ENV Test Report

SHIPPING TEST

TRAKYA PACK - PULP MOLDING EOOD PACKED PRODUCT Model: UNIGLASS BOTTLE PACKAGING (1 CONFIGURATION)

Add value.
Inspire trust.

In accordance with ISTA 3A:2018

Prepared for: TRAKYA PACK - PULP MOLDING EOOD
Woodrow Wilson Street, 12
4006 PLOVDIV (BULGARIA)

ENV-V200220022737A-000

SIGNATURE			
GIANLUIGI PONZETTO 19.11.2026 13:57:39 UTC			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**EDITING DATE**
Gianluigi Ponzetto	Technical Reviewer	Authorised Signatory	2026-11-18

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
N°5 UNIGLASS BOTTLE PACKAGING (1 CONFIGURATION) were tested and found to be compliant with ISTA 3A:2018 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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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	2026-11-18

1.2 Introduction

Applicant	TRAKYA PACK - PULP MOLDING EOOD – Yasen Yanakiev
Manufacturer	TRAKYA PACK - PULP MOLDING EOOD
Model Number(s)	UNIGLASS BOTTLE PACKAGING (1 CONFIGURATION)
Manufacturer Declared Variant(s)	N/A
Serial Number(s)	N/A
Hardware Version(s)	N/A
Software Version(s)	N/A
Number of Samples Tested	5
Test Specification/Issue/Date	ISTA 3A:2018
Test Plan/Issue/Date	N/A
Date of Receipt of E.U.T.	2026-08-28
Sample Identification Code	1069860 1÷5
Start of Test	2026-10-05
Finish of Test	2026-10-05
Name of Engineer(s)	Riccardo Mendo
Customer Witness(es) to test	None
Related Document(s)	N/A

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with ISTA 3A:2018 is shown below.

Section	Specification Clause	Test Description	Verdict	Comments/Base Standard
Configuration: Packaged products				
§ 2.1	ISTA 3A:2018	DROP	PASS	No breaks or aesthetical issues have been detected during the test by naked eye visual inspection (see performance criteria at §1.5.6)
§ 2.2	ISTA 3A:2018	RANDOM WITH AND WITHOUT TOP LOAD	PASS	No breaks or aesthetical issues have been detected during the test by naked eye visual inspection (see performance criteria at §1.5.6)
§ 2.3	ISTA 3A:2018	DROP	PASS	No breaks or aesthetical issues have been detected during the test by naked eye visual inspection (see performance criteria at §1.5.6)

For performance criteria applied to give result below see paragraph 1.5.6

1.4 Customer Supplied Form

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

1.5 Product Information

1.5.1 Technical Description

The Equipment under test (E.U.T.) were packed products containing bottle of wine.

1.5.2 E.U.T. Port/Cable Identification

N/A

1.5.3 Test Configuration

Size [mm]: 410x145x150 (h)
Weight [kg]: 1,6

1.5.4 Mode(s) of Operation

N/A

1.5.5 Monitoring of Performance

None

1.5.6 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 Test Engineer who has observed the unit from all sides at a distance of 0.5 m 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 E.U.T. Modification Record

The table below details modifications made to the E.U.T. 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 E.U.T.	Modification Fitted By	Date Modification Fitted
UNIGLASS BOTTLE PACKAGING (1 CONFIGURATION)			
N/A	As supplied by the customer	N/A	N/A

1.8 Test Location

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

Test Name	Name of Engineer(s)
Shipment test	Riccardo Mendo

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 DROP

2.1.1 Specification Reference

ISTA 3A:2018

2.1.2 Equipment Under Test and Modification State

UNIGLASS BOTTLE PACKAGING (1 CONFIGURATION)

2.1.3 Date of Test

2026-10-05

2.1.4 Test Method

The samples have been placed on the drop machine and allowed to fall freely following the test severities below and as shown in ANNEX A:

Test Severities

Relevant specification: ISTA 3A:2018

Drop Number	< 32 kg (70 lb)	32-70 kg (70-150 lb)	Standard, Flat, Elongated, Small (not in bag)
1	460 mm (18 in)	300 mm (12 in)	Edge 3-4
2	460 mm (18 in)	300 mm (12 in)	Edge 3-6
3	460 mm (18 in)	300 mm (12 in)	Edge 4-6
4	460 mm (18 in)	300 mm (12 in)	Corner 3-4-6
5	460 mm (18 in)	300 mm (12 in)	Corner 2-3-5
6	460 mm (18 in)	300 mm (12 in)	Edge 2-3
7	460 mm (18 in)	300 mm (12 in)	Edge 1-2
8	910 mm (36 in)	600 mm (24 in)	Face 3
9	460 mm (18 in)	300 mm (12 in)	Face 3

2.1.5 Environmental Conditions

Ambient Temperature	Min: + 23,4 °C Max: + 24,4 °C
Relative Humidity	Min: 40,8 % Max: 44,3 %

2.1.6 Specification Limits

According to the specification clause.

2.1.7 Test Results

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

All equipment shown in table below are in their valid calibration period during all test campaign of this Test Report.

Device no.	Designation	Model	Manufacturer
DPM_74	DROP MACHINE	ACCUDROP 160	MTLAB
FLE_109	ANALOG FLEXOMETER	33-684	STANLEY

2.1.9 Operator

This test was carried out by Riccardo Mendo.

2.2 RANDOM WITH AND WITHOUT TOP LOAD

2.2.1 Specification Reference

ISTA 3A:2018

2.2.2 Equipment Under Test and Modification State

UNIGLASS BOTTLE PACKAGING (1 CONFIGURATION)

2.2.3 Date of Test

2026-10-05

2.2.4 Test Method

The sample has been placed on the vibrating table and subjected to a random vibration with the following profiles, durations, and directions.

