

Nytt inom standardisering och lagstiftning

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Standardisering av vibrationer

1 Scope

This part of ISO 5349 specifies general requirements for measuring and reporting hand-transmitted vibration exposure in three orthogonal axes. It defines a frequency weighting and band-limiting filters to allow uniform comparison of measurements. The values obtained can be used to predict adverse effects of hand-transmitted vibration over the frequency range covered by the octave bands from 8 Hz to 1 000 Hz.

This part of ISO 5349 is applicable to periodic and to random or non-periodic vibration. Provisionally, this part of ISO 5349 is also applicable to repeated shock type excitation (impact).

NOTE 1 The time dependency for human response to repeated shocks is not fully known. Application of this part of ISO 5349 for such vibration is to be made with caution.

This part of ISO 5349 provides guidance for the evaluation of hand-transmitted vibration exposure, specified in terms of a frequency-weighted vibration acceleration and daily exposure time. It does not define limits of safe vibration exposure.

Resolution from WG3 meeting in Vienna 1985:

WG3 will consider a revision to ISO 5349 at its next meeting on the subject of high frequency and shock vibration provided more epidemiological data are available at that time.



EUROPEAN
COMMISSION

Brussels, 21.4.2021
COM(2021) 202 final

ANNEXES 1 to 11

ANNEXES

to the

Proposal for a Regulation of the European Parliament and of the Council on machinery products

{SEC(2021) 165 final} - {SWD(2021) 82 final} - {SWD(2021) 83 final}

1.5.9. Vibrations

A machinery product shall be designed and constructed in such a way that risks resulting from vibrations produced by the machinery product are reduced to the lowest level, taking account of technical progress and the availability of means of reducing vibration, in particular at source.

The level of vibration emission may be assessed with reference to comparative emission data for similar machinery products.

2.2.1.1. Instructions

The instructions shall give the following information concerning vibrations, expressed as acceleration (m/s^2), and transmitted by portable handheld and hand-guided machinery:

- (a) the vibration total value from continuous vibrations to which the hand-arm system is subjected;
- (b) the mean value of the peak amplitude of the acceleration from repeated shock vibrations, to which the hand-arm system is subjected;
- (c) the uncertainty of both measurements.

The values referred to in the first subparagraph shall either be those actually measured for the machinery in question or those established on the basis of measurements in respect of a technically comparable machinery product, which is representative of the state of the art.

If harmonised standards or technical specifications adopted by the Commission in accordance with Article 17(3) cannot be applied, the vibration data shall be measured using the most appropriate measurement code for the machinery.

The operating conditions during measurement and the methods used for measurement, or the reference of the harmonised standard applied, shall be specified.

ISO/TC108/SC4

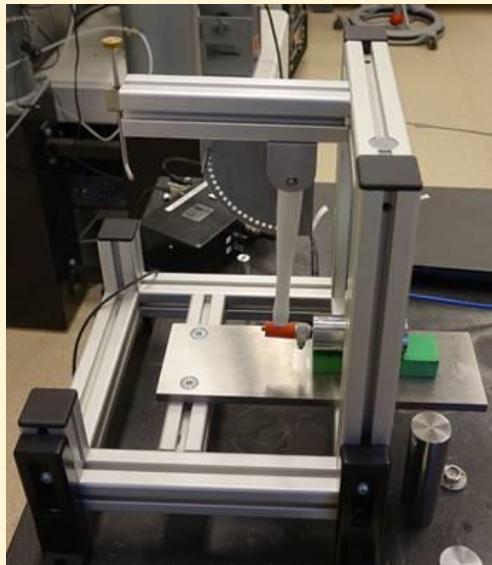
Nytt "preliminary work item" (PWI), "High frequency vibration and repetitive shocks" startat i September 2021 inom ISO/TC108/SC4 "Human Vibration"

Uppdraget:

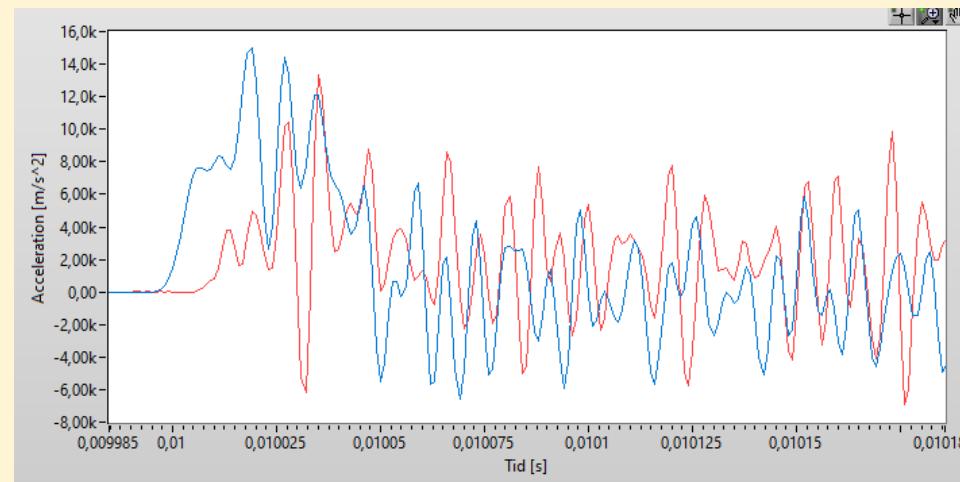
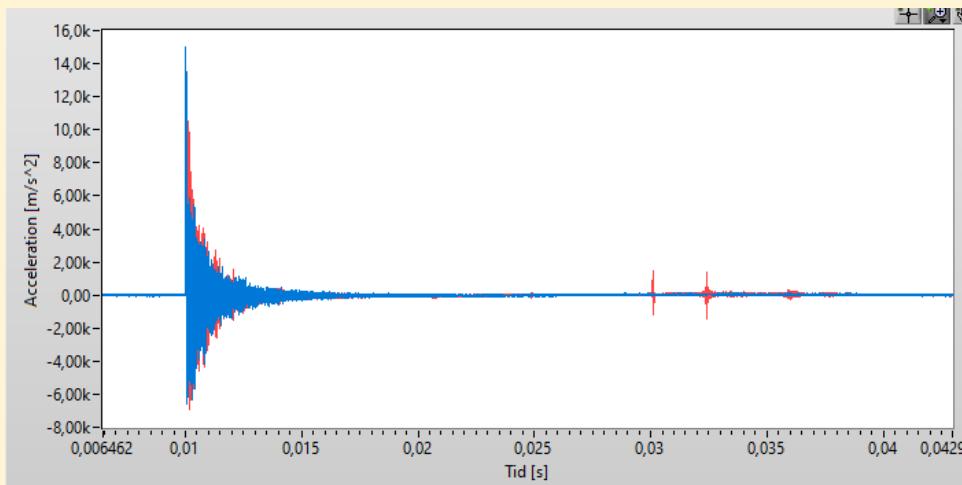
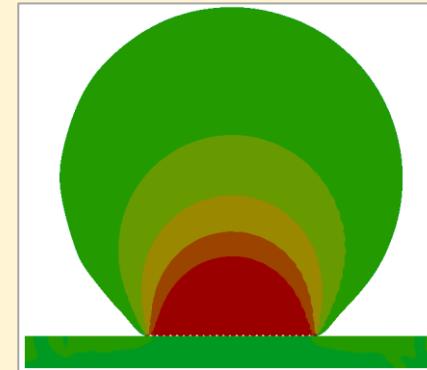
- A: Definiera vad "shock" vibrationer är.
- B: Ta fram algoritmer för kvantifiering av "shock".
- C: Ta fram mätmetod för ätninga av vibrationer överstigande 1250 Hz.

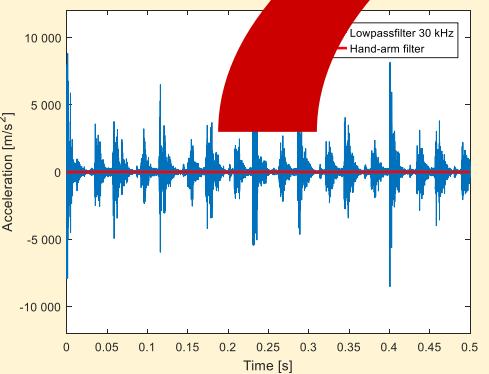
Syfte:

- A: Möjliggör kravställning av stötar och ultravibrationer för maskinanvändare.
- B: Möjligör konstruktionskrav för maskintillverkare.
- C: Utveckla forskning inom vibrationsskador.

