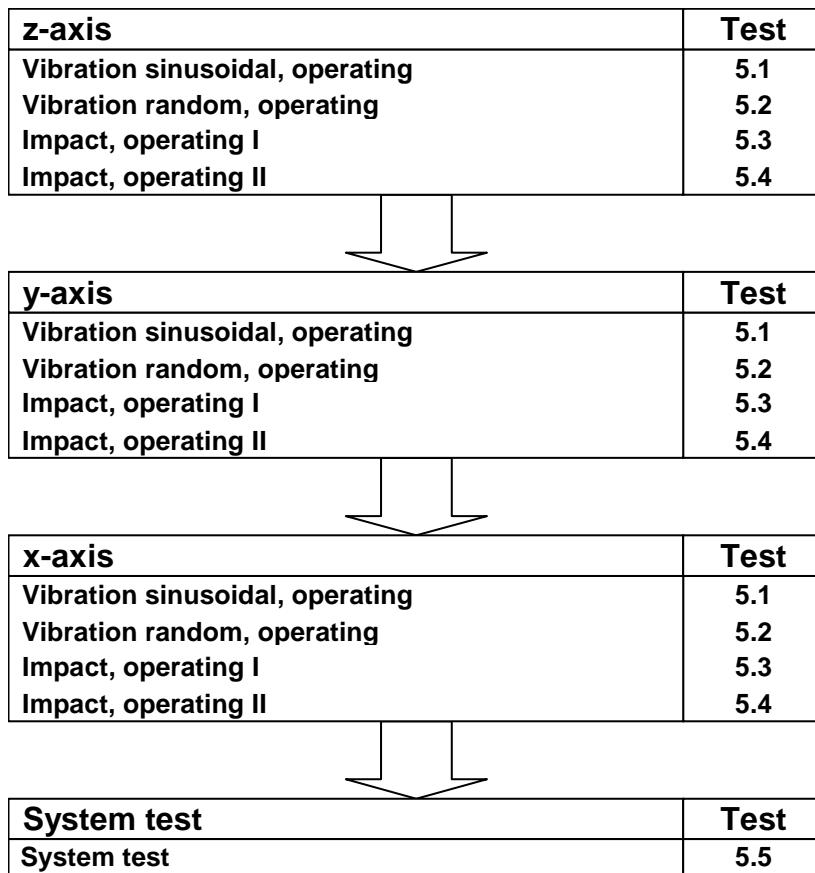
Mechanical environmental conditions according to DIN EN 60721-3-5: 1997 test class 5M2

Test specification:

Vibration sinusoidal, operating	According to DIN EN 60068-2-6 (Edition 10/08)	"Basic environmental testing procedure; Test Fc and guidance: Vibration, sinusoidal"
Vibration random, operating	According to DIN EN 60068-2-64 (Edition 04/09)	"Environmental testing; Part 2: test methods; Test Fh: Vibration , broad-band random (digitally controlled) and guidance"
Impact, operating	According to DIN EN 60068-2-27 (Edition 02/10)	"Basic environmental testing procedure; Part 2: Tests; Test Ea and guidance: shock"

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3.3. Test procedure



Remark: After all tests a visual inspection was done (see 5.6 Visual inspection).

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3.4. Summary of results

3.4.1. Valued tests

	passed	failed
Vibration sinusoidal, operating, x-, y-, z-axis	X	
Vibration random, operating, x-, y-, z-axis	X	
Impact, operating I, x-, y-, z-axis	X	
Impact, operating II, x-, y-, z-axis	X	
System test	X	

Remark : The results are only applicable for the tested configuration.

3.4.2. Acceleration values

3.4.2.1. Vibration sinusoidal, operating

Shaker ref. value [G]	X-axis		Heatpipe		Z-axis	
	a [G]	f [Hz]	a [G]	f [Hz]	a [G]	f [Hz]
Vibration X-axis	1,5	3,1 207%	56 Hz	7,9 527%	4,9 327%	409 Hz
Vibration Y-axis	1,5	1,9 127%	74 Hz	13,1 873%	3,9 260%	73 Hz
Vibration Z-axis	1,5	3,6 240%	51 Hz	1,7 113%	4,0 267%	48 Hz

3.4.2.2. Vibration random, operating

RMS [G]	Heatpipe			
	Shaker ref. value	X-axis	Y-axis	Z-axis
Vibration X-Axis	1,71	2,53 148%	1,09 64%	1,43 83%
Vibration Y-Axis	1,71	0,78 46%	2,97 174%	1,66 97%
Vibration Z-Axis	1,71	1,43 84%	0,99 58%	2,57 151%

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3.4.2.3. Impact, operating I

a [G]		Heatpipe		
	Shaker ref. value	X-axis	Y-axis	Z-axis
Impact	10,0	10,8	4,4	9,9
X-axis		108%	44%	99%
Impact	10,0	3,1	11,8	6,5
Y-axis		31%	118%	65%
Impact	10,0	8,8	11,9	16,9
Z-axis		88%	119%	169%

3.4.2.4. Impact, operating II

a [G]		Heatpipe		
	Shaker ref. value	X-axis	Y-axis	Z-axis
Impact	30,0	23,5	15,5	25,7
X-axis		78%	52%	86%
Impact	30,0	8,4	26,9	16,6
Y-axis		28%	90%	55%
Impact	30,0	20,4	49,1	41,1
Z-axis		68%	164%	137%

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3.5. Table of used instruments

Vibration generator

Test-/Measure device	Equipment name			Check (Ch) / Calibration (C)	
	Manufacturer	Type	Serial-No.	last	next
Shaker	RMS	SW8200	5751	08.13Ch	02.14Ch
Power amplifier	RMS	TGA12016	5751	08.13Ch	02.14Ch
Shaker control system	M+P	VP8	B080064 B080078	08.13Ch	02.14Ch
Shaker software	M+P	VcpNT Revision 2.10.36	--	not necessary	not necessary
Accelerometer (vertical table)	Endevco	7701-50	DL28	12.13C	12.14C
Accelerometer (vertical heavy-load table)	B & K	4370	1921852	12.13C	12.14C
Accelerometer (horizontal-(slide) table)	Endevco	7702A-50	11455	12.13C	12.14C
Charge amplifier (8x)	UD	CVA-8	214	11.13C	11.14C
Slide table (horizontal) (81 kg)	RMS	SWT 4333/1	5931	not necessary	not necessary

