

Test report

No.: 2017-0277-VU

Date of test: June - July 2017

Testers: Dipl.-Ing. Pröhl,
Dipl.-Ing. Roter

No. of pages: 13

**Applicant/
manufacturer:** DIRAK GmbH
Königsfelder Straße 1
58256 Ennepetal

Test specimens: Different specimens: see table 1 to 3 on
pages 11 to 13

**Test procedures /
bases:** Random vibration test:
base standard: DIN EN 60068-2-64 (04/2009)
test standard: DIN EN 61373 (04/1999)

Shock test:
base standard: DIN EN 60068-2-27 (02/2010)
test standard: DIN EN 61373 (04/1999)

Delivered on: June 26th, 2017

Date of report: July 18th, 2017

Specimens:



Fig. 1 and 2: Specimens in fixture

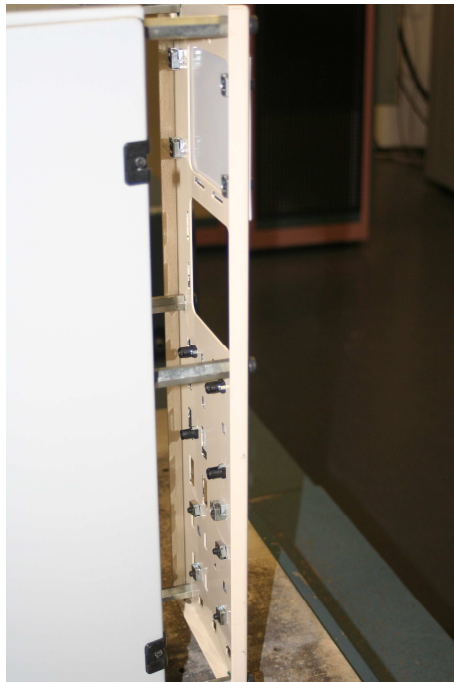


Fig. 3 and 4: Specimens in fixture

1 Test equipment and regulation

1.1 Vibration and shock test

Electro dynamic shaker:

Test load:

Frequency range:

Sine, peak:

Random, rms:

Max. load:

Diameter of armature:

Size expander:

Size slip table:

Regulation and
measurement data acquisition:

Hardware:

Software

SN:

PN:

Accelerometers:

UD-SAI T2000-44 with connected slip table and power amplifier SAI 120

89 kN

(2 to 2000 (3000 vertical)) Hz

180 gn

100 gn

vertical: approx. 860 kg incl. expander,
horizontal.: approx. 2,000 kg incl. slip table

approx. 445 mm

approx. (900 x 900) mm

approx. (1000 x 1000) mm

PC Unholtz-Dickie Corporation

Vwin II, Version 2.31

10011404

V116

Endevco 42A16

PCB J320C33

SN. 10219

SN. 15795

2 Testing methods

2.1 Visual checks

Before, during and after the vibration and shock tests the specimens were subjected to a visual check.

2.2 Random Vibration test (long-term test)

The vibration test was conducted in accordance with the standard DIN EN 61373 (1999) Category 1, Class B. The category and class were specified by the customer.

The test parameters were defined as follows:

Excitation mode:	random
Frequency range:	5 Hz to 150 Hz
Power density:	<u>vertical, longitudinal, transversal:</u> 5 Hz – 20 Hz 1.857 (m/s ²) ² /Hz 20 Hz – 150 Hz -6 dB / octave
Effective acceleration:	<u>vertical, longitudinal, transversal:</u> 7.9 m/s ² (RMS)
Test directions:	3 Raumrichtungen (X, Y, Z)
Test duration:	approx. 5 h / direction
Total test duration:	approx. 15 h (effective vibration time)
Test temperature:	room temperature

Following customers instructions the test was conducted with the profile “vertical” in all three directions.

Diagram 1 on page 8 shows exemplarily the regulating channel’s excitation during the long-term test.

2.3 Shock test

The shock test was conducted in accordance with the standard DIN EN 61373 (1999) Category 1, Class B. The category and class were specified by the customer.

The test parameters were defined as follows:

Shock pulse:	half sine
Shock duration and amplitude:	<u>vertical, longitudinal, transversal:</u> 30 ms AT 50m/s ²
Test directions:	6 directions
Number of shocks:	3 / direction
Test temperature:	room temperature

Following customers instructions the test was conducted with the profile "longitudinal" in all three directions.

Diagrams 2 to 3 on pages 9 to 10 show the regulating channel's shock excitation in the positive and negative directions.

