

DICHIARAZIONE DI CONFORMITÀ

Campo di applicazione:

Categoria veicoli: N2, N3, O3, O4

Prodotto: Parafango supportato da Tubi e cavallotto in tecnopolimero

Fabbricante: Bawer S.p.A.

Range di esercizio: -20°C / + 40° C

Norme di riferimento: ISO 13355:2016 - CEI EN 60068-2-64:2012/A1:2020

BAWER S.p.A. con sede legale in Via Solferino, 4 70022 Altamura (BA) – e sede operativa in Via Francesco Padula sn, Zona Industriale Jesce, 75100 Matera Italy,

Dichiara

Che la combinazione dei prodotti Parafango Fender serie (F) con Tubo Ø42 e Cavallotto in Tecnopolimero, assolvono alla funzione per cui sono destinati.

I test report emessi dai Laboratori TUV Sud, allegati hanno validato i parametri di progettazione della combinazione tubo con cavallotto e parafango.

MES200220000931A00TR_EN/IT - MES200220000931B00TR_EN/IT, ENV200220000931A/B_REV00.

I risultati dei test hanno confermato la capacità di resistenza, durabilità e performance di detta combinazione, avendo raggiunto i valori di riferimento di progetto.

La documentazione allegata è pertanto parte integrante della presente dichiarazione e non può essere utilizzata separatamente integralmente o in parte dalla stessa.

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DECLARATION OF CONFORMITY

Field of application:

Vehicle category: N2, N3, O3, O4

Product: Fender supported by technopolymer tubes and clevis

Manufacturer: Bawer S.p.A.

Operating range: -20°C / +40° C

Reference standards: ISO 13355:2016 - CEI EN 60068-2-64:2012/A1:2020

BAWER S.p.A., with its legal headquarters located at Via Solferino, 4, 70022 Altamura (BA), and its operational headquarters situated at Via Francesco Padula, n/a, Industrial Zone Jesce, 75100 Matera, Italy,

Declares

That the combination of the Fender (F) series products with Ø42 Tube and Technopolymer clevis fulfils the function for which they are destined.

The attached test reports, issued by TUV Sud Laboratories, have validated the design parameters of the tube-clevis combination and fender.

MES200220000931A00TR_EN/IT - MES200220000931B00TR_EN/IT, ENV200220000931A/B_REV00.

The test results have confirmed the resistance, durability, and performance capabilities of said combination, meeting the reference design values.

The attached documentation is therefore an integral part of this declaration and cannot be used separately or in part from it.

Bawer S.p.A. will take legal actions, in case of unauthorized use or divulgement of mentioned document to a third Party.

ENV Test Report

VIBRATION TEST

BAWER S.p.A.

PIPES for FENDER

Model:

F4801 PARAFANGO FENDER

F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42

In accordance with

ISO 13355:2016

CEI EN 60068-2-64:2012/A1:2020

Prepared for: BAWER S.p.A.
Via Solferino, 4
70022 Altamura (BA)

ENV 200220000931A REV00



Add value.
Inspire trust.

SIGNATURE

RICCARDO
MENDO
04.03.2024
08:00:40 UTC

NAME	JOB TITLE	RESPONSIBLE FOR	EDITING DATE
Riccardo Mendo	Technical Reviewer	Authorised Signatory	2024-02-01

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.
The above date represents Test Report editing date. Test Report issue date corresponds with the digital signature affixing date.

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with ISO13355:2016 and CEI EN 60068-2-64:2012/A1:2020 for the tests detailed in section 1.3.

DISCLAIMER AND COPYRIGHT

The results of this Test Report refer only to the tested sample as received and tested in the sequence indicated, where prescribed. They are valid for the time and conditions of test, unless otherwise specified.
The integral reproduction of the present Test Report is allowed; the partial reproduction must be authorized in writing by the Laboratory.
The result of functional test is based on what the Client declared and it is not responsibility of the CAB.

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Sede legale e amministrativa:
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20126 Milano – Italy

Soggetta al controllo
e al coordinamento di
TÜV SÜD AG
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Via Brandizzo 123
10088 Volpiano – Italy

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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.
In case of subsequent revisions, the current Test Report replaces the previous versions.
The date below represents Test Report editing date. Test Report issue date corresponds with the digital signature affixing date.

Issue	Description of Change	Date of Editing
0	First Issue	2024-02-01

Table 1

1.2 Introduction

Applicant	BAWER S.p.A.
Manufacturer	BAWER S.p.A.
Model Number(s)	F4801 PARAFANGO FENDER F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42
Manufacturer Declared Variant(s)	Series
Serial Number(s)	None
Hardware Version(s)	N/A
Software Version(s)	N/A
Number of Samples Tested	1
Test Specification/Issue/Date	ISO 13355:2016 CEI EN 60068-2-64:2012/A1:2020
Test Plan/Issue/Date	N/A
Date of Receipt of EUT	2024-01-24
Sample Identification Code	787833
Start of Test	2024-01-30
Finish of Test	2024-01-31
Name of Engineer(s)	Gianluigi Ponzetto
Customer Witness(es) to test	None
Related Document(s)	ISO 5348:2021, Mechanical mounting of accelerometers

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with ISO 13355:2016 and CEI EN 60068-2-64:2012/A1:2020 is shown below.

Section	Specification Clause	Test Description	Verdict	Comments/Base Standard
Configuration and Mode: see Par. 1.5.3 and 1.5.4				
§ 2.1	ISO 13355:2016	RANDOM VIBRATION	PASS	No breaks or aesthetical issues have been detected during the test by visual inspection (see performance criteria at §1.5.6).
§ 2.1	CEI EN 60068-2-64:2012/A1:2020 Annex A Spectrum A1 – Transportation Tab. A.1 and A.2 Cl. 1a and 1b	RANDOM TRANSPORTATION	PASS	No breaks or aesthetical issues have been detected during the test by visual inspection (see performance criteria at §1.5.6).

Table 2

For performance criteria applied to give the above verdict, see paragraph 1.5.6

1.4 Customer Supplied Form

See paragraph 1.2 where are indicated sample information provided by the Client. On this information the CAB has no responsibility.

1.5 Product Information

1.5.1 Technical Description

The Equipment under test (E.U.T.) was pipes for fender.

1.5.2 EUT Port/Cable Identification

N/A

1.5.3 Test Configuration

The test campaign has been carried out following the sequence shown below:

Test Campaign		
Sample	Test Sequence	Axes Sequence
F4801 PARAFANGO FENDER F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42	Random Vibration	Z
F4801 PARAFANGO FENDER F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42	Random Transportation	Z
F4801 PARAFANGO FENDER F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42	Random Transportation	X

F4801 PARAFANGO FENDER F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42	Random Transportation	Y
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Table 3

The E.U.T was not operating.

The test fixture has been fixed to the shaker head or to the slip table by using M8 screws tightened with a torque of 25 Nm.

The E.U.T. has been fixed to the test fixture by using 2 M16 bolts tightened with a torque of 80 Nm.

The fender has been connected with the pipes by using 8 KEY 21 bolts closed at 6 Nm.

1.5.4 Mode(s) of Operation

The E.U.T. was not operating during all the test campaign.

1.5.5 Monitoring of Performance

A visual check has been performed by the Lab Engineer after each axis in order to verify the mechanical integrity of the samples.

1.5.6 Performance Criteria

After the test, the E.U.T. has been subjected to a visual inspection and no detachment of the parts has been observed.

The inspection has been carried out by the Lab Engineer who has observed the unit from all sides at a distance of 0.5m without using any kind of equipment.

The criteria by which the results are expressed are given in the standards and/or in the client specification listed in paragraph 1.3 of this technical report.

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test program.

The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
PIPES for FENDER, F4801 PARAFANGO FENDER, F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42			
F4801 PARAFANGO FENDER F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42	N/A	N/A	N/A

Table 4

1.8 Test Location

TUV Italia conducted the following tests at our Test Laboratory of Volpiano (TO).

Test Name	Name of Engineer(s)	Test Accreditation Body
VIBRATION CAMPAIGN	Gianluigi Ponzetto	N/A

Table 5

Office address:

TUV Italia, Via Brandizzo 123, 10088 Volpiano (TO), Italy.

1.9 External Tests

None.

1.10 Sampling Plan

TUV Italia does not carry out sampling and is not responsible for any sampling carried out by the Customer.

2 Test Details

2.1 RANDOM VIBRATION

2.1.1 Specification Reference

ISO 13355:2016

2.1.2 Equipment Under Test and Modification State

Model: F4801 PARAFANGO FENDER, F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42
Serial Number: None

2.1.3 Date of Test

2024-01-30

2.1.4 Test Method

The test has been performed in order to measure and monitor the dynamic response of the E.U.T. under the random vibration environment.

The Equipment Under Test has been installed on a metal fixture directly bolted on the shaker head, as shown in photo documentation in ANNEX A

The sample and its fixture have been subjected to random vibration with the profile reported below.

Test Severities

Relevant specification: ISO 13355:2016

Frequency [Hz]	Power Spectral Density [g ² /Hz]	Slope [dB/oct]
3	-	13,75
4	0,0120	-
18	0,0120	-
40	0,0010	-
200	0,0005	-
Overall RMS acceleration: 0,60 g Axis: Z Duration: 30 min		

Table 6

E.U.T. functioning during test: according to 1.5.4-1.5.5

Control/Measuring point

Two monoaxial control accelerometers (C1, C2) have been positioned on the fixture.

A triaxial measuring accelerometer (EUT) has been placed on the E.U.T..

Profiles of accelerations measured by the accelerometer positioned on measuring point, a specific location on the equipment under test at which data is gathered for the purpose of examining the vibration response characteristics of the equipment, are shown on annexes in ANNEX B at the end of the document.

The transfer functions were calculated from the random signals taken from the reference point and measuring points.

Control strategy: maximum

In this method, the control value is computed from the signals from each checkpoint. A composite control value is formed by arithmetically averaging the PSD value at each frequency line from the checkpoints.

Accelerometer mounting: cyanoacrylate glue on kapton tape

Test information

Crest factor: 3

Statistical accuracy (number of DOFs): 240

Frequency resolution: 1.25 Hz

Abort: +6 dB / -6 dB

Alarm: +3 dB / -3 dB

Preferred testing axes and order of testing: none

Initial and final vibration response investigation: not required

Critical frequencies: not required

Final measurements and acceptance or rejection criteria: no breaks or aesthetical issues have been detected during the test by visual inspection.

2.1.5 Environmental Conditions

Ambient Temperature	Min: 18,4 °C
	Max: 20,5 °C
Relative Humidity	Min: 40,3 %
	Max: 46,0 %

2.1.6 Specification Limits

No reports, test carried out regularly.

2.1.7 Test Results

Test completed satisfactorily. Performance assessment of the E.U.T. made during this test has observed, no breaks or aesthetical issues have been detected during the test by visual inspection.

