

APPENDIX D. FREQUENCY CHARACTERISTICS OF DIGITAL FILTERS IMPLEMENTED IN THE SVAN 912AE INSTRUMENT

In this part the frequency characteristics of the digital filters implemented in the SVAN 912AE instrument in the METER MODE for the measurement of sound and vibration are presented.

For sound measurement the following filters are available:

Lin	from 5 Hz to 23.67 kHz (-3 dB),
A	conforming to IEC 651 Type 0,
C	conforming to IEC 651 Type 0,
G	for the infra sounds measurements, conforming to ISO / DIS 7196.2 .

For the vibration acceleration measurement the following filters are available:

W-Bxy	(Whole Body x, y), conforming to ISO 8041 , Type 1;
W-Bz	(Whole Body z), conforming to ISO 8041 , Type 1;
W-Bc	(Whole Body combined), conforming to ISO 8041 , Type 1;
H-A	(Hand-Arm), conforming to ISO 8041 , Type 1;
HP	high pass filter (cf. App. C);
Lin	high pass filter (cf. App. C);
KB	special filter for the application on the ships (KB = " W-Bc " + 28.9 dB).

For the vibration velocity measurement the following filters are available:

Vel1	filter of single integration (1 Hz – 330 Hz);
Vel3	filter of single integration (3 Hz – 1000 Hz);
Vel10	filter of single integration (10 Hz – 3000 Hz);
MF-Vel	special filter for machines (10 Hz – 1000 Hz) conforming to ISO 10816 .

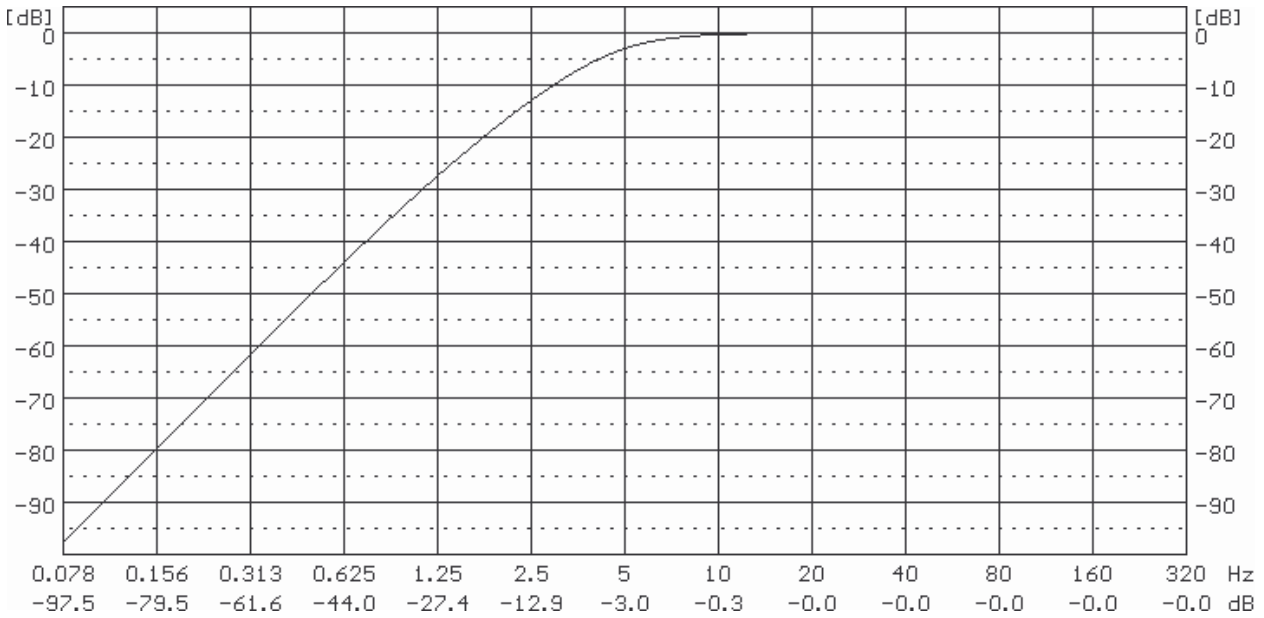
For the vibration displacement measurement the following filters are available:

Dil1	filter of double integration (1 Hz – 18 Hz);
Dil3	filter of double integration (3 Hz – 57 Hz);
Dil10	filter of double integration (10 Hz – 181 Hz).

The exemplary frequency characteristics of digital 1/1 octave and 1/3 octave filters implemented in the SVAN 912AE instrument in the **ANALYZER MODE** for sound and vibration analysis are also given.

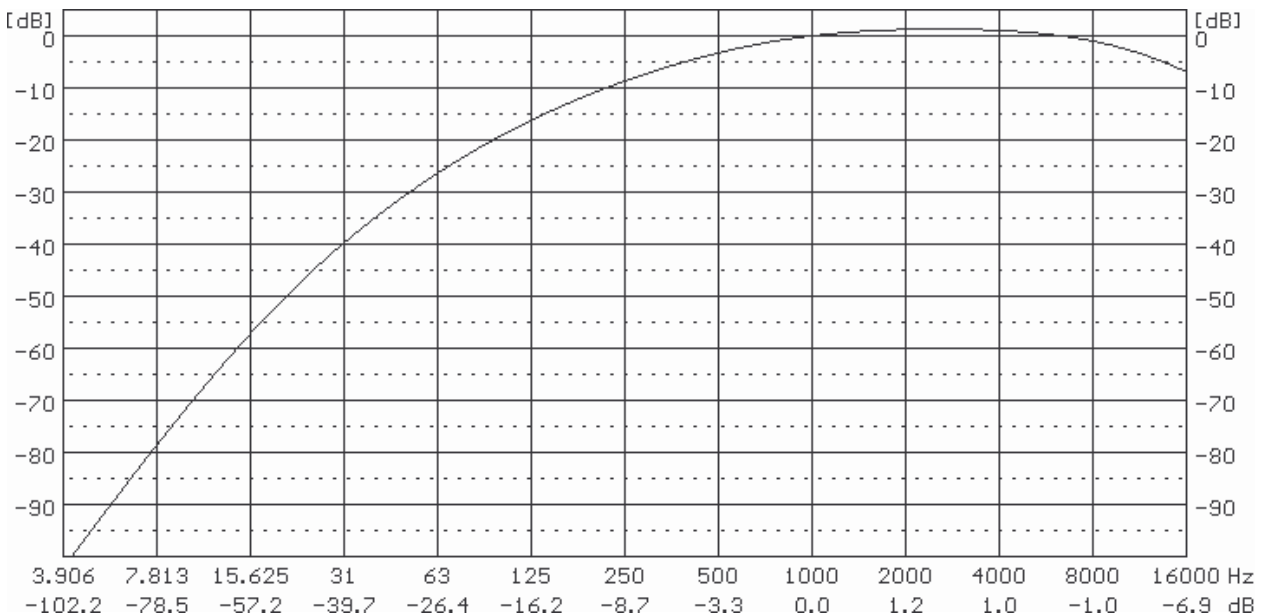
D1. Frequency characteristics of the digital filters for sound measurements

Lin (METER MODE) from 5 Hz to 23.67 kHz (-3 dB), -0.1 dB for 14.5 Hz, 18 dB / octave slope