Test Severities

Relevant specification: ISTA 3A:2018

OVER THE ROAD

Frequency (Hz)	PSD Level, g^2/Hz
1.0	0.0007
3.0	0.02
5.0	0.02
7.0	0.001
12.0	0.001
15.0	0.004
24.0	0.004
28.0	0.001
36.0	0.001
42.0	0.003
75.0	0.003
200.0	0.000004

G_{rms} 0,53

Duration: 60 min with face 3 down with load
30 min with face 4 down with load
30 min with face 6 down

PICK UP AND DELIVERY

Frequency (Hz)	PSD Level, g^2/Hz
1.0	0.001
3.0	0.035
4.0	0.035
7.0	0.0003
13.0	0.0003
15.0	0.001
24.0	0.001
29.0	0.0001
50.0	0.0001
70.0	0.002
100.0	0.002
200.0	0.00005

G_{rms} 0,46

Duration: 30 min with face 3 down

The dynamic top loads have been calculated with the formula reported below:

Top-Load Formulas TL		**Metric Units (m and kg)**	**English Units (in and lb)**
Top-Load **(TL–H)** with **face 3** down		(2.7 – H) x L x W x 100	(108 – H) x L x W x 0.0035
Top-Load **(TL–W)** with **face 4** down		(2.7 – W) x L x H x 100	(108 – W) x L x H x 0.0035
Top-Load **(TL–L)** with **face 6** down		(2.7 – L) x W x H x 100	(108 – L) x W x H x 0.0035
Where	**Represents**		
TL	Total Weight of the Top-Load Apparatus	Kilograms (kg)	Pounds (lb)
2.7 **and** 108	Height of typical trailer	Meters (m)	Inches (in)
H	Height of shipping unit	Meters (m)	Inches (in)
L	Length of shipping unit	Meters (m)	Inches (in)
W	Width of shipping unit	Meters (m)	Inches (in)
100 **and** 0.0035	Loading Factor: 50% of the average density of freight*	100 kg/m^3	0.0035 lb/in^3

Top-Load weight (TL) for any Axis	
Determine the Top-Load weight to be used for each axis by comparing the calculated TL against the following statements.	
IF the calculated Top-Load for an axis is …	**THEN …**
Less than 11kg (25 lb)	**Do not use** a Top-Load during vibration testing.
11 kg (25 lb) to 140 kg (300 lb)	Use the calculated Top-Load (TL) rounded up to the next closest increment of **2 kg (5 lb)** for that axis. *Examples*: If the calculated Top-Load is 21 kg you would round up and use 22 kg as the Top-Load; If the calculated Top-Load is 32 lb you would round up and use 35 lb as the Top-Load.
Greater than 140 kg (300 lb)	Use 140 kg (300 lb) as the Top-Load (TL).

TOP LOAD ON FACE 1	**TOP LOAD ON FACE 2**	**TOP LOAD ON FACE 5**
16 kg	16 kg	NO TOP LOAD

2.2.5 Environmental Conditions

Ambient Temperature	Min: + 23,4 °C Max: + 24,4 °C
Relative Humidity	Min: 40,8 % Max: 44,3 %

2.2.6 Specification Limits

According to the specification clause.

2.2.7 Test Results

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

All equipment shown in table below are in their valid calibration period during all test campaign of this Test Report.

Device no.	Designation	Model	Manufacturer
VBT_36	SHAKER	443-100-20	SERVOTEST
CTR_190	CONTROL SYSTEM	SPIDER-81	CRYSTAL INSTRUMENTS
ACC_162	ACCELEROMETER	352C34	PCB PIEZOTRONICS

2.2.9 Operator

This test was carried out by Riccardo Mendo.

2.3 DROP

2.3.1 Specification Reference

ISTA 3A:2018

2.3.2 Equipment Under Test and Modification State

UNIGLASS BOTTLE PACKAGING (1 CONFIGURATION)

2.3.3 Date of Test

2026-10-05

2.3.4 Test Method

The samples have been placed on the drop machine and allowed to fall freely following the test severities below and as shown in ANNEX A:

Test Severities

Relevant specification: ISTA 3A:2018

Drop Number	Drop Height			Test Specimen	
	< 32 kg (70 lb)	32-70 kg (70-150 lb)	Small (in a bag)	Standard, Flat, Elongated	Small (in a bag)
10	460 mm (18 in)	300 mm (12 in)	610 mm (24 in)	Edge 3-4	Face 4
11	460 mm (18 in)	300 mm (12 in)	610 mm (24 in)	Edge 3-6	Face 1
12	460 mm (18 in)	300 mm (12 in)	610 mm (24 in)	Edge 1-5	Face 2
13	460 mm (18 in)	300 mm (12 in)	610 mm (24 in)	Corner 3-4-6	Face 3
14	460 mm (18 in)	300 mm (12 in)	610 mm (24 in)	Corner 1-2-6	Face 1
15	460 mm (18 in)	300 mm (12 in)	610 mm (24 in)	Corner 1-4-5	Face 2
16	910 mm (36 in)	600 mm (24 in)	610 mm (24 in)	Most critical or damage-prone flat orientation	Face 4
17	460 mm (18 in)	300 mm (12 in)	NA	**Standard:** Face 3 on hazard **Flat or Elongated:** Face 2 on hazard	NA

2.3.5 Environmental Conditions

Ambient Temperature	Min: + 23,4 °C Max: + 24,4 °C
Relative Humidity	Min: 40,8 % Max: 44,3 %

2.3.6 Specification Limits

According to the specification clause.

2.3.7 Test Results

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.

2.3.8 Test Location and Test Equipment Used

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

All equipment shown in table below are in their valid calibration period during all test campaign of this Test Report.

Device no.	Designation	Model	Manufacturer
DPM_74	DROP MACHINE	ACCUDROP 160	MTLAB
FLE_109	ANALOG FLEXOMETER	33-684	STANLEY

2.3.9 Operator

This test was carried out by Riccardo Mendo.

3 Test Equipment Information

3.1 General Test Equipment Used

All equipment shown in table below are in their valid calibration period during all test campaign of this Test Report.

Device no.	Designation	Model	Manufacturer
ACC_162	Uniaxial accelerometer	352C34	PCB Piezotronics
CTR_190	8-channel control system for Servotest 443-100-20	Spider-81	Crystal Instruments
VBT_36	Servohydraulic Vibrator Servotest	443-100-20	Servotest
DPM_74	Drop Machine MTLAB	ACCUDROP 160	MTLAB
FLE_109	Analog flexometer	33-684	Stanley

4 Incident Reports

No incidents reports were raised.