2.1.8 Test Location and Test Equipment Used

This test was carried out in ENV Laboratory TUV Italia, Via Brandizzo 123, 10088 Volpiano (TO), Italy

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
THERMO-HYGROMETER	VAISALA	HMP115	TIG_28	36	2026-04-13
TORQUE WRENCH	Tecnogi	906F	CHI_151	36	2025-11-28
TORQUE WRENCH	Tecnogi	7010C1	CHI_195	24	2025-03-24
TORQUE WRENCH	Beta Utensili	606/20	CHI_09	36	2026-03-24
SHAKER	LDS Dactron	V875	VB_T_26	N.A.	N.A.
CONTROL SYSTEM	LDS Dactron	Laser USB	CTR_146	24	2024-03-04
C1 CONTROL ACC.	PCB PIEZOTRONICS	356A14	ACC_173	24	2025-03-06
C2 CONTROL ACC.	PCB PIEZOTRONICS	356A15	ACC_185	24	2025-11-22
EUT MEASURE ACC.	PCB PIEZOTRONICS	356B21	ACC_205	24	2024-12-06

Table 7

2.1.9 Operator

This test was carried out by Gianluigi Ponzetto.

2.2 RANDOM TRANSPORTATION

2.2.1 Specification Reference

CEI EN 60068-2-64:2012/A1:2020

2.2.2 Equipment Under Test and Modification State

Model: F4801 PARAFANGO FENDER, F099015 KIT TUBI IN PLASTICA CON CAVALLOTTI ø42
Serial Number: None

2.2.3 Date of Test

From 2024-01-30 to 2024-01-31

2.2.4 Test Method

The test has been performed in order to measure and monitor the dynamic response of the E.U.T. under the random vibration environment.

The Equipment Under Test has been installed on a metal fixture directly bolted on the shaker head, as shown in photo documentation in ANNEX A

The sample and its fixture have been subjected to random vibration with the profile reported below.

Test Severities

Relevant specification: CEI EN 60068-2-64:2012/A1:2020

Frequency [Hz]	Acceleration Spectral Density [(m/s ²) ² /Hz]	Slope [dB/oct]
5	1,4400	-
40	1,4400	-
500	0,0144	-
Overall RMS acceleration: 10,56 m/s ²		
Axis: Z		
Duration: 1 h		

Table 8

Frequency [Hz]	Acceleration Spectral Density [(m/s ²) ² /Hz]	Slope [dB/oct]
5	0,650	-
40	0,650	-
500	0,015	-
Overall RMS acceleration: 6,50 m/s ² Axis: X, Y Duration: 1 h/axis		

Table 9

E.U.T. functioning during test: according to 1.5.4-1.5.5

Control/Measuring point

Two monoaxial control accelerometers (C1, C2) have been positioned on the fixture.

A triaxial measuring accelerometer (EUT) has been placed on the E.U.T..

Profiles of accelerations measured by the accelerometer positioned on measuring point, a specific location on the equipment under test at which data is gathered for the purpose of examining the vibration response characteristics of the equipment, are shown on annexes in ANNEX B at the end of the document.

The transfer functions were calculated from the random signals taken from the reference point and measuring points.

Control strategy: maximum

In this method, the control value is computed from the signals from each checkpoint. A composite control value is formed by arithmetically averaging the PSD value at each frequency line from the checkpoints.

Accelerometer mounting: cyanoacrylate glue on kapton tape

Test information

Crest factor: 3

Statistical accuracy (number of DOFs): 240

Frequency resolution: 1.25 Hz

Abort: +6 dB / -6 dB

Alarm: +3 dB / -3 dB

Preferred testing axes and order of testing: none

Initial and final vibration response investigation: not required

Critical frequencies: not required

Final measurements and acceptance or rejection criteria: no breaks or aesthetical issues have been detected during the test by visual inspection.

2.2.5 Environmental Conditions

Ambient Temperature	Min: 18,4 °C Max: 20,5 °C
Relative Humidity	Min: 40,3 % Max: 46,0 %

2.2.6 Specification Limits

No reports, test carried out regularly.

2.2.7 Test Results

Test completed satisfactorily. Performance assessment of the E.U.T. made during this test has observed, no breaks or aesthetical issues have been detected during the test by visual inspection.

2.2.8 Test Location and Test Equipment Used

This test was carried out in ENV Laboratory TUV Italia, Via Brandizzo 123, 10088 Volpiano (TO), Italy

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
THERMO-HYGROMETER	VAISALA	HMP115	TIG_28	36	2026-04-13
THERMO-HYGROMETER	VAISALA	HMP115	TIG_27	36	2026-04-13
TORQUE WRENCH	Tecnogi	906F	CHI_151	36	2025-11-28
TORQUE WRENCH	Tecnogi	7010C1	CHI_195	24	2025-03-24
TORQUE WRENCH	Beta Utensili	606/20	CHI_09	36	2026-03-24
SHAKER	LDS Dactron	V875	VB_T_26	N.A.	N.A.
CONTROL SYSTEM	LDS Dactron	Laser USB	CTR_146	24	2024-03-04
SHAKER	LDS Dactron	V850-440	VB_T_197	N.A.	N.A.
CONTROL SYSTEM	LDS Dactron	Laser USB	CTR_147	24	2024-03-04
C1 CONTROL ACC.	PCB PIEZOTRONICS	356A14	ACC_173	24	2025-03-06
C2 CONTROL ACC.	PCB PIEZOTRONICS	356A15	ACC_185	24	2025-11-22
EUT MEASURE ACC.	PCB PIEZOTRONICS	356B21	ACC_205	24	2024-12-06

Table 10

2.2.9 Operator

This test was carried out by Gianluigi Ponzetto.



RESERVED

3 Test Equipment Information

3.1 General Test Equipment Used

Instrument	Manufacturer	Model Number	Serial Number	Calibration Period (months)	Calibration Expires
THERMO-HYGROMETER	VAISALA	HMP115	T1140490	36	2026-04-13
THERMO-HYGROMETER	VAISALA	HMP115	T1140479	36	2026-04-13
TORQUE WRENCH	Tecnogi	906F	M008703	36	2025-11-28
TORQUE WRENCH	Tecnogi	7010C1	F003705	24	2025-03-24
TORQUE WRENCH	Beta Utensili	606/20	N.A.	36	2026-03-24
SHAKER	LDS Dactron	V875	S8395A-001/1	N.A.	N.A.
CONTROL SYSTEM	LDS Dactron	Laser USB	8563802	24	2024-03-04
SHAKER	LDS Dactron	V850-440	353123/1_6751518/1	N.A.	N.A.
CONTROL SYSTEM	LDS Dactron	Laser USB	11124660	24	2024-03-04
C1 CONTROL ACC.	PCB PIEZOTRONICS	356A14	111109	24	2025-03-06
C2 CONTROL ACC.	PCB PIEZOTRONICS	356A15	LW140031	24	2025-11-22
EUT MEASURE ACC.	PCB PIEZOTRONICS	356B21	LW186606	24	2024-12-06

Table 11

4 Incident Reports

No incidents reports were raised.

RESERVED

5 Measurement Uncertainty

Declared uncertainties are obtained with factor $k=2$ except if otherwise specified. For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name and/or Measurement Type/Unit	Measurement Uncertainty
Ambient temperature	$\pm 2,3 \text{ }^{\circ}\text{C}$
Relative humidity	$\pm 7,0 \text{ } \%$
RANDOM VIBRATIONS – Acceleration spectral density	$\pm 1,2 \text{ dB}$
RANDOM VIBRATION – Acceleration spectral density R.M.S. value of acceleration – Z axis	$\pm 0,08 \text{ g}_{\text{RMS}}$
RANDOM TRANSPORTATION – Acceleration spectral density R.M.S. value of acceleration – Z axis	$\pm 1,46 \text{ m/s}^2_{\text{RMS}}$
RANDOM TRANSPORTATION – Acceleration spectral density R.M.S. value of acceleration – X and Y axes	$\pm 0,90 \text{ m/s}^2_{\text{RMS}}$

Table 12

Measurement Uncertainty Decision Rule

The decision rule "Binary statement for simple acceptance" according to ILAC-G8 will be applied." The level of risk to false accept and false reject items is described on ILAC-G8.

