

MECHANICAL TEST REPORT

According to the standard method:

IEC 60068-2-6 (2007)

IEC 60068-2-27 (2008)

Equipment under test:

AL200HT-NV-WD power supply

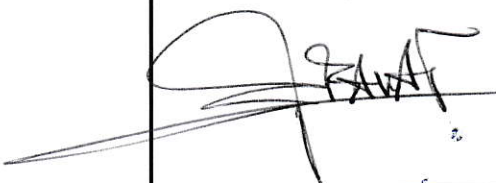

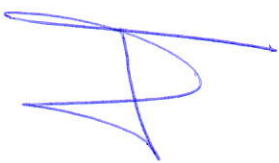
Company:

LOREME SA

DISTRIBUTION: Mr REPPERT

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EQUIPMENT UNDER TEST:

One power supply AL200HT-NV-WD

Reference:



photo 1

MANUFACTURER: LOREME SA**CUSTOMER'S NAME AND ADDRESS:****Company:** LOREME SA**Address:** 12 rue des Potiers d'Etain Actipôle BORNY
B.P.35014
57071 Metz**Contact:** Mr. Emmanuel REPPERT**PURCHASE ORDER:** N° E230278AMP**TEST DATES:** From 9th to 15th March, 2023**TEST LOCATION:** Test Laboratory of Bourgoin-Jallieu**TESTER:** Thomas MELIN

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1. PURPOSE OF THE TESTS.

Test purpose was to investigate the behavior of a power supply AL200HT-NV-WD by means of vibrations and shocks tests.

2. EQUIPMENT SUBMITTED FOR TESTING.

The equipment under test is a power supply AL200HT-NV-WD



photo 2

The equipment carried the Environne'Tech test number: 23B467.

3. CUSTOMER SPECIFICATIONS SHEET.

3.1. Reference documents:

Mechanical tests to be performed as per ENVESS-23B467LOR-00V01 Technical and Commercial Offer, the IEC 60068-2-6 (2007) and the IEC 60068-2-27 (2008) Standards.

3.2. Reminder of the main test criteria:

3.2.1. Sinusoidal vibrations:

Frame of reference: IEC 60068-2-6 (2007)

Test:

- Type: sine vibrations
- Frequency range: 10 – 500 Hz
- Level:
 - From 10 to 58Hz: 0.15mm pk-pk
 - From 58 to 500Hz: 1g
- Sweeping rate: 1 oct/min
- Sweep number: 24 (12 up and 12 down)
- Axis number: 3 axis (Ox, Oy et Oz)

3.2.2. Shocks:

Frame of reference: IEC 60068-2-27 (2008)

Test:

- Type: shocks
- Level: 15g
- Duration of shock: 11ms
- Number of shock: 3 per direction
- Axis number: 3 axis, 6 directions

3.3. Functional control verification:

Visual inspection to be conducted before and after each test by Environne'Tech.
Output voltage must be controlled before and after tests by Environne'Tech.

4. EQUIPMENT USED.

4.1. Test facilities.

Identity	Designation	Brand and Model	Features
MECA 76	Electrodynamic vibrator	LDS V875-640T	35kN ; 5Hz to 2000Hz ; resonance 2200Hz sine: 35kN; 25.4 mmPeak; 1.5m/sPeak; 50gPeak random: 33kNeff; 75geff / impact 1/2sine: 93kN
MECA 648	Electrodynamic vibrator	LDS V8-440 HBT 600	5Hz to 2500Hz ; resonance at 2000Hz ; sine: 57.8kN ; random: 66kN; impact: 1/2sine 198kN

4.2. Measurement Equipment.

Identity	Designation	Brand and Model	Characteristics	Last validity date	Metrological confirmation valid until
MECA 572	Control generator	LDS LASER	8 measuring channels ; sine, random, impacts, limitation levels ; from 1Hz to 5000Hz	09/03/2021	09/05/2023
MECA 758	Accelerometer	PCB 353B03	sensitivity: 10.08 mV/g at 160Hz	29/07/2022	29/09/2023
MECA 617	Accelerometer	PCB 353B04	sensitivity: 9.93 mV/g at 160Hz	19/05/2022	19/07/2023
MECA 745	Accelerometer	PCB 356A02	X: 9.85 mV/g, Y: 9.63 mV/g, Z: 9.57 mV/g at 160Hz	30/01/2023	30/03/2024
ELEC 712					

4.3. Test fixtures.

A tooling designed by Environne'Tech is used to fix the power supply.

5. TEST LOG.


5.1. Chronology:

Tests have been conducted on the specimen according to specifications described in chapter 3 of this report.

A summary table of the chronology of tests is given below:

Axis	Test	Date
X	Sinusoidal vibrations	09/03/2023
Y	Sinusoidal vibrations	10/03/2023
Z	Sinusoidal vibrations	
	Shocks	13/03/2023
X	Shocks	14/03/2023
Y	Shocks	15/03/2023

On the curves below, alarm and tolerance lines are tolerances of the standard:

<i>Test:</i>	<i>Curves description: standard tolerance</i>
Sinusoidal vibrations / Shock	

5.2. *Axis determination:*

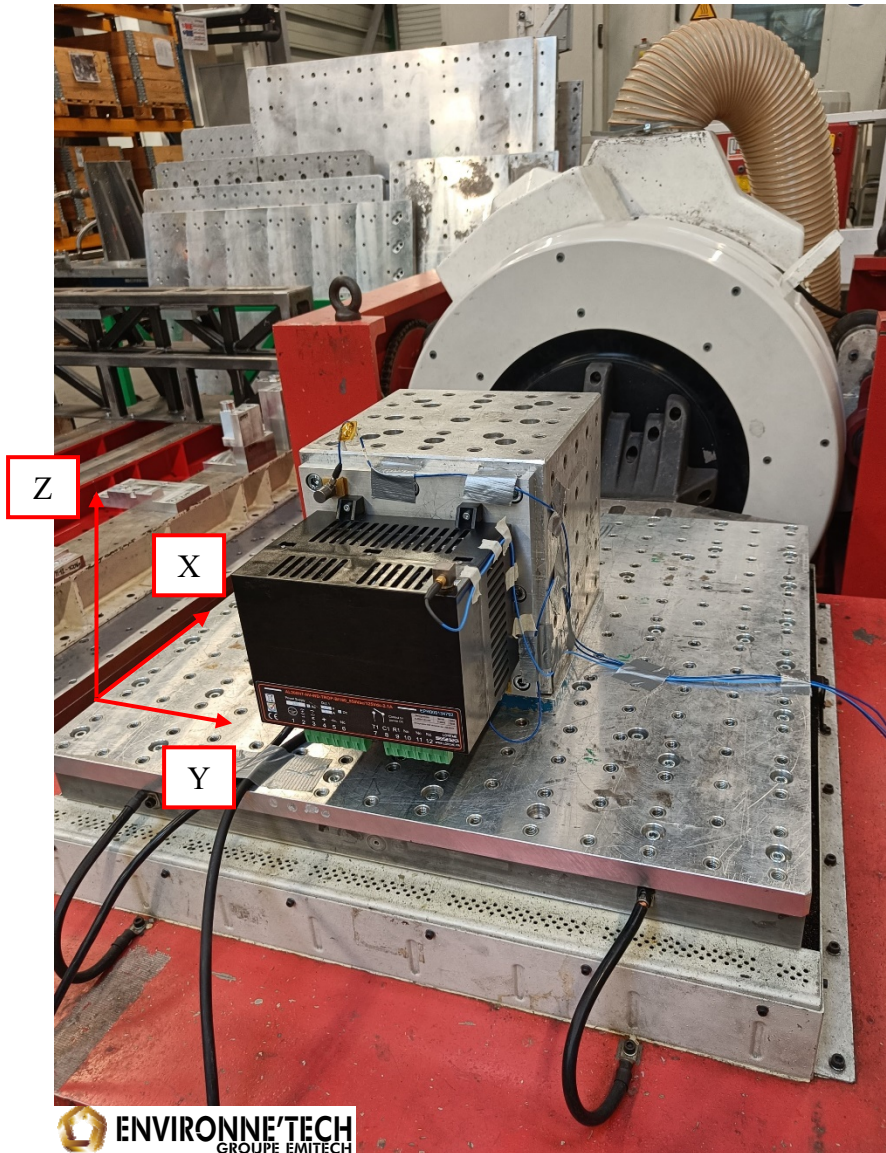


photo 3

5.3. *Instrumentation:*

Equipment was instrumented with 1 measuring accelerometer.

Measuring accelerometer M is given below:

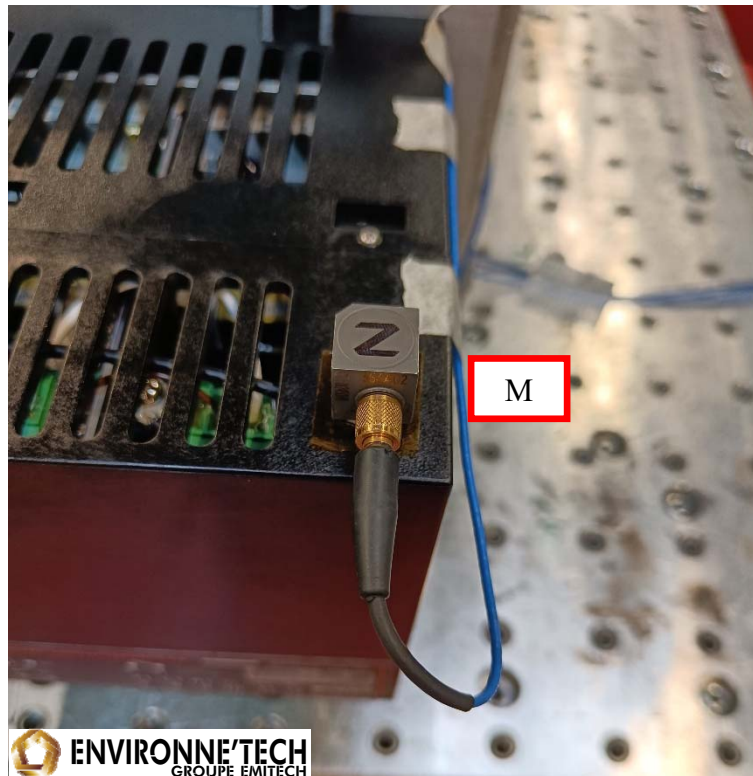


photo 4

Position of the measuring accelerometer remains the same for the entire duration of the tests.

