



Lavis, September 21, 2016

Spett.
Studio arc. Roberto Prioli
Via Milano, 42
38122 Trento

Subject: **Test report on the damping of mechanical vibrations.**
Tested sample: type 7 cylindrical support

Conducted tests results on the available sample are shown below. Surveys have led to the determination of:

- Ability of the damping of mechanical vibrations;

Equipment

All the equipment is reported to be in the 1st Class in accordance with the rules I.E.C. n. 651/77 "Sound Level Meters", I.E.C. n.804 / 85 " Integrating-averaging Sound Level Meters" ed I.E.C. n. 225/82" Octave, Half-octave and Third -octave Bande Filters Intended for the Analysis of Sounds and Vibrations" and in compliance with specifications in the 1st Class with the rules EN 60651/1994 and EN 60804/1994.

In more detail, the type of the equipment, the brand, the model and the serial number are shown below:

Instrument	Brand	Model	Serial n.	Calibration date
Multichannel analyzer	Sinus	SoundBook MKII	7017	12/10/2014
Accelerometer	PCB	393A03	30180	10/08/2010
Accelerometer	PCB	393A03	30342	10/18/2010
Accelerometer	PCB	393A03	41333	06/18/2014
Calibrator	Bruel Kjaer	4294	1845221	03/02/2016

The instrumentation is equipped with the integration and frequency analysis modules.

It was used the S.A.M.U.R.A.I program, with which was elaborated test reports provided by the referenced rules, for downloading data and the following reworking.

It has never met any overloading of the instruments throughout the measurement cycle.

The parameter set for the measurements and frequency analysis in third octave were respectively:

- frequency weighting for spectral analysis	Linear
- analyzed frequency range	10 _ 10.000 Hz
- source	Planking normalized generator Compliant UNI EN ISO 16283 - 2

SOURCE

For the generation of the vibration signal has been used a machine with the following characteristics:

Brand	Look Line
Model	EM50
Serial number	T100300
Lifting mechanism type	electromagnetic

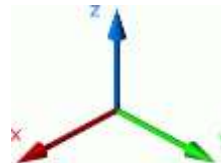




Sample and test methodology description:

4 cylindrical supports with the following characteristics are provided:

Descrizione	U.M.	Valore
Sample name	-	AM 14 basal
Description		Circular disc made of basal granulate of vary granulometry (mm 0 /mm 2), washed and dried, mixed with a polyurethan resins mixture with a low percentage of isocyanate. A neoprene disc of 2mm is pasted with a polymer elastic on the bearing surfaces.
Diameter	mm	45
Thickness	mm	14
Weight	Gr	33
Performing tests date	-	July 1, 2016



Samples were positioned in the floor, that is stimulated by the planking generator and a plate provided by the customer. Masses for the simulation of the work load (15 kg) were loaded on the plate. Accelerometers were positioned on a support in the center of the plate and they were anchored there with a beeswax. Accelerometers are oriented along the X, Y, Z axis.

Values measured on the tested support plate were compared with the values measured in the same conditions of load and stress relieved by placing the plate on 4 steel elements having irrelevant damping mechanical.

This test was conducted using an internal procedure and is representative of the damping of mechanical vibrations that generally impact the building structures (primary range 50 5000 Hz).