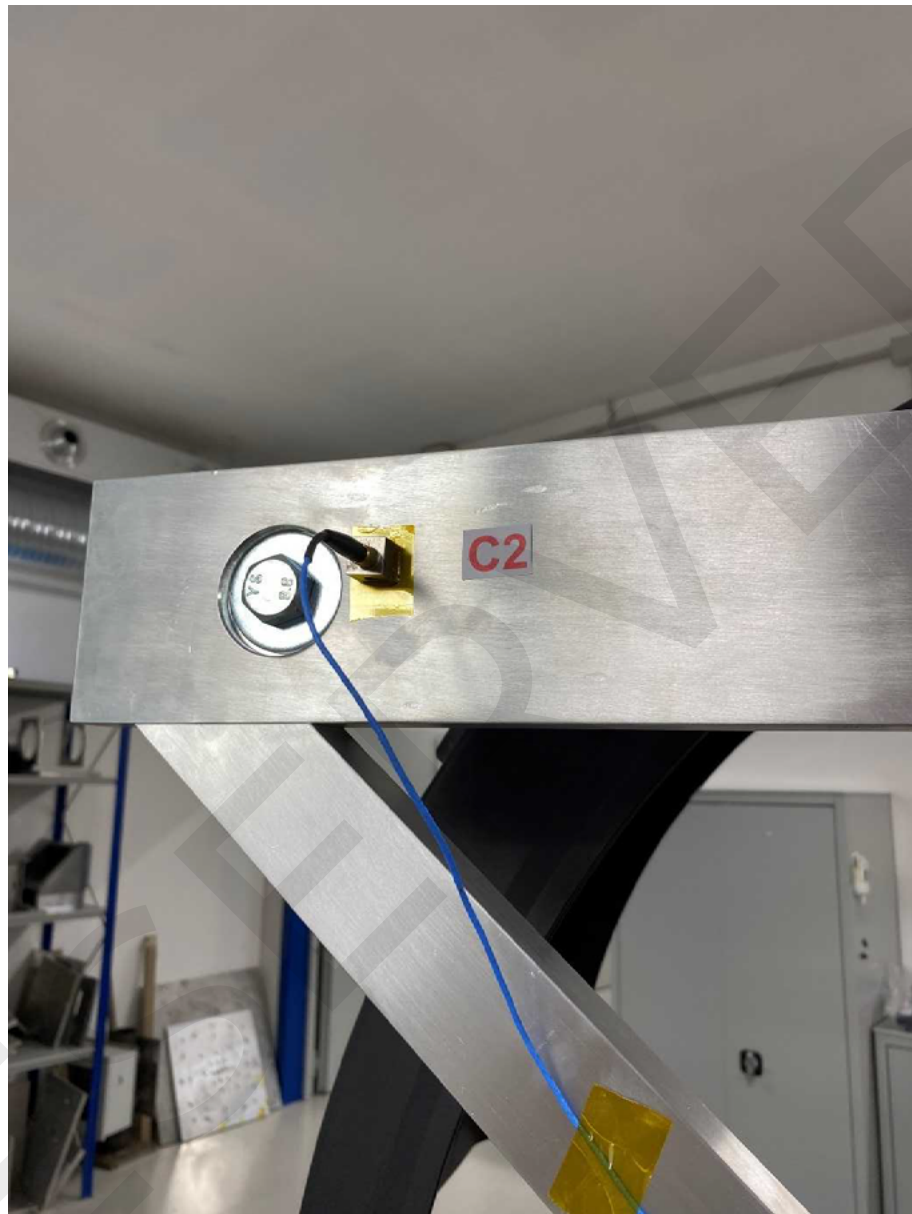
ANNEX A

PHOTO 1/6



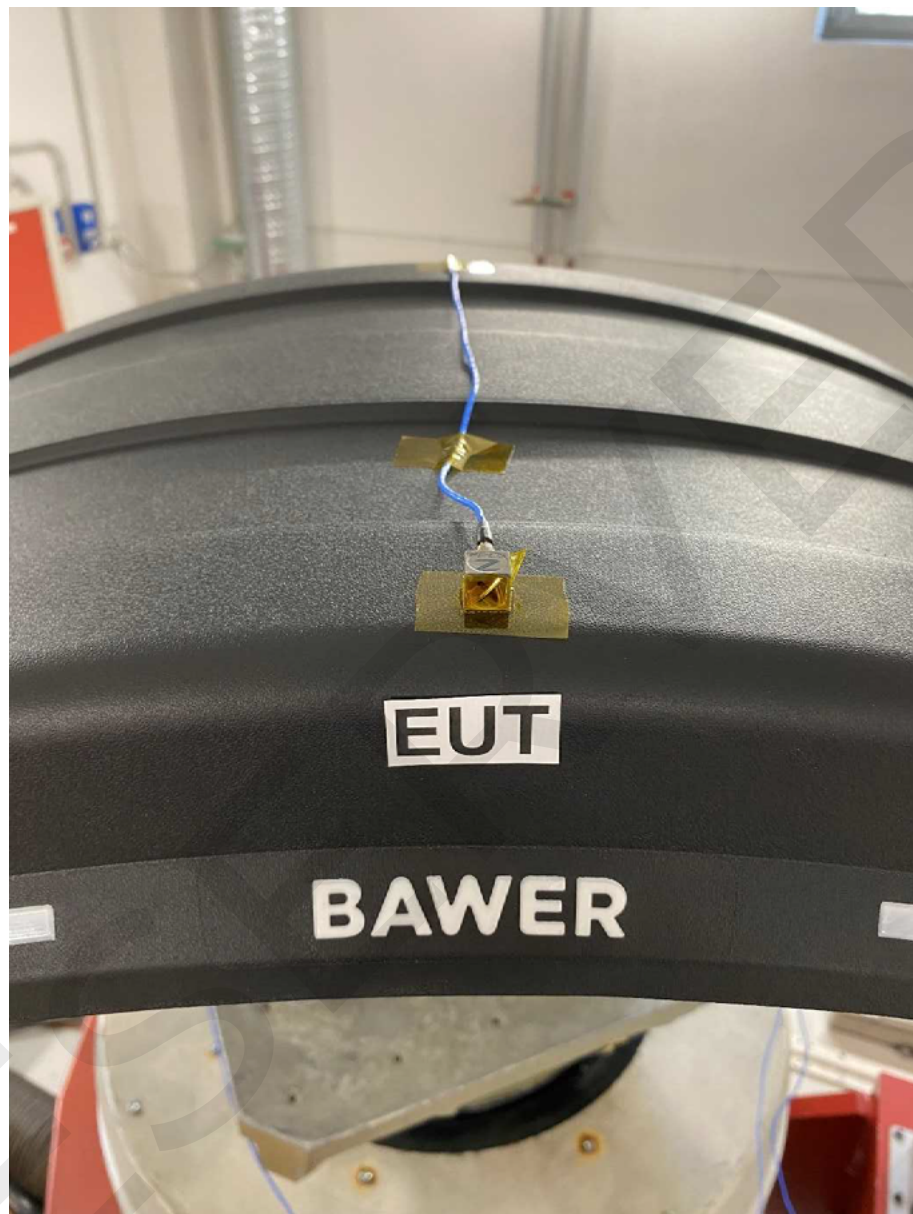
ACCELEROMETERS POSITION – C1

PHOTO 2/6



ACCELEROMETERS POSITION – C2

PHOTO 3/6



ACCELEROMETERS POSITION – EUT

PHOTO 4/6



VIBRATION TEST SETUP – Z AXIS

PHOTO 5/6



VIBRATION TEST SETUP – X AXIS

PHOTO 6/6



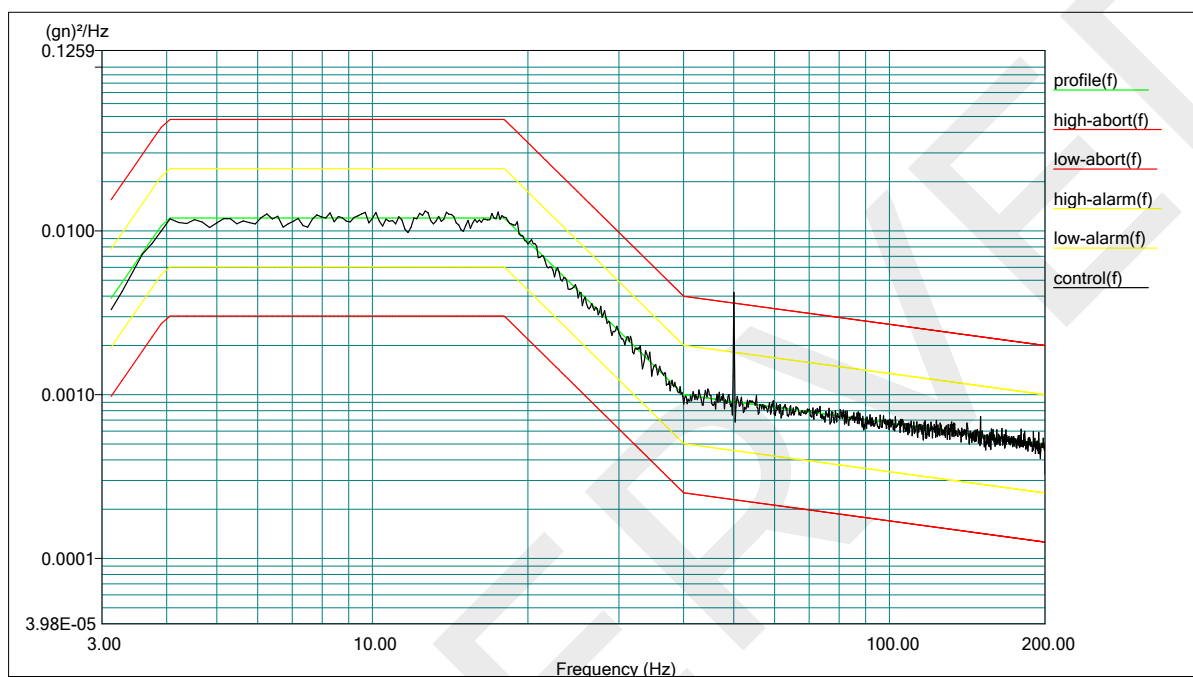
VIBRATION TEST SETUP – Y AXIS

ANNEX B

ANNEX 1/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM VIBRATION TEST ON Z AXIS

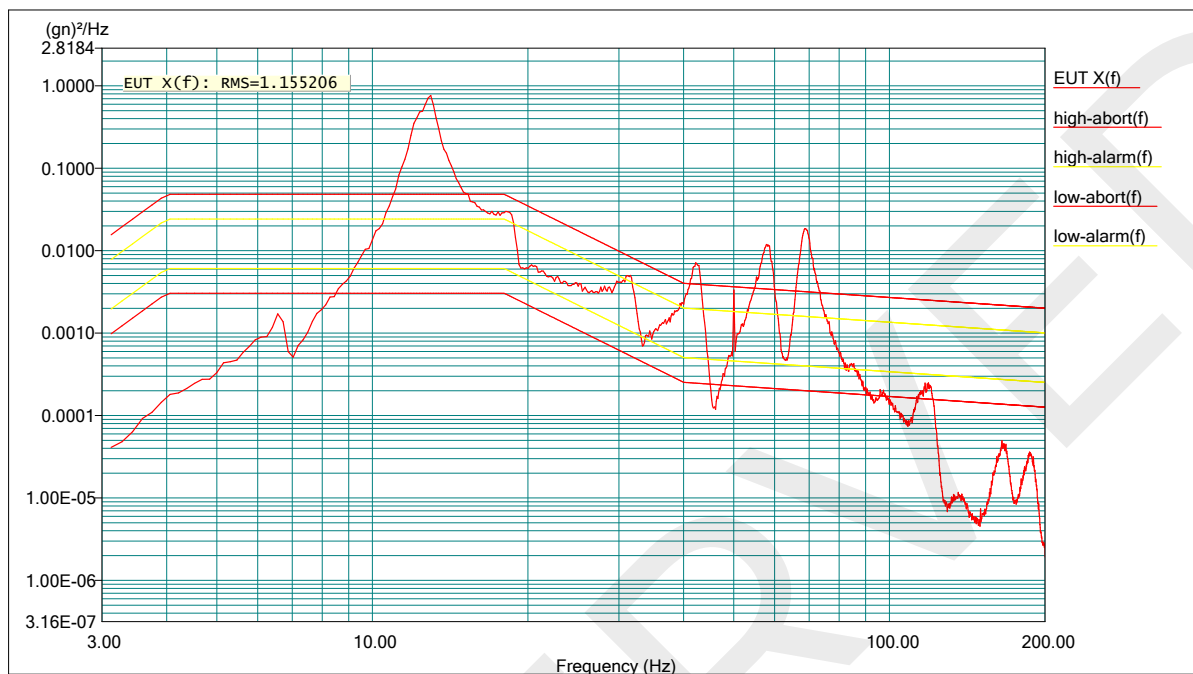


Level: 100 %
Control RMS: 0.596772 gn
6.400000 Seconds
Full Level Elapsed Time: 00:30:00
Lines: 1600
Frame Time:

Definition of the test profile: the graph represents the result of the control strategy adopted, that is the maximum between the two control accelerometers, at each point of the frequency range.