5.4. Axis X:

5.4.1. Set-up:

Specimen set-up along axis X is given below:

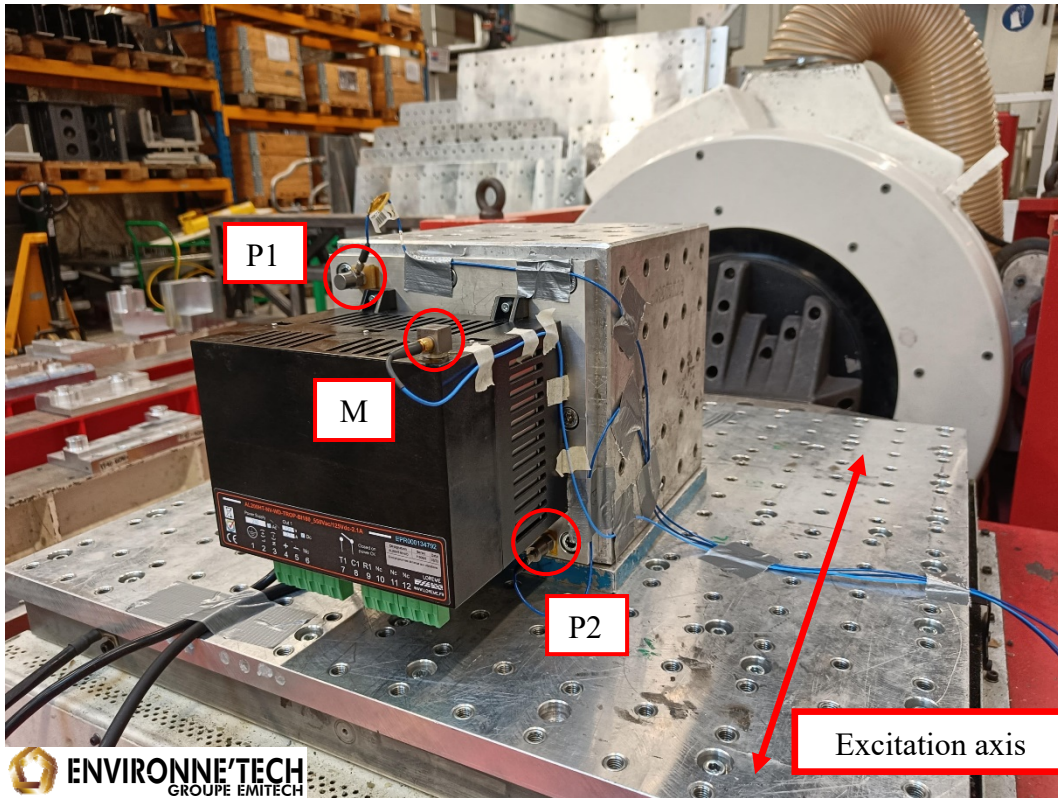


photo 5

Control accelerometers P1 and P2 are given below:

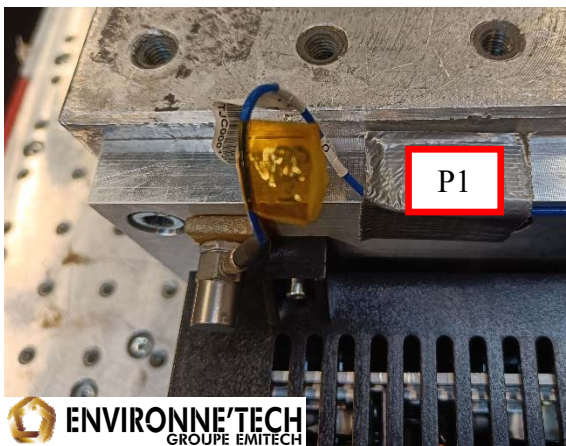


photo 6

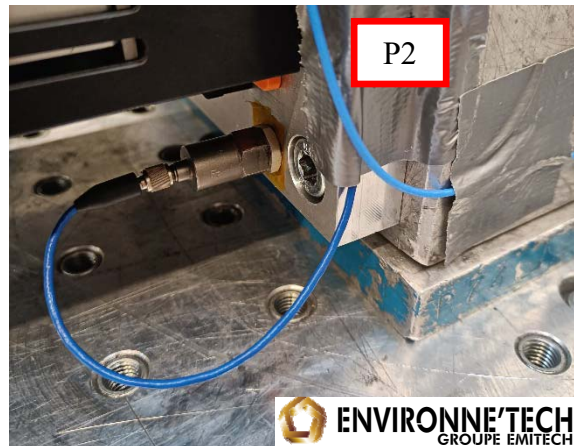
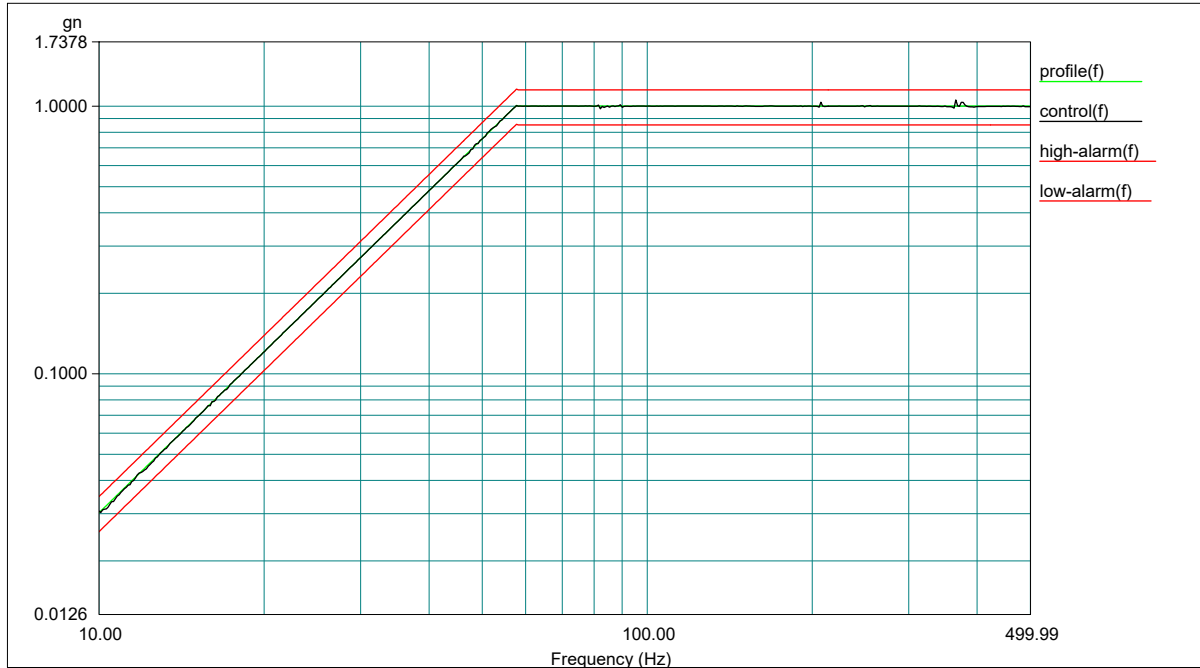


photo 7

A control strategy worked out in average on these 2 points was adopted.

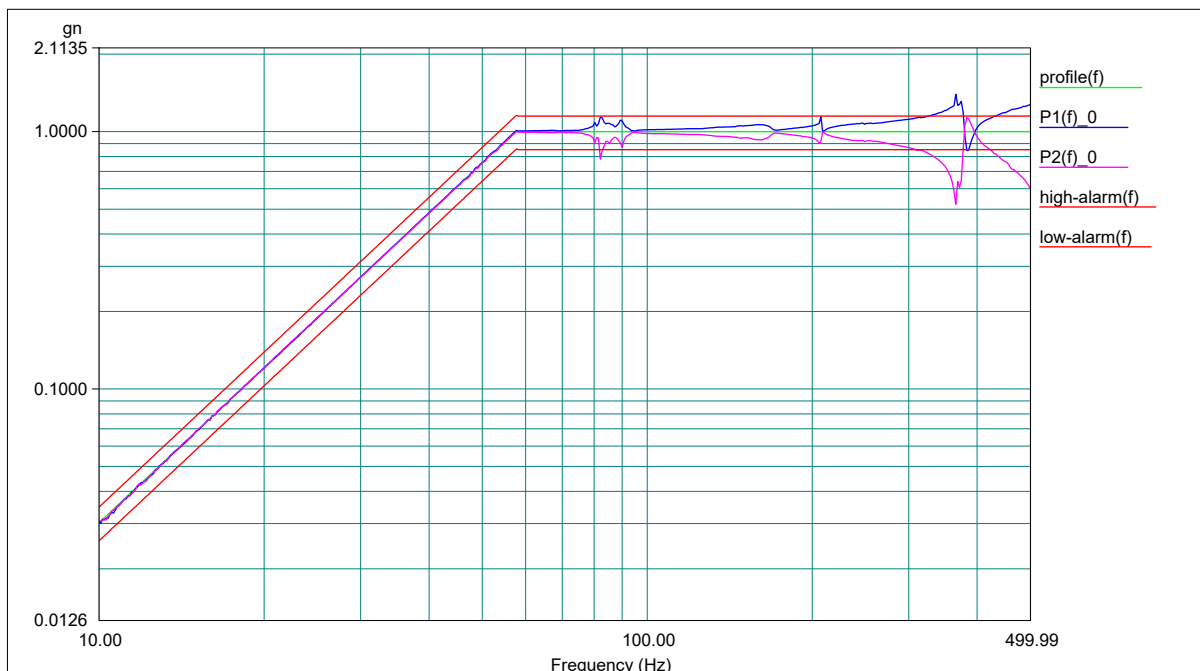
5.4.2. Sinusoidal vibrations:

The control, which is obtained by averaging the two piloting points, is given below:



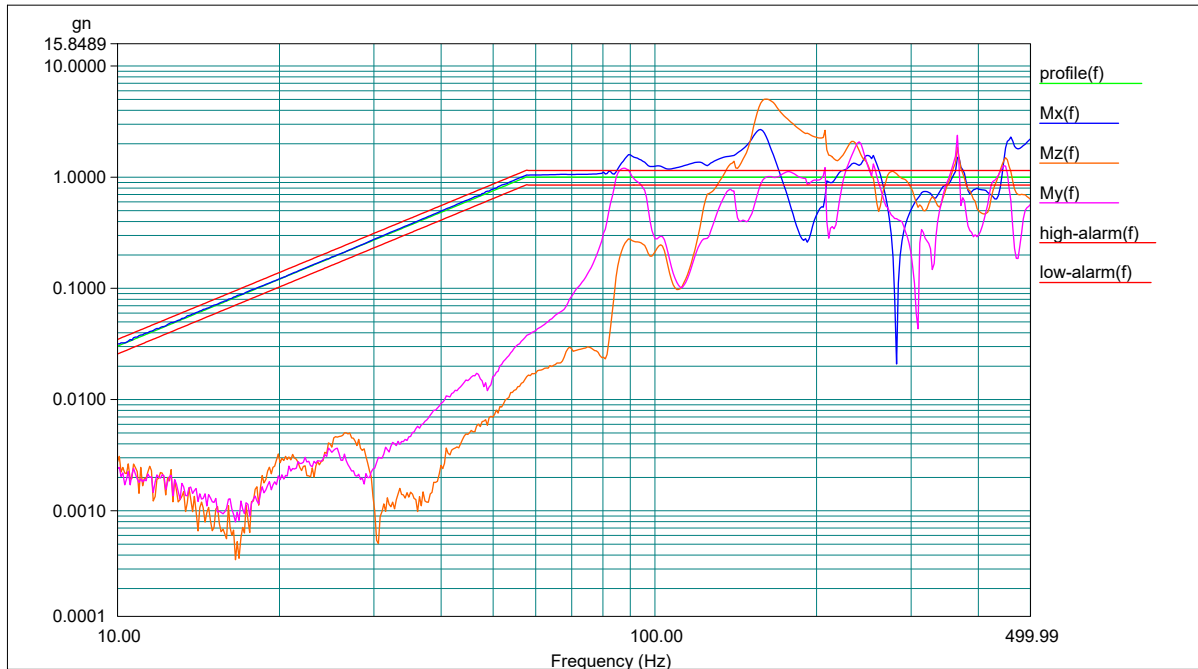
curve 1

The two piloting points used to control the injected signal are given below:



curve 2

Acceleration measurement at point M is given below:

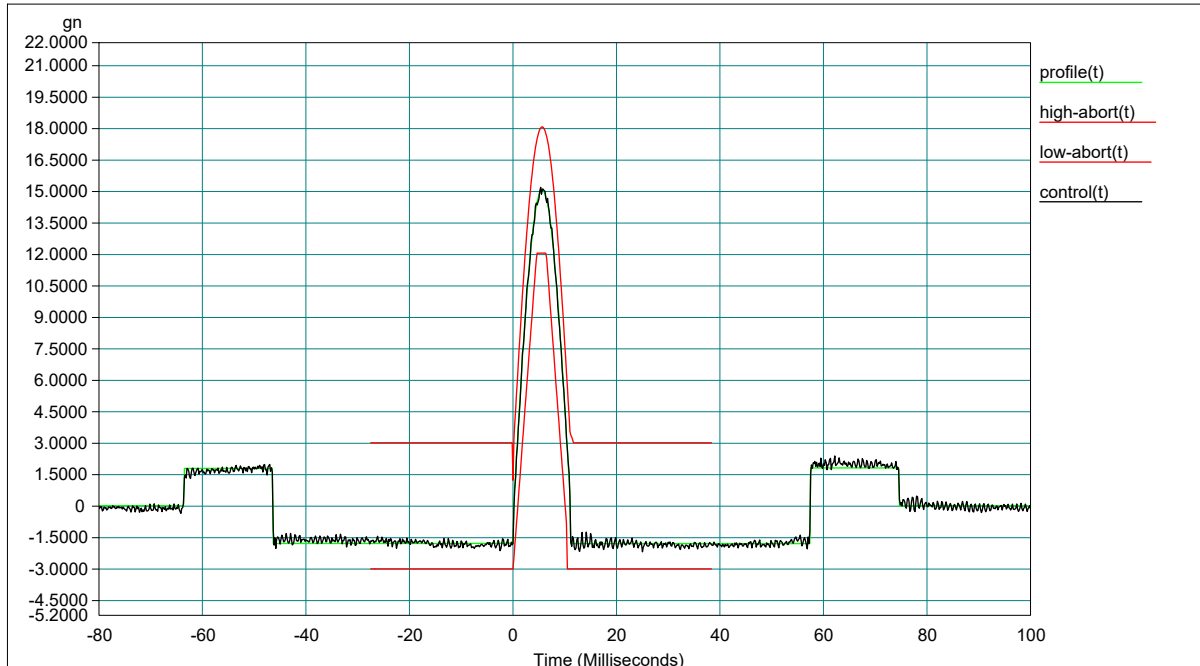


curve 3

5.4.3. Shocks:

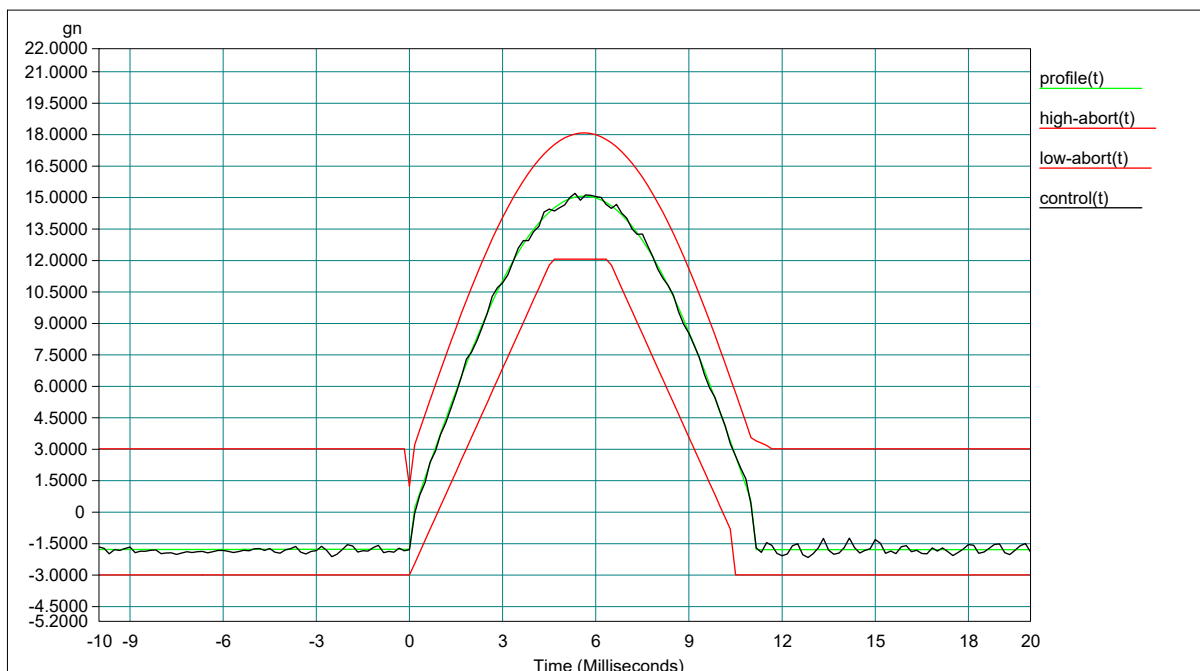
Curves recorded for the last of the three positive shocks are presented here after.

Control curve is given below:



curve 4

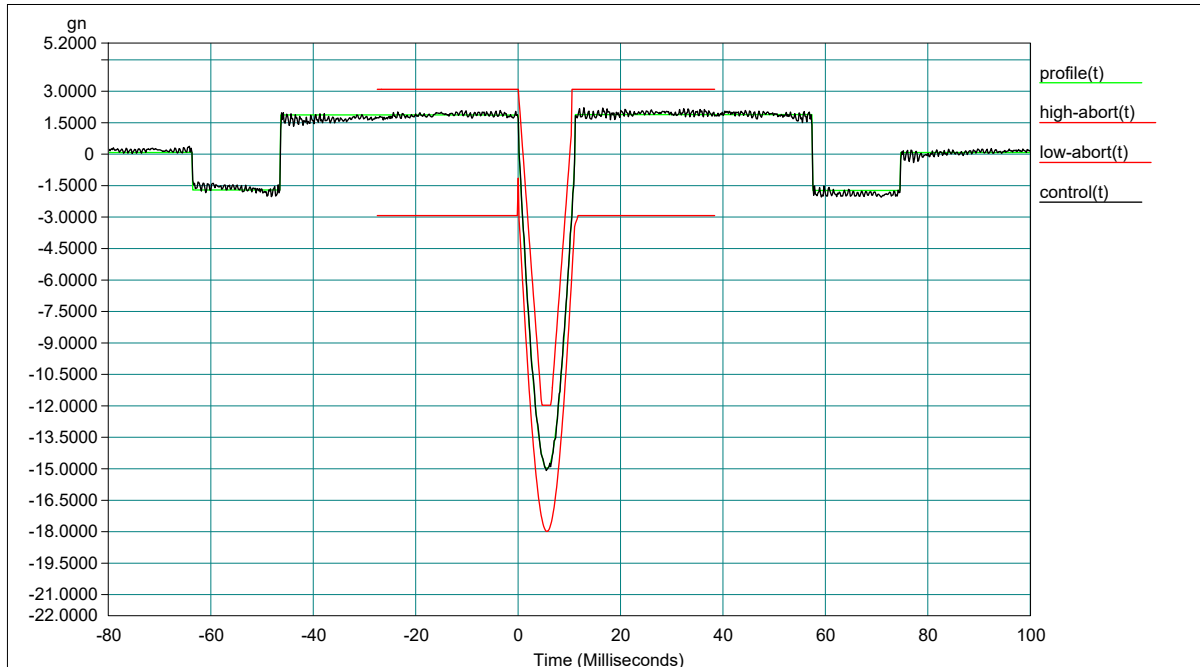
Duration of shock is presented below:



curve 5

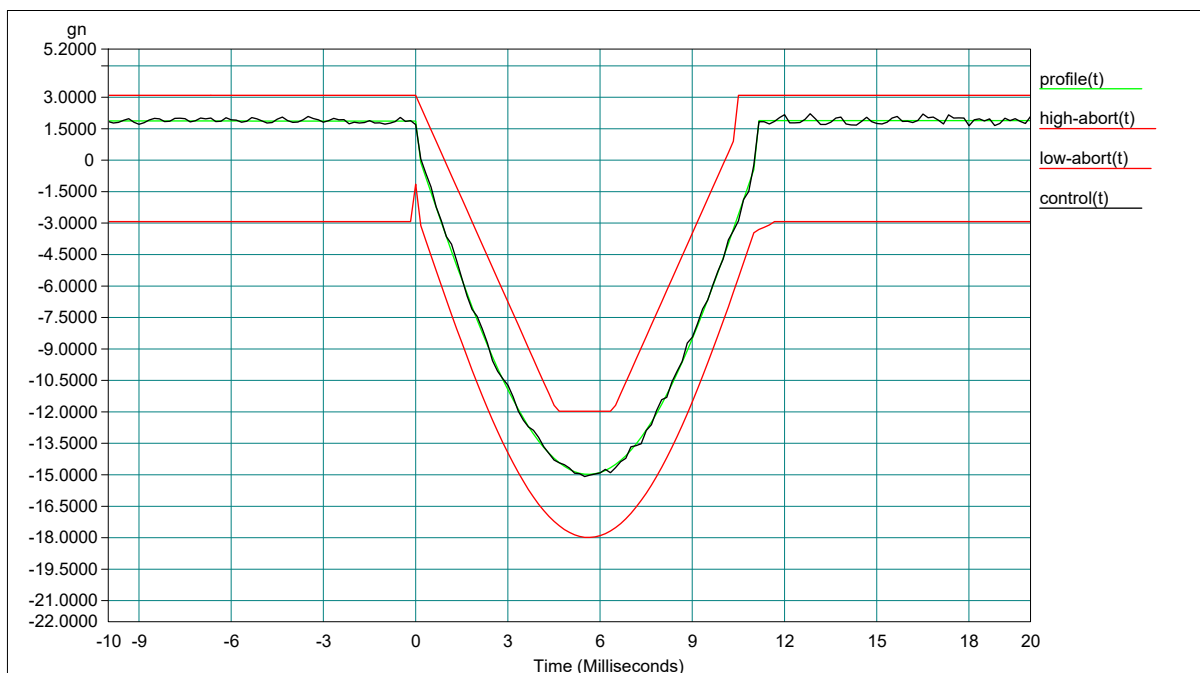
Curves recorded for the last of the three negative shocks are presented here after.

Control curve is given below:



curve 6

Duration of shock is presented below:



curve 7

5.5. Axis Y :

5.5.1. Set-up:

Specimen set-up along axis Y is given below:

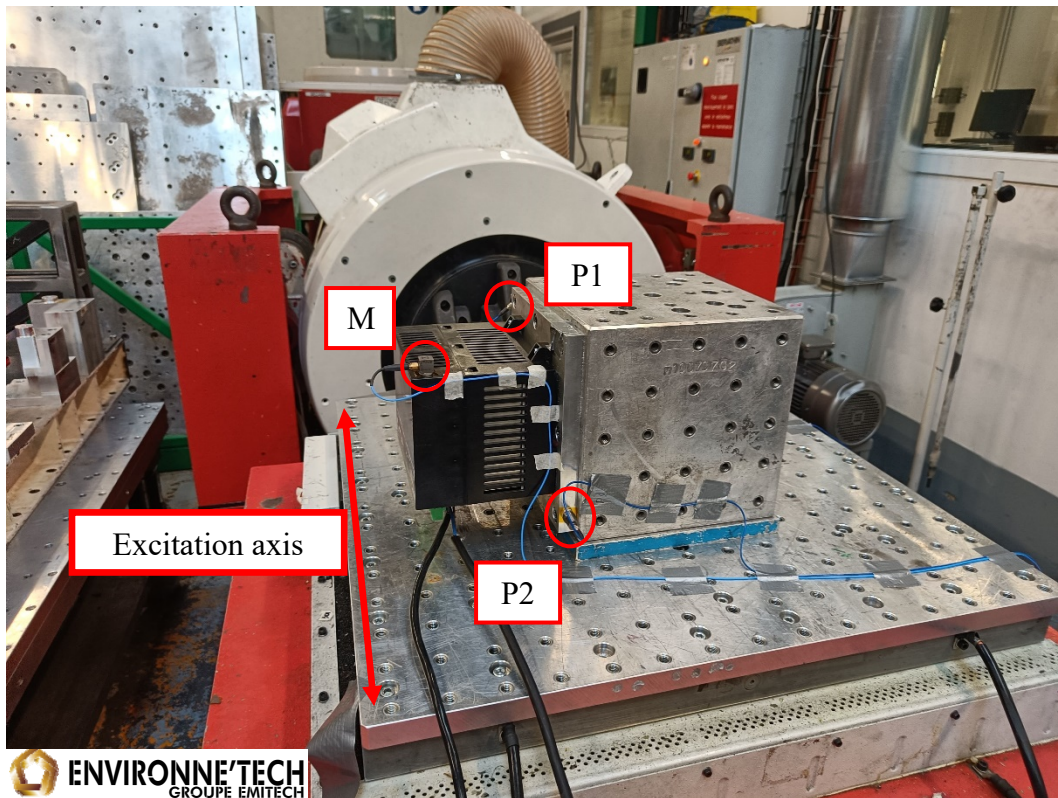


photo 8

Control accelerometers P1 and P2 are given below:

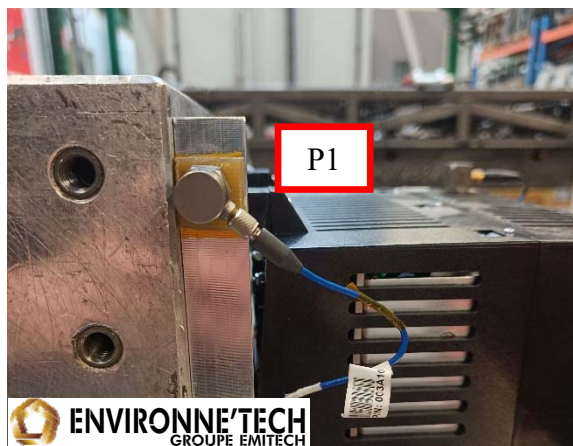


photo 9

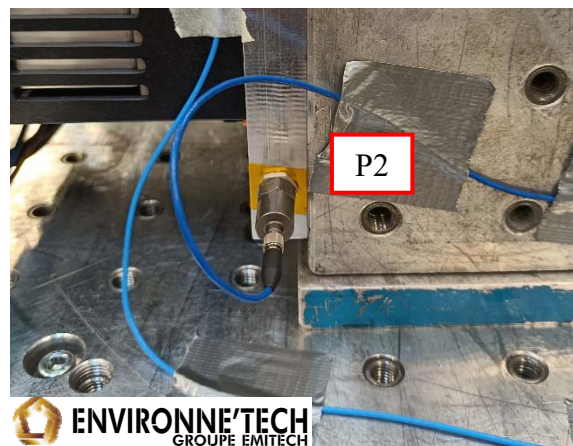
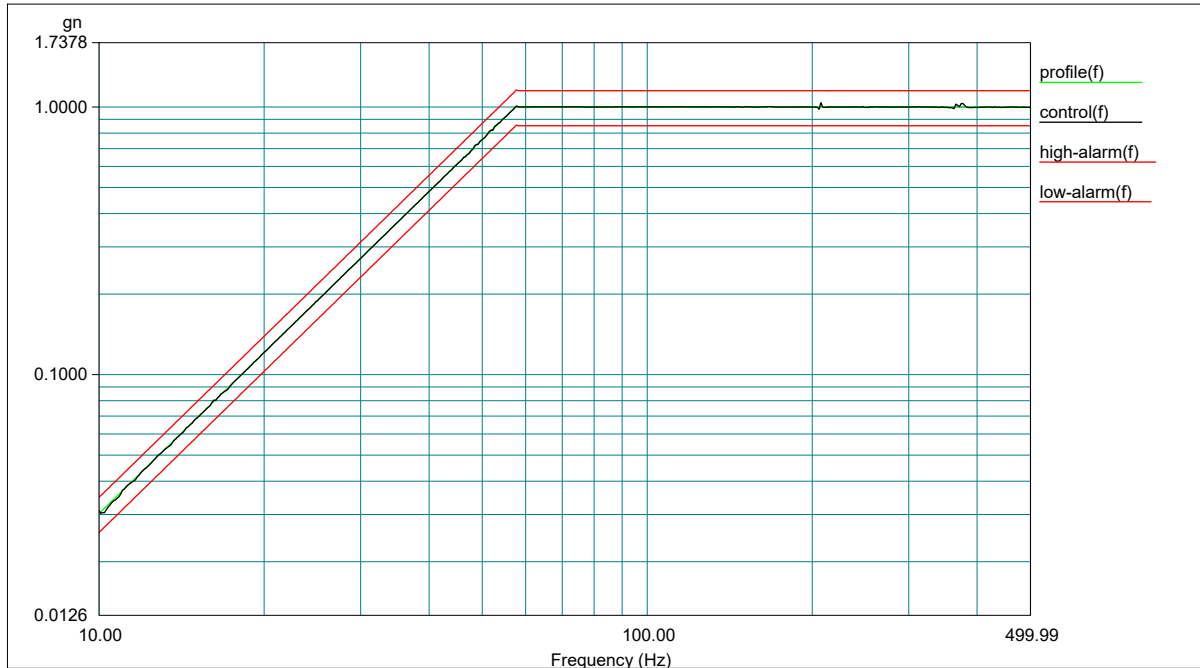


photo 10

A control strategy worked out in average on these 2 points was adopted.