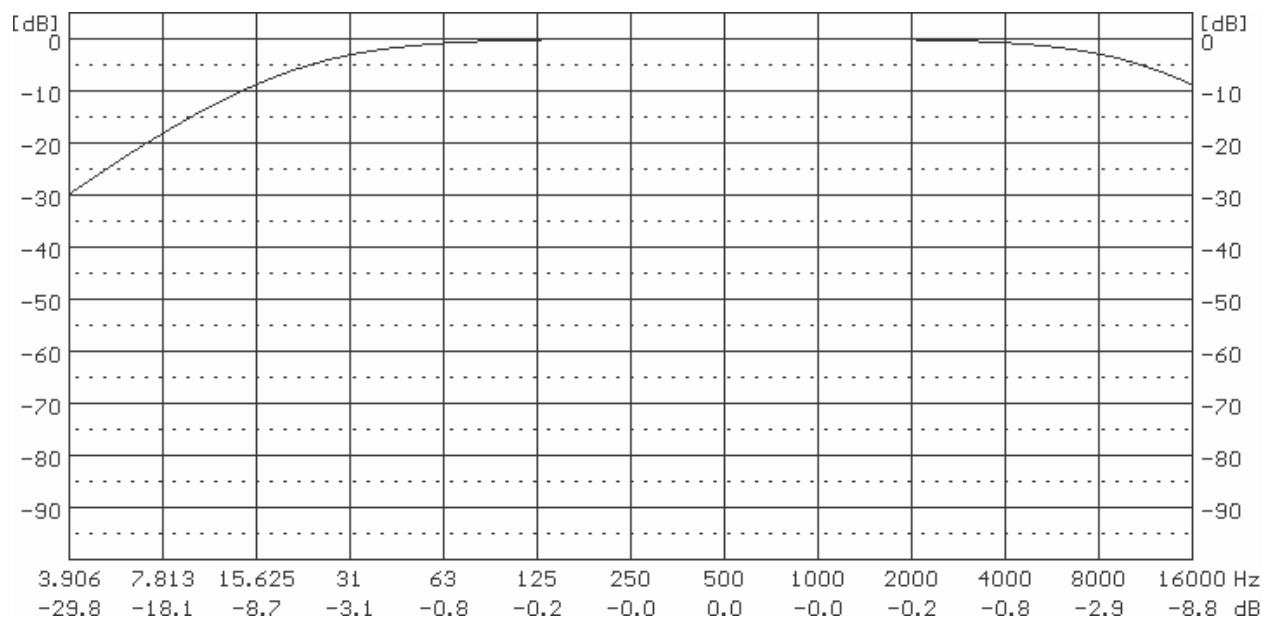
Frequency characteristics of the digital Lin filter implemented in the METER MODE of the SVAN 912AE instrument for sound measurements

A conforming to IEC 651 Type 0



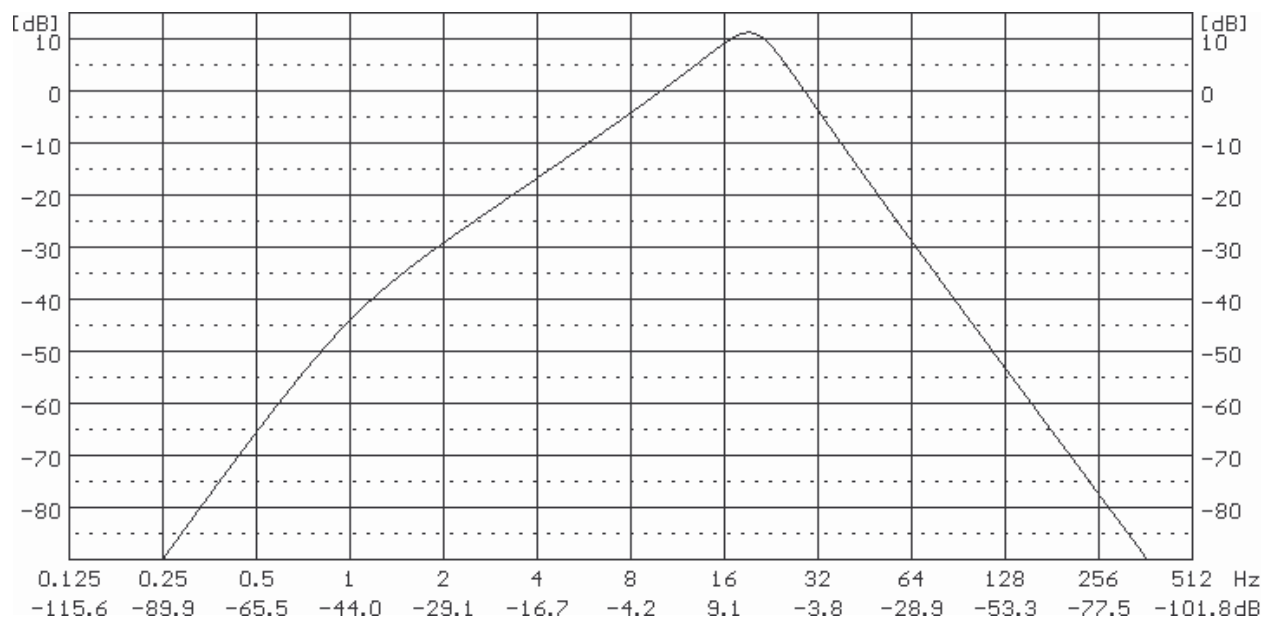
Frequency characteristics of the digital A filter implemented in the METER MODE of the SVAN 912AE instrument for sound measurements

C conforming to IEC 651 Type 0



Frequency characteristics of the digital C filter implemented in the METER MODE of the SVAN 912AE instrument for sound measurements

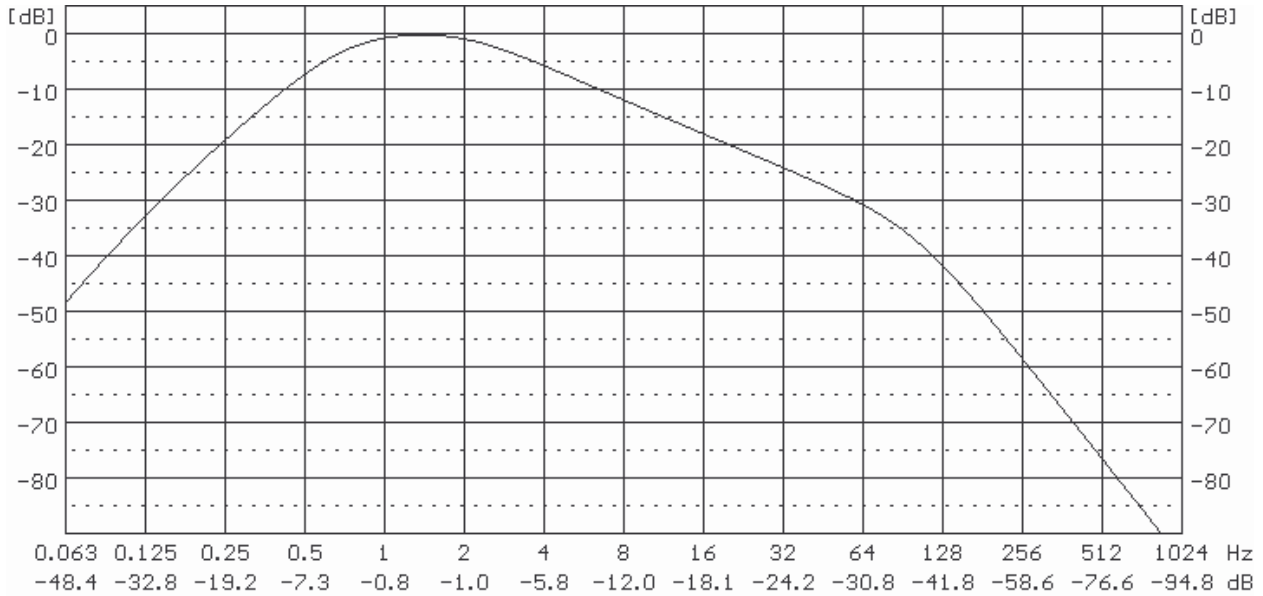
G for the infra sounds measurements from 1 Hz to 100 Hz, conforming to ISO / DIS 7196.2