Used accelerometers / EUT measure points

Instruments	Equipment name			Check (Ch) / Calibration (C)	
	Manufacturer	Type	Serial-No.	last	next
1 Accelerometer attached to the Heatpipe	PCB	356A33	90471	12.13C	12.14C

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4. Equipment under test

4.1. System description

Product: D3243-S10
Manufacturer: Fujitsu Technology Solutions GmbH
Type: system board
Approval name: D3243-S

Part no.: S26361-D3243-S10

Serial no.: Evaluation Sample

Component	Model	Manufacturer	Part no.	Serial no.	Rev.	Remark
System board	D3243-S10	Fujitsu Tech-nology Solu-tions GmbH	S26361- D3243-S10	42595769	GS6	2 x SO-DIMM, 1 x mSATA Module

Receipt date: January 09, 2014

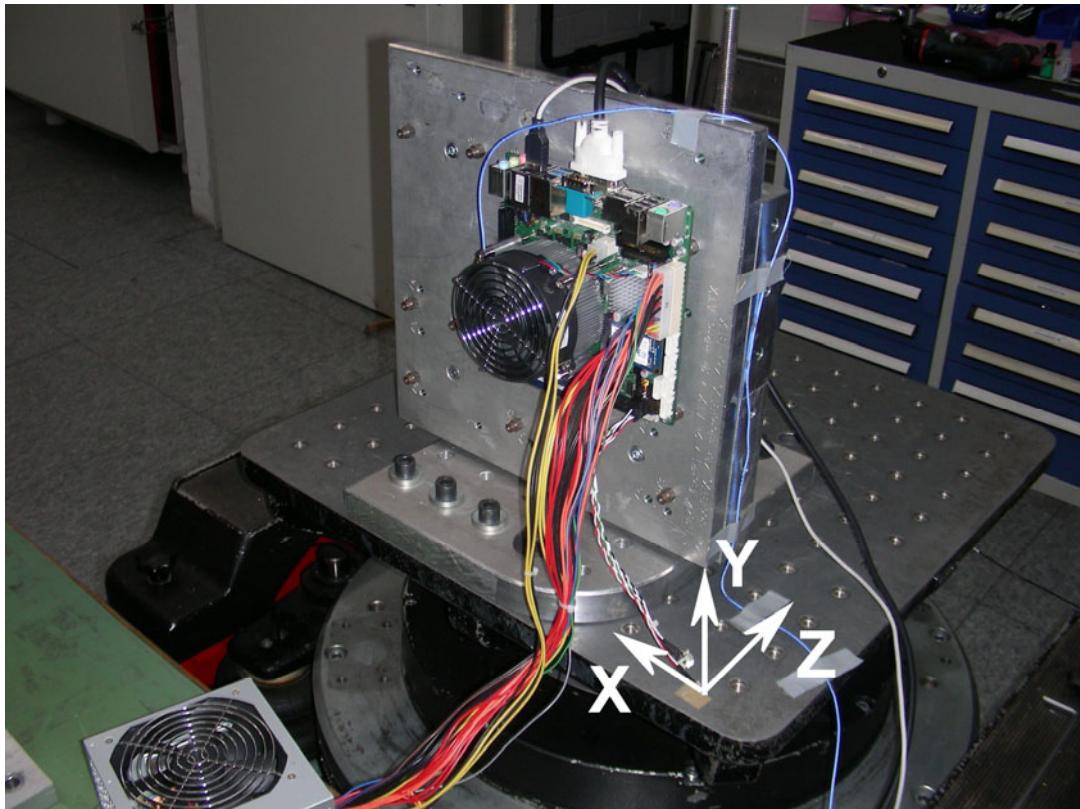
Condition when received: ready for test

4.2. Environmental conditions

Temperature: 21°C +/- 2°C
Relative Humidity: 50%...+/- 20%
Barometric Pressure 1013 hPa +/-15 hPa

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4.3. Test specification



Function test: Systest 32-Bit V 3.00.253

EUT fixing: The EUT was fixed to the vibration table with metal fixings (see photo above).

Measuring points:

No.	Axis	Sensor type	Position
1	x,y,z	356A33	top side of the Heatpipe

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5. Test results

5.1. Vibration sinusoidal, operating

	passed	failed
Vibration sinusoidal, operating x-axis	X	
Vibration sinusoidal, operating y-axis	X	
Vibration sinusoidal, operating z-axis	X	

Test specification: According to DIN EN 60721-3-5: 1997 test class 5M2

Standard: According to "Basic environmental testing procedure; DIN EN 60068-2-6 Test Fc and guidance: Vibration, sinusoidal" (Edition 10/08)

Vibration severity: Vibration (sinusoidal):
 2 - 9 Hz: 3,3 mm
 9 - 200 Hz: 1 g
 200 - 500 Hz: 1,5 g
 Duration: 4 sweep
 (2 sweep = 1 cycle = 2 Hz to 500 Hz to 2 Hz)
 start frequency: 2 Hz
 sweep rate: 1 Oct/min.

Requirements: No damage and errors allowed during vibration test.