The following pictures show the test specimens undergoing the vibration and shock tests.

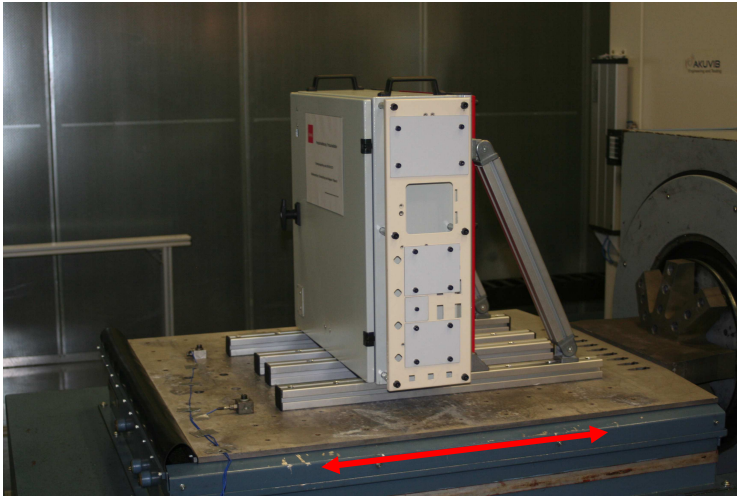


Fig. 5: Specimens during the vibration and shock test in the first horizontal direction

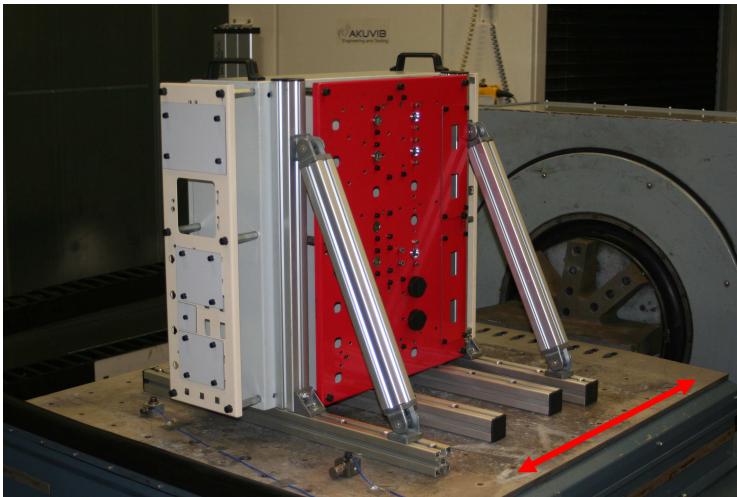


Fig. 6: Specimens during the vibration and shock test in the second horizontal direction

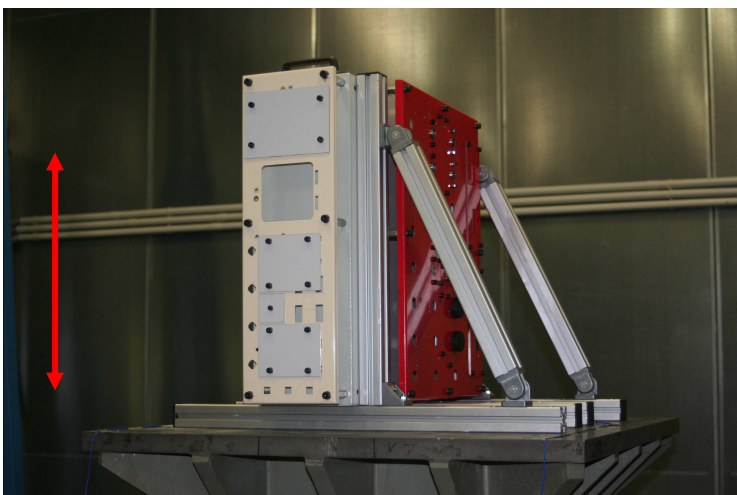


Fig. 7: Specimens during the vibration and shock test in vertical direction

3 Test procedure

The tests were conducted in the following order:

- | | |
|--|------------|
| 1. Random vibration test, long term test,
first horizontal direction | 26.06.2017 |
| 2. Shock test, first horizontal direction | 26.06.2017 |
| 3. Shock test, second horizontal direction | 26.06.2017 |
| 4. Random vibration test, long term test,
second horizontal direction | 26.06.2017 |
| 5. Random vibration test, long term test,
vertical direction | 28.07.2017 |
| 6. Shock test, vertical direction | 28.07.2017 |


4 Result

The visual inspection of the specimens after testing could not detect any cracks, chipping, deformation, abrasion, or other mechanical damage.