Frequency characteristics of the digital G filter implemented in the METER MODE of the SVAN 912AE instrument for sound measurements

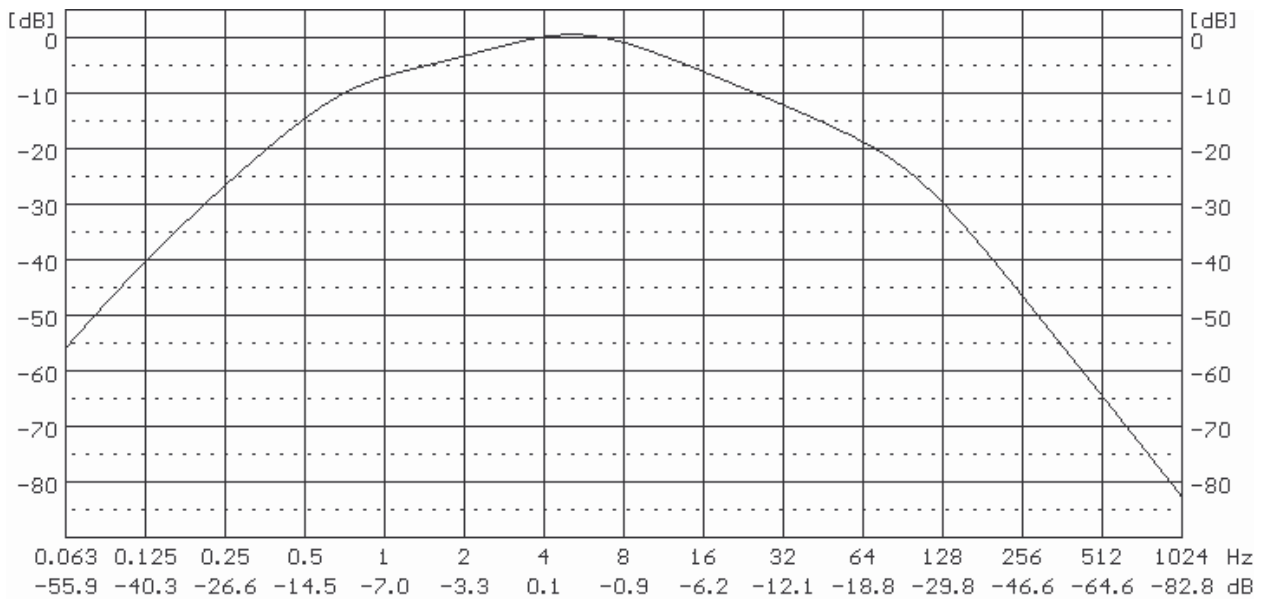
D2. Characteristics of the filters for the vibration acceleration measurements

W-Bxy (Whole Body x, y), from 1 Hz to 80 Hz, conforming to **ISO 8041**, Type 1



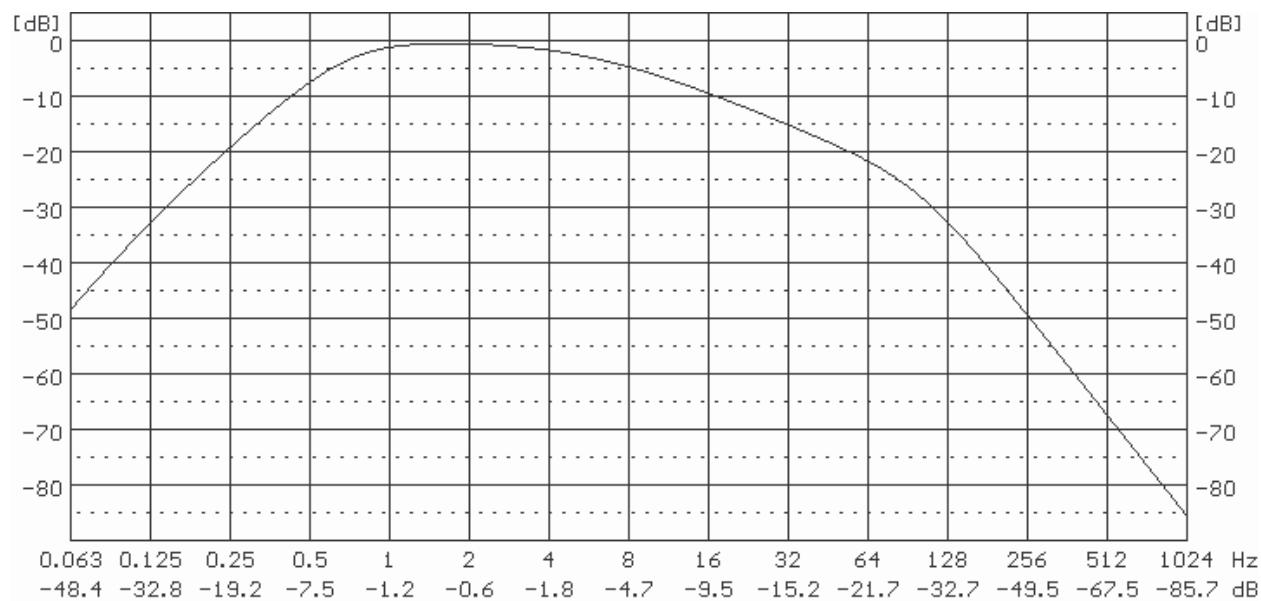
Frequency characteristics of the digital W-Bxy filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration acceleration measurements

W-Bz (Whole Body z), from 1 Hz to 80 Hz, conforming to **ISO 8041**, Type 1



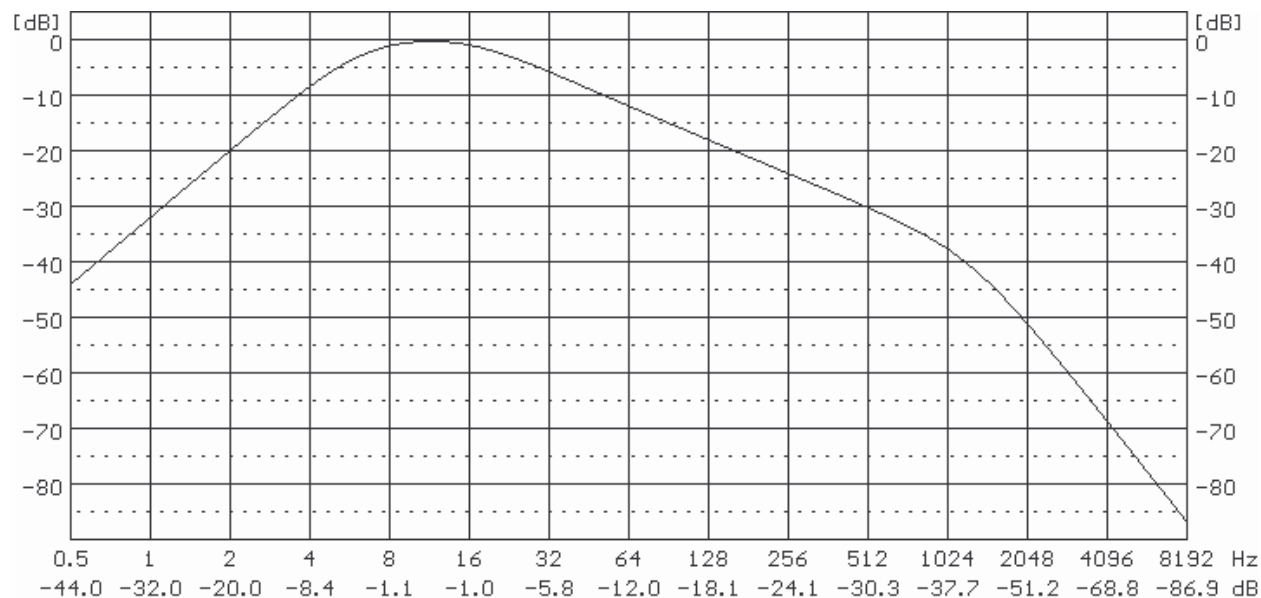
Frequency characteristics of the digital W-Bz filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration acceleration measurements