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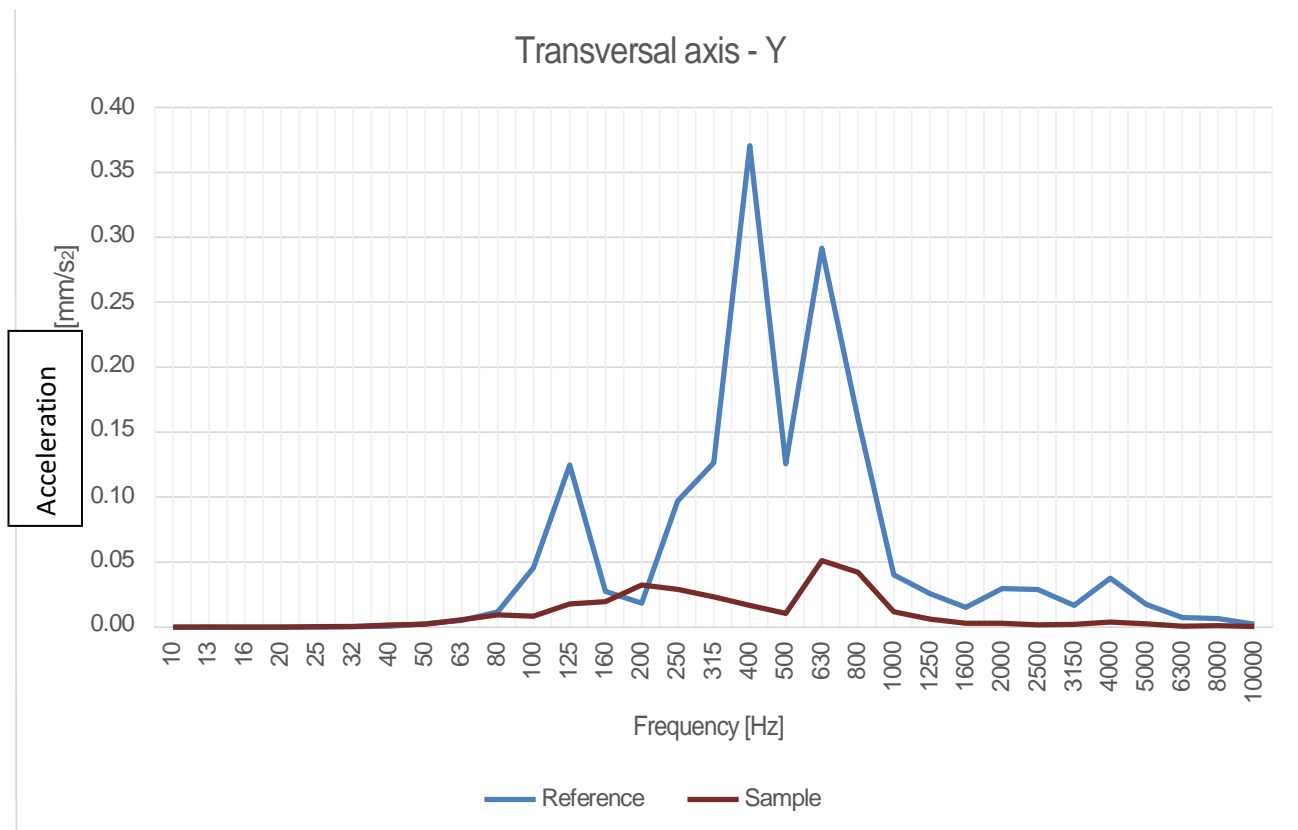
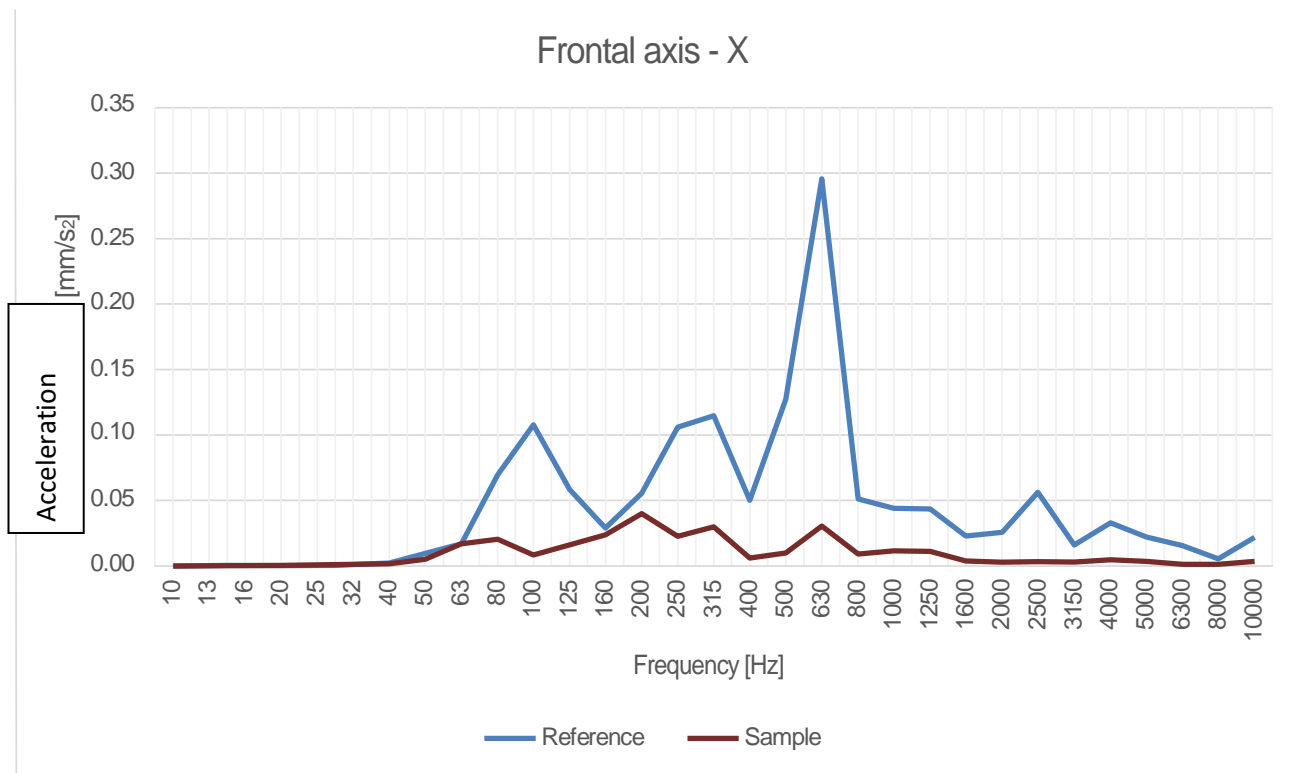