ANNEX 2/16

CUSTOMER: BAWER - FENDER
TEST: RANDOM VIBRATION TEST ON Z AXIS

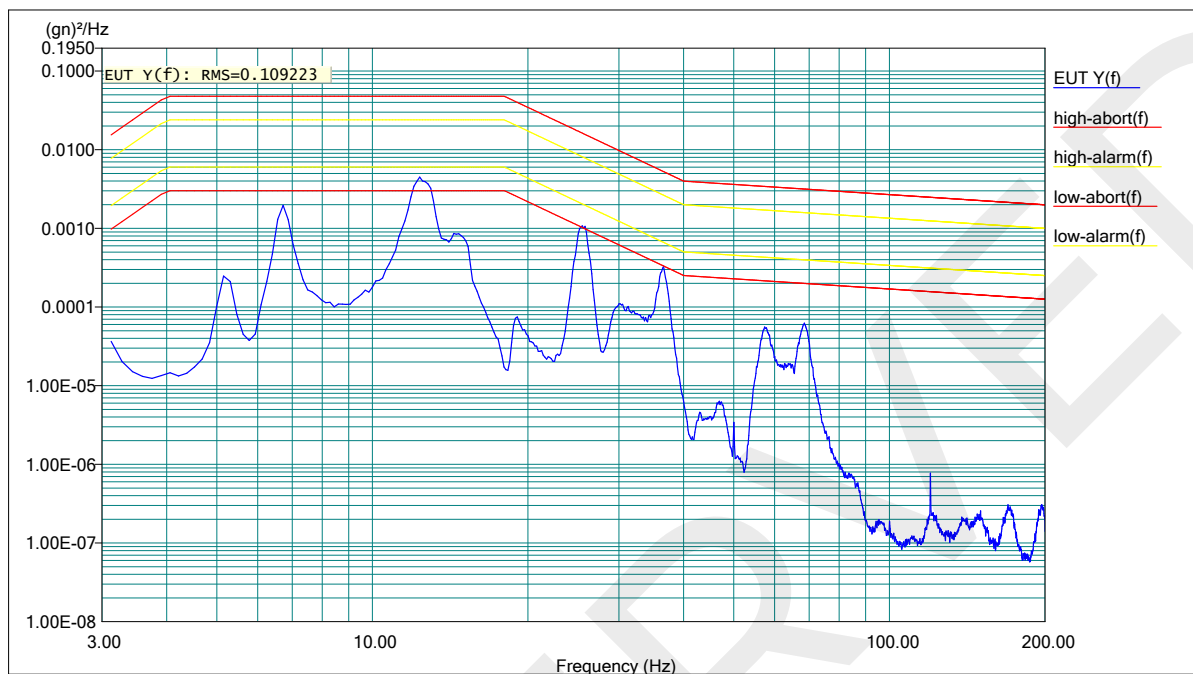


Level: 100 %
Control RMS: 0.596772 gn
6.400000 Seconds
Full Level Elapsed Time: 00:30:00
Lines: 1600
Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 3/16

CUSTOMER: BAWER - FENDER
TEST: RANDOM VIBRATION TEST ON Z AXIS

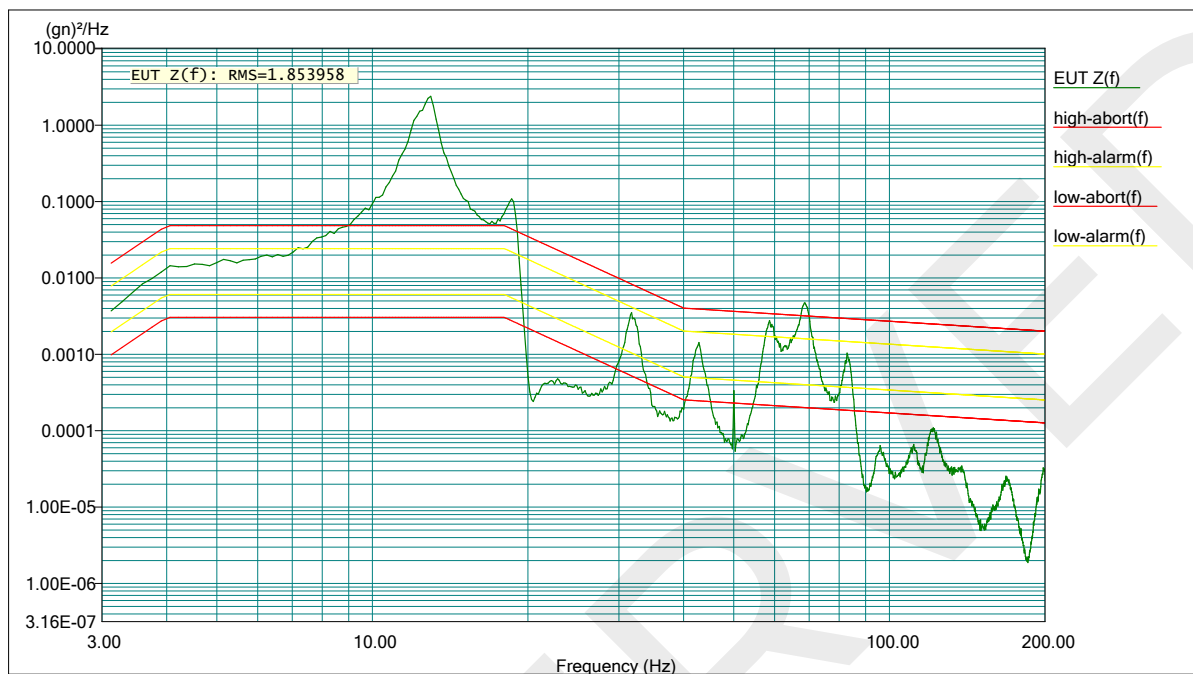


Level: 100 %
Control RMS: 0.596772 gn
6.400000 Seconds
Full Level Elapsed Time: 00:30:00
Lines: 1600
Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 4/16

CUSTOMER: BAWER - FENDER
TEST: RANDOM VIBRATION TEST ON Z AXIS



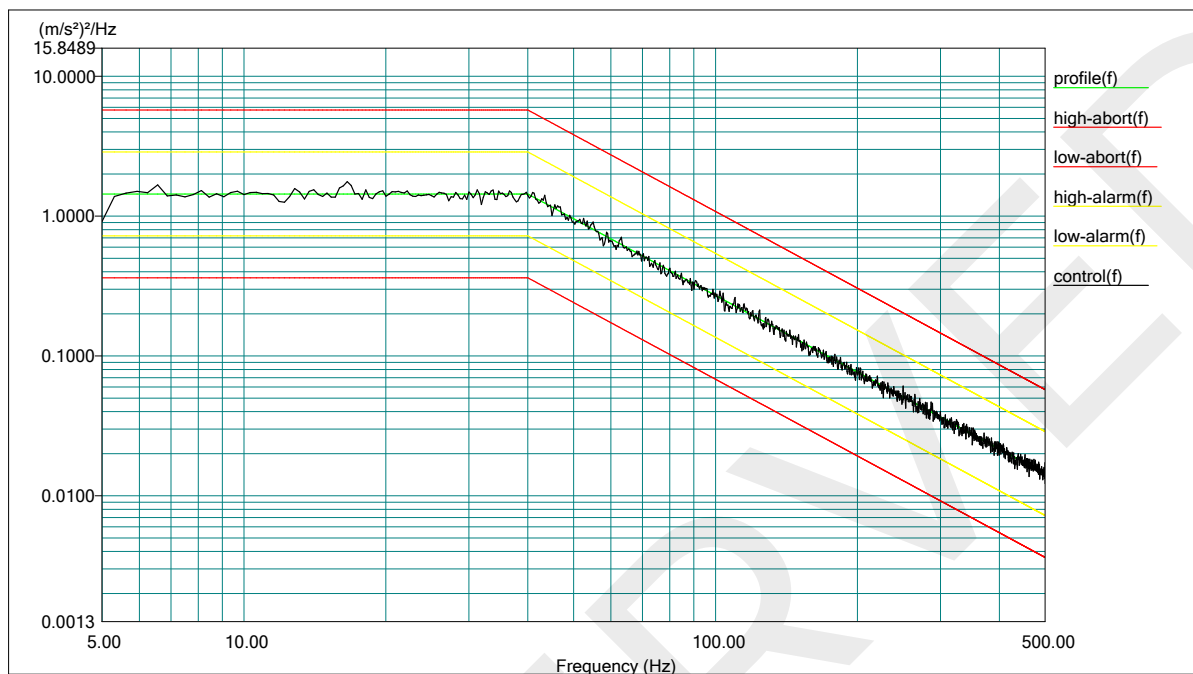
Level: 100 %
Control RMS: 0.596772 gn Full Level Elapsed Time: 00:30:00 Lines: 1600 Frame Time:
6.400000 Seconds

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 5/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON Z AXIS



Level: 100 %

Control RMS: 10.579172 m/s²
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

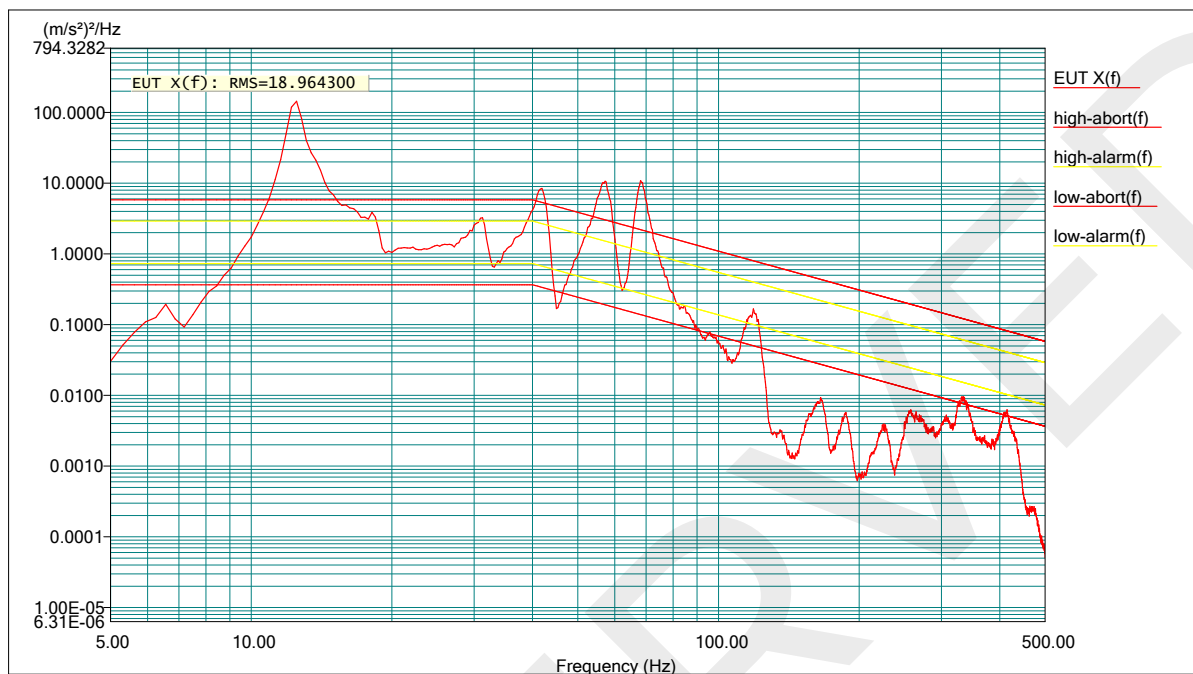
Lines: 1600 Frame Time:

Definition of the test profile: the graph represents the result of the control strategy adopted, that is the maximum between the two control accelerometers, at each point of the frequency range.