W-Bc (Whole Body combined), from 1 Hz to 80 Hz, conforming to **ISO 8041**, Type 1



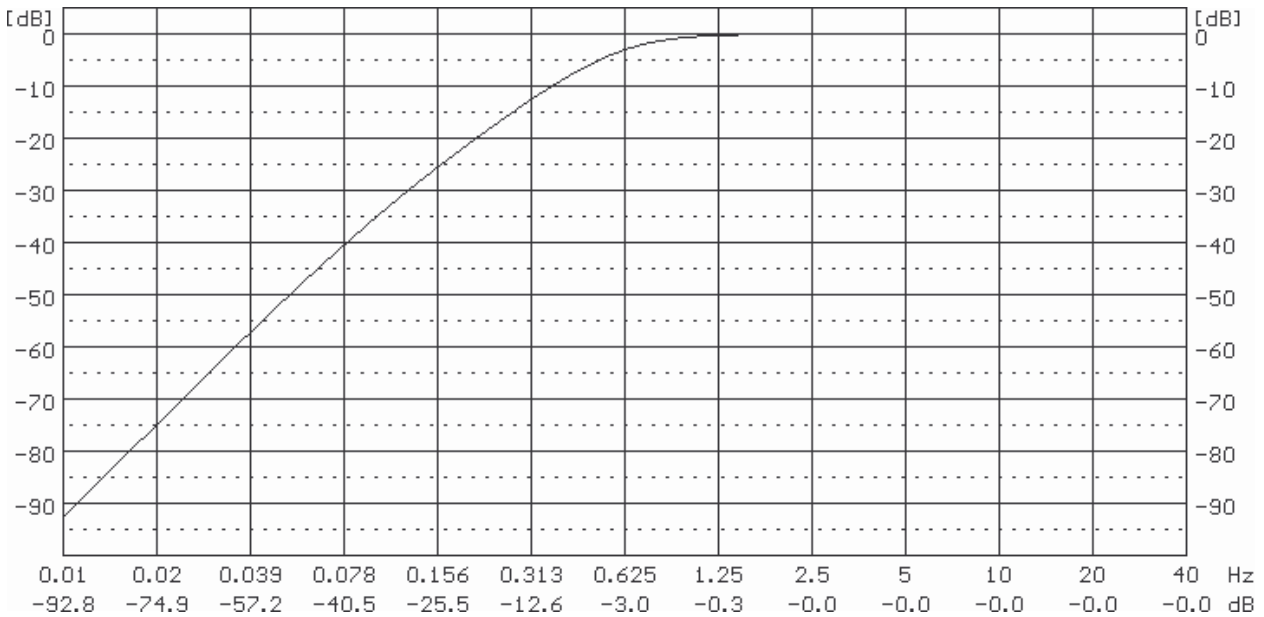
Frequency characteristics of the digital W-Bc filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration acceleration measurements

H-A (Hand-Arm), from 8 Hz to 1000 Hz conforming to **ISO 8041**, Type 1



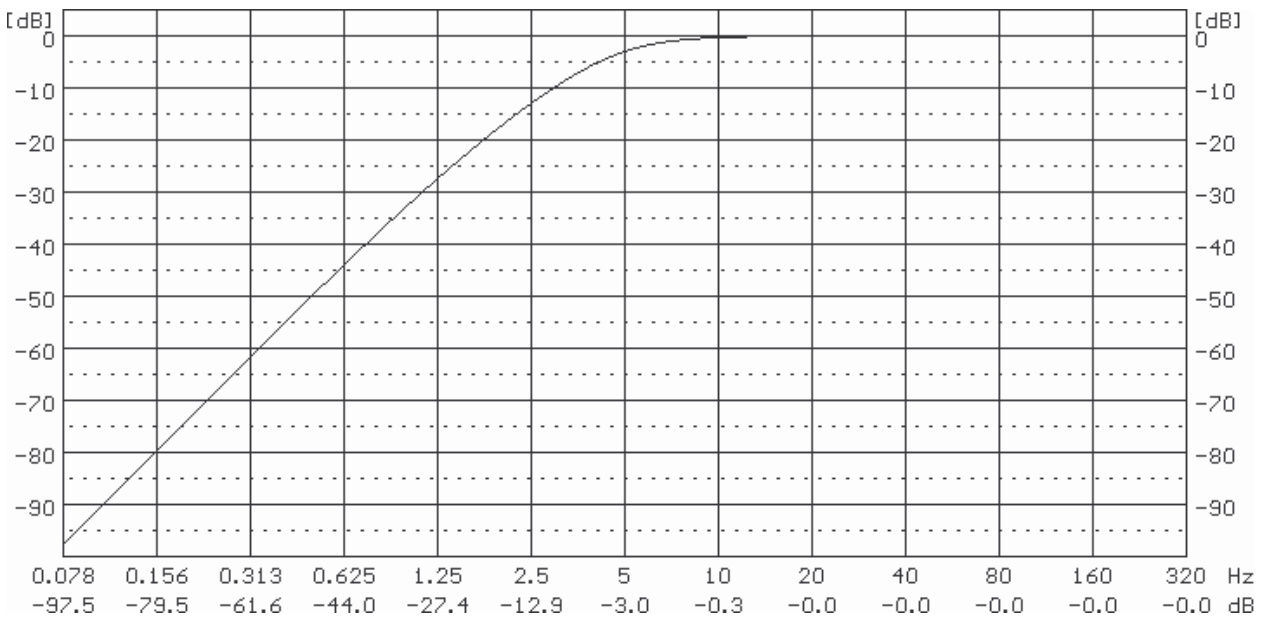
Frequency characteristics of the digital H-A filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration acceleration measurements