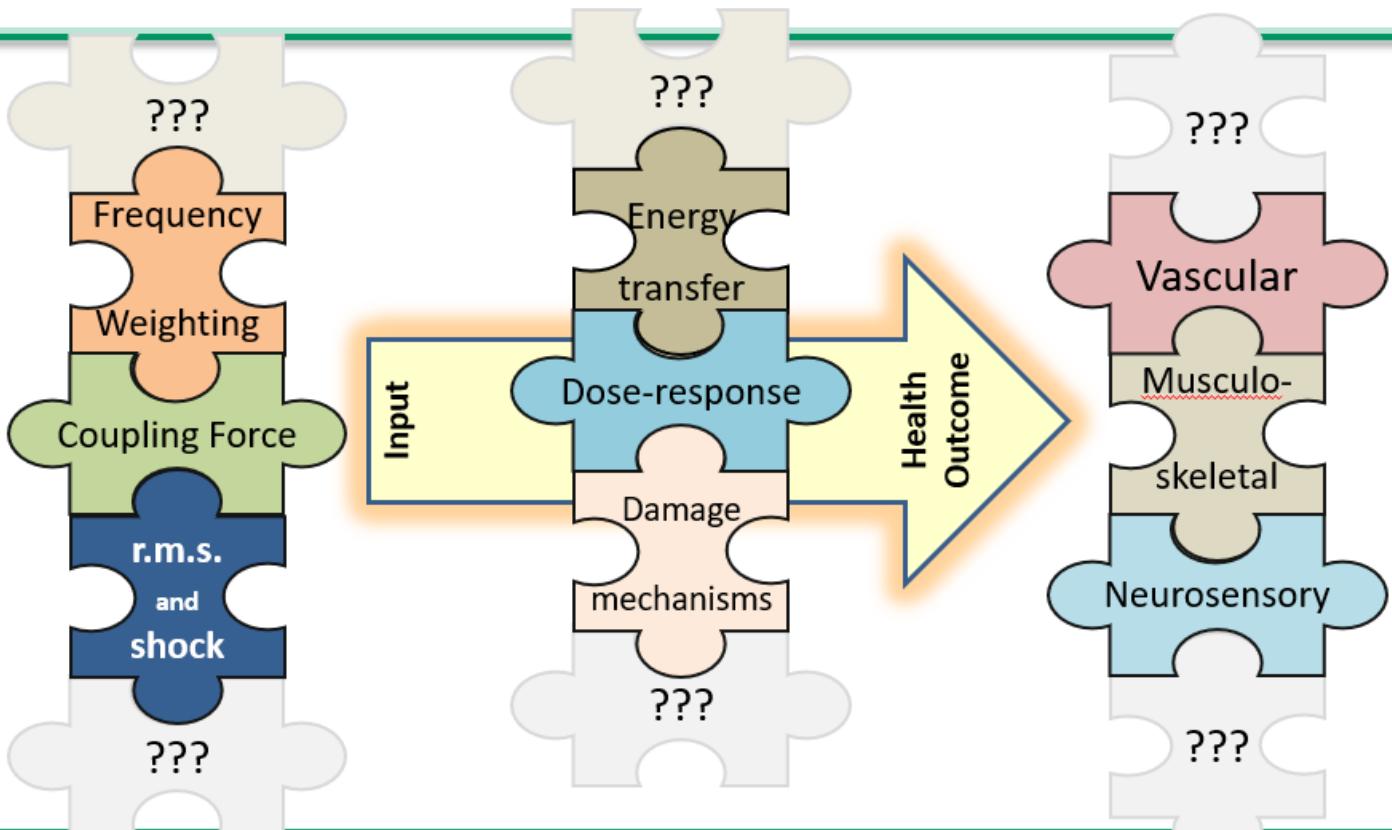


Measurement of vibration transmission into finger
- High frequency vibration do propagate into finger tissue