ANNEX 6/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON Z AXIS



Level: 100 %

Control RMS: 10.579172 m/s^2
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

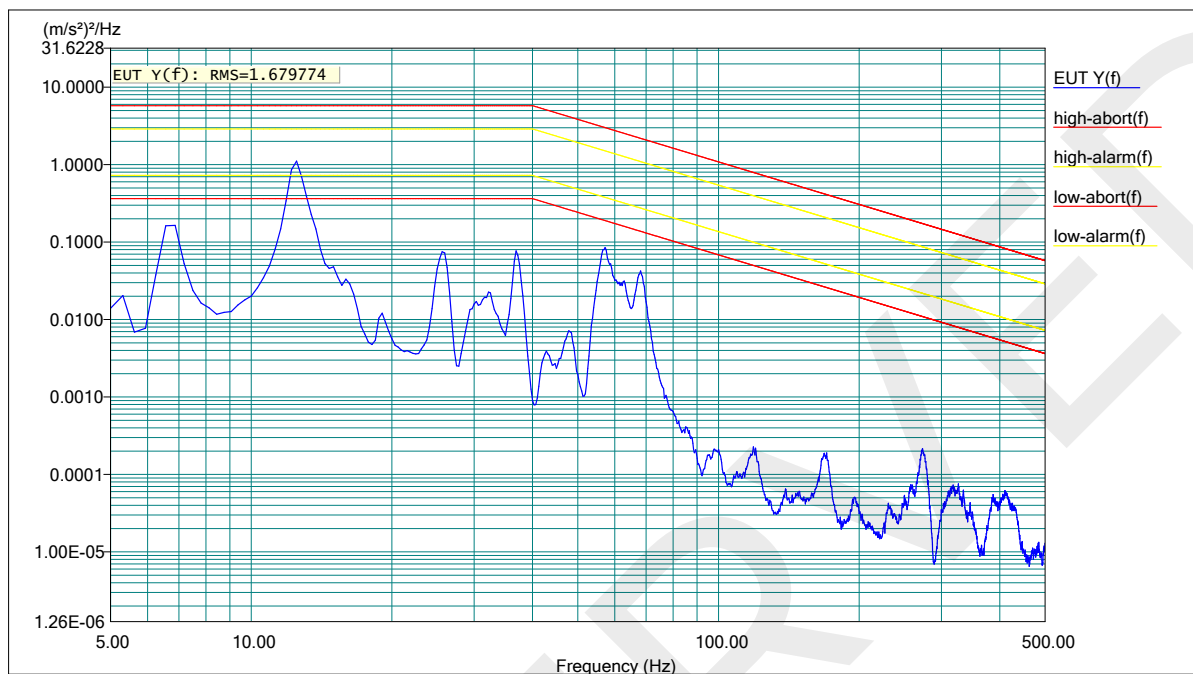
Lines: 1600 Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 7/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON Z AXIS



Level: 100 %

Control RMS: 10.579172 m/s^2
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

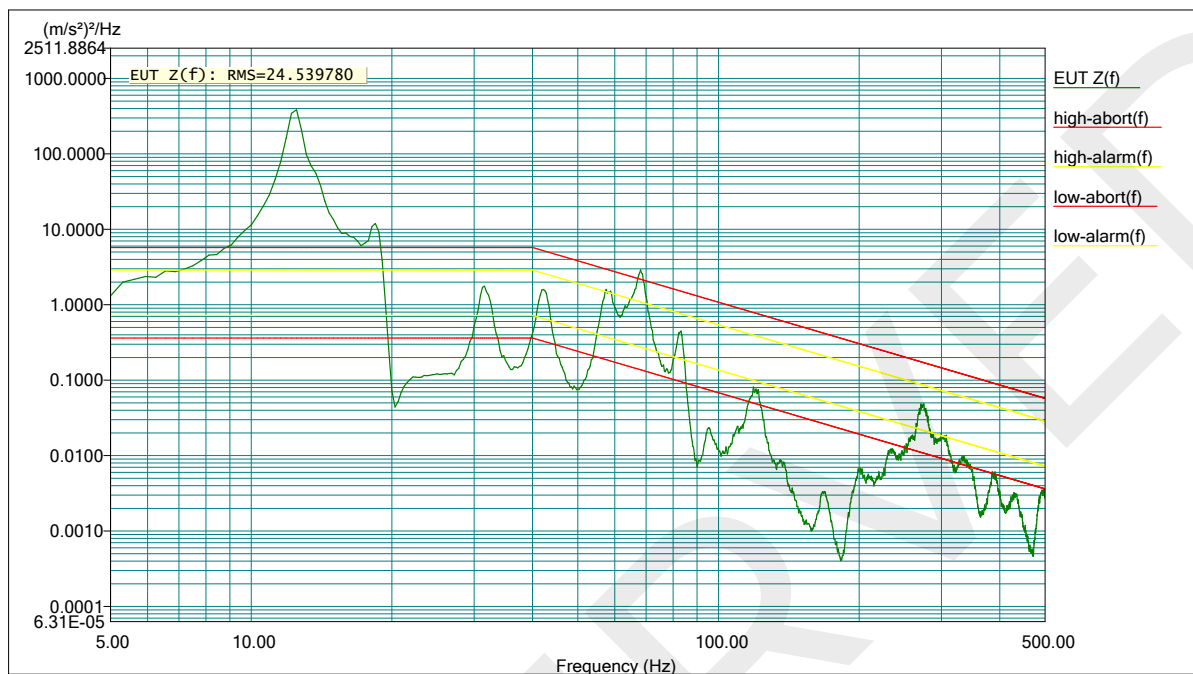
Lines: 1600 Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 8/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON Z AXIS



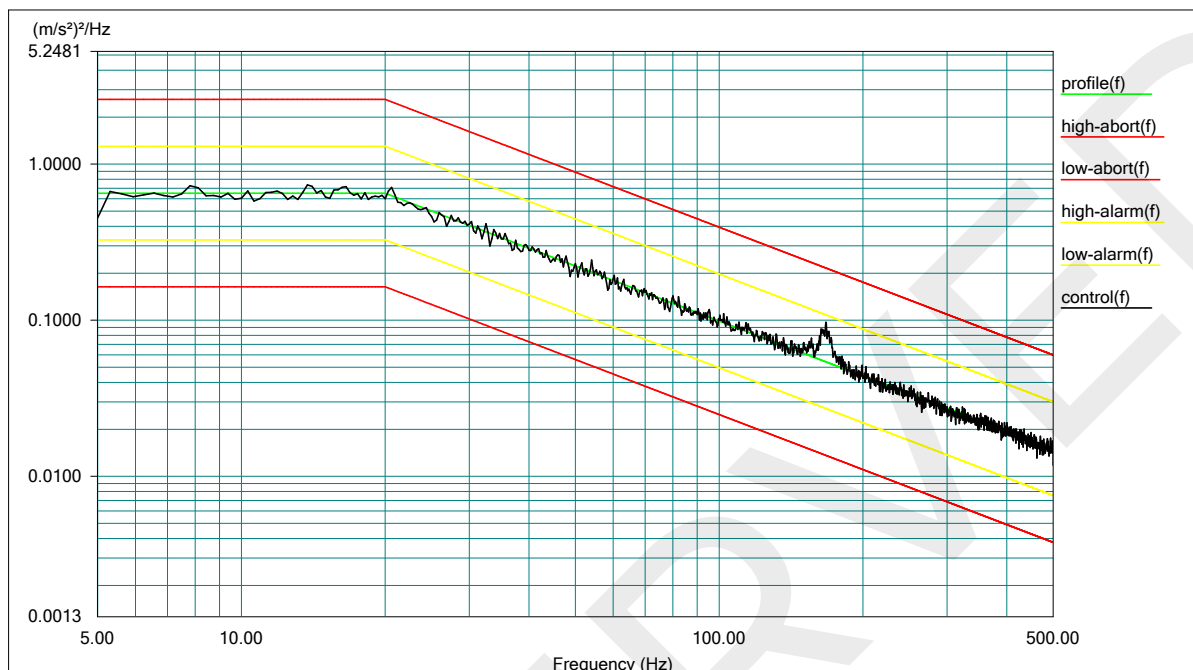
Level: 100 %
Control RMS: 10.579172 m/s²
3.200000 Seconds
Full Level Elapsed Time: 01:00:00
Lines: 1600
Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 9/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON X AXIS



Level: 100 %

Control RMS: 6.479190 m/s^2
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

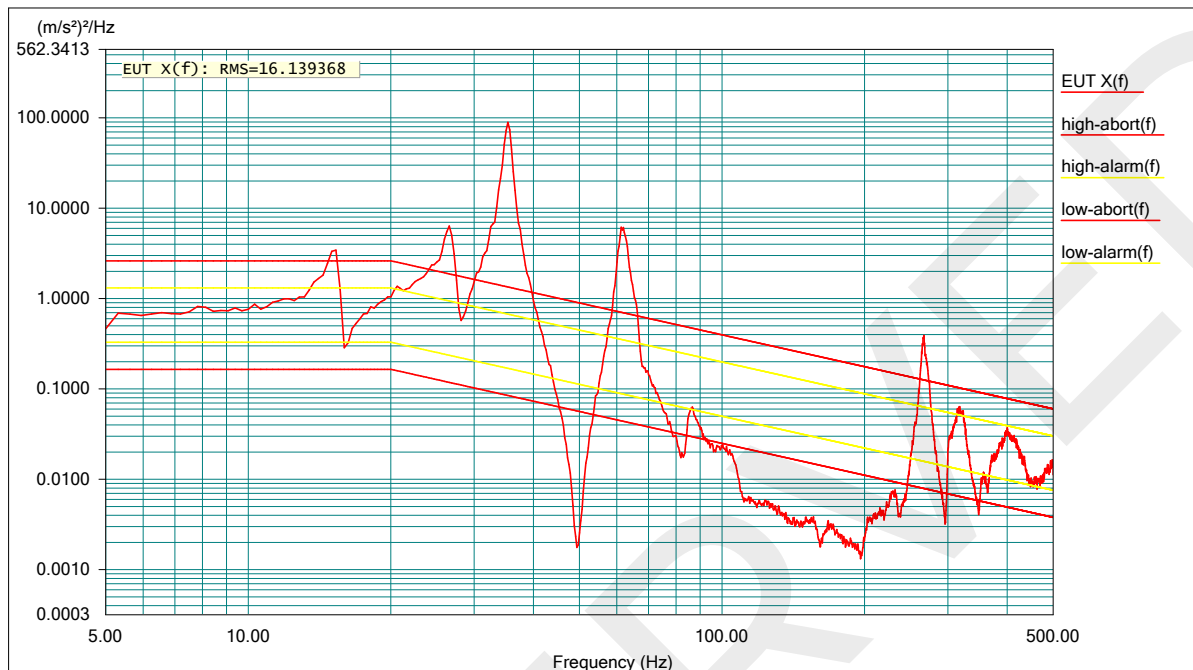
Lines: 1600 Frame Time:

Definition of the test profile: the graph represents the result of the control strategy adopted, that is the maximum between the two control accelerometers, at each point of the frequency range.

