SEISMIC
Tests Certificate

Delivered on: Monday, June 7th 2021

Applicable Standards:

- International Standard **IEC 60068-3-3:1991**: "*Environmental testing – Part 3: Guidance. Seismic tests methods for equipments*" (*there is a later edition of this standard, dated 2019*).

Other documents:

- VIRLAB document number **200306E1**, Revision 0, dated 09/03/2020: "*TEST PROCEDURE FOR SEISMIC QUALIFICATION OF "ELECTRICAL EQUIPMENT" ACCORDING TO IEC60068-3-3 (ZONE 4) AND IEC60068-2-57 INTERNATIONAL STANDARDS*".
- International Standard **IEC 60068-2-57:2013**: "*Environmental testing - Part 2-57: Test Ff: Vibration - Time-history method*".
- International Standard **IEC 60068-2-6:2007**: *Environmental testing – Part 2-6: Tests – Fc: Vibration (sinusoidal).*
- International Standard **IEC 60068-2-47:2005**: "*Environmental testing - Part 2-47: Tests. Mounting of specimens for vibration, impact and similar dynamic tests*".

Laboratory Name: **VIRLAB, S.A.**

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Client: **LANDE ENDUSTRIYEL METAL URUNLER SAN. Ve TIC. AS.**

Equipment tested: Three (3) type and / or model of ***Rack Cabinets***

According to the information provided by LANDE, three (3) ***Rack Cabinets*** have been tested, described here below:

- ✓ ***Type A: two (2) Datacentre standard rack 42U 600 x 1000 mm Cabinets*** joined (*code LN-SRDC-ND-42U6010-LG-EGAA*), with a seismic platform (*code LN-ZMN-TBL-6010-LG*), weighed down with 530 kg per rack of simulated masses (*total 1060 kg*).
- ✓ ***Type B: one (1) Datacentre standard rack 47U 800 x 1200 mm Cabinet*** (*code LN-SRDC-ND-47U8012-LG-EGAA*), weighed down with 540 kg of simulated masses.
- ✓ ***Type C: one (1) Datacentre standard rack 47U 800 x 1200 mm Cabinet*** (*code LN-SRDC-SE-47U8012-LG-EGAA*), weighed down with 1020 kg of simulated masses.

Pictures included here below show the ***Cabinets*** on the test platform in "XZ" direction (*front to back/vertical*) and in "YZ" direction (*side to side/vertical*).

"XZ" Direction

"YZ" Direction

The ***Cabinets*** described here above have been tested at VIRLAB facilities of Asteasu (SPAIN), on 26/05/2021, according to International Standard **IEC 60068-3-3:1991**.

Other test conditions are described in VIRLAB document number **200306E1**, Revision 0, dated 09/03/2020.

The ***Cabinets*** have been submitted to the tests described here below:

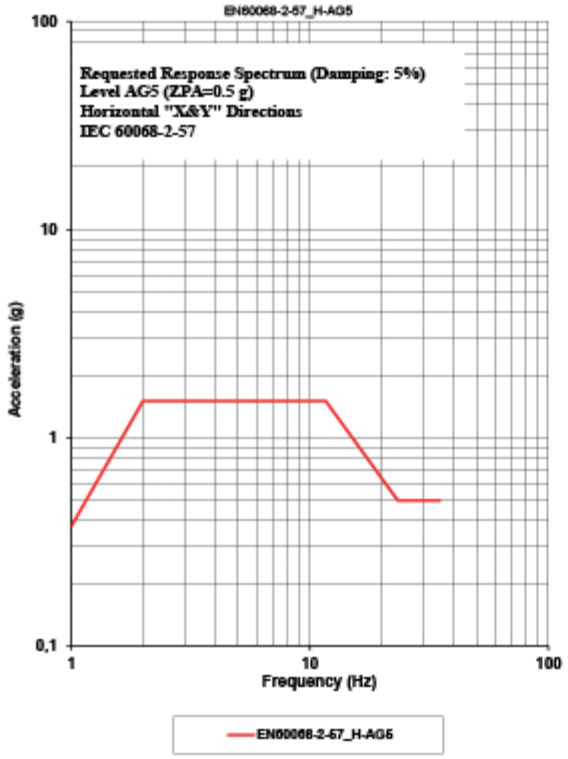
- Resonance search tests, between 1 and 35 Hz, with an acceleration level of 0.1 g, independently performed in each one of the three main directions of the ***Cabinets***, horizontal "X" (*front-to-back*), vertical "Z" and horizontal "Y" (*side-to-side*).

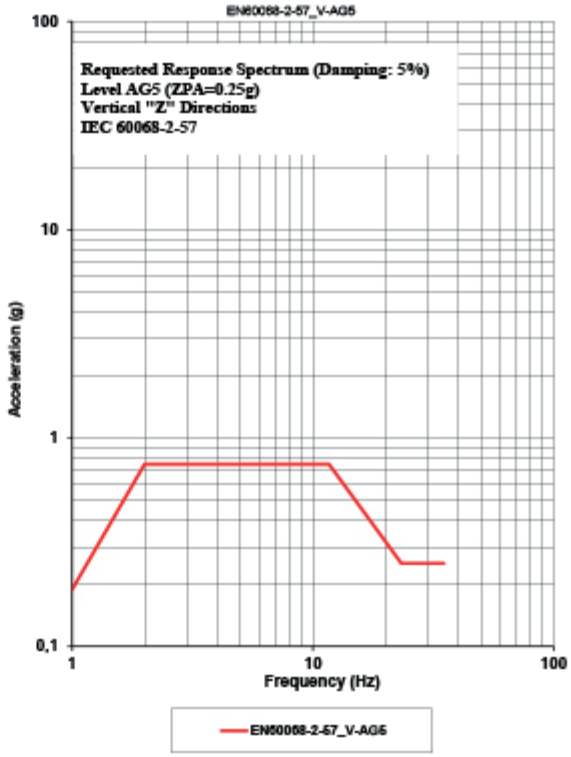
- Seismic tests, consisting of five (5) **S1** (60% S2) level tests, followed by one (1) **S2** level test, 30 seconds duration, applied in both "XZ" (*front-to-back and vertical*) and "YZ" (*side-to-side and vertical*) directions.

The level to be applied corresponds to **AG5** level defined in **IEC 60068-3-3:1991** (*equivalent to seismic activity **Zone 4** according to last edition of **IEC 60068-3-3:2019***).

The applicable Required Response Spectra, **RRS**, for a 5% damping, has been obtained following the recommendations in annex A of the International Standard **IEC 60068-2-57:2013**, with a Zero Period Acceleration, ZPA, of 0.5 g in horizontal direction and 0.25 g in vertical direction (*50% of horizontal direction, with direction factor of 0.5*), as it is described in more detail in VIRLAB document number **200306E1**, Revision 0, dated 09/03/2020.

The RRS are included here below for S2 level, for a 5% damping, for horizontal and vertical directions:





After the seismic tests to which the ***Cabinets*** have been subjected, no structural anomaly has been detected in the final visual inspection carried out in the laboratory.

Test report number **213200** of **VIRLAB, S.A.**, will include all the information obtained, with tables, figures, photographs, and other relevant information.

Revised and authorized by:

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Alberto CORRAL
Technical Director

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