The specimens did not self unlock during the tests

The customer will continue investigations on the test specimens.

Processed by



(Dipl.-Ing. Pröhl)
(Head of laboratory)



(Dipl.-Ing. Roter)
(test engineer)

Diagram 1: Long-term test regulating channel (exemplarily)

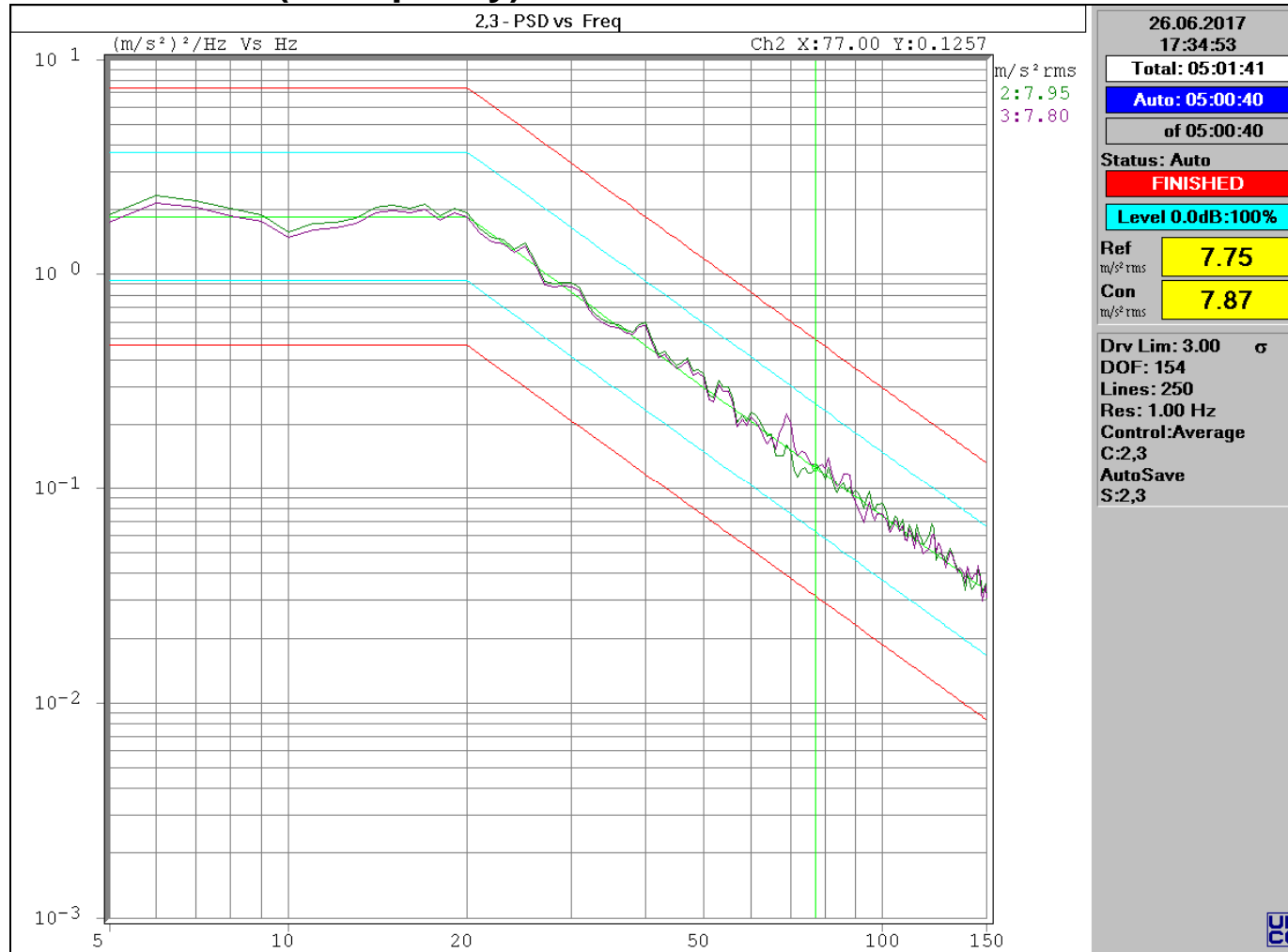


Diagram 2: Shock test regulating channel, positive direction (exemplarily)