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:

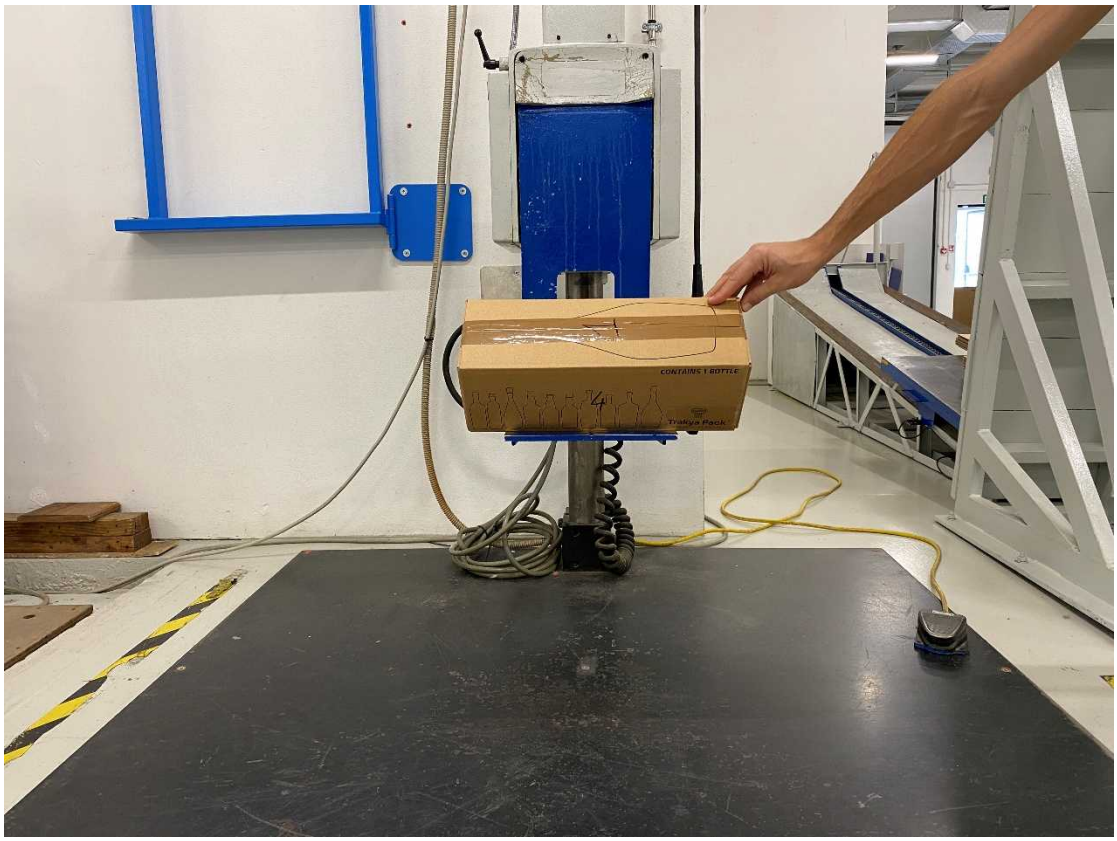
Test Name and/or measurement type/unit	Measurement Uncertainty
VIBRATION - Acceleration spectral density	± 1,2 dB
VIBRATION – OVER THE ROAD - Acceleration spectral density R.M.S. value of acceleration	± 0,03 g
VIBRATION – PICK UP AND DELIVERY - Acceleration spectral density R.M.S. value of acceleration	± 0,02 g
TEMPERATURE (Ambient)	± 2,3 °C
RELATIVE HUMIDITY (Ambient)	± 7,0 %
WEIGHT	± 2,0 %
HEIGHT	± 0,7 mm

Measurement Uncertainty Decision Rule

The decision rule "Binary statement for simple acceptance" according to ILAC-G8 and IEC Guide 115 will be applied.
The level of risk to false accept and false reject items is described on ILAC-G8.