Function test: Systest 32-Bit V 3.00.253

Test results:

Test No.	Axis	Component	Test program	Test cycles	Results
1	x	Heatpipe	-	4 sweep	passed, results according to fig. 1, page 11
2	y	Heatpipe	-	4 sweep	passed, results according to fig. 2, page 11
3	z	Heatpipe	-	4 sweep	passed, results according to fig. 3, page 12

Remark:

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Fig. 1

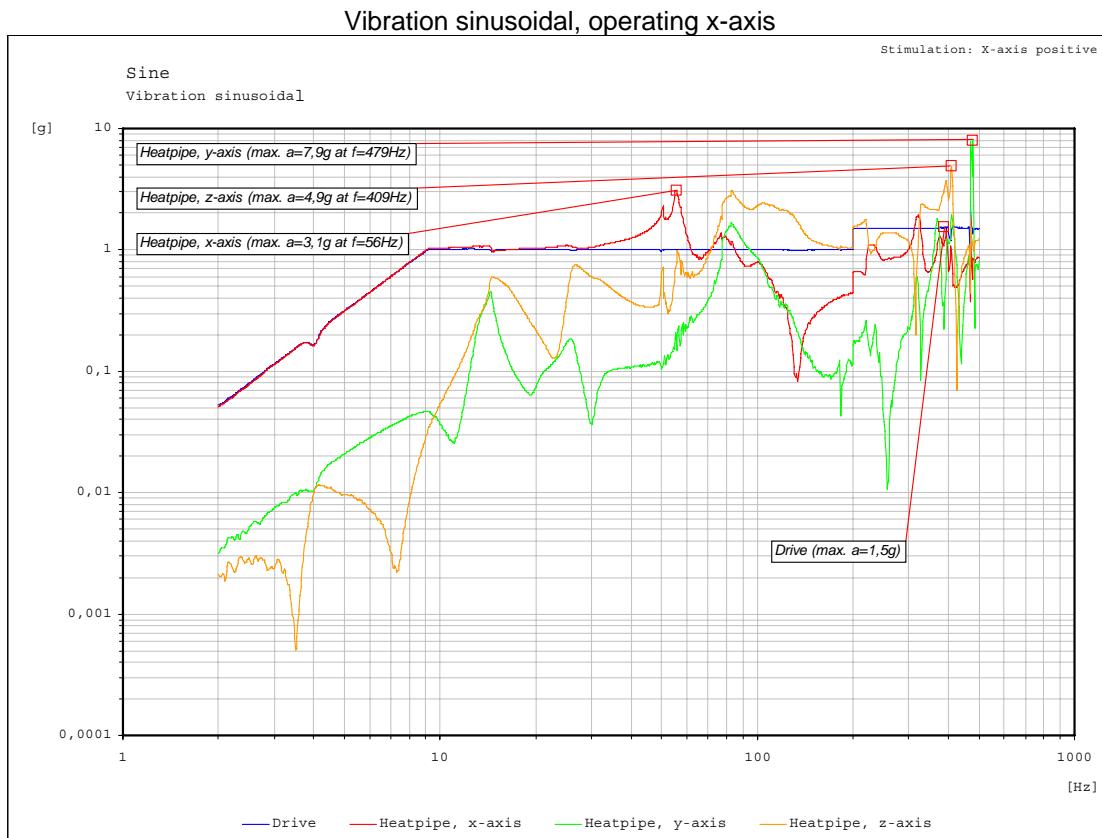
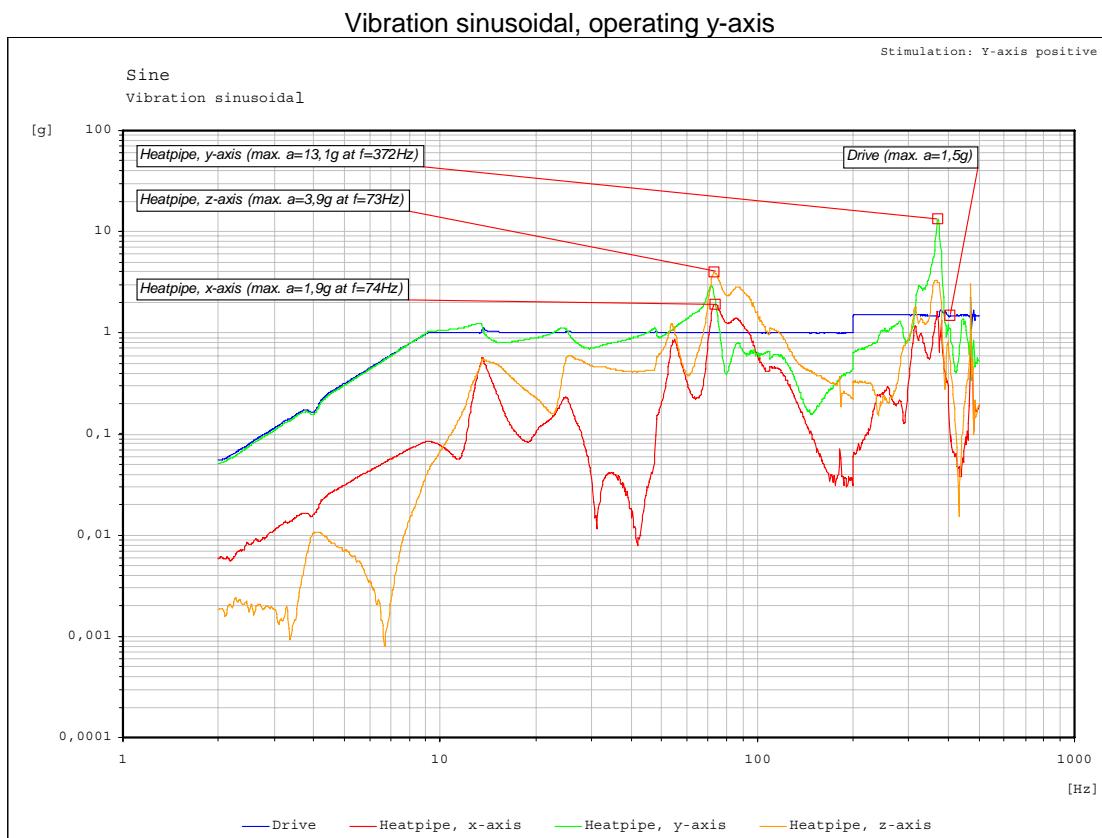
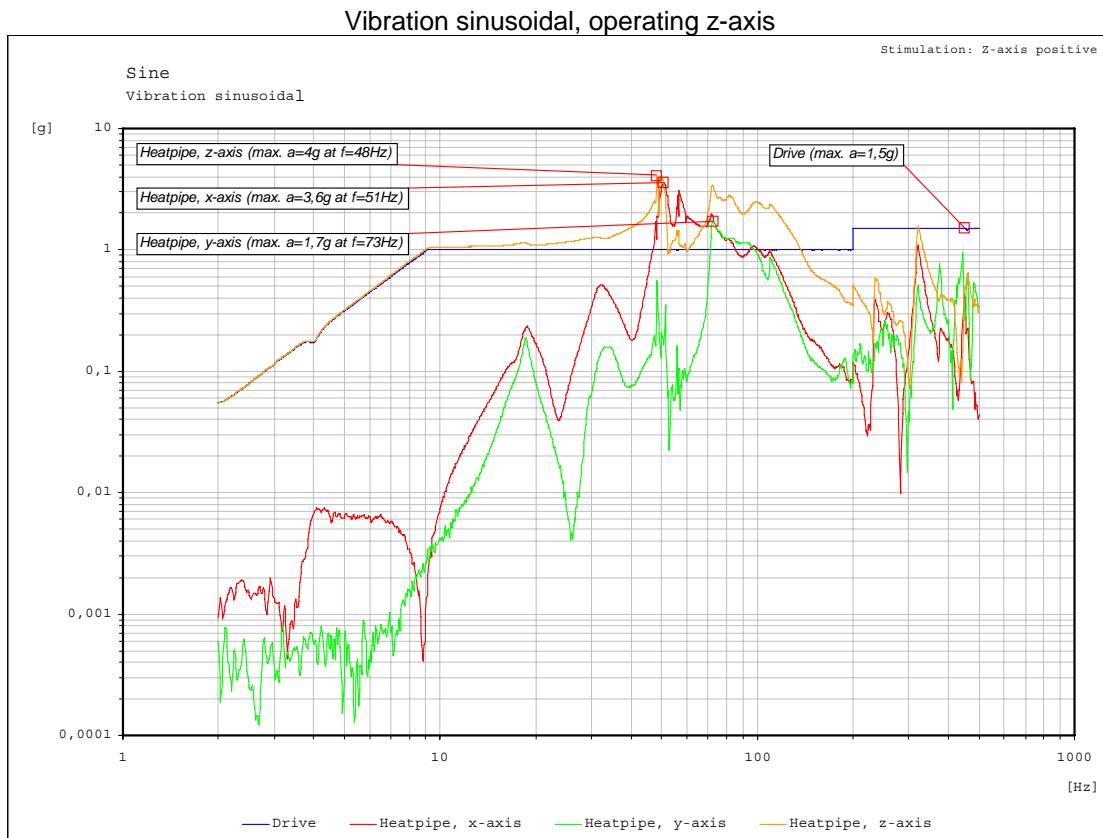