HP (METER MODE): 1,61 Hz / -0,1 dB (0,78 Hz / -3,0 dB), 18 dB / octave slope



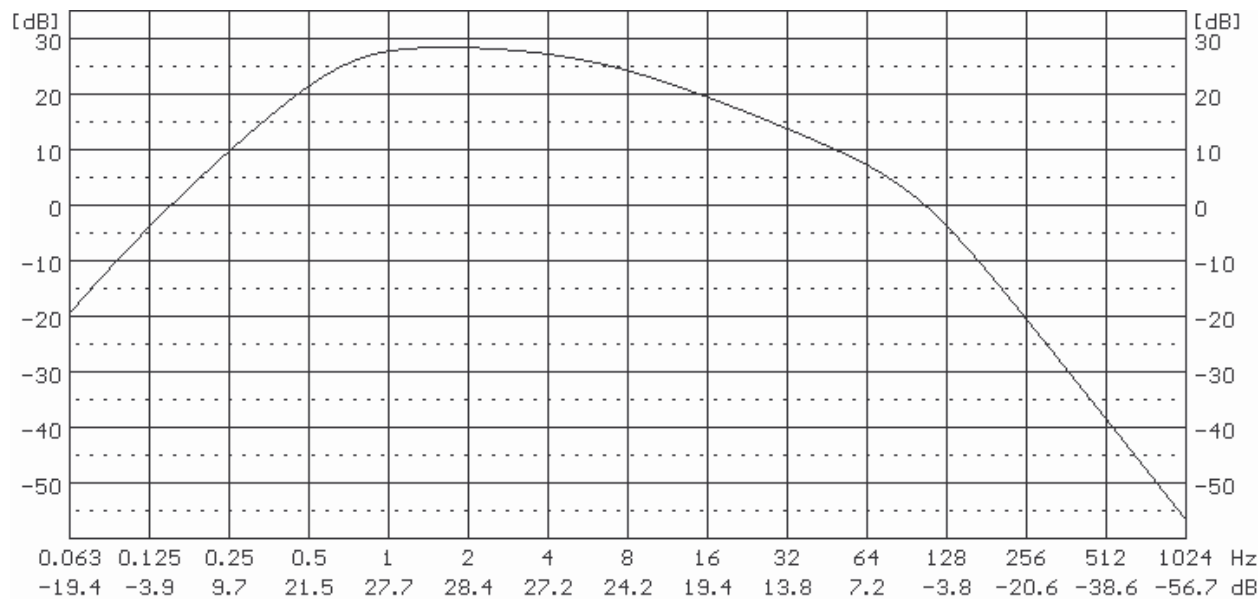
Frequency characteristics of the digital HP filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration acceleration measurements

Lin (METER MODE): 14,5 Hz / -0,1 dB (5,00 Hz / -3,0 dB), 18 dB / octave slope



Frequency characteristics of the digital Lin filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration acceleration measurements

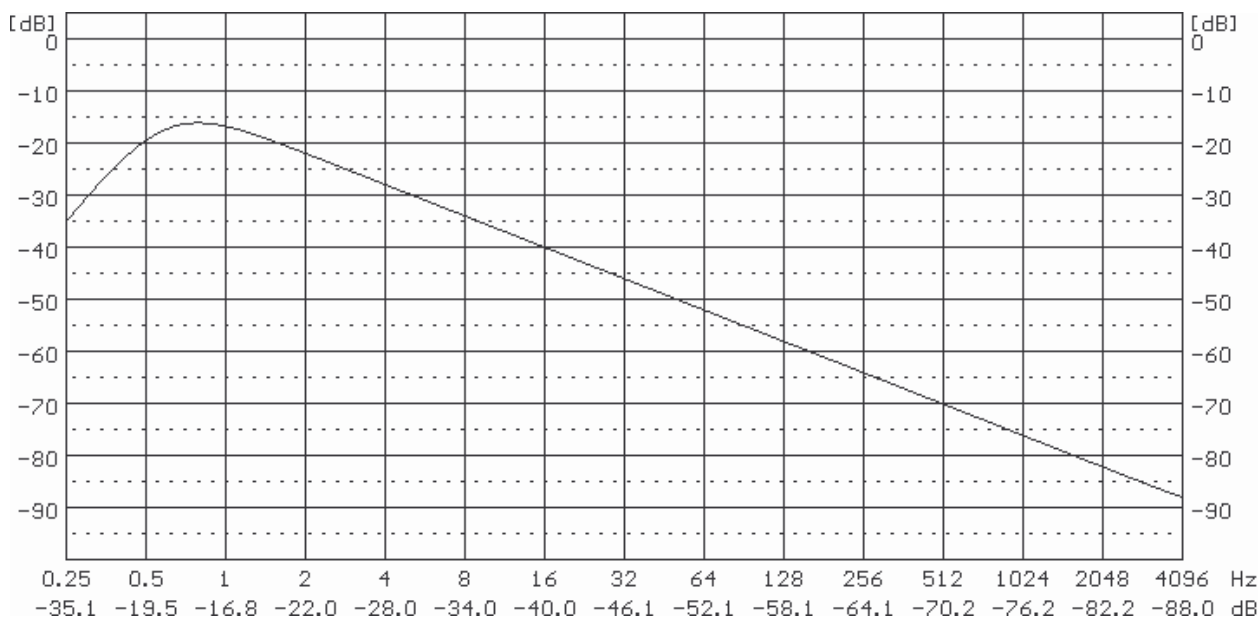
KB special filter for the application on the ships, from 1 Hz to 80 Hz (**KB** = "W-Bc" + 28.9 dB)



Frequency characteristics of the digital KB filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration acceleration measurements

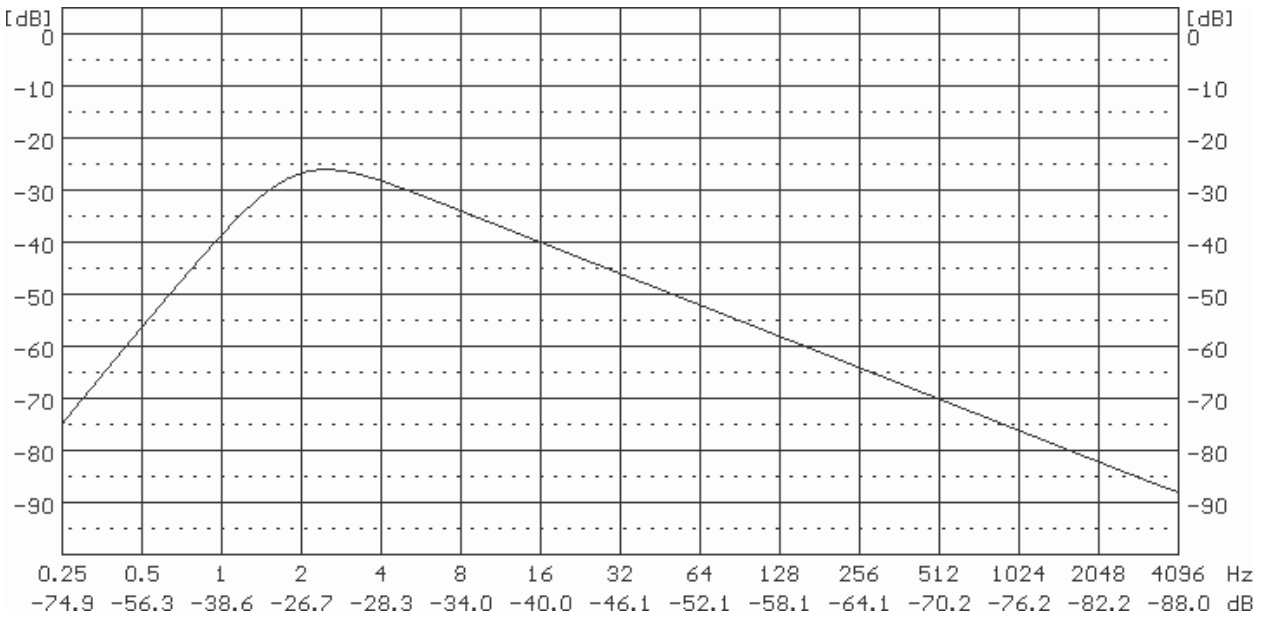
D3. Characteristics of the filters for the vibration velocity measurements