ANNEX A

PHOTO 1/21



DROP

PHOTO 2/21



DROP

PHOTO 3/21



DROP

PHOTO 4/21



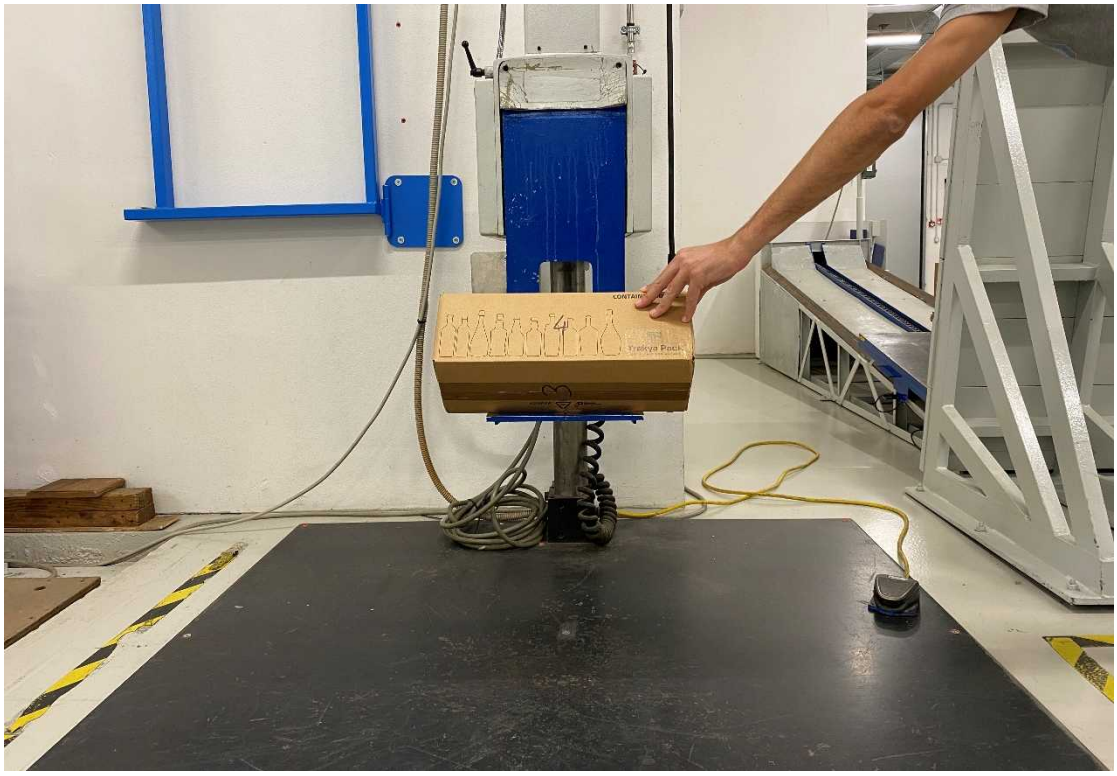
DROP

PHOTO 5/21



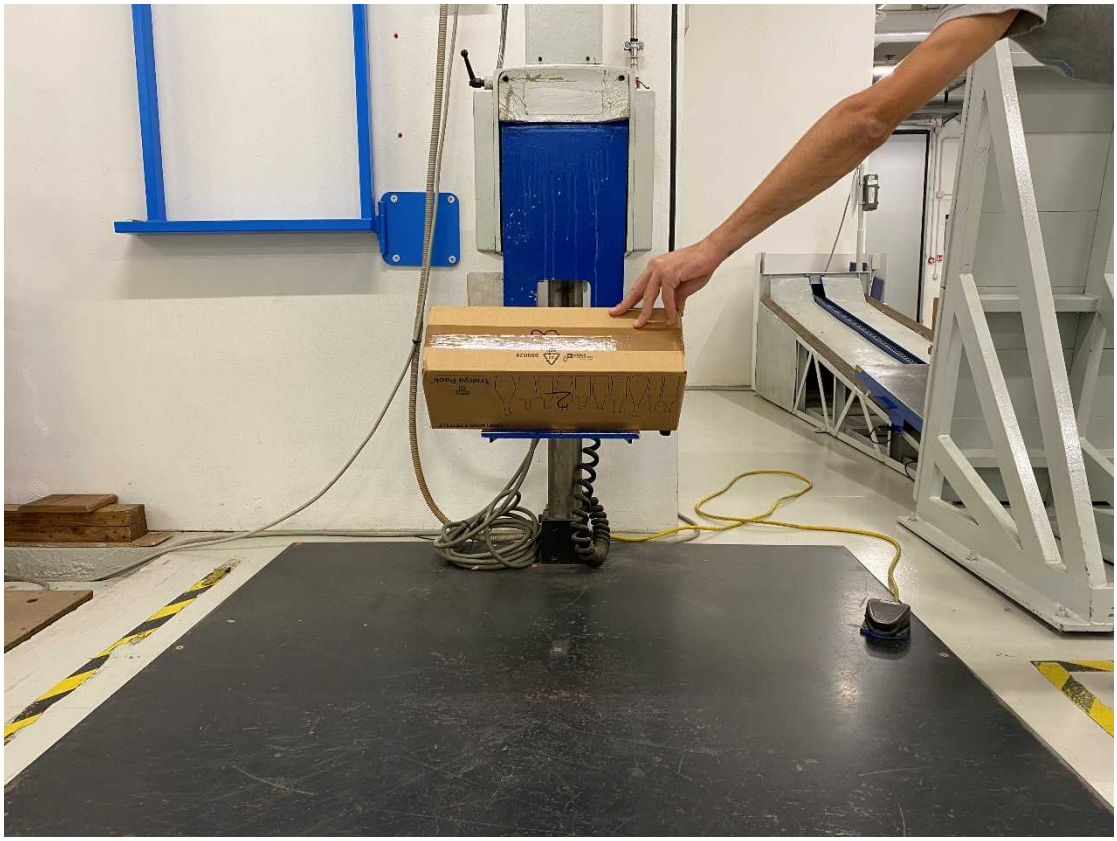
DROP

PHOTO 6/21



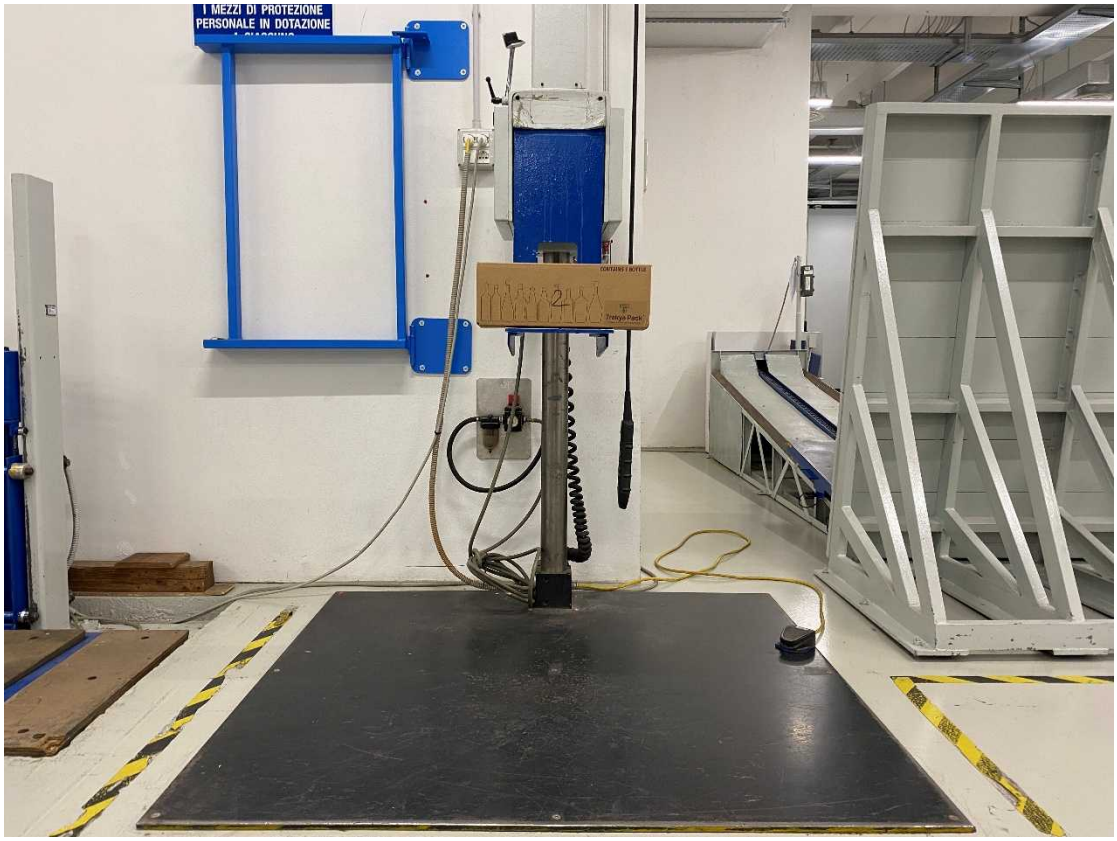
DROP

PHOTO 7/21