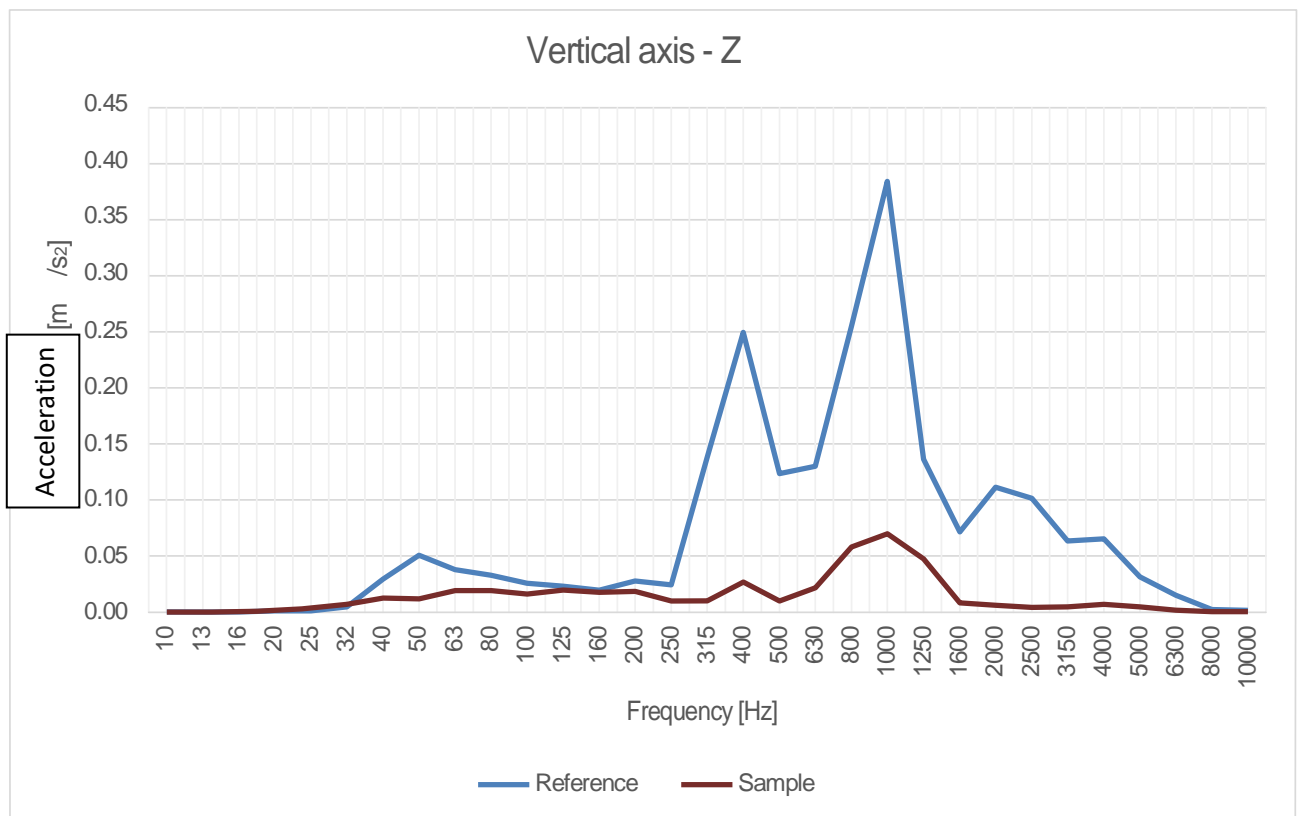
Tests results:

	X AXIS				Y AXIS				Z AXIS			
	Ref. [mm/s ²]	Samp. [mm/s ²]	Abs. var. [mm/s ²]	Red.%	Ref. % [mm/s ²]	Samp. [mm/s ²]	Abs. var. [mm/s ²]	Red.	Ref. % [mm/s ²]	Samp. [mm/s ²]	Abs. var. [mm/s ²]	Red.
SUM(LIN)	0.41	0.08	0.333	80.9%	0.56	0.09	0.469	83.7%	0.63	0.12	0.505	80.7%
Freq. Hz	-	-	-	-	-	-	-	-	-	-	-	-
10	0.0001	0.0001	0.000	-16.9%	0.0001	0.0001	0.000	14.5%	0.0001	0.0001	0.000	20.0%
13	0.0001	0.0001	0.000	3.8%	0.0001	0.0001	0.000	6.5%	0.0001	0.0001	0.000	-5.0%
16	0.0001	0.0001	0.000	-31.9%	0.0000	0.0001	0.000	-48.9%	0.0001	0.0002	0.000	-37.4%
20	0.0002	0.0004	0.000	-117.2%	0.0000	0.0001	0.000	-72.1%	0.0013	0.0016	0.000	-27.9%
25	0.0002	0.0003	0.000	-76.3%	0.0001	0.0001	0.000	-27.8%	0.0013	0.0036	-0.002	-188.7%
32	0.0005	0.0009	0.000	-64.4%	0.0002	0.0005	0.000	-137.9%	0.0047	0.0069	-0.002	-46.1%
40	0.0023	0.0014	0.001	36.9%	0.0007	0.0015	-0.001	-113.8%	0.0297	0.0125	0.017	57.8%
50	0.0095	0.0051	0.004	46.1%	0.0025	0.0022	0.000	9.8%	0.0506	0.0118	0.039	76.6%
63	0.0169	0.0169	0.000	0.1%	0.0051	0.0058	-0.001	-13.4%	0.0379	0.0194	0.018	48.7%
80	0.0698	0.0202	0.050	71.1%	0.0115	0.0093	0.002	19.6%	0.0331	0.0193	0.014	41.6%
100	0.1078	0.0084	0.099	92.2%	0.0456	0.0084	0.037	81.6%	0.0259	0.0161	0.010	37.8%
125	0.0581	0.0162	0.042	72.1%	0.1248	0.0178	0.107	85.8%	0.0234	0.0196	0.004	16.2%
160	0.0287	0.0238	0.005	17.2%	0.0275	0.0195	0.008	29.0%	0.0195	0.0177	0.002	9.0%
200	0.0556	0.0399	0.016	28.3%	0.0185	0.0323	-0.014	-74.9%	0.0279	0.0185	0.009	33.6%
250	0.1060	0.0226	0.083	78.7%	0.0972	0.0290	0.068	70.2%	0.0245	0.0099	0.015	59.6%
315	0.1146	0.0299	0.085	73.9%	0.1264	0.0233	0.103	81.6%	0.1378	0.0101	0.128	92.7%
400	0.0501	0.0061	0.044	87.8%	0.3704	0.0167	0.354	95.5%	0.2496	0.0268	0.223	89.3%
500	0.1272	0.0097	0.117	92.4%	0.1257	0.0107	0.115	91.5%	0.1234	0.0100	0.113	91.9%
630	0.2956	0.0306	0.265	89.7%	0.2914	0.0511	0.240	82.5%	0.1300	0.0216	0.108	83.3%
800	0.0511	0.0090	0.042	82.3%	0.1600	0.0421	0.118	73.7%	0.2555	0.0580	0.198	77.3%
1000	0.0437	0.0115	0.032	73.6%	0.0402	0.0119	0.028	70.4%	0.3843	0.0699	0.314	81.8%
1250	0.0435	0.0110	0.033	74.7%	0.0256	0.0062	0.019	75.9%	0.1364	0.0475	0.089	65.2%
1600	0.0226	0.0035	0.019	84.3%	0.0150	0.0030	0.012	79.9%	0.0716	0.0084	0.063	88.3%
2000	0.0255	0.0026	0.023	89.9%	0.0295	0.0029	0.027	90.2%	0.1114	0.0061	0.105	94.5%
2500	0.0560	0.0032	0.053	94.3%	0.0289	0.0018	0.027	93.8%	0.1016	0.0043	0.097	95.8%
3150	0.0158	0.0029	0.013	81.9%	0.0169	0.0019	0.015	88.8%	0.0636	0.0047	0.059	92.6%
4000	0.0330	0.0045	0.028	86.3%	0.0376	0.0040	0.034	89.5%	0.0657	0.0069	0.059	89.5%
5000	0.0220	0.0035	0.018	83.9%	0.0176	0.0024	0.015	86.2%	0.0315	0.0047	0.027	85.2%
6300	0.0153	0.0012	0.014	92.2%	0.0073	0.0008	0.006	88.7%	0.0151	0.0015	0.014	90.3%
8000	0.0054	0.0010	0.004	82.0%	0.0065	0.0010	0.005	85.1%	0.0025	0.0004	0.002	85.1%
10000	0.0218	0.0035	0.018	84.0%	0.0022	0.0004	0.002	81.5%	0.0016	0.0004	0.001	77.7%

