

CUSTOMER

Name:

Ing.bureau AV-Consulting B.V.

Address:

Benedenberg 100A

Zip code & City :

2861LH Bergambacht

Country:

The Netherlands

CALIBRATION OF

Device:

MEMS Accelerometer

Brand & type:

CI VSEW MK2

Serial number:

5123A-WGM110

Customers Instrument tag N/A

SPECIFICATIONS

Calibrated in accordance: ISO-16063-21

Method used:

Back to Back Calibration, direct comparison to reference standard accelerometer as specified in ISO-16063-21. Conformity with SBR-A requirements

Traceability:

DANAK CDK1602396

CALIBRATION CONDITIONS

Preconditioning: 4 hours at 23 [°C] ± 3 [°C]

Environmental conditions:	Pressure	Unit	Humidity	Unit	Temperature	Unit
	1009,4	[hPa]	46,0	[%]	23,1	[°C]

UNCERTAINTY OF MEASUREMENT

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, which for a normal distribution provides a level of confidence of approximately 95%. The uncertainty in evaluation has been carried out in accordance with EA-4/02 from elements originating from standards, calibration methods, effect of environmental conditions and any short time contribution from the device under calibration.

RESULT

PASS

DATE

Date of calibration :

Date of issue :

Calibration Engineer:

Approved Signatory:

A.Vreeswijk

6-11-2018

6-11-2018

VISUAL INSPECTION

Yes No

The equipment / device is in serviceable condition.	x	
There is no visible damage.	x	
The appropriate documentation accompanied the equipment.	x	
Calibration tags / CE tags are present and correct.	x	
The equipment is suitable to use for official testing and/or calibration.	x	

COMMENTS

The FFT analyzer submitted for testing has successfully completed the periodic tests for the environmental conditions under which the tests were performed.
 Pass for frequencies below 125 Hz
 On the DUT the high pass filter was set 200mHz no low pass filter was set.
 Sampling frequency was set at 1 kHz.
 DUT was prior to test auto calibrated with gravityfield.

CALIBRATION EQUIPMENT

Device	Type	Brand	Serialno.
Digital Voltmeter 8½ digits	3458A	Keysight	MY450534664
Ultra low distortion generator	DS360	Stanford RS	33264
Conditioning Amplifier	Nexus 2692	Bruel & Kjaer	2079137
Laboratory Standard Accelerometer	8305	Bruel & Kjaer	1000577
Laboratory Standard Accelerometer	8076K	Kistler	C127545
Power Amplifier	2712	Bruel & Kjaer	2005145

EXPANDED UNCERTAINTY OF MEASUREMENTS

Frequency f [Hz]	Expanded Uncertainty, U, Rounded to 2 Significant Digits. Charge Transmission Reference.
3 - 8 Hz	1,3%
10-2000 Hz	1,1%
2500 - 4000 Hz	1,9%
5000 - 8000 Hz	2,6%
10000 Hz	3,4%