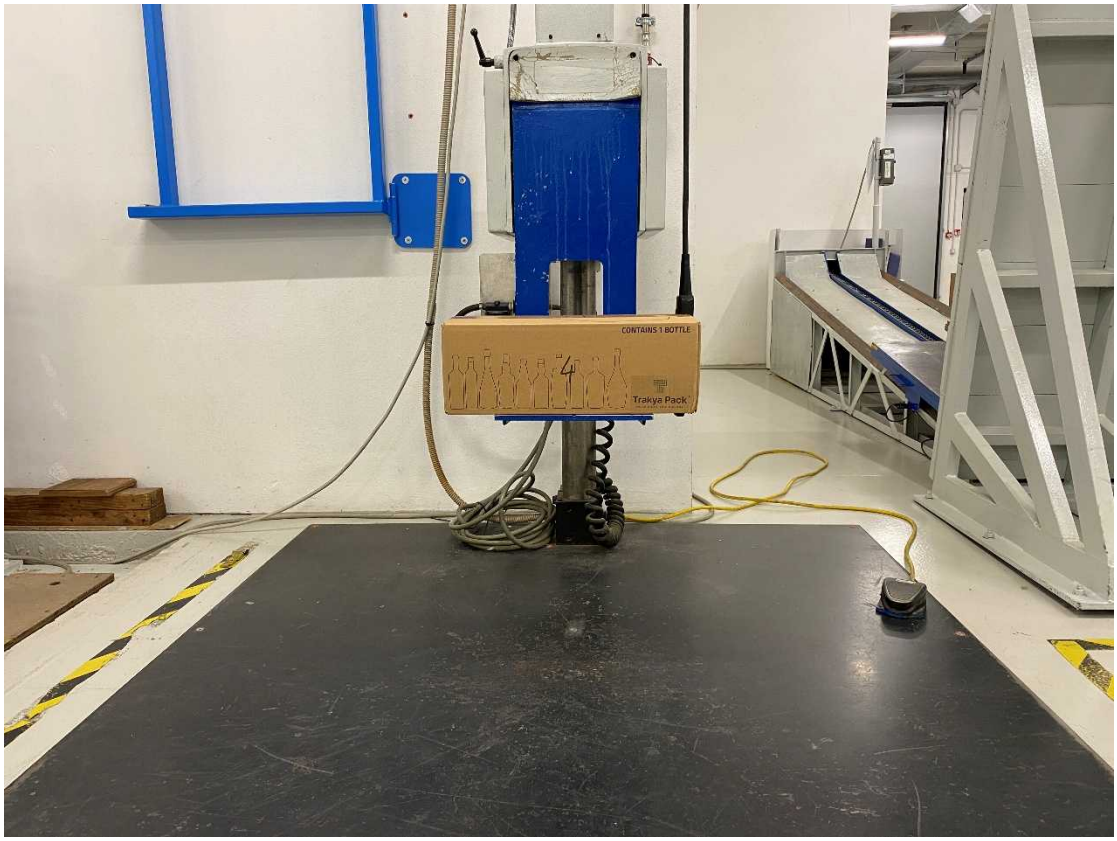
DROP

PHOTO 8/21



DROP

PHOTO 9/21



DROP

PHOTO 10/21



RANDOM WITH TOP LOAD ON FACE 1

PHOTO 11/21



RANDOM WITH TOP LOAD ON FACE 2

PHOTO 12/21



RANDOM WITHOUT TOP LOAD ON FACE 5

PHOTO 13/21



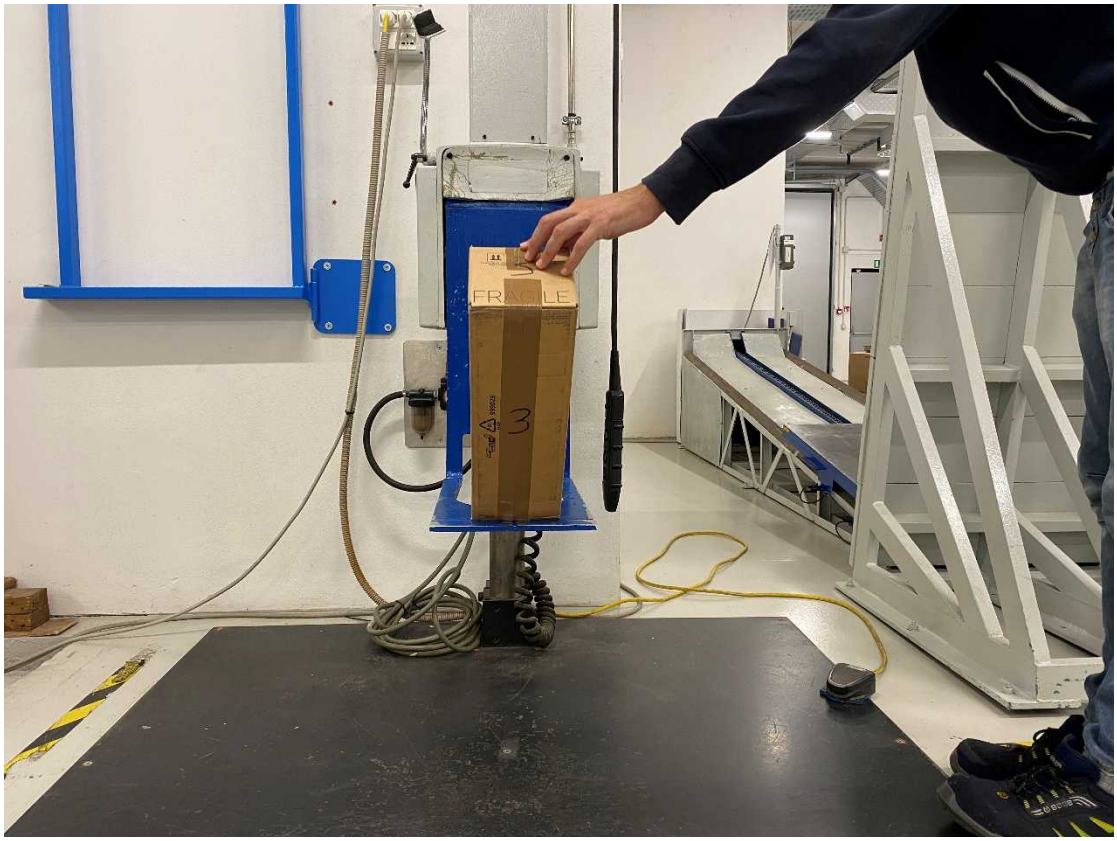