HAV issues

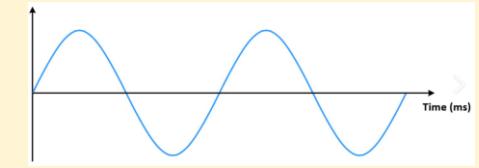
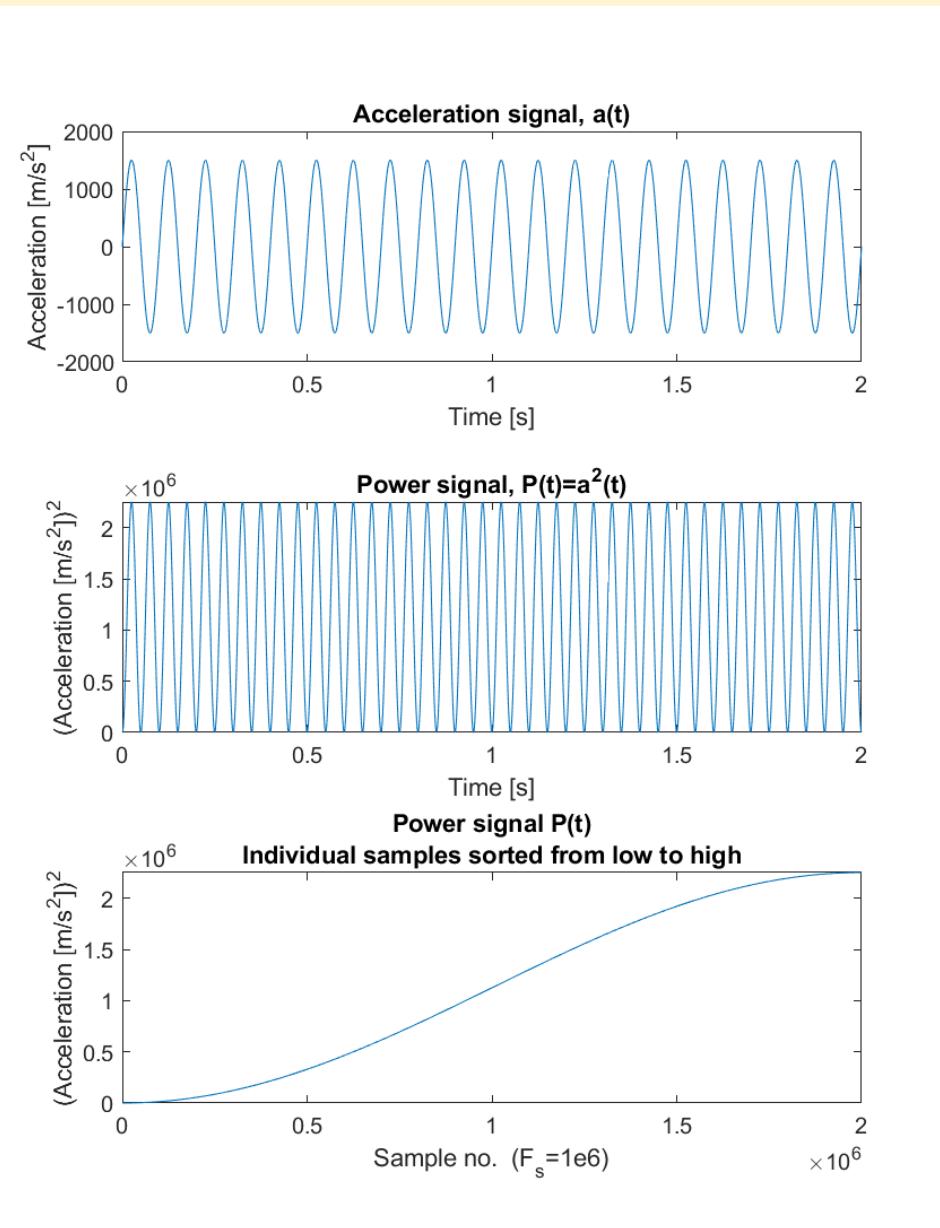


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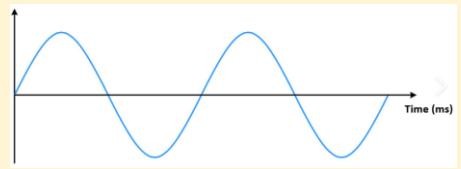