Keys:

- Ref.: Reference value measured without anti-vibration supports;
- Samp.: Detected value using the test sample;
- Abs. var.: Absolute variation among those you read;
- Red.%: Reduction of the vibration to the percentage reference value.





If you require any further information, please do not hesitate to contact me. Best regards,

Alberto Piffer

Attachments:

- Equipment calibration certificates



Spectra Srl
Ama Laboranti
Via Belvedere, 42
Azzano (MB)
Tel: 039 413421 Fax: 039 6111215
Website: www.spectra.it spectra@spectra.it

CENTRO DI TARATURA LAT N° 163
Calibration Centre
Laboratorio Accreditato di Taratura



LAT N°163

Membro degli Accordi di Mutuo Riconoscimento EA, IAF ed ILAC

Signatory of EA, IAF and ILAC Mutual Recognition Agreements

CERTIFICATO DI TARATURA LAT 163/1766
Certificate of Calibration

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- Data di Emissione: 2014/12/10
date of issue

- cliente: Piffer Alberto
customer Loc. Aicheri n°2
38015 - Lavis (TN)

- destinatario:
addressee

- richiesta: Off.716/14
application

- in data: 2014/11/25
date

- Si riferisce a:
Referring to

- oggetto: Fonometro
item

- costruttore: SINUS GmbH
manufacturer

- modello: SoundBook MkII
model

- matricola: 7017
serial number

- data delle misure: 2014/12/10
date of measurements

- registro di laboratorio: 599/14
laboratory reference

Il presente certificato di taratura è emesso in base all'accreditamento LAT N. 163 rilasciato in accordo ai decreti attuativi della legge n. 273/1991 che ha istituito il Sistema Nazionale di Taratura (SNT). ACCREDIA attesta le capacità di misura e di taratura, le competenze metrologiche del Centro e la riferibilità delle tarature eseguite ai campioni nazionali ed internazionali delle unità di misura del Sistema Internazionale delle Unità (SI).

Questo certificato non può essere riprodotto in modo parziale, salvo espressa autorizzazione scritta da parte del Centro.

This certificate of calibration is issued in compliance with the accreditation LAT No. 163 granted according to decrees connected with Italian Law No. 273/1991 which has established the National Calibration System. ACCREDIA attests the calibration and measurement capability, the metrological competence of the Centre and the traceability of calibration results to the national and international standards of the International System of Units (SI).

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I risultati di misura riportati nel presente Certificato sono stati ottenuti applicando le procedure citate alla pagina seguente, dove sono specificati anche i campioni di prima linea da cui inizia la catena di riferibilità del Centro ed i rispettivi certificati di taratura in corso di validità. Essi si riferiscono esclusivamente all'oggetto in taratura e sono validi nel momento e nelle condizioni di taratura, salvo diversamente specificato.

The measurement results reported in this Certificate were obtained following the procedures given in the following page, where the reference standards or instruments are indicated which guarantee the traceability chain of the laboratory, and the related calibration certificates in the course of validity are indicated as well. They relate only to the calibrated item and they are valid for the time and conditions of calibration, unless otherwise specified.

Le incertezze di misura dichiarate in questo documento sono state determinate conformemente alla Guida ISO/IEC 98 e al documento EA-4/02. Solitamente sono espresse come incertezza estesa ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k corrispondente al livello di fiducia di circa il 95%. Normalmente tale fattore vale 2.

The measurement uncertainties stated in this document have been determined according to the ISO/IEC Guide 98 and to EA-4/02. Usually, they have been estimated as expanded uncertainty obtained multiplying the standard uncertainty by the coverage factor k corresponding to a confidence level of about 95%. Normally, this factor k is 2.

Il Responsabile del Centro
Head of the Centre


Emilio Cuglio



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LAT N° 192

Centro di Taratura LAT N° 192
Calibration Centre

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CERTIFICATO DI TARATURA LAT 192 N° 3579-16
Certificate of Calibration

- data di emissione <i>date of issue</i>	2016-03-02
- cliente <i>customer</i>	PIFFER ALBERTO LOC.AICHERI, 2 38015 LAVIS (TN)
- destinatario <i>receiver</i>	
- richiesta <i>application</i>	SKY LAB ORD.22
- in data <i>date</i>	2016-02-22
Si riferisce a <i>referring to</i>	
- oggetto <i>item</i>	CALIBRATORE
- costruttore <i>manufacturer</i>	Brue&Kjaer
- modello <i>model</i>	4294
- matricola <i>serial number</i>	1845221
- data ricevimento oggetto <i>date of receipt item</i>	2016-02-26
- data delle misure <i>date of measurements</i>	2016-03-02
- registro di laboratorio <i>laboratory reference</i>	3589

Il presente certificato di taratura è emesso in base all'accREDITAMENTO LAT N°192 rilasciato in accordo ai decreti attuativi della legge n. 273/1991 che ha istituito il Sistema Nazionale di Taratura (SNT). ACCREDIA attesta le capacità di misura e di taratura, le competenze metrologiche del Centro e la riferibilità delle tarature eseguite ai campioni nazionali e internazionali delle unità di misura del Sistema Internazionale delle Unità (SI).

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Il Responsabile del Centro
Head of the Centre

F. PACINI