RANDOM WITHOUT TOP LOAD – FACE 3 DOWN

PHOTO 14/21



DROP

PHOTO 15/21



DROP

PHOTO 16/21



DROP

PHOTO 17/21



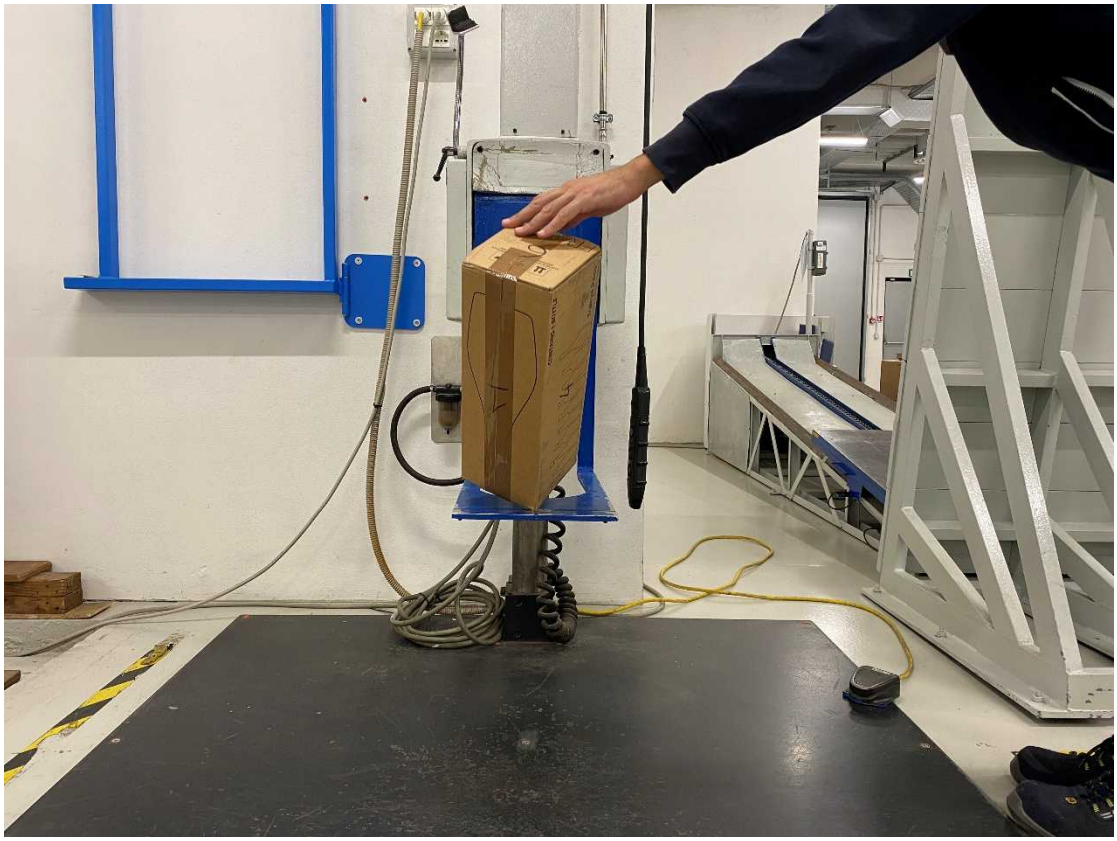
DROP

PHOTO 18/21



DROP

PHOTO 19/21



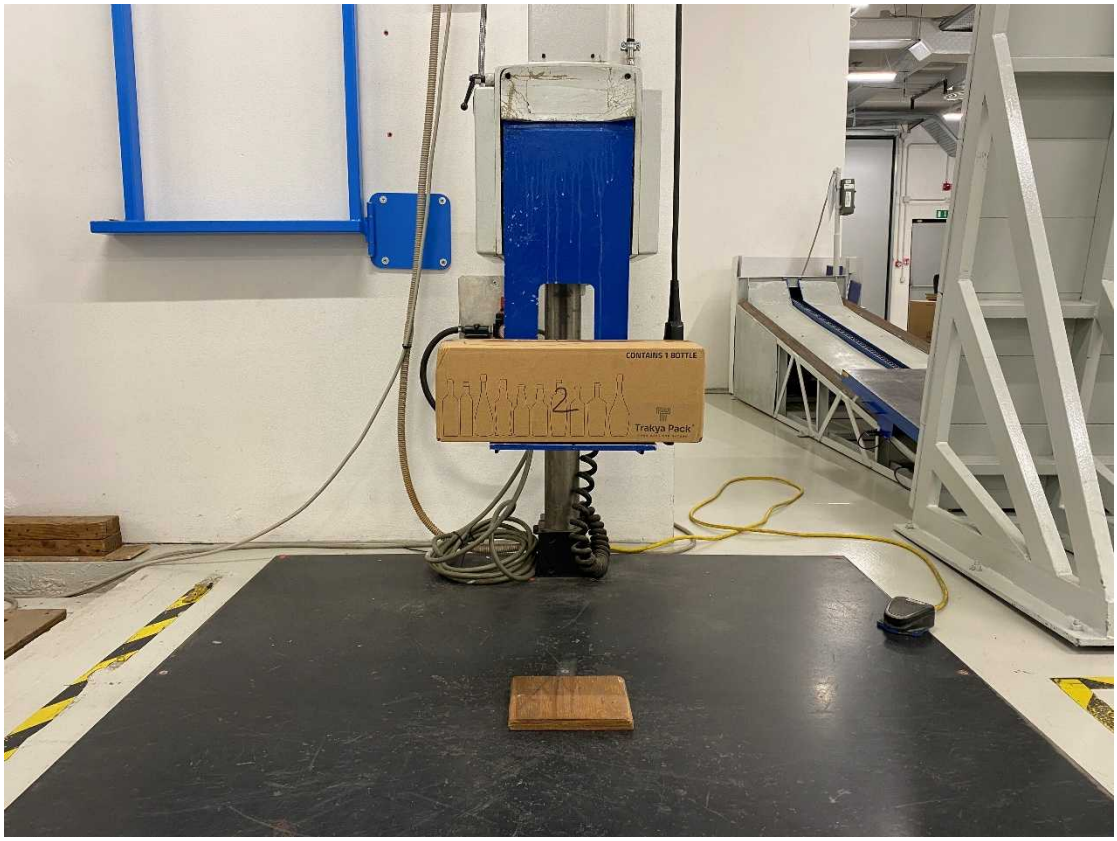
DROP

PHOTO 20/21