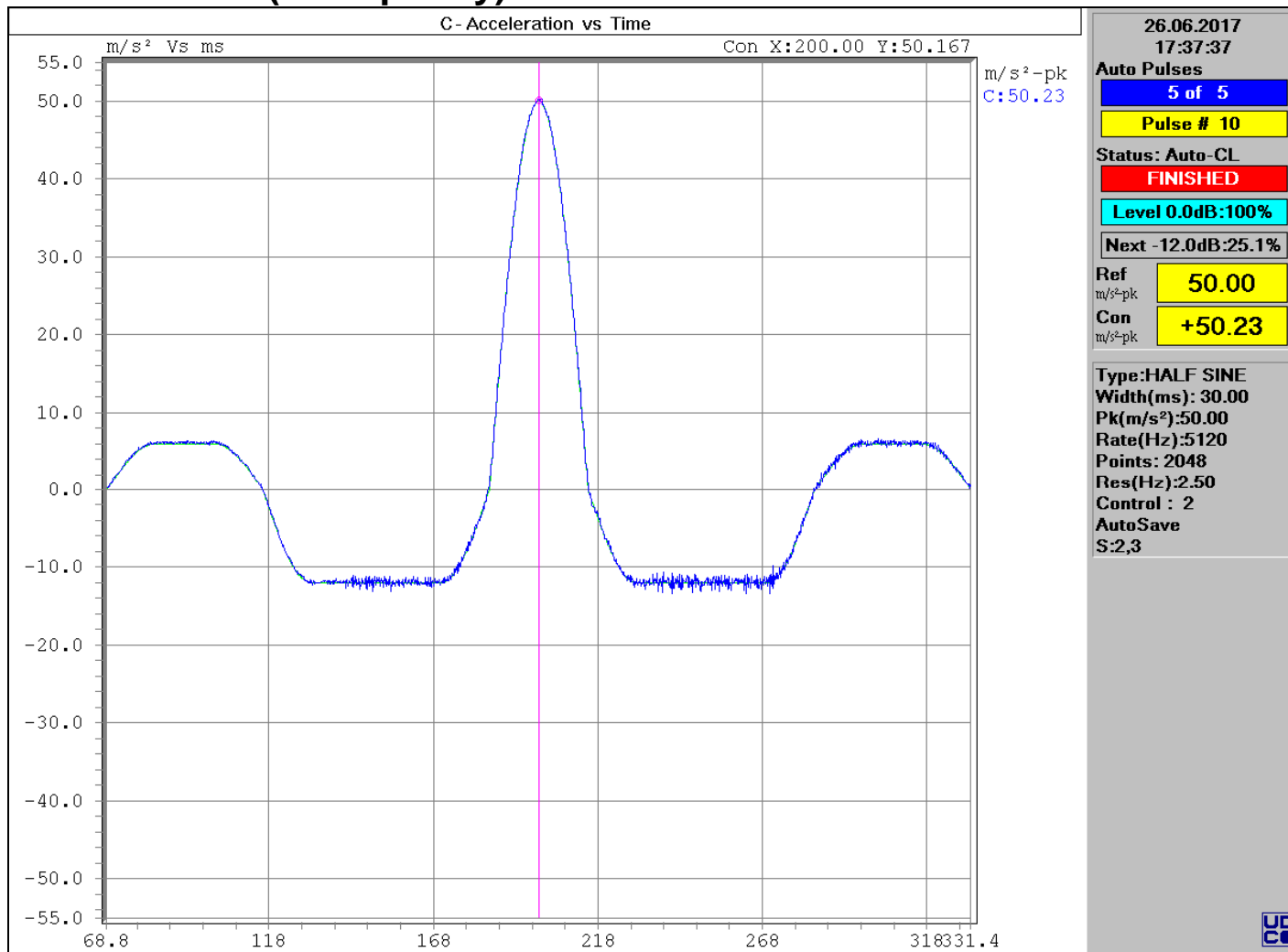


Diagram 3: Shock test regulating channel, negative direction (exemplarily)