Vel1 filter of single integration (1 Hz – 330 Hz); 6 dB / octave slope



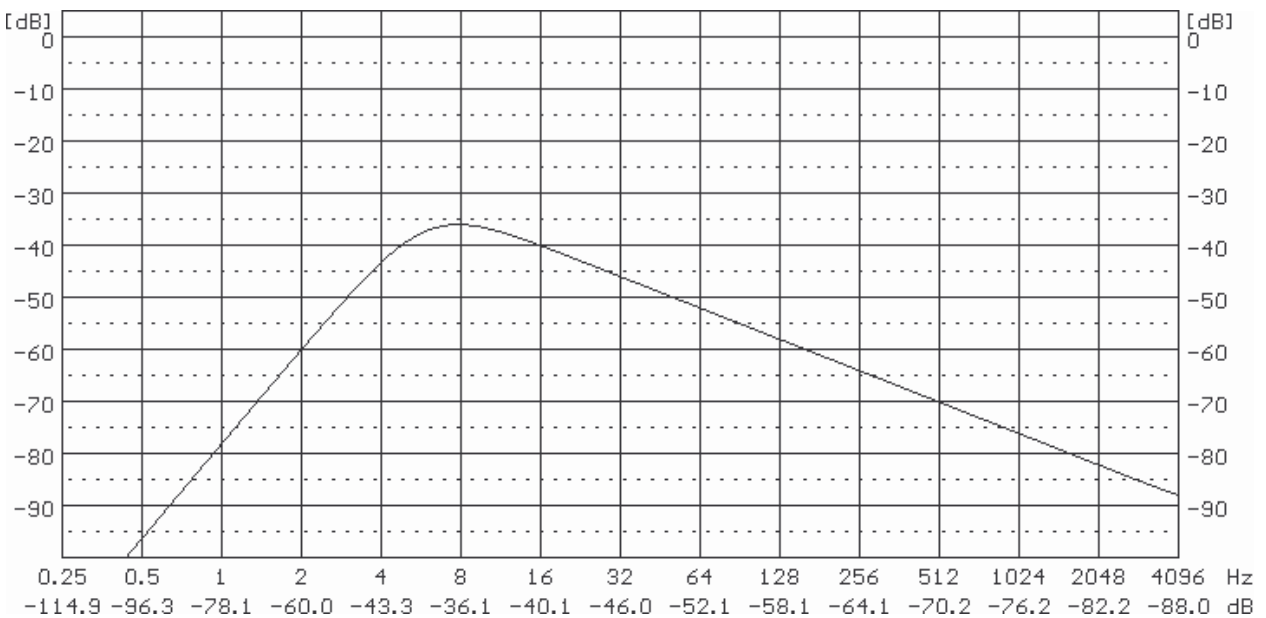
Frequency characteristics of the digital, single integration, Vel1 filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration velocity measurements

Vel3 filter of single integration (3 Hz – 1000 Hz); 6 dB / octave slope



Frequency characteristics of the digital, single integration, Vel3 filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration velocity measurements

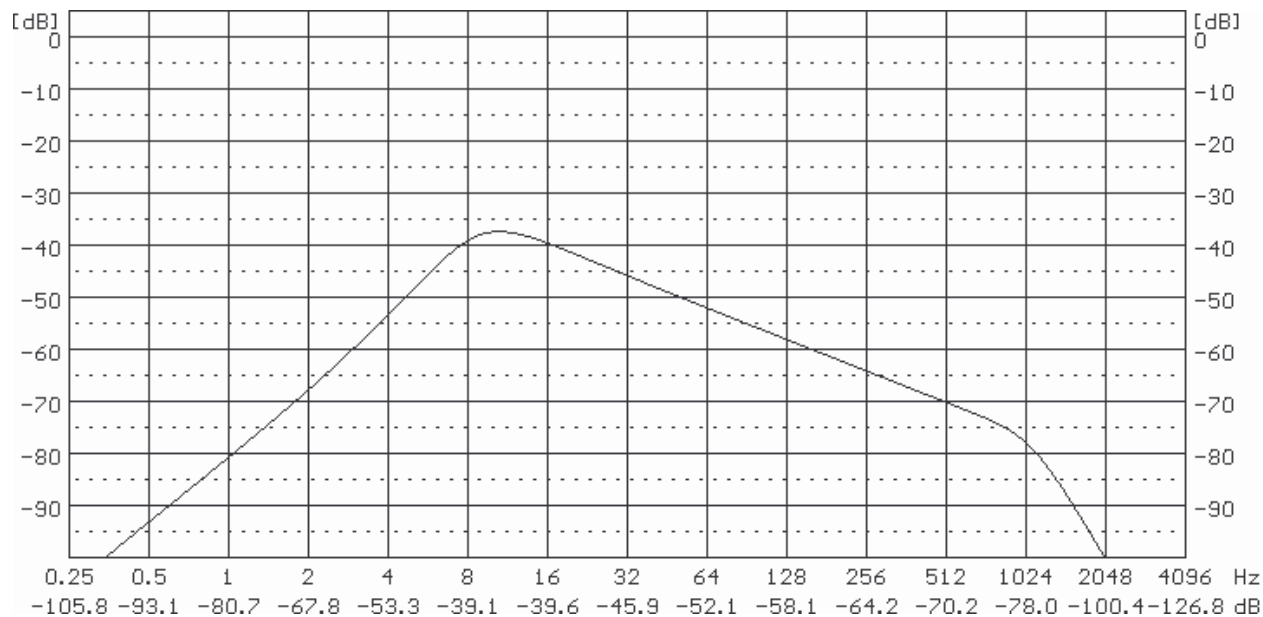
Vel10 filter of single integration (1 Hz – 3000 Hz); 6 dB / octave slope



Frequency characteristics of the digital, single integration, Vel10 filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration velocity measurements

Special filter for the machine condition assessment

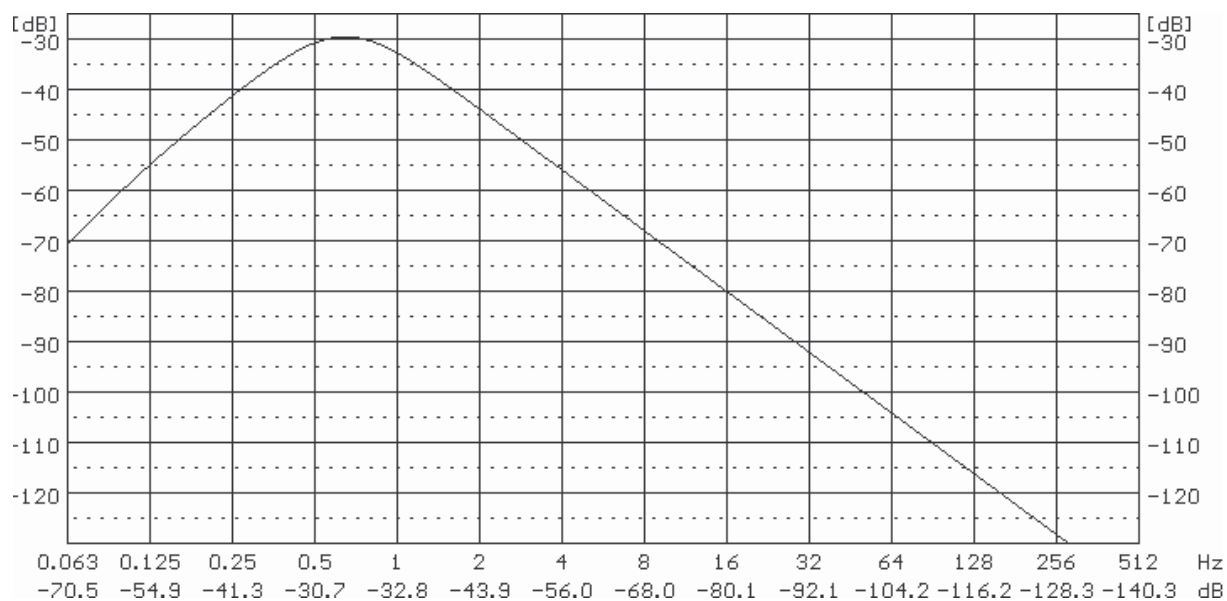
MF-Vel from 10 Hz to 1000 Hz, conforming to **ISO 10816**



Frequency characteristics of the digital MF-Vel filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration velocity measurements