DROP

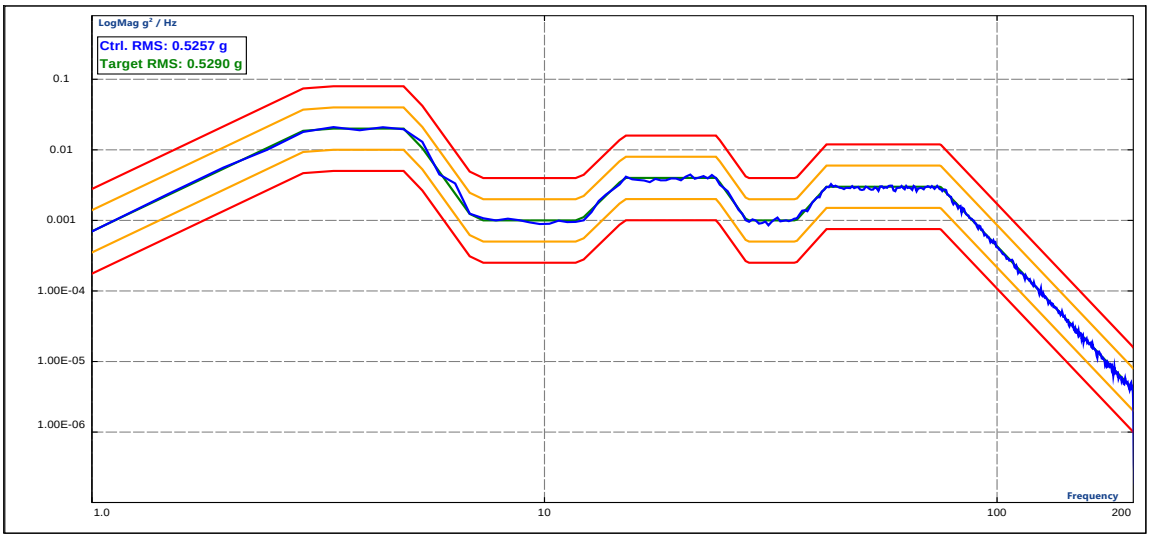
PHOTO 21/21



DROP

ANNEX 1/4

CUSTOMER: TRAKYA PACK
TEST: OVER THE ROAD WITH TOP LOAD ON FACE 1



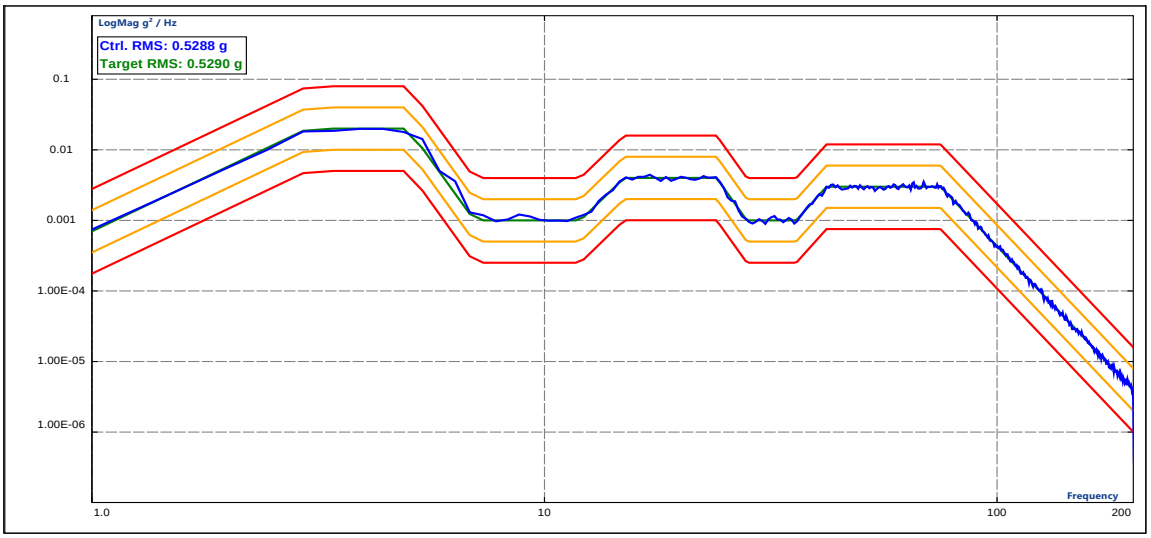
Level: 100.00 %
Velocity Pk: 0.342 m/s
DOF: 128
Full level elapsed time: 01:00:00