ANNEX 10/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON X AXIS



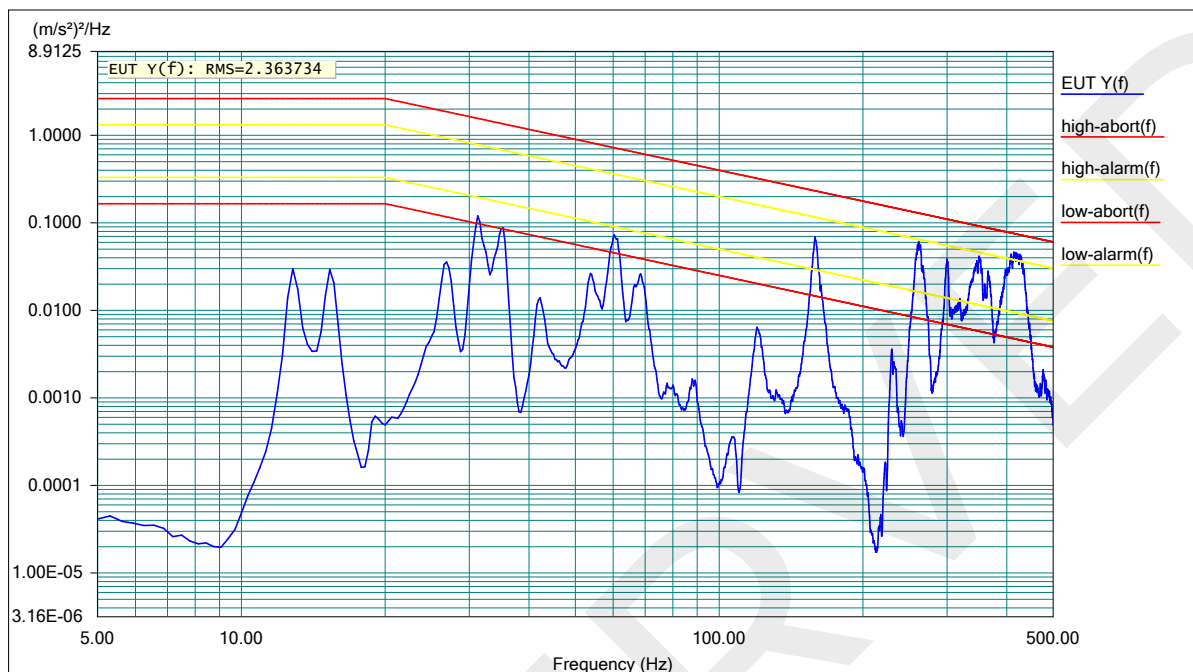
Level: 100 %
Control RMS: 6.479190 m/s²
3.200000 Seconds
Full Level Elapsed Time: 01:00:00
Lines: 1600
Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 11/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON X AXIS



Level: 100 %

Control RMS: 6.479190 m/s^2
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

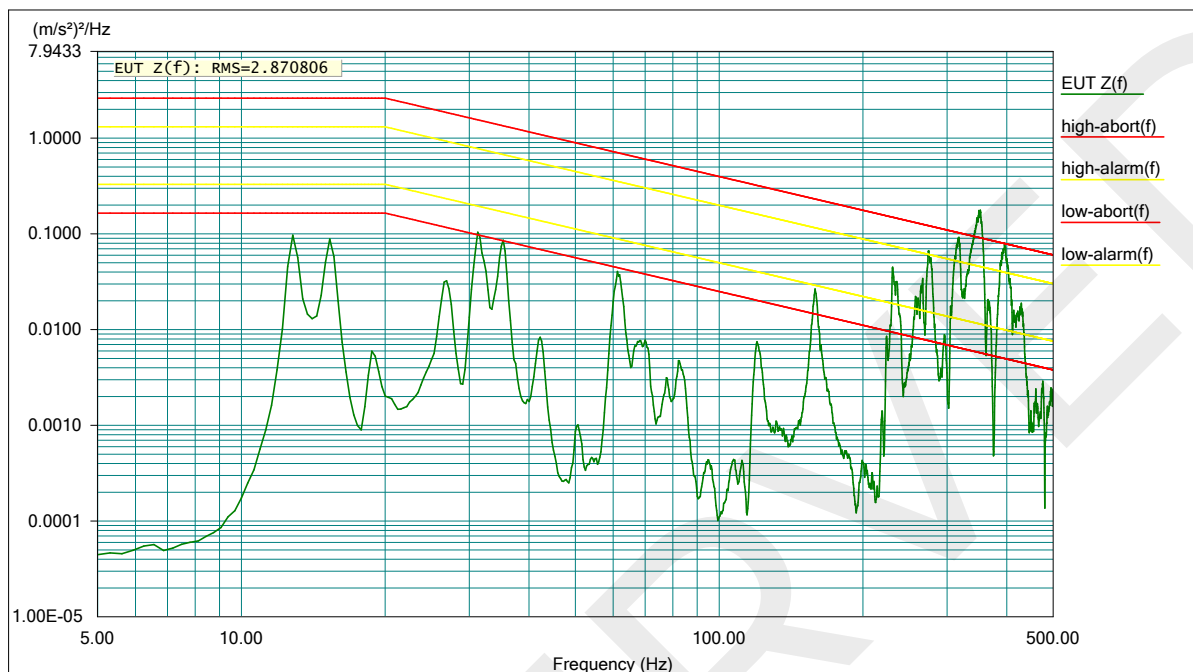
Lines: 1600 Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 12/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON X AXIS



Level: 100 %

Control RMS: 6.479190 m/s^2
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

Lines: 1600

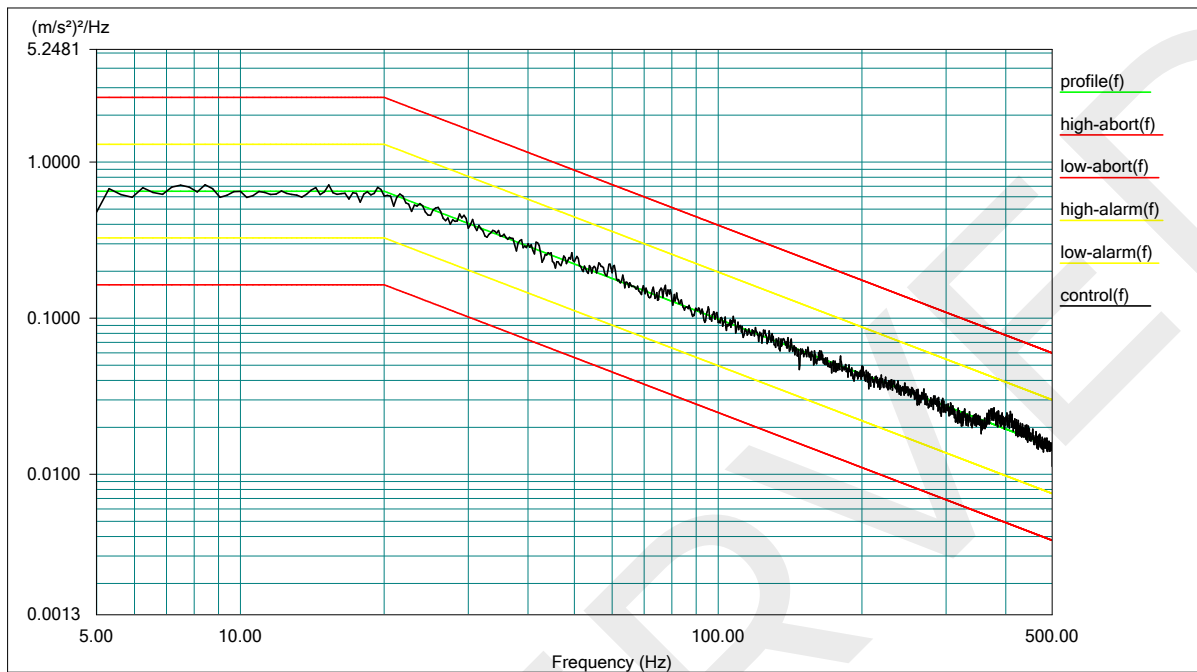
Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 13/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON Y AXIS



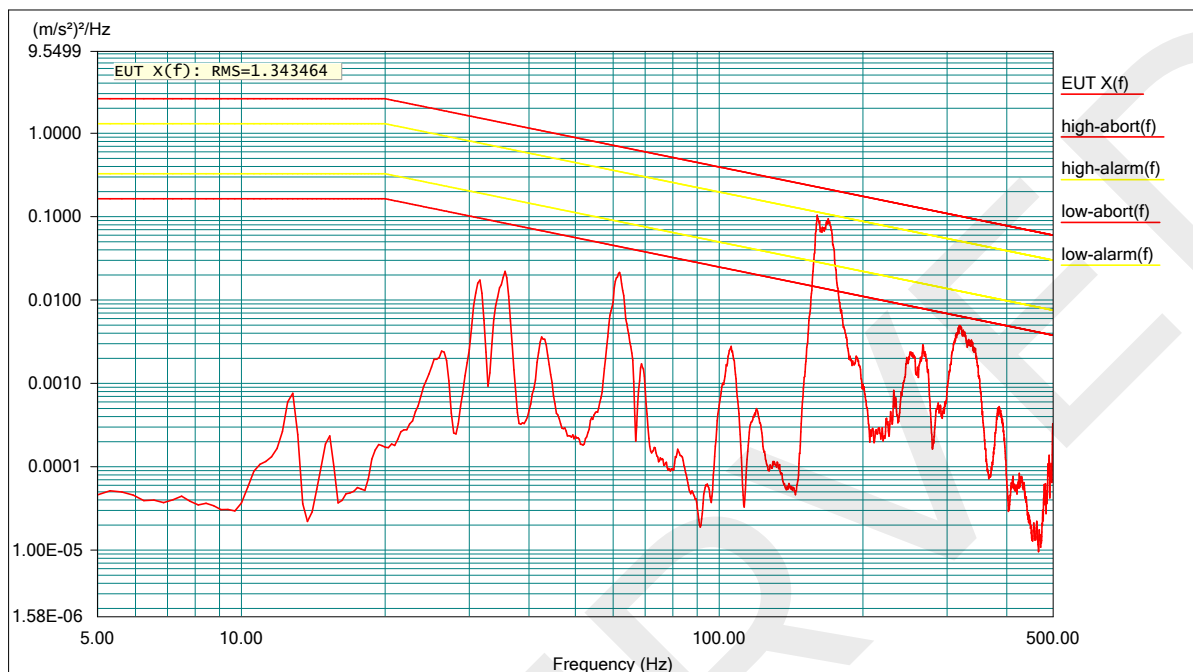
Level: 100 %
Control RMS: 6.471885 m/s^2
3.200000 Seconds
Full Level Elapsed Time: 01:00:00
Lines: 1600
Frame Time:

Definition of the test profile: the graph represents the result of the control strategy adopted, that is the maximum between the two control accelerometers, at each point of the frequency range.