Thermal effects have been incorporated in the uncertainties

**CERTIFICATE OF CALIBRATION
MEASUREMENTS**

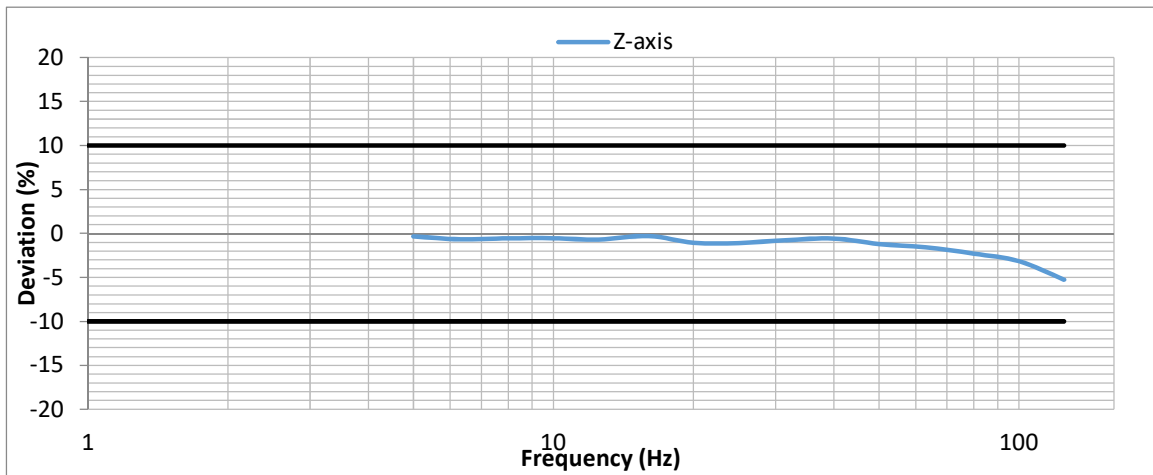
AVC16119

	Brand	Type	Serial no.	Sensitivity	Unit	Ref. frequency	Fixture
Z-AXIS	Convergence Instruments	VSEW MK2	5123A-WGM110	N/A	ms-2	16	Clamp with screws

MEASUREMENTS CONDITIONS

Gravitational Field NL	9,80665	ms-2
Excitation Angle	0	Degree
Excitation	Sinusoidal	
Connexion Cable	USB	Customer cable

Frequentierespons



Sensitivity measured relative to reference axis measurement at 16 Hz

f [Hz]	Dev [%]	Dev [dB]
5	-0,33	-0,04
6,3	-0,66	-0,09
8	-0,55	-0,05
10	-0,54	-0,08
12,5	-0,70	-0,07
16	-0,29	-0,03
20	-1,06	-0,10
25	-1,09	-0,10
31,5	-0,76	-0,07
40	-0,58	-0,06
50	-1,20	-0,10
63	-1,58	-0,15
80	-2,29	-0,20
100	-3,16	-0,29
125	-5,25	-0,52

**CERTIFICATE OF CALIBRATION
MEASUREMENTS**

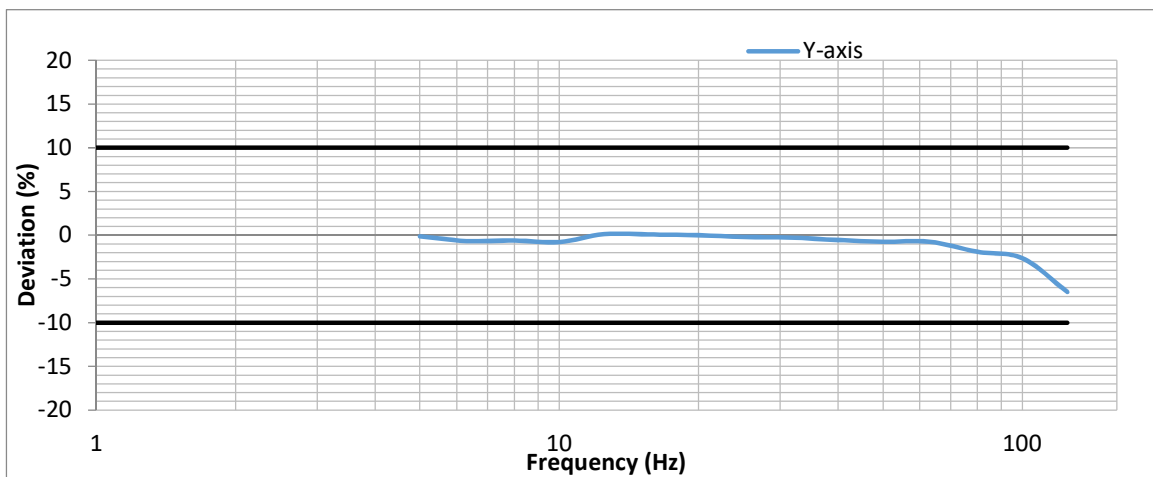
AVC16119

	Brand	Type	Serial no.	Sensitivity	Unit	Ref. frequency	Fixture
Y-AXIS	Convergence Instruments	VSEW MK2	5123A-WGM110	N/A	ms-2	16	Clamp with screws