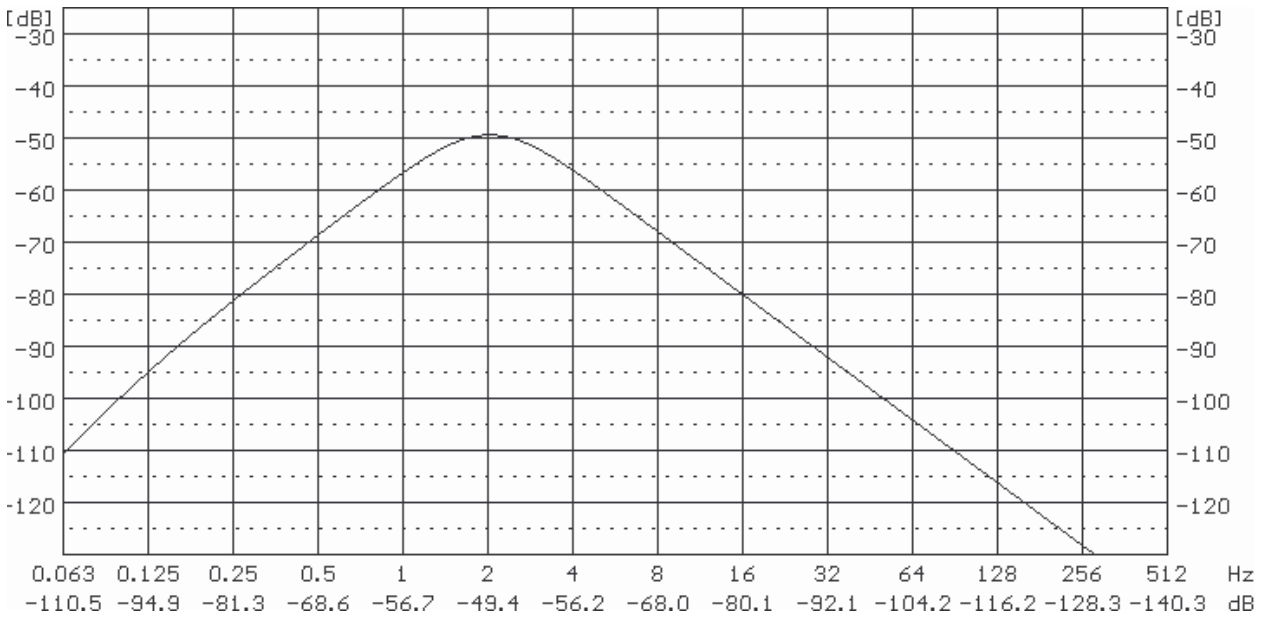
D4. Characteristics of the filters for the vibration displacement measurements

Dil1 filter of double integration (1 Hz – 18 Hz); 12 dB / octave slope



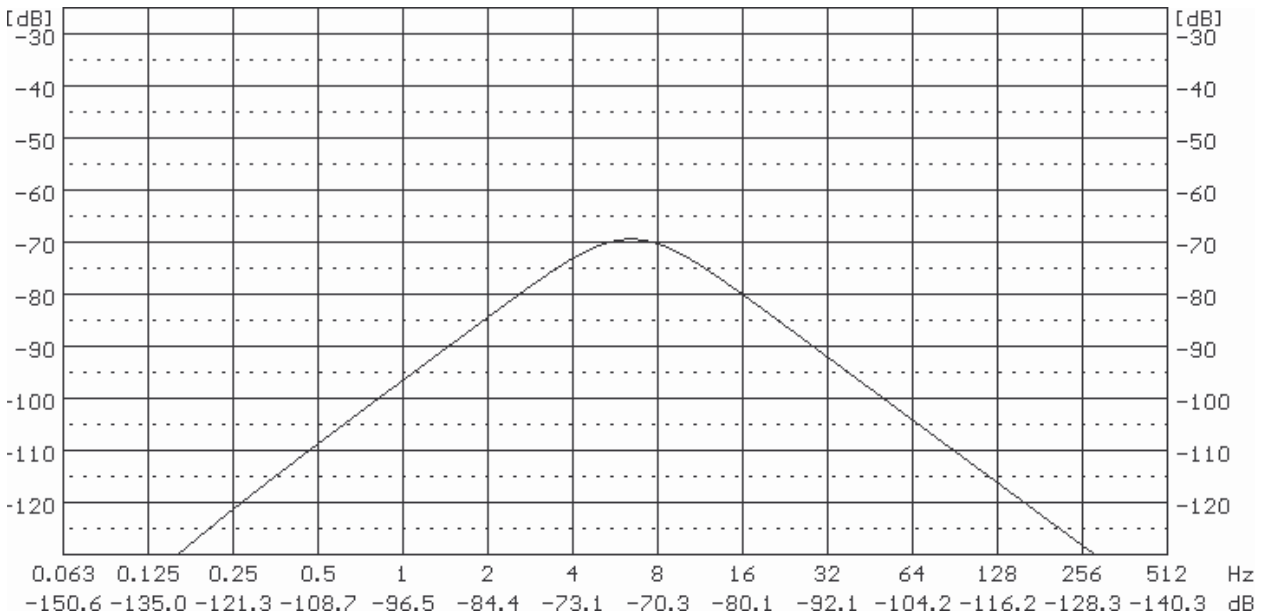
Frequency characteristics of the digital, double integration, Dil1 filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration displacement measurements

Dil3 filter of double integration (3 Hz – 57 Hz); 12 dB / octave slope



Frequency characteristics of the digital, double integration, Dil3 filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration displacement measurements

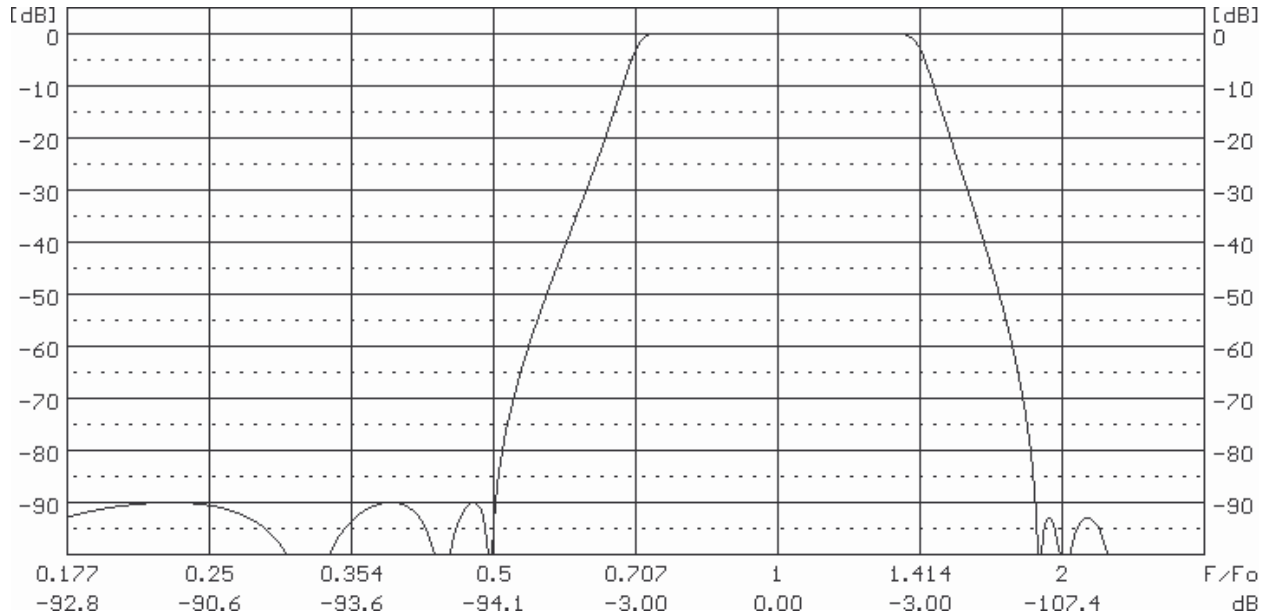
Dil10 filter of double integration (3 Hz – 181 Hz); 12 dB / octave slope