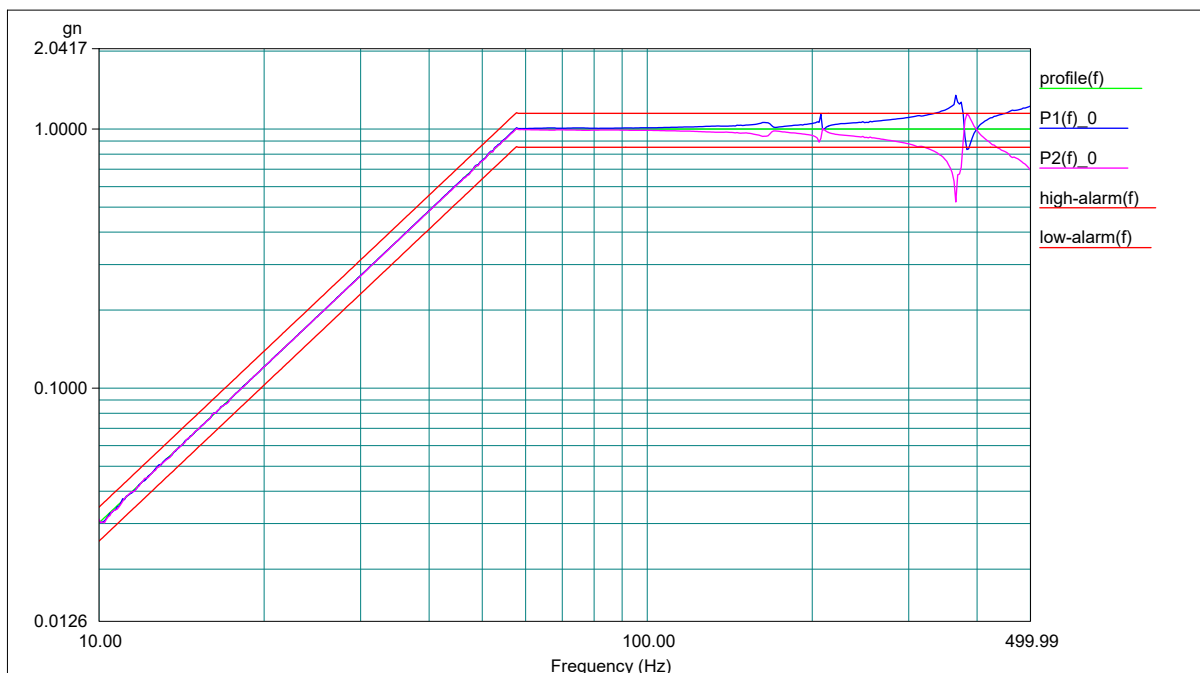
5.5.2. Sinusoidal vibrations:

The control, which is obtained by averaging the two piloting points, is given below:



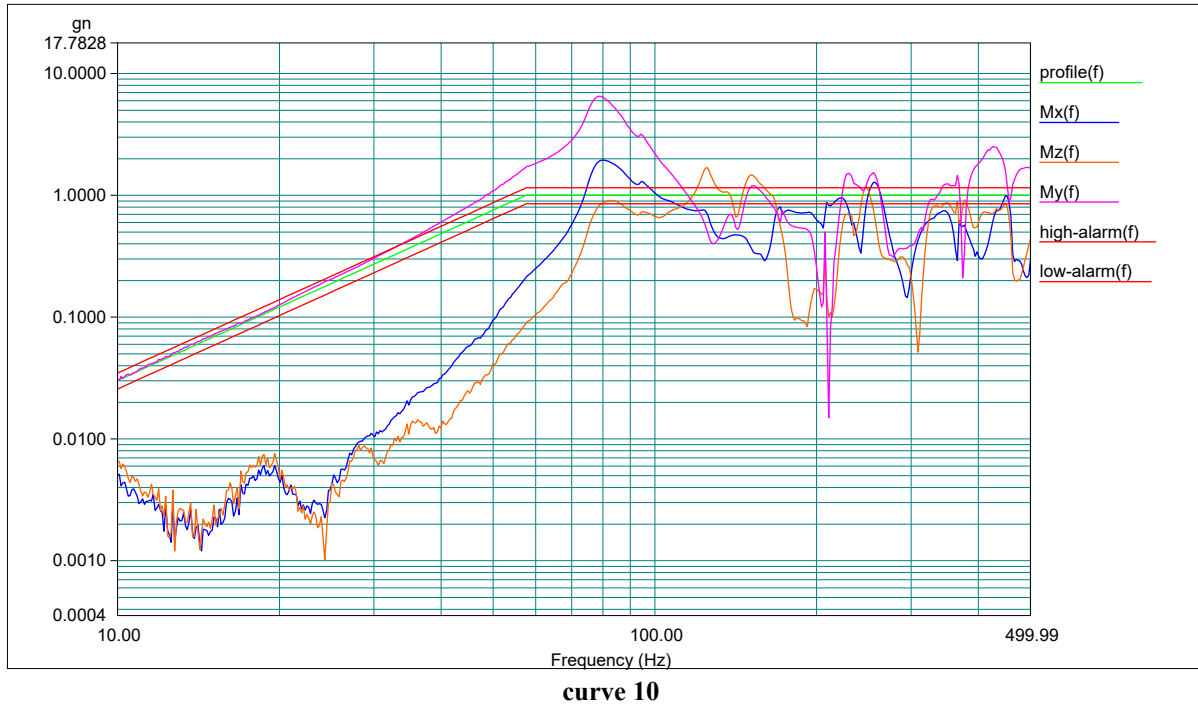
curve 8

The two piloting points used to control the injected signal are given below:



curve 9

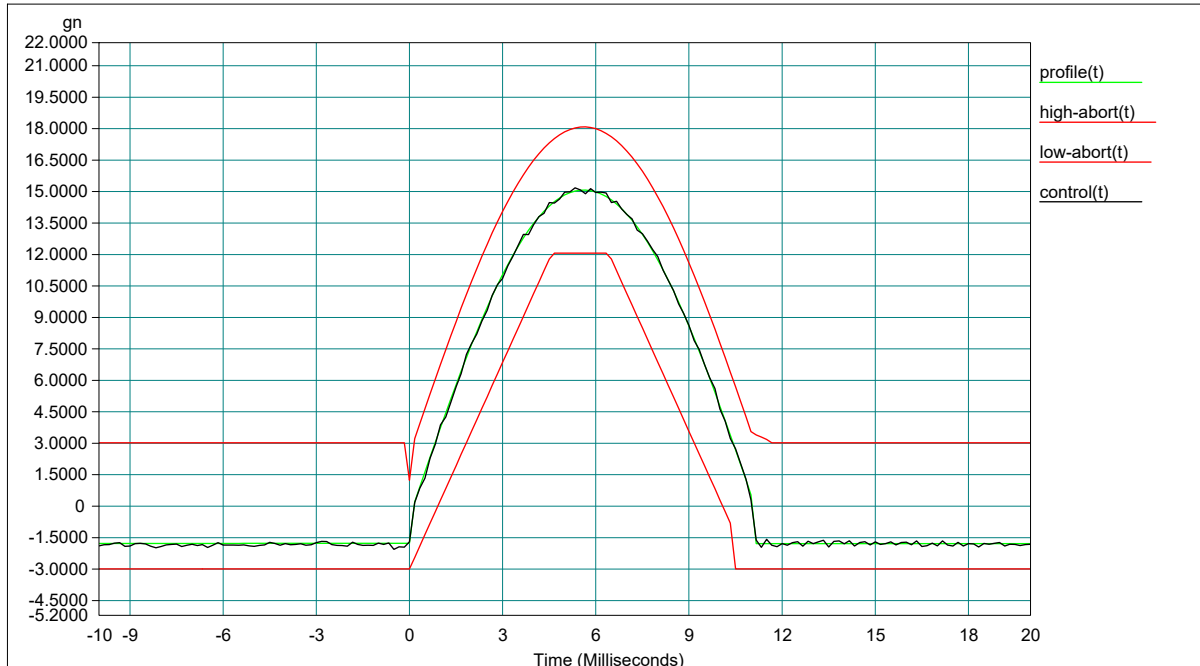
Acceleration measurement at point M is given below:



5.5.3. Shocks:

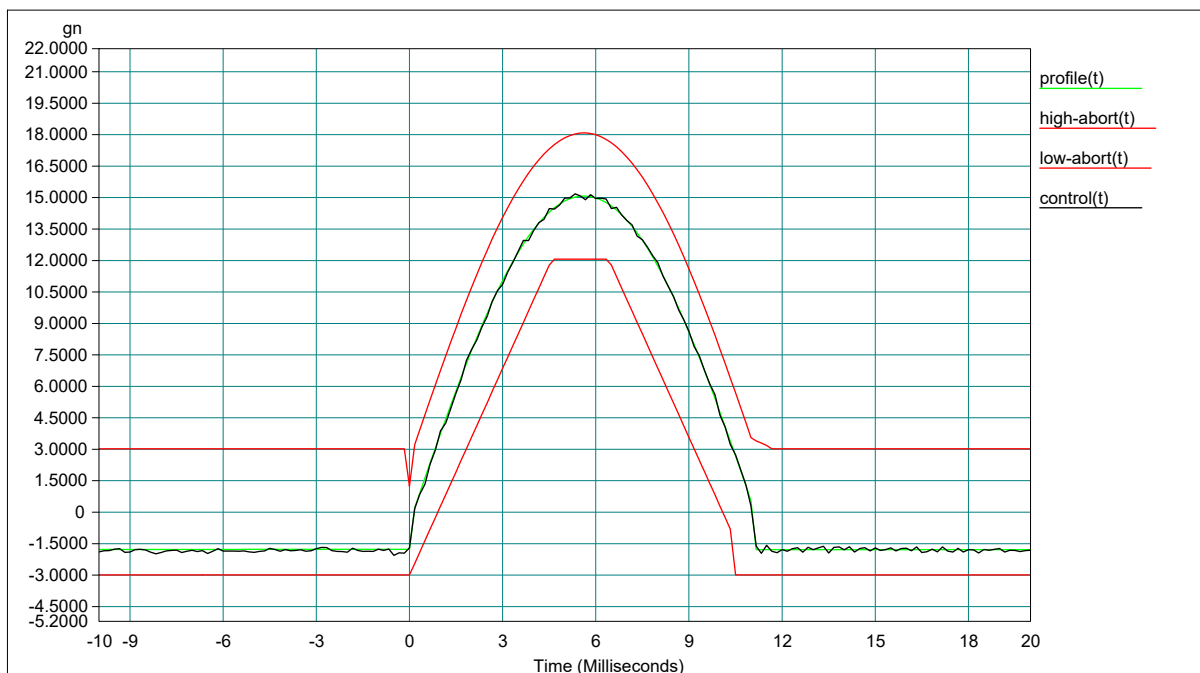
Curves recorded for the last of the three positive shocks are presented here after.

Control curve is given below:



curve 11

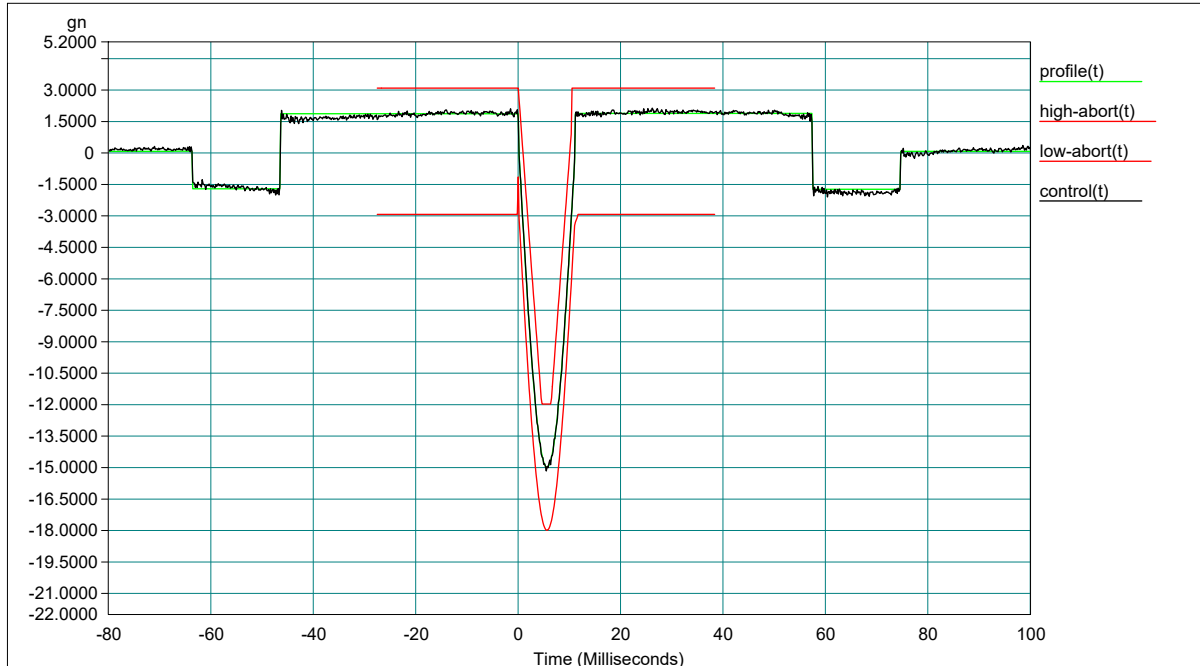
Duration of shock is presented below:



curve 12

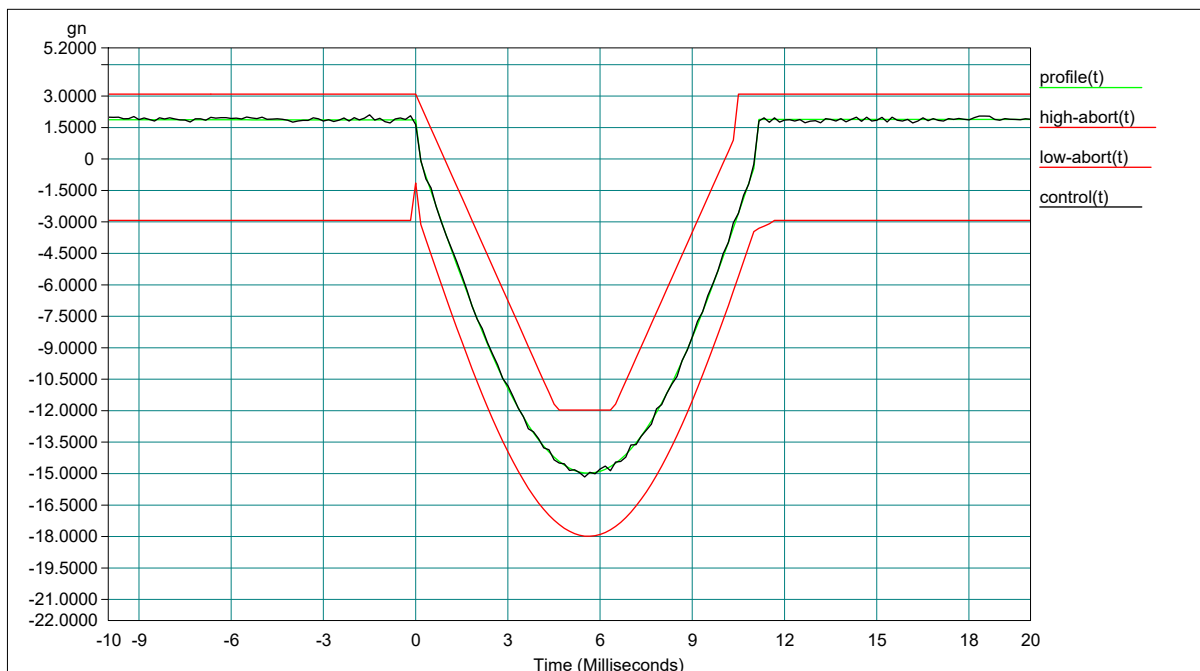
Curves recorded for the last of the three negative shocks are presented here after.

Control curve is given below:



curve 13

Duration of shock is presented below:



curve 14

5.6. Axis Z:

5.6.1. Set-up:

Specimen set-up along transverse axis given below:

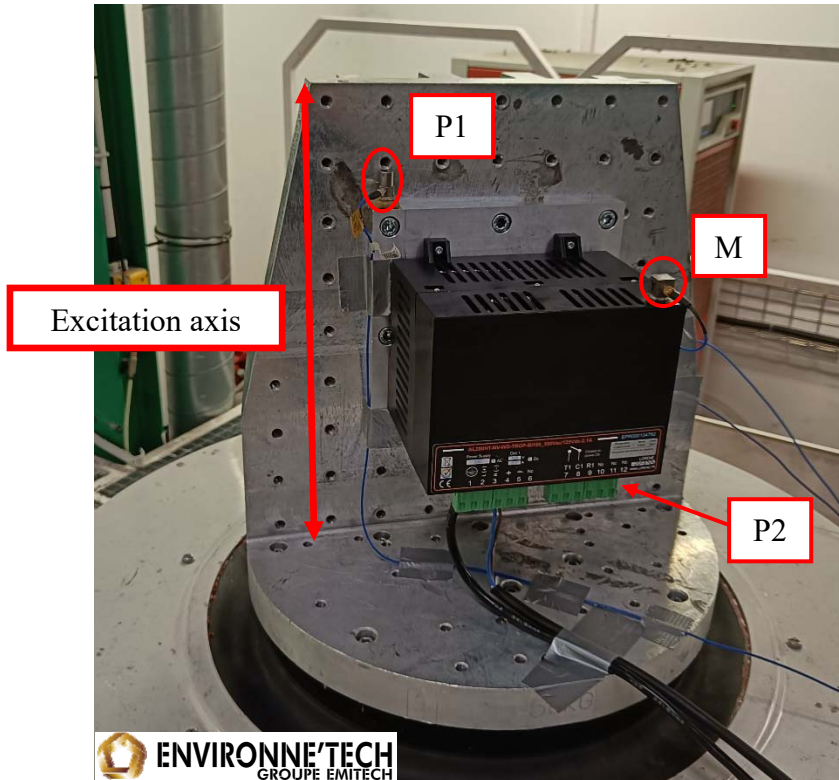


photo 11

Control accelerometers given below (P1 and P2):