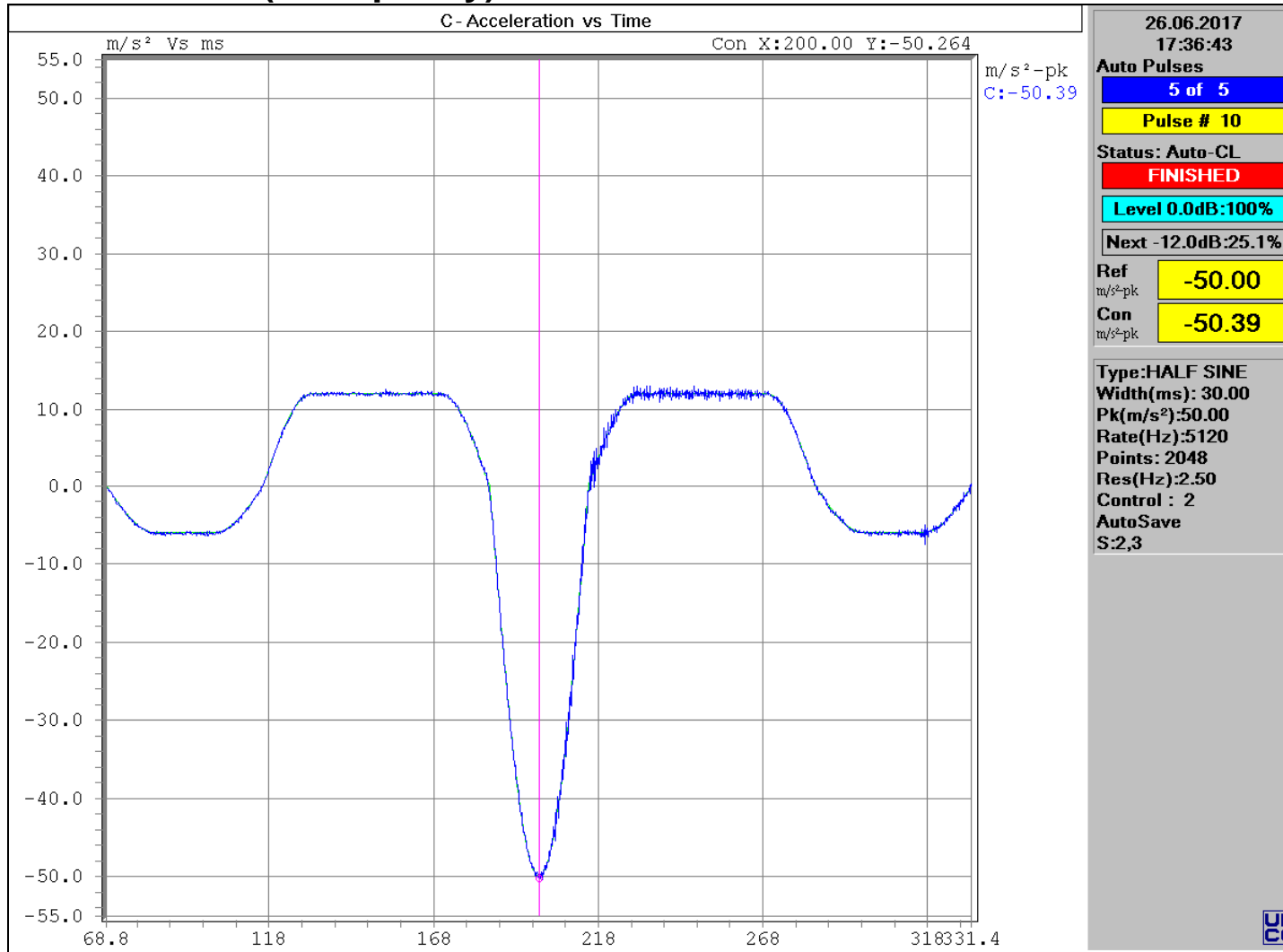


Table 1: Specimens, part 1

	1-078	Compression Latch Pr20.1, zinc die
	1-079	Compression Latch Pr20.1, zinc die
	6-045.01	Cage Nuts
	6-045.02	Cage Nuts
	6-045.03	Cage Nuts
	6-045	Cage Nuts

Table 2: Specimens, part 2

	7-071	Compression Latch with spring loaded flap
	1-112	Flash Quarter-Turn L22-66
	3-211/ 3-215	Compression Rod Latch with re-direction
	248-8250.RH-00000	FLUSH COMPRESSION LATCH RH
	248-8253.RH-00000	FLUSH COMPRESSION LATCH RH
	248-8254.RH-00000	FLUSH COMPRESSION LATCH RH

Table 3: Specimens, part 3

	248-8046.00-00000	COMPRESSION LATCH SHORT AXIS
	248-8002.00-000LH	COMPRESSION LATCH W.CAM LH
	248-8010.SG-00000	COMP.LATCH W. CLIP RH SIGNAL
	248-8012.00-AS0XX	CAM WITH PLUG AS A.H VARIABLE
	7-086	FLUSH COMPRESSION LATCH RH/LH
	7-086	FLUSH COMPRESSION LATCH RH/LH