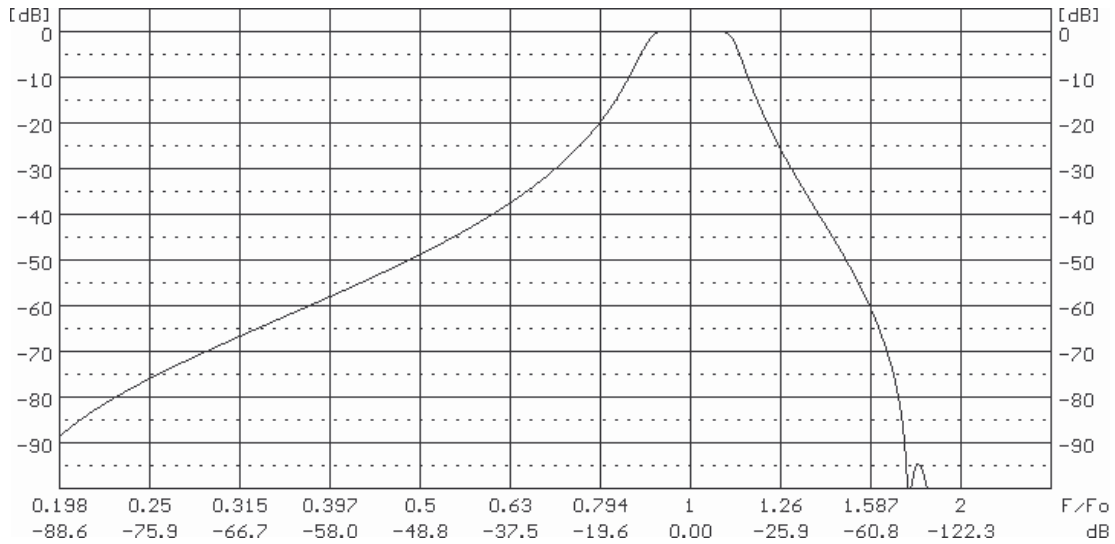
Frequency characteristics of the digital, double integration, Dil10 filter implemented in the METER MODE of the SVAN 912AE instrument for the vibration displacement measurements

D5. Characteristics of the digital 1/1 octave and 1/3 octave filters

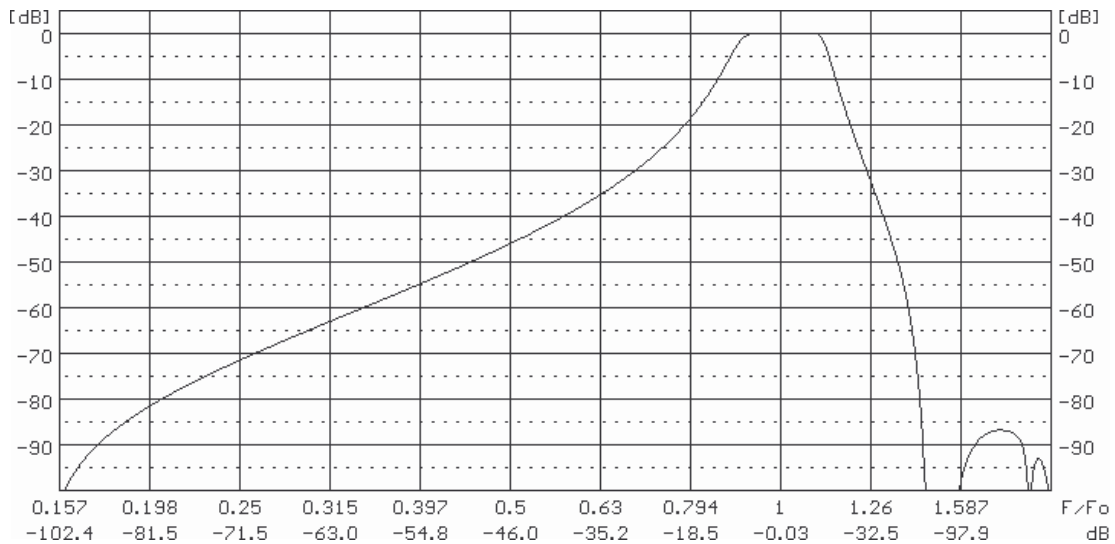
The exemplary frequency characteristics of one digital 1/1 octave filter and three 1/3 octave filters covering 1/1 octave band implemented in the SVAN 912AE instrument in the **ANALYZER MODE** for sound and vibration analysis are given. The central frequencies of 1/1 octave and 1/3 octave filters are taken from the base 2 system.



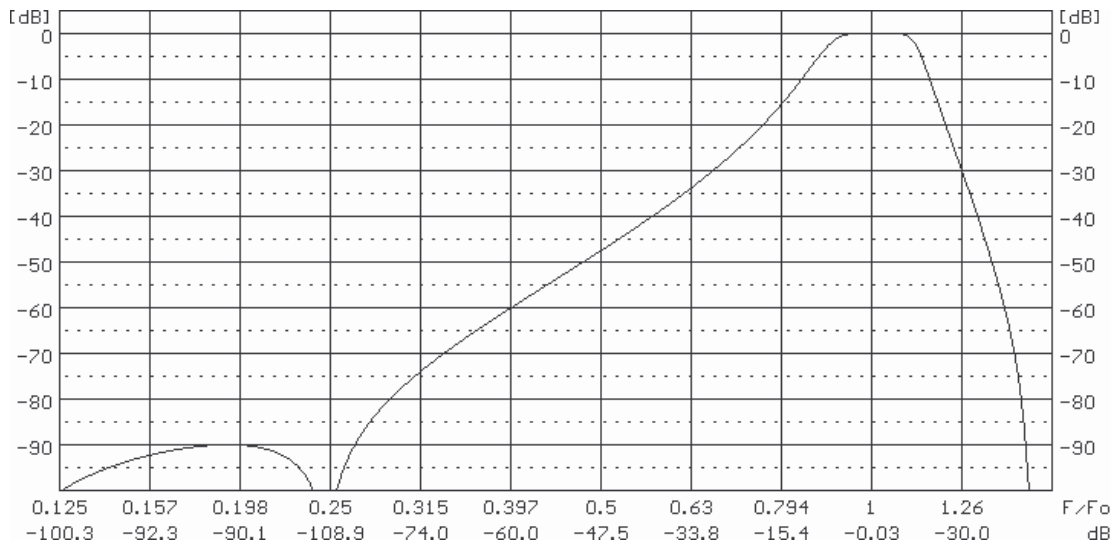
Frequency characteristics of the exemplary digital 1/1 octave filter implemented in the ANALYZER MODE of the SVAN 912AE instrument for sound and vibration analysis



Frequency characteristics of the exemplary digital lower 1/3 octave filter implemented in the ANALYZER MODE of the SVAN 912AE instrument for sound and vibration analysis



Frequency characteristics of the exemplary digital middle 1/3 octave filter implemented in the ANALYZER MODE of the SVAN 912AE instrument for sound and vibration analysis



Frequency characteristics of the exemplary digital upper 1/3 octave filter implemented in the ANALYZER MODE of the SVAN 912AE instrument for sound and vibration analysis