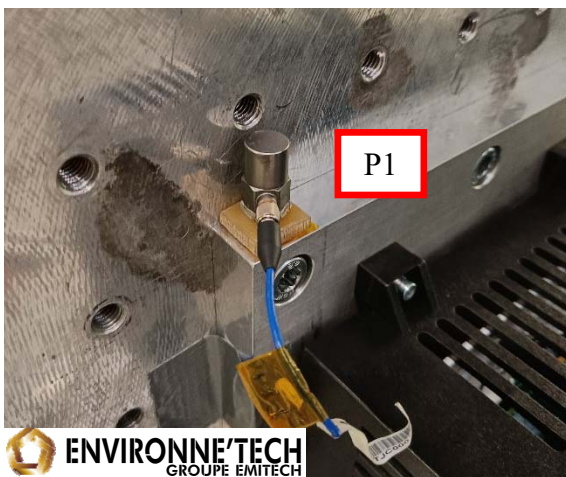


photo 12

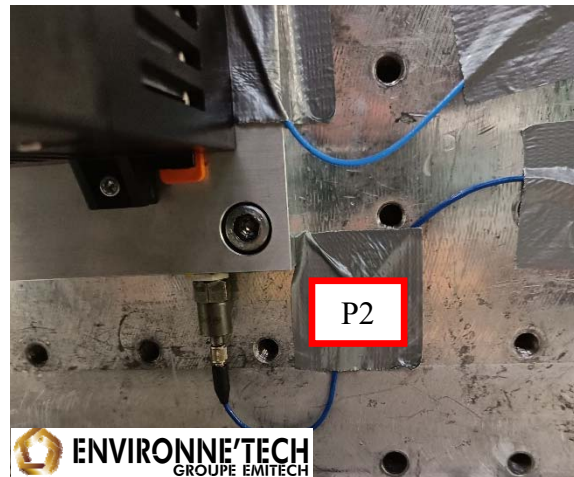
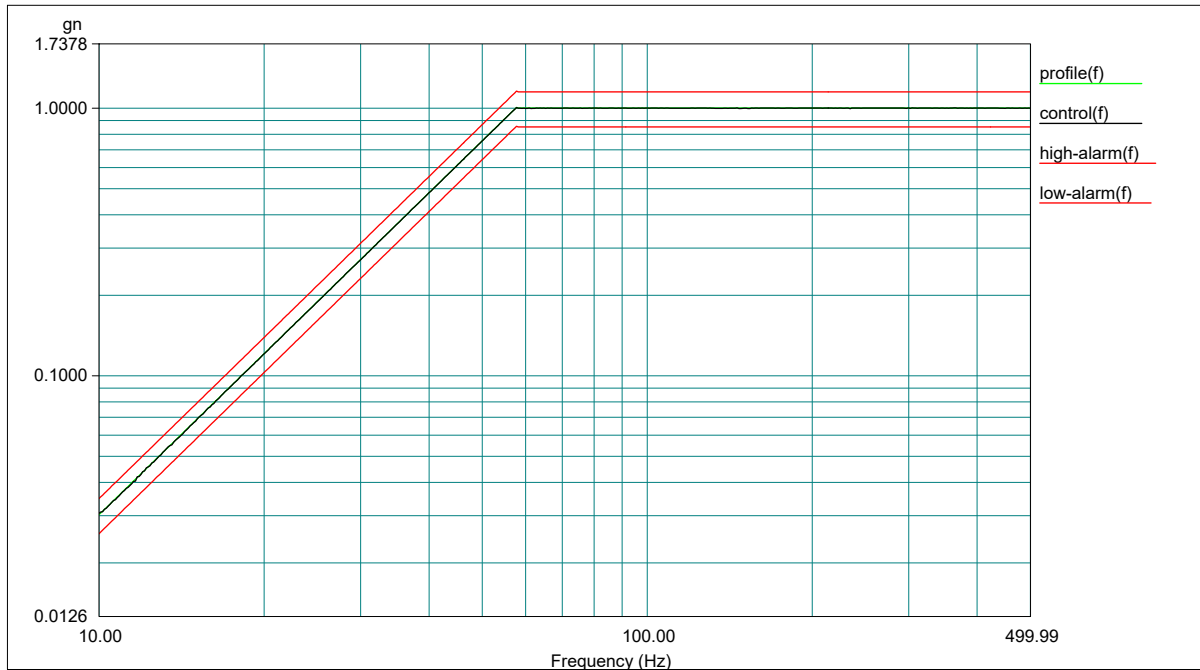


photo 13

A control strategy worked out in average on these 2 points was adopted.

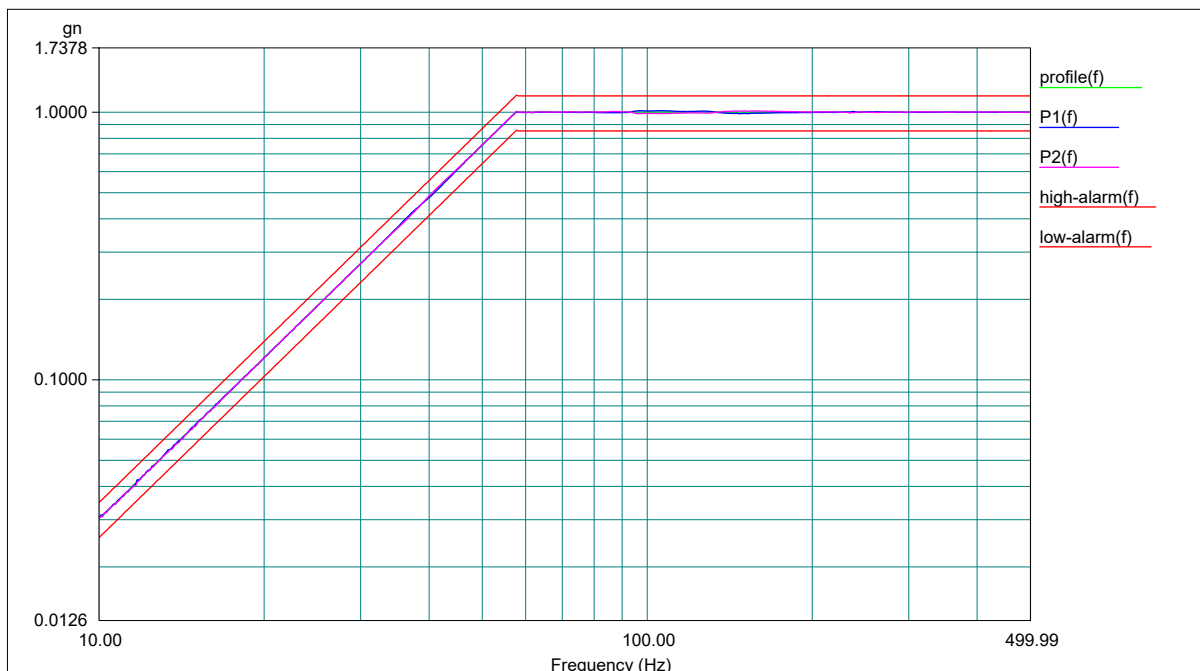
5.6.2. Sinusoidal vibrations:

The control, which is obtained by averaging the two piloting points, is given below:



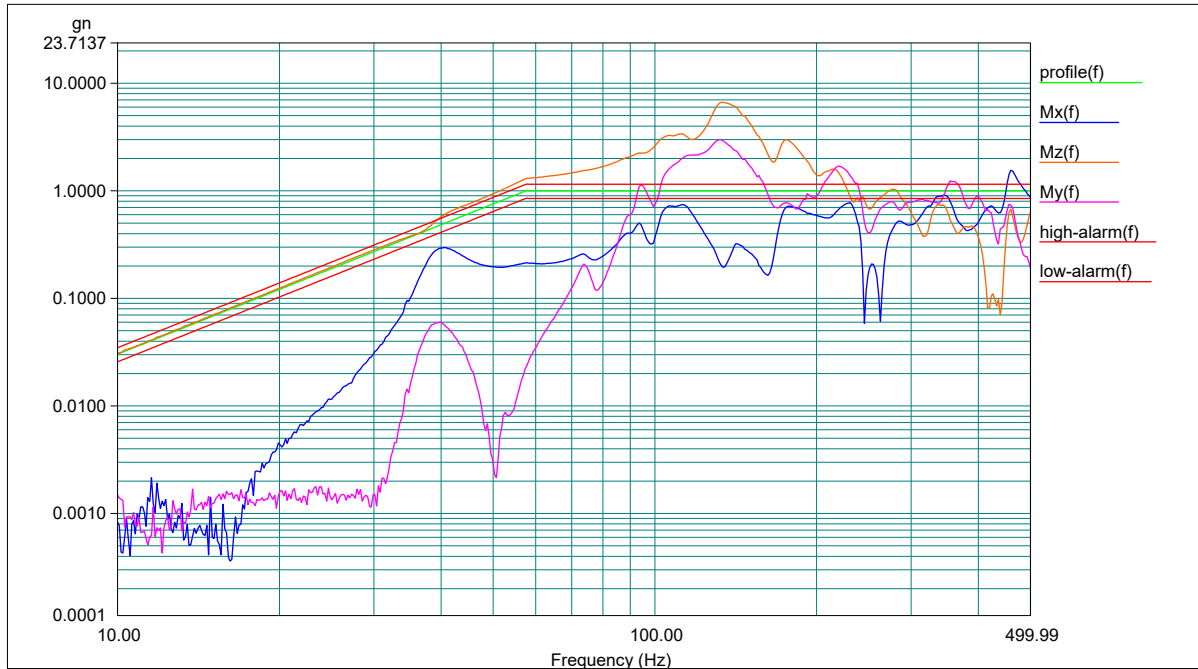
curve 15

The two piloting points used to control the injected signal are given below:



curve 16

Acceleration measurement at point M is given below:

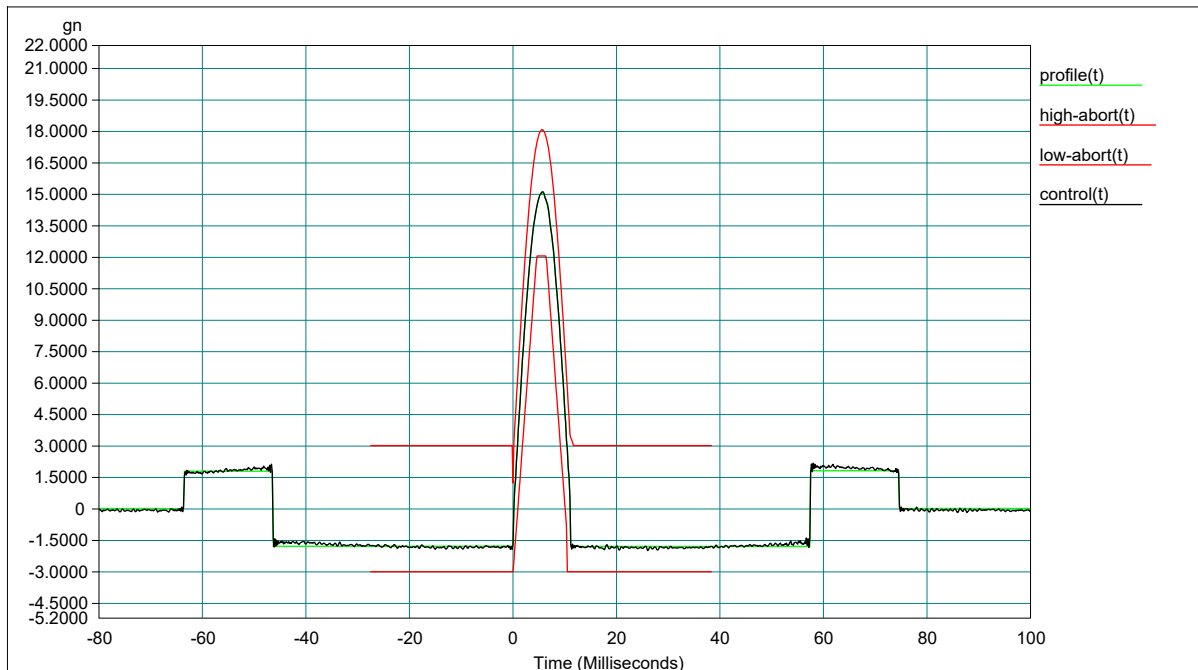


curve 17

5.6.3. Shocks:

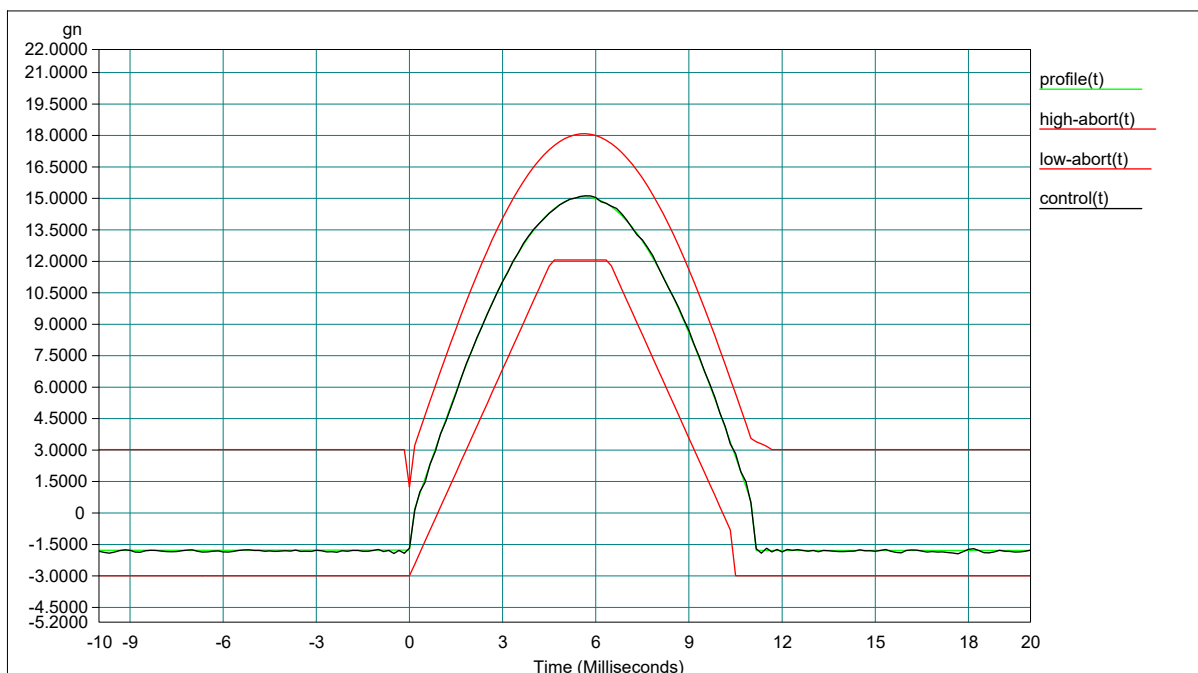
Curves recorded for the last of the three positive shocks are presented here after.

Control curve is given below:



curve 18

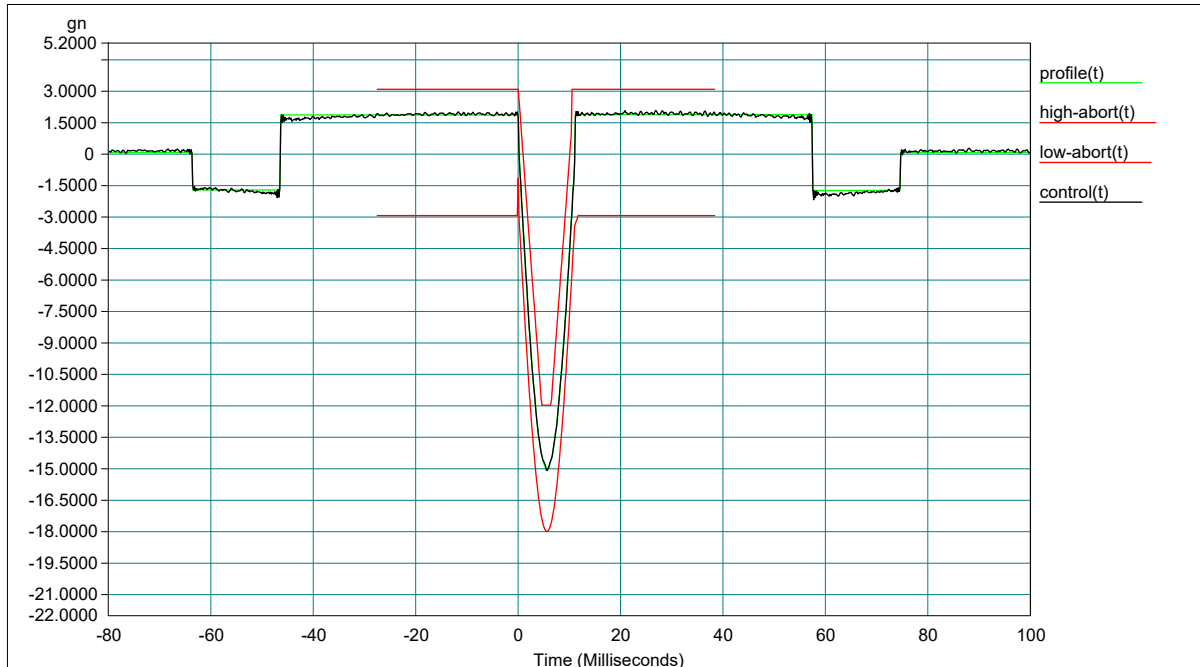
Duration of shock is presented below:



curve 19

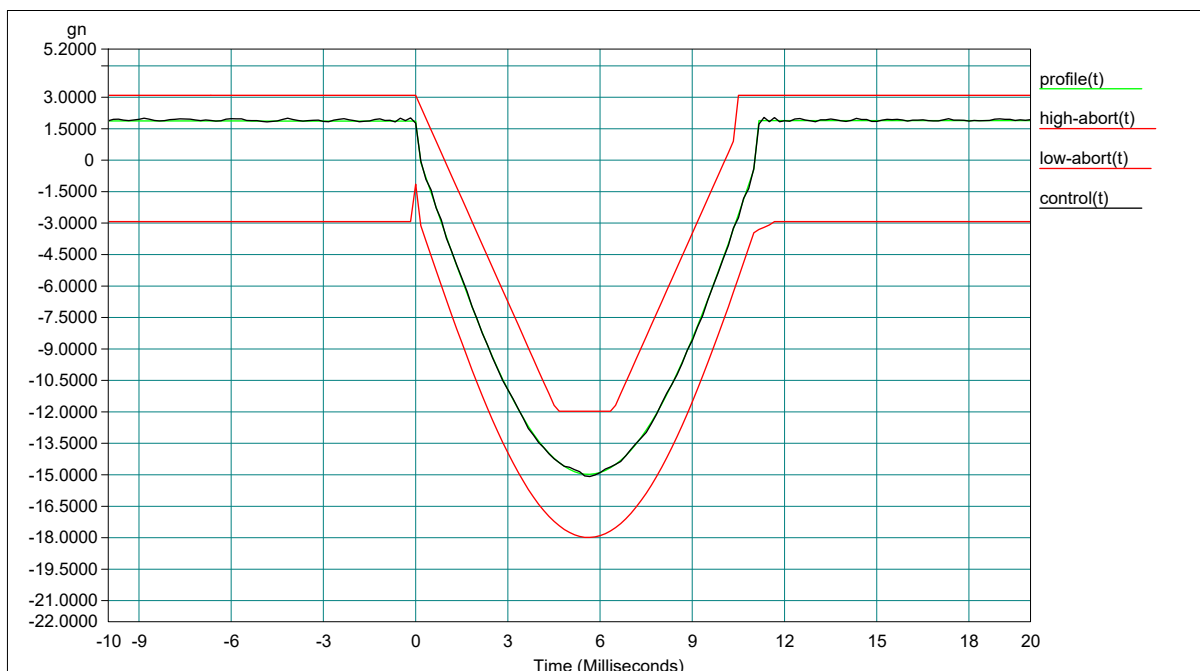
Curves recorded for the last of the negative shocks are presented here after.

Control curve is given below:



curve 20

Duration of shock is presented below:



curve 21

6. CONCLUSION.

Tests have been conducted on the specimen according to specifications described in chapter 3 of this report.

No external deterioration is observed at the end of tests. No variation of the mechanical behavior is observed.

Before and after each test, the output voltage has been tested, the value stayed at 125.2V for the entire duration of tests.

The Power supply AL200HT-NV-WD was sent back in this state for assessment to LOREME SA.

□□□ End of report □□□