Fig. 2



EUT : D3243-S (D3243-S10)

Fig. 3



EUT : D3243-S (D3243-S10)

5.2. Vibration random, operating

	passed	failed
Vibration random, operating x-axis	X	
Vibration random, operating y-axis	X	
Vibration random, operating z-axis	X	

Test specification: According to DIN EN 60721-3-5: 1997 test class 5M2

Standard: According to
 DIN EN 60068-2-64 "Environmental testing;
 Part 2: test methods;
 (Edition 04/09) Test Fh: Vibration , broad-band random
 (digitally controlled) and guidance"

Vibration severity: Vibration random operating:
 10 - 200 Hz: 1 m/s²
 30 - 200 Hz: 0,3 m/s²
 Effective value aeef: 16,74 m/s²

Duration per axis: 30 minutes

Requirements: No damage and errors allowed during vibration test.

Function test: Systest 32-Bit V 3.00.253

Test results:

Test No.	Axis	Component	Test program	Endurance	Results
1	x	Heatpipe	-	30 min.	passed, results according to fig. 1, page 11
2	y	Heatpipe	-	30 min.	passed, results according to fig. 2, page 11
3	z	Heatpipe	-	30 min.	passed, results according to fig. 3, page 12

Remark:

EUT : D3243-S (D3243-S10)

5.3. Impact, operating I

	passed	failed
Impact, operating x-axis (pos./neg. direction)	X	
Impact, operating y-axis (pos./neg. direction)	X	
Impact, operating z-axis (pos./neg. direction)	X	

Test specification: According to DIN EN 60721-3-5: 1997 test class 5M2

Standard: According to
 DIN EN 60068-2-27 "Basic environmental testing procedure;
 Part 2: Tests;
 (Edition 02/10) Test Ea and guidance: shock"

Severity: Impact operating:
 Pulse shape: half sine
 Acceleration: 100 m/s²
 Duration: 11 ms
 Number: 50 impacts per direction
 Totally number: 300 impacts
 Time between pulse: 1 s

Requirements: No damage and errors allowed during impact test.

Function test: Systest 32-Bit V 3.00.253

Test results:

Test No.	Axis	Component	Test program	Test cycles	Results
1	x	Heatpipe	-	+50/-50 impact	passed, results according to fig. 1 and 2, page 15
2	y	Heatpipe	-	+50/-50 impact	passed, results according to fig. 3 and 4, page 16
3	z	Heatpipe	-	+50/-50 impact	passed, results according to fig. 5 and 6, page 17

Remark:

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Fig. 1

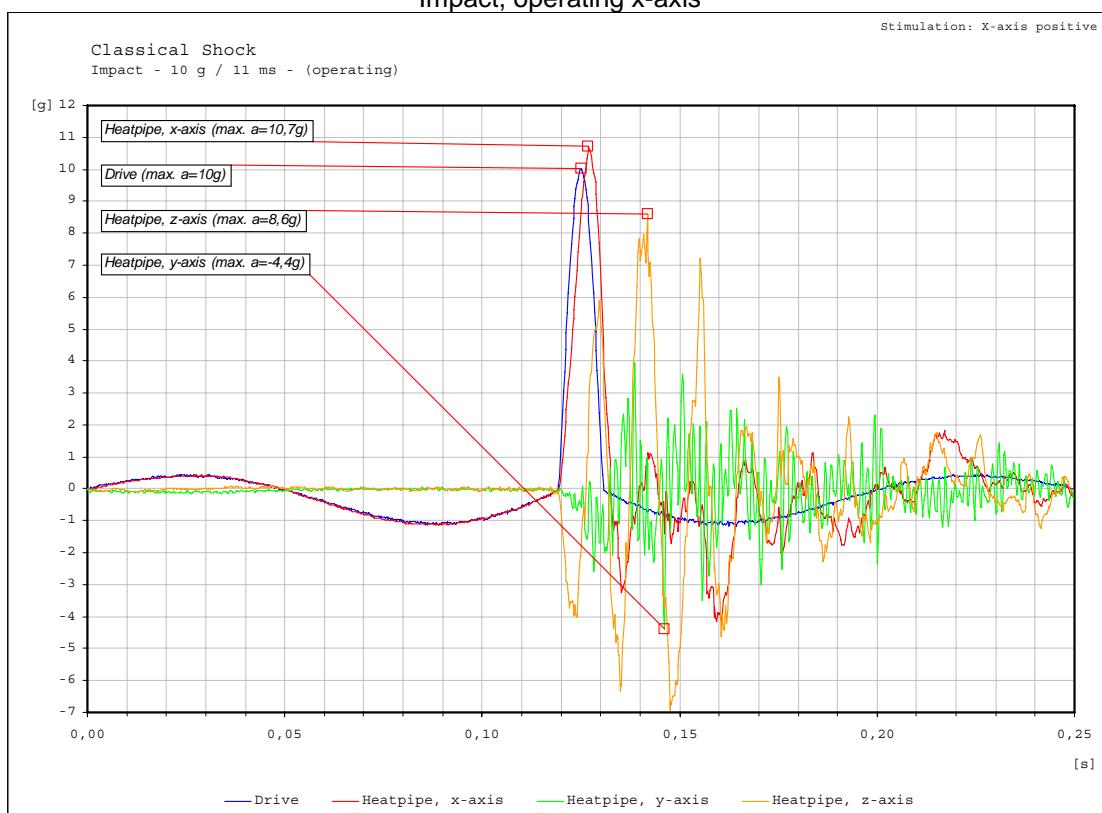
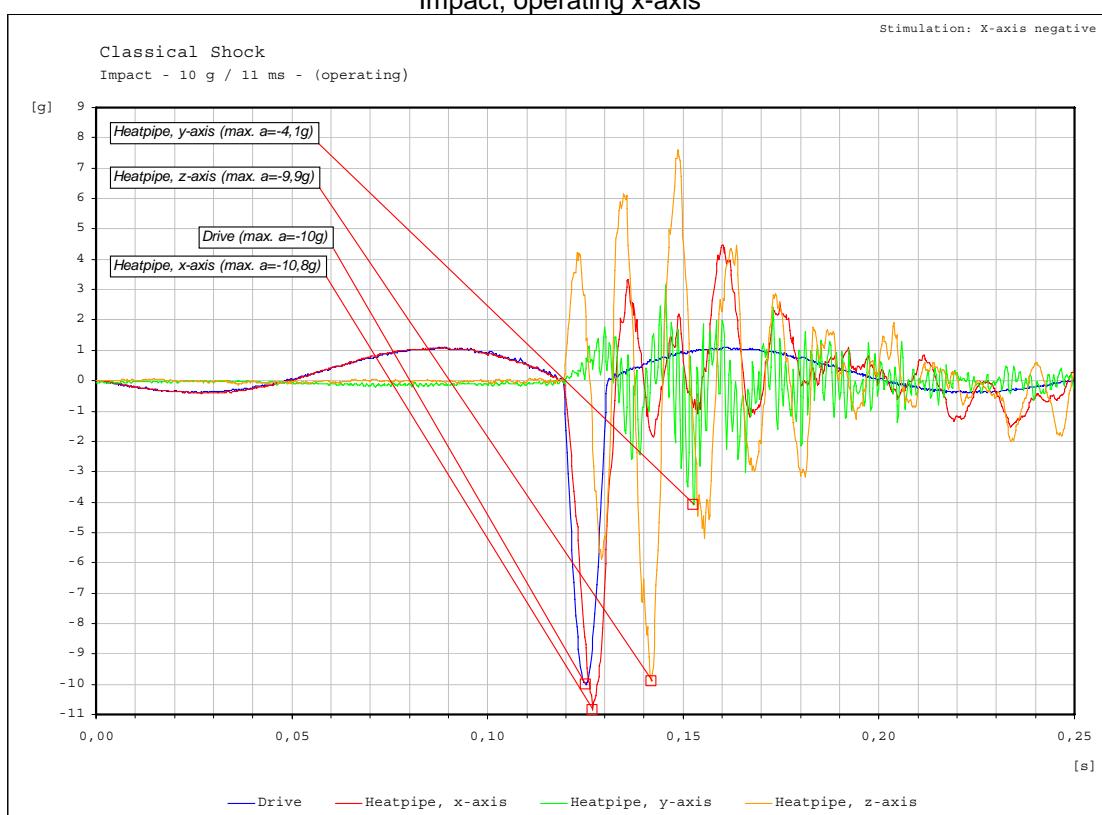


Fig. 2



EUT : D3243-S (D3243-S10)