ANNEX 14/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON Y AXIS



Level: 100 %

Control RMS: 6.471885 m/s^2
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

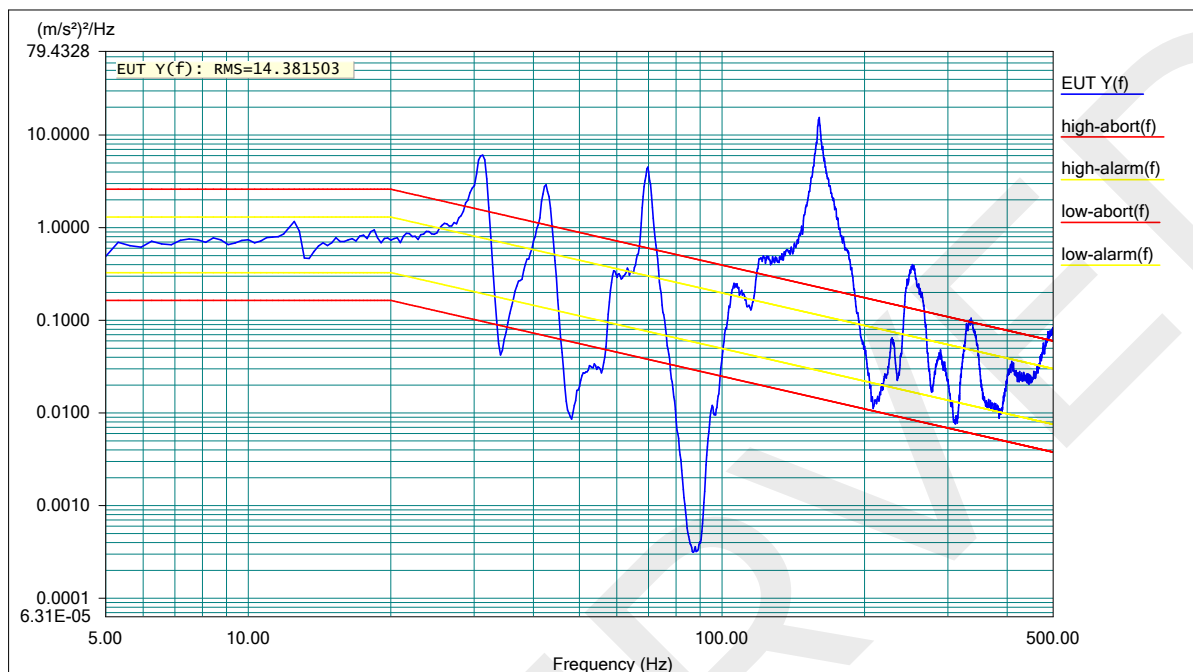
Lines: 1600 Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 15/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON Y AXIS



Level: 100 %

Control RMS: 6.471885 m/s^2
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

Lines: 1600

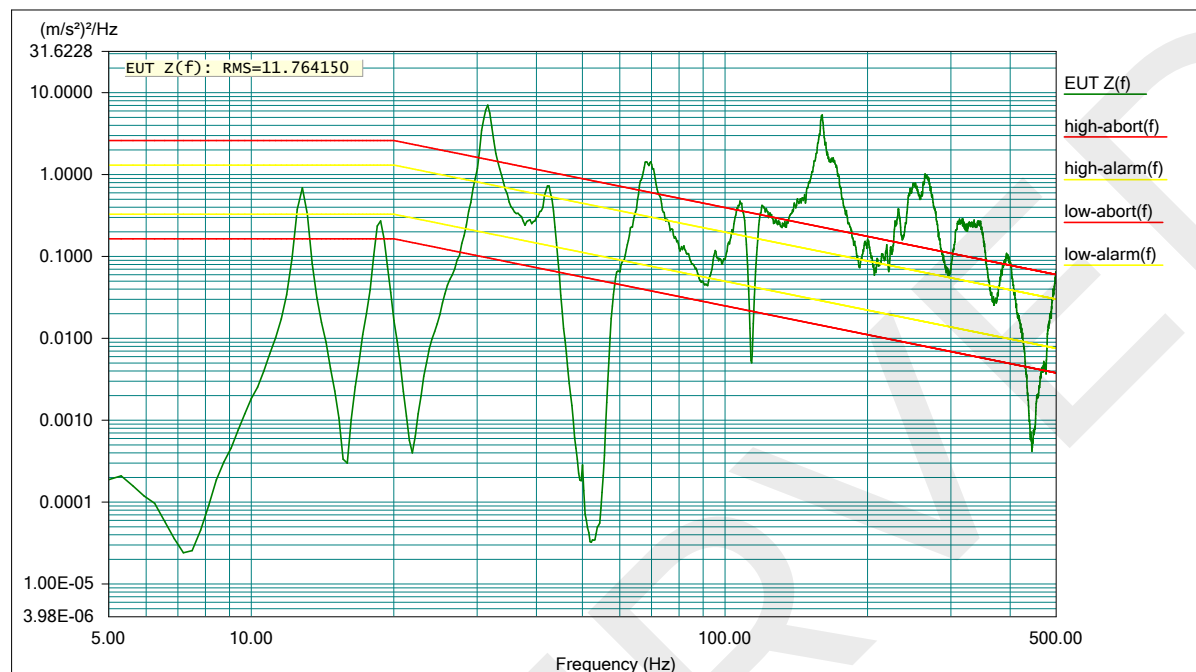
Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

ANNEX 16/16

CUSTOMER: BAWER - FENDER

TEST: RANDOM TRANSPORTATION TEST ON Y AXIS



Level: 100 %

Control RMS: $6.471885 m/s^2$
3.200000 Seconds

Full Level Elapsed Time: 01:00:00

Lines: 1600 Frame Time:

Application of the test profile: the graph shows the curves obtained by the triaxial accelerometer M1 and represents the stress suffered by the object under test, along the axis shown on the right, at each point of the frequency range. The label, instead, points out the total energy to which the sample has been subjected.

END of TEST REPORT

MES Test Report

Load test ambient temperature

BAWER S.p.A.

PIPES for FENDER

Model: TUBO PLEX Ø42

In accordance with Customer specification test 3.2023



Add value.
Inspire trust.

Prepared for:

Bawer S.P.A.
Via Solferino 4 – 70022 ALTAMURA

Fabio Murgia
01.03.2024
18:41:09
GMT+01:00



MES 200220000931 A00

SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Fabio Murgia	Technical Reviewer	Authorised Signatory	2024/02/22

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with Customer specification for the tests detailed in section 1.3.

DISCLAIMER AND COPYRIGHT

The results of this test report refer only to the tested sample as received and tested in the sequence indicated, where prescribed.
The integral reproduction of the present Test report is allowed; the partial reproduction must be authorized in writing by the Lab.
The result of functional test is based on what the Client declared, and it is not responsibility of the CAB and the Accreditation Body.

TÜV SÜD

TÜV[®]

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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

In case of subsequent revisions, the current Test Report replaces the previous versions

Issue	Description of Change	Date of Issue
n.d	n.d	n.d

Table 1

1.2 Introduction

Applicant	Bawer S.P.A.
Manufacturer	Bawer S.P.A
Model Number(s)	Model: TUBO PLEX Ø42
Manufacturer Declared Variant(s)	N/A
Serial Number(s)	From 1 to 9
Hardware Version(s)	N/A
Software Version(s)	N/A
Number of Samples Tested	9
Test Specification/Issue/Date	Customer specification test 3.2023
Test Plan/Issue/Date	N/A
Date of Receipt of EUT	2024-01-24
Sample Identification Code	787833
Start of Test	2024/02/06
Finish of Test	2024/02/08
Name of Engineer(s)	Fabio Murgia
Customer Witness(es) to test	-
Related Document(s)	Customer specification 3.2023

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with Customer specification are shown below.

Section	Specification Clause	Test Description	Verdict	Comments/Base Standard
Configuration and Mode: TUBO PLEX Ø42				
2.1	Customer specification test 3.2023	Load test ambient temperature	-	-

Table 2

For performance criteria applied to give result below see paragraph 1.5.6

1.4 Customer Supplied Form

Test Request Form according to Customer specification

1.4.1 Product Information

1.4.2 Technical Description

Kit tubi in plastica per parafanghi

Test Configuration

The test configurations are not specified in the following paragraphs describing the tests carried out

1.4.3 Mode(s) of Operation

The product under test is installed on a fixture supplied by the manufacturer in its actual position of use.

1.4.4 Monitoring of Performance

The sample under test was examined post test.

1.4.5 Performance Criteria

After the test, the EUT has been subjected to a visual inspection and no detachment of the parts has been observed.

The inspection has been carried out by the Lab Engineer who has observed the unit from all sides at a distance of 0.5m without using any kind of equipment.

We inform that, on the products under test, the Client performed functional test, before, during and after our test.

These functional tests were performed with instruments and equipment of the Client; every operation related to functional test done is under Client responsibility.

The (positive) result of functional test is based on what the Client declared, and it is not responsibility of the CAB and the Accreditation Body.

The criteria by which the results are expressed are given in the standards and/or in the client specification listed in paragraph 1.3 of this technical report.

1.5 Deviations from the Standard

None

1.6 Test Location

TUV Italia conducted the following tests at our Volpiano Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Load Test ambient temperature	Alessandro De Marco	None

Table 3

Office Address:

TUV Italia, Via Brandizzo 123, 10088 Volpiano (TO), Italy

1.7 Sampling Plan

TUV Italia does not carry out sampling and is not responsible for any sampling carried out by the customer.