Drive Pk: 4.27 V
Control RMS: 0.526 g
Remaining Time: 00:00:00

Est. disp. (PkPk): 36.669 mm
Target RMS: 0.529 g
Total elapsed time: 01:01:19

ANNEX 2/4

CUSTOMER: TRAKYA PACK
TEST: OVER THE ROAD WITH TOP LOAD ON FACE 2



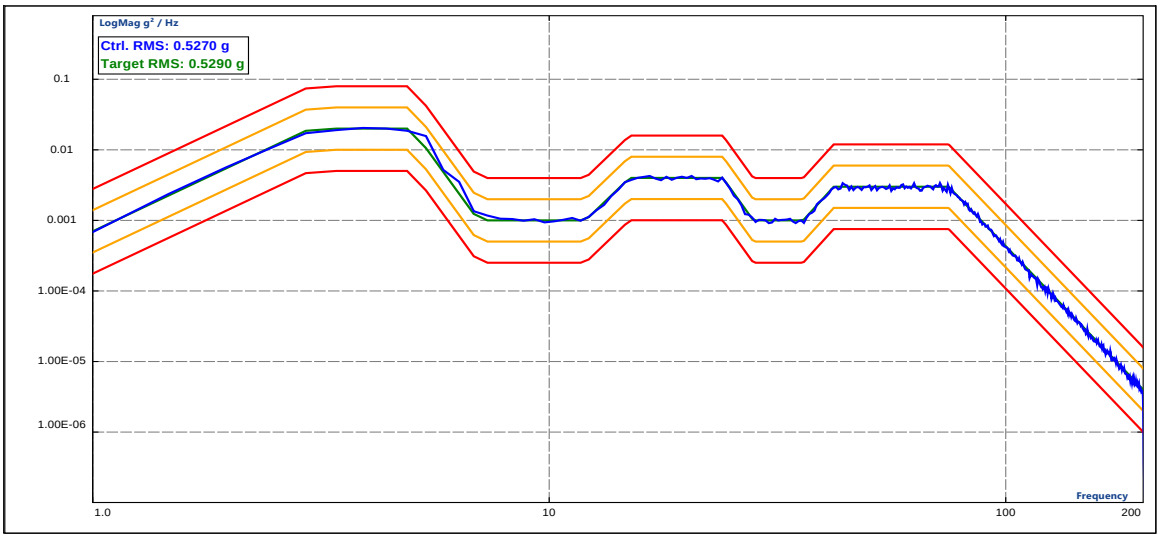
Level: 100.00 %
Velocity Pk: 0.339 m/s
DOF: 128
Full level elapsed time: 00:30:00

Drive Pk: 5.48 V
Control RMS: 0.529 g
Remaining Time: 00:00:00

Est. disp. (PkPk): 36.211 mm
Target RMS: 0.529 g
Total elapsed time: 00:31:19

ANNEX 3/4

CUSTOMER: TRAKYA PACK
TEST: OVER THE ROAD WITHOUT TOP LOAD ON FACE 5



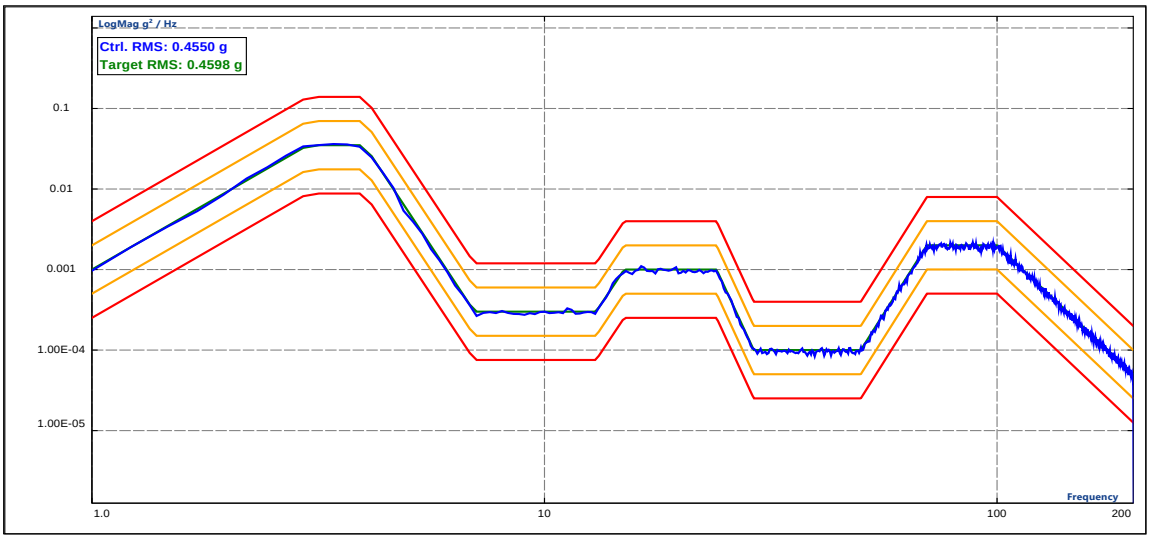
Level: 100.00 %
Velocity Pk: 0.342 m/s
DOF: 128
Full level elapsed time: 00:30:00

Drive Pk: 6.591 V
Control RMS: 0.527 g
Remaining Time: 00:00:00

Est. disp. (PkPk): 36.582 mm
Target RMS: 0.529 g
Total elapsed time: 00:31:19

ANNEX 4/4

CUSTOMER: TRAKYA PACK
TEST: PICK UP AND DELIVERY – FACE 3 DOWN



Level: 100.00 %
Velocity Pk: 418.753 mm/s
DOF: 128
Full level elapsed time: 00:30:00

Drive Pk: 3.287 V
Control RMS: 0.455 g
Remaining Time: 00:00:00

Est. disp. (PkPk): 51.557 mm
Target RMS: 0.460 g
Total elapsed time: 00:31:40

END of TEST REPORT