Fig. 3

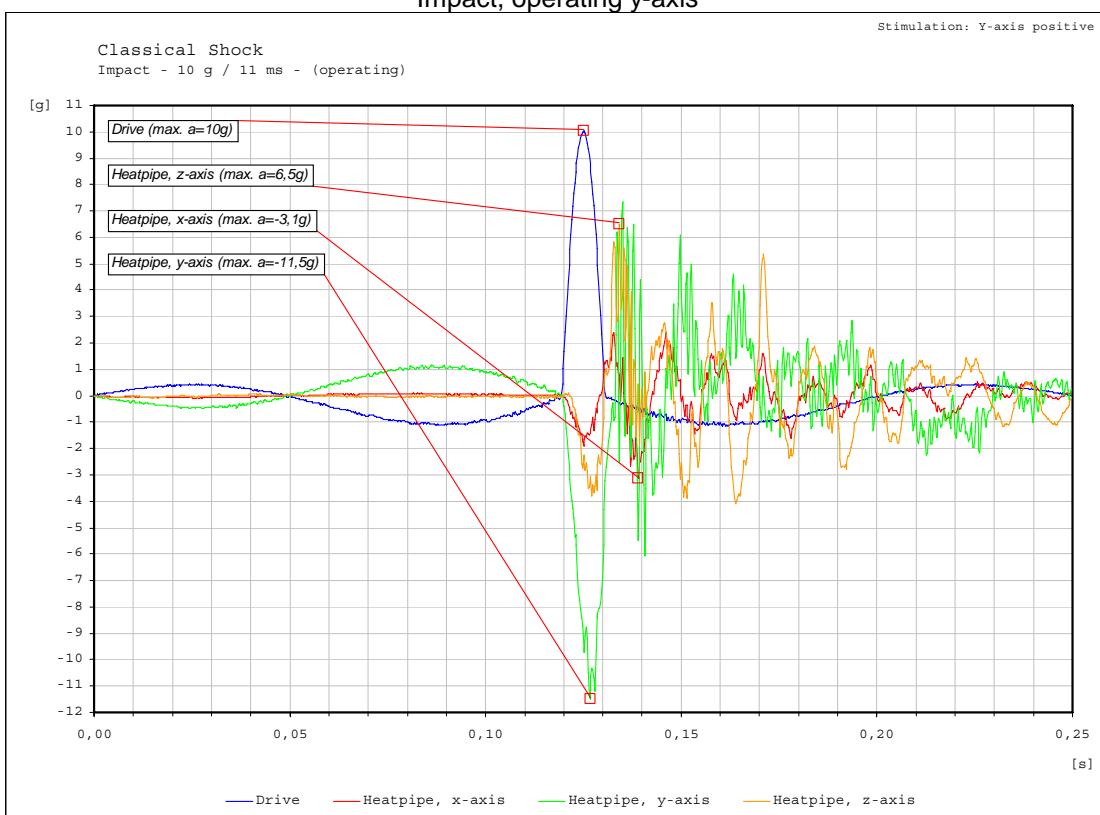


Fig. 4

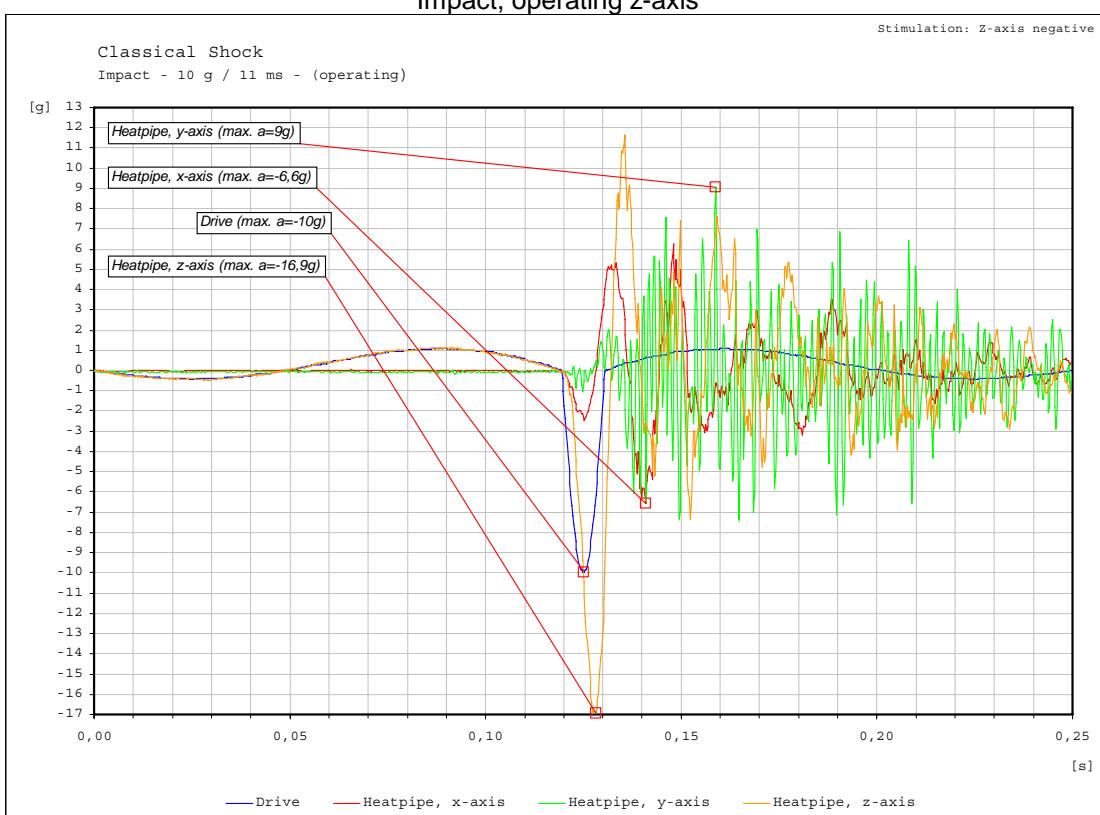


EUT : D3243-S (D3243-S10)

Fig. 5



Fig. 6



EUT : D3243-S (D3243-S10)

5.4. Impact, operating II

	passed	failed
Impact, operating x-axis (pos./neg. direction)	X	
Impact, operating y-axis (pos./neg. direction)	X	
Impact, operating z-axis (pos./neg. direction)	X	

Test specification: According to DIN EN 60721-3-5: 1997 test class 5M2

Standard: According to
 DIN EN 60068-2-27 "Basic environmental testing procedure;
 Part 2: Tests;
 (Edition 02/10) Test Ea and guidance: shock"

Severity: Impact operating:
 Pulse shape: half sine
 Acceleration: 300 m/s²
 Duration: 6 ms
 Number: 50 impacts per direction
 Totally number: 300 impacts
 Time between pulse: 3 s

Requirements: No damage and errors allowed during impact test.