2 Test Details

2.1 Load Test ambient temperature

2.1.1 Specification Reference

Test Request Form according to Customer specification 3.2023

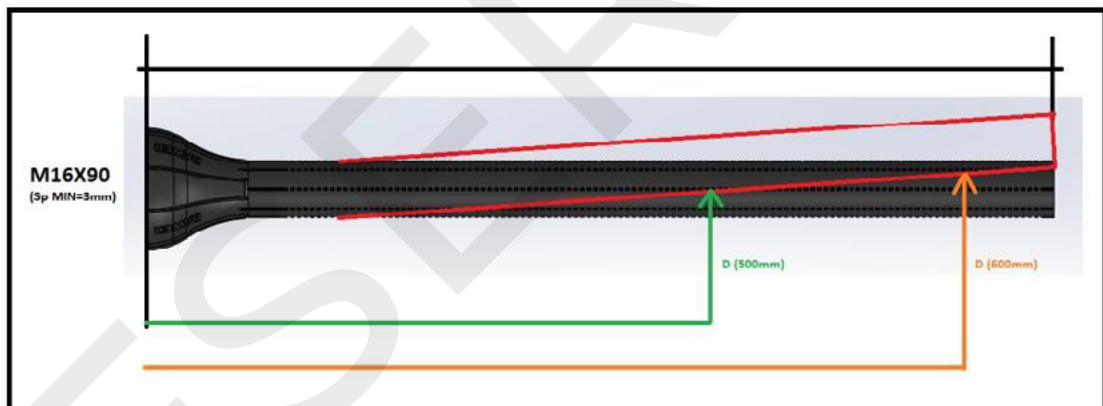
2.1.2 Equipment Under Test and Modification State

Model: TUBO PLEX Ø42

2.1.3 Test Method

Below are the test specifications received:

- TYPE OF TESTS: Shear load evaluation of residual deflection.
- TEST TEMPERATURE: +20°C
- MAXIMUM WEIGHT OF TEST OBJECT: <1 kg
- FIXTURE: Supplied by the customer
- PRODUCT OVERALL DIMENSION: <200x715mm (Ø42mm)
- LOAD APPLICATION POINTS: 1 sample at D=600, 1 sample at D=500 (see diagram below)
- FIXING: pins supplied by the customer, M16X90, tightening torque: 80Nm



Pictures



Point 600mm



Point 500mm

2.1.4 Environmental Conditions

Ambient Temperature 20 °C
Relative Humidity 51 %

2.1.5 Specification Limits

According to Customer specification test 3.2023

2.1.6 Test Results

Position where the load is applied 500mm				
Sample	Load test	Initial position	Deformation under test	Permanent deformation
1	110kg	1040mm	933mm	10mm
2	110kg	1040mm	921mm	11mm

Position where the load is applied 600mm				
Sample	Load test	Initial position	Deformation under test	Permanent deformation
1	100kg	1040mm	920mm	10mm

2.1.7 Test Location and Test Equipment Used

This test was carried out in MES Laboratory TUV Italia, Via Brandizzo 123, 10088 Volpiano (TO), Italy

Instrument	Manufacturer	Type No	TE No
Analog measuring tape	Usag	981	2.1
Dynamometer 5000 N	AEP Transducers	DNA2	2.1
Thermohygrometer	Gemini Data Logger	Tinytag View2 TV-4500	2.1

Table 5

2.1.8 Operator

This test was carried out by Fabio Murgia

3 Informazioni sulla strumentazione

3.1 General Test Equipment Used

Instrument	Manufacturer	Type No	TE No
Analog measuring tape	Usag	981	2.1
Dynamometer 5000 N	AEP Transducers	DNA2	2.1
Thermohygrometer	Gemini Data Logger	Tinytag View2 TV-4500	2.1

Table 9

4 Incident Reports

None

5 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Tools	Measurement Uncertainty
Load cell	0,1%
Analog tape measure	0,4%
Thermohygrometer	0,02°

Table 10

Measurement Uncertainty Decision Rule

The decision rule "Binary statement for simple acceptance" according to ILAC-G8 will be applied." The level of risk to false accept and false reject items is described on ILAC-G8.

END of TEST REPORT

MES Test Report

Load test after conditioning at +55°C and -30°C

BAWER S.p.A.

PIPES for FENDER

Model: TUBO PLEX Ø42

In accordance with Customer specification test 4.2023



Add value.
Inspire trust.

Prepared for:

Bawer S.P.A.
Via Solferino 4 – 70022 ALTAMURA

Fabio Murgia
01.03.2024
18:43:15
GMT+01:00



MES 200220000931 B00

SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Fabio Murgia	Technical Reviewer	Authorised Signatory	2024/02/22

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with Customer specification test 4.2023 for the tests detailed in section 1.3.

DISCLAIMER AND COPYRIGHT

The results of this test report refer only to the tested sample as received and tested in the sequence indicated, where prescribed
The integral reproduction of the present Test report is allowed; the partial reproduction must be authorized in writing by the Lab.
The result of functional test is based on what the Client declared, and it is not responsibility of the CAB and the Accreditation Body.

TÜV SÜD

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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

In case of subsequent revisions, the current Test Report replaces the previous versions

Issue	Description of Change	Date of Issue
n.d	n.d	n.d

Table 1

1.2 Introduction

Applicant	Bawer S.P.A.
Manufacturer	Bawer S.P.A
Model Number(s)	TUBO PLEX Ø42
Manufacturer Declared Variant(s)	N/A
Serial Number(s)	From 1 to 9
Hardware Version(s)	N/A
Software Version(s)	N/A
Number of Samples Tested	9
Test Specification/Issue/Date	Customer specification test 4.2023
Test Plan/Issue/Date	N/A
Date of Receipt of EUT	2024-01-24
Sample Identification Code	787833
Start of Test	2024/02/06
Finish of Test	2024/02/08
Name of Engineer(s)	Fabio Murgia
Customer Witness(es) to test	-
Related Document(s)	Customer specification

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with Customer specification test 4.2023 are shown below.

Section	Specification Clause	Test Description	Verdict	Comments/Base Standard
Configuration and Mode: TUBO PLEX Ø42				
2.1	Customer specification test 4.2023	Load test after conditioning at +55°C and - 30°C	-	-

Table 2

For performance criteria applied to give result below see paragraph 1.5.6

1.4 Customer Supplied Form

Test Request Form according to Customer specification

1.4.1 Product Information

1.4.2 Technical Description

Kit tubi in plastica per parafanghi

Test Configuration

The test configurations are not specified in the following paragraphs describing the tests carried out

1.4.3 Mode(s) of Operation

The product under test is installed on a fixture supplied by the manufacturer in its actual position of use.

1.4.4 Monitoring of Performance

The sample under test was examined post test.

1.4.5 Performance Criteria

After the test, the EUT has been subjected to a visual inspection and no detachment of the parts has been observed.

The inspection has been carried out by the Lab Engineer who has observed the unit from all sides at a distance of 0.5m without using any kind of equipment.

We inform that, on the products under test, the Client performed functional test, before, during and after our test.

These functional tests were performed with instruments and equipment of the Client; every operation related to functional test done is under Client responsibility.

The (positive) result of functional test is based on what the Client declared, and it is not responsibility of the CAB and the Accreditation Body.

The criteria by which the results are expressed are given in the standards and/or in the client specification listed in paragraph 1.3 of this technical report.

1.5 Deviations from the Standard

None

1.6 Test Location

TUV Italia conducted the following tests at our Volpiano Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Load Test ambient temperature	Alessandro De Marco	None

Table 3

Office Address:

TUV Italia, Via Brandizzo 123, 10088 Volpiano (TO), Italy

1.7 Sampling Plan

TUV Italia does not carry out sampling and is not responsible for any sampling carried out by the customer.

2 Test Details

2.1 Load Test ambient temperature

2.1.1 Specification Reference

Test Request Form according to Customer specification test 4.2023.

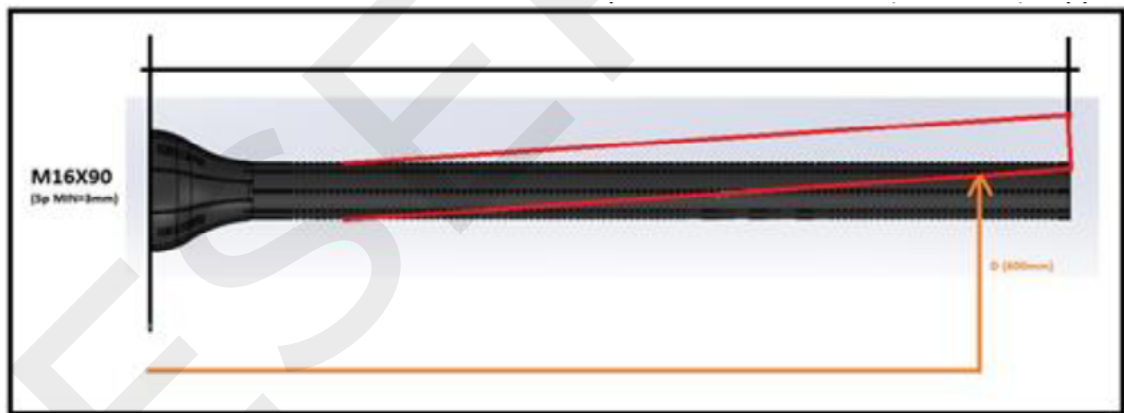
2.1.2 Equipment Under Test and Modification State

Model: TUBO PLEX Ø42

2.1.3 Test Method

Below are the test specifications received:

- TYPE OF TESTS: Plastic behavior of the component as the temperatures. Application of post-conditioning at -30°C; +55°C.
- TEST TEMPERATURE: -30°C, +55°C
- MAXIMUM WEIGHT OF TEST OBJECT: <1 kg
- FIXTURE: Supplied by the customer
- LOAD APPLICATION POINTS: 1 sample at D=600
- FIXING: pins supplied by the customer, M16X90, tightening torque: 80Nm
- AIR CONDITIONING: 5h @ -30°C, 5h @ +55°C
- APPLICATION SPECIFICATIONS LOAD: in the shortest possible time after conditioning



Pictures



Point 600mm after condition at -30°C



Point 600mm after condition at +55°C

2.1.4 Environmental Conditions

Ambient Temperature 20 °C
Relative Humidity 51 %

2.1.5 Specification Limits

According to Customer specification test 4.2023

2.1.6 Test Results

Position where the load is applied 600mm after conditioning at -30°C				
Sample	Load test	Initial position	Deformation under test	Permanent deformation
1	115kg	1015mm	930mm	5mm
2	115kg	1015mm	920mm	5mm
3	115kg	1015mm	950mm	5mm

Position where the load is applied 600mm after conditioning at +55°C				
Sample	Load test	Initial position	Deformation under test	Permanent deformation
1	80kg	1019mm	865mm	24mm
2	80kg	1019mm	865mm	22mm

2.1.7 Test Location and Test Equipment Used

This test was carried out in MES Laboratory TUV Italia, Via Brandizzo 123, 10088 Volpiano (TO), Italy

Instrument	Manufacturer	Type No	TE No
Analog measuring tape	Usag	981	2.1
Dynamometer 5000 N	AEP Transducers	DNA2	2.1
Thermohygrometer	Gemini Data Logger	Tinytag View2 TV-4500	2.1

Table 5

2.1.8 Operator

This test was carried out by Fabio Murgia

3 Information on the equipment

3.1 General Test Equipment Used

Instrument	Manufacturer	Type No	TE No
Analog measuring tape	Usag	981	2.1
Dynamometer 5000 N	AEP Transducers	DNA2	2.1
Thermohygrometer	Gemini Data Logger	Tinytag View2 TV-4500	2.1

Table 9

4 Incident Reports

None

5 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Tools	Measurement Uncertainty
Load cell	0,1%
Analog tape measure	0,4%
Thermohygrometer	0,02°

Table 10

Measurement Uncertainty Decision Rule

The decision rule "Binary statement for simple acceptance" according to ILAC-G8 will be applied." The level of risk to false accept and false reject items is described on ILAC-G8.

END of TEST REPORT