MEASUREMENTS CONDITIONS

Gravitational Field NL	9,80665	ms-2
Excitation Angle	0	Degree
Excitation	Sinusoidal	
Connexion Cable	USB	Customer cable

Frequentierespons



Sensitivity measured relative to reference axis measurement at 16 Hz

f [Hz]	Dev [%]	Dev [dB]
5	-0,13	-0,01
6,3	-0,66	-0,08
8	-0,61	-0,06
10	-0,77	-0,09
12,5	0,12	0,01
16	0,08	0,01
20	0,00	0,00
25	-0,19	-0,02
31,5	-0,27	-0,03
40	-0,55	-0,06
50	-0,75	-0,07
63	-0,74	-0,06
80	-1,90	-0,21
100	-2,63	-0,31
125	-6,48	-0,82

**CERTIFICATE OF CALIBRATION
MEASUREMENTS**

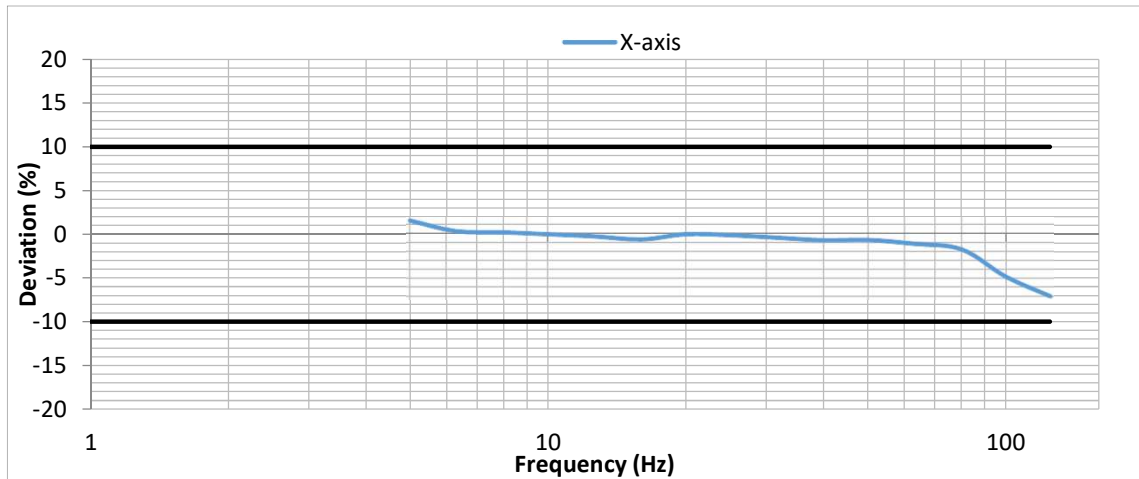
AVC16119

	Brand	Type	Serial no.	Sensitivity	Unit	Ref. frequency	Fixture
X-AXIS	Convergence Instruments	VSEW MK2	5123A-WGM110	N/A	ms ⁻²	16	Clamp with screws

MEASUREMENTS CONDITIONS

Gravitational Field NL	9,80665	ms ⁻²
Excitation Angle	0	Degree
Excitation	Sinusoidal	
Connexion Cable	USB	Customer cable

Frequentierespons



Sensitivity measured relative to reference axis measurement at 16 Hz

f [Hz]	Dev [%]	Dev [dB]
5	1,44	0,17
6,3	0,25	0,04
8	0,12	0,01
10	-0,10	-0,01
12,5	-0,32	-0,03
16	-0,67	-0,06
20	-0,09	-0,01
25	-0,20	-0,02
31,5	-0,47	-0,04
40	-0,76	-0,10
50	-0,73	-0,08
63	-1,16	-0,11
80	-1,78	-0,15
100	-4,85	-0,43
125	-7,03	-0,73