Function test: Systest 32-Bit V 3.00.253

Test results:

Test No.	Axis	Component	Test program	Test cycles	Results
1	x	Heatpipe	-	+50/-50 impact	passed, results according to fig. 1 and 2, page 19
2	y	Heatpipe	-	+50/-50 impact	passed, results according to fig. 3 and 4, page 20
3	z	Heatpipe	-	+50/-50 impact	passed, results according to fig. 5 and 6, page 21

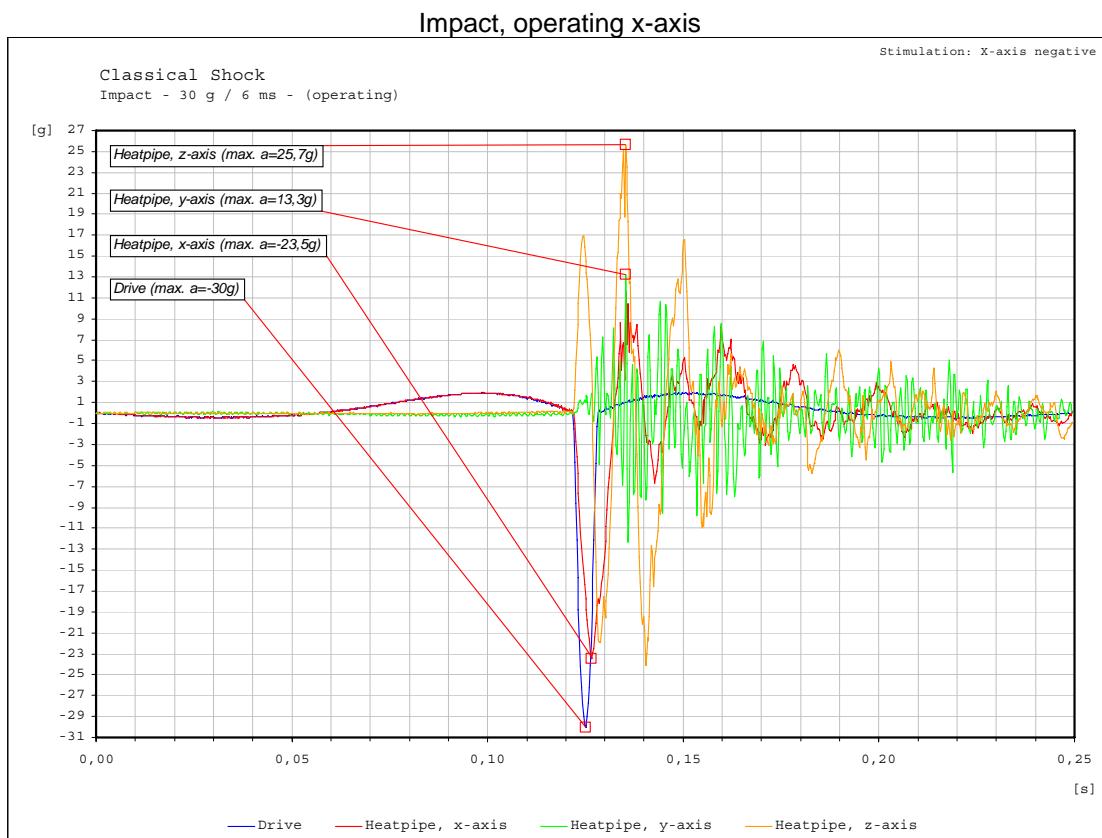
Remark:

EUT : D3243-S (D3243-S10)

Fig. 1



Fig. 2



EUT : D3243-S (D3243-S10)

Fig. 3

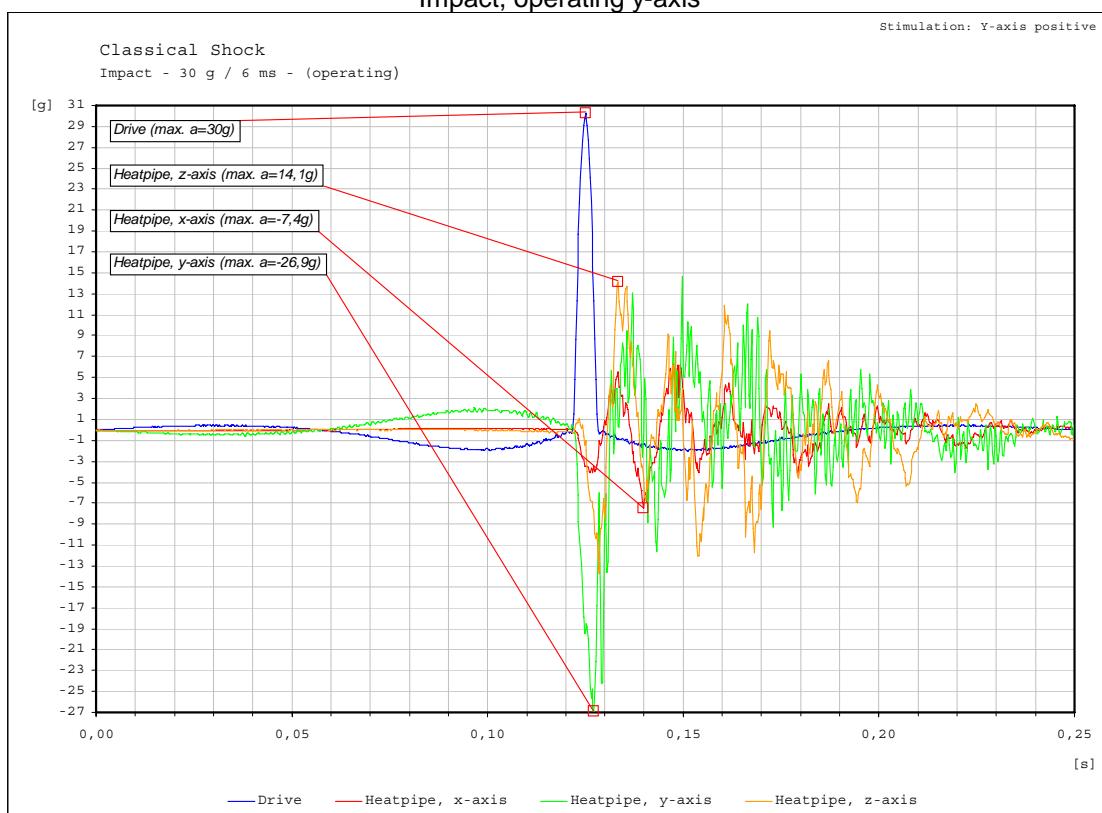
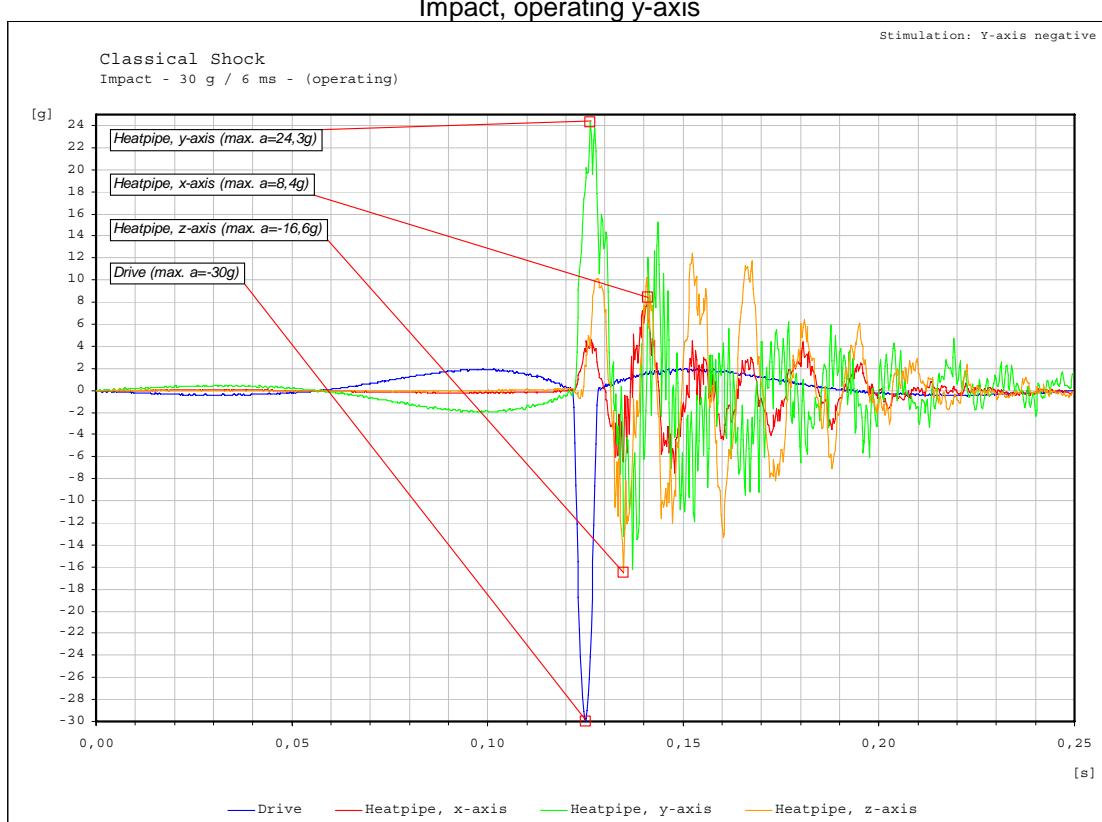


Fig. 4



EUT : D3243-S (D3243-S10)

Fig. 5



Fig. 6



EUT : D3243-S (D3243-S10)

5.5. System test

	passed	failed
System test	X	

5.6. Visual inspection

The EUT with all its components passed without any damage.

EUT : D3243-S (D3243-S10)

6. EUT-Photos

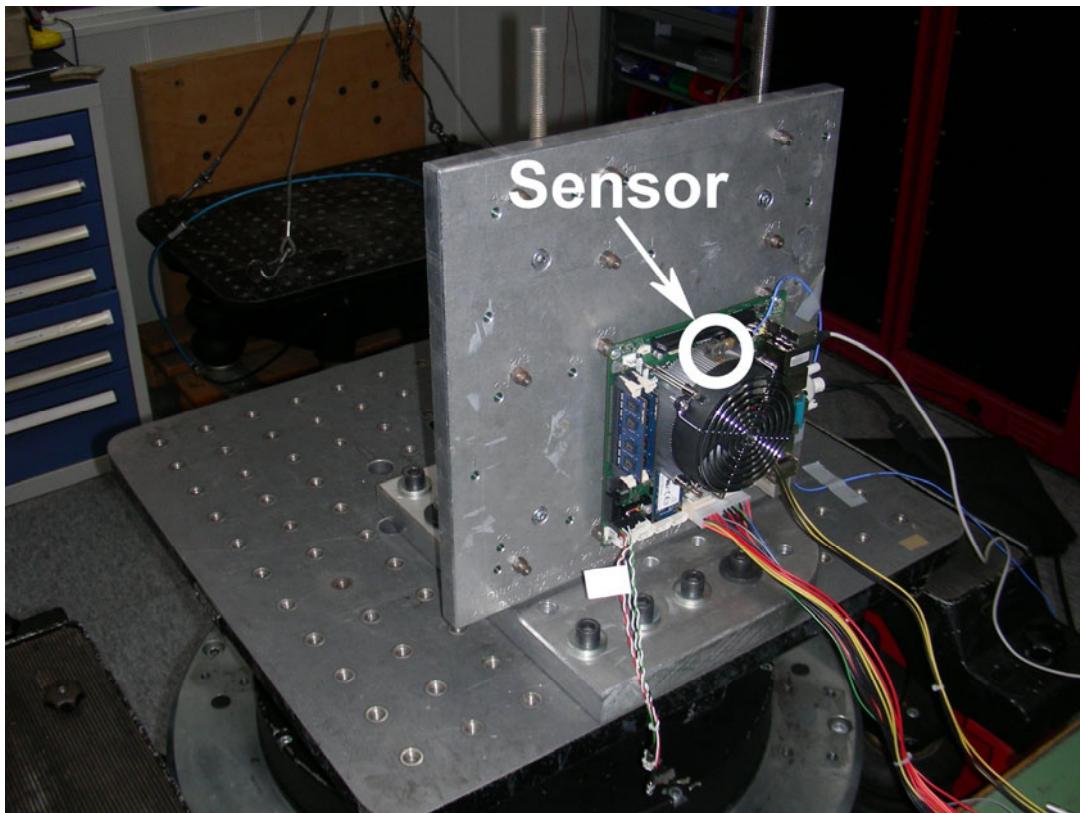


Picture no. 1: Top side of EUT



Picture no. 2: Bottom side of EUT

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Picture no. 4: Measuring point no. 1 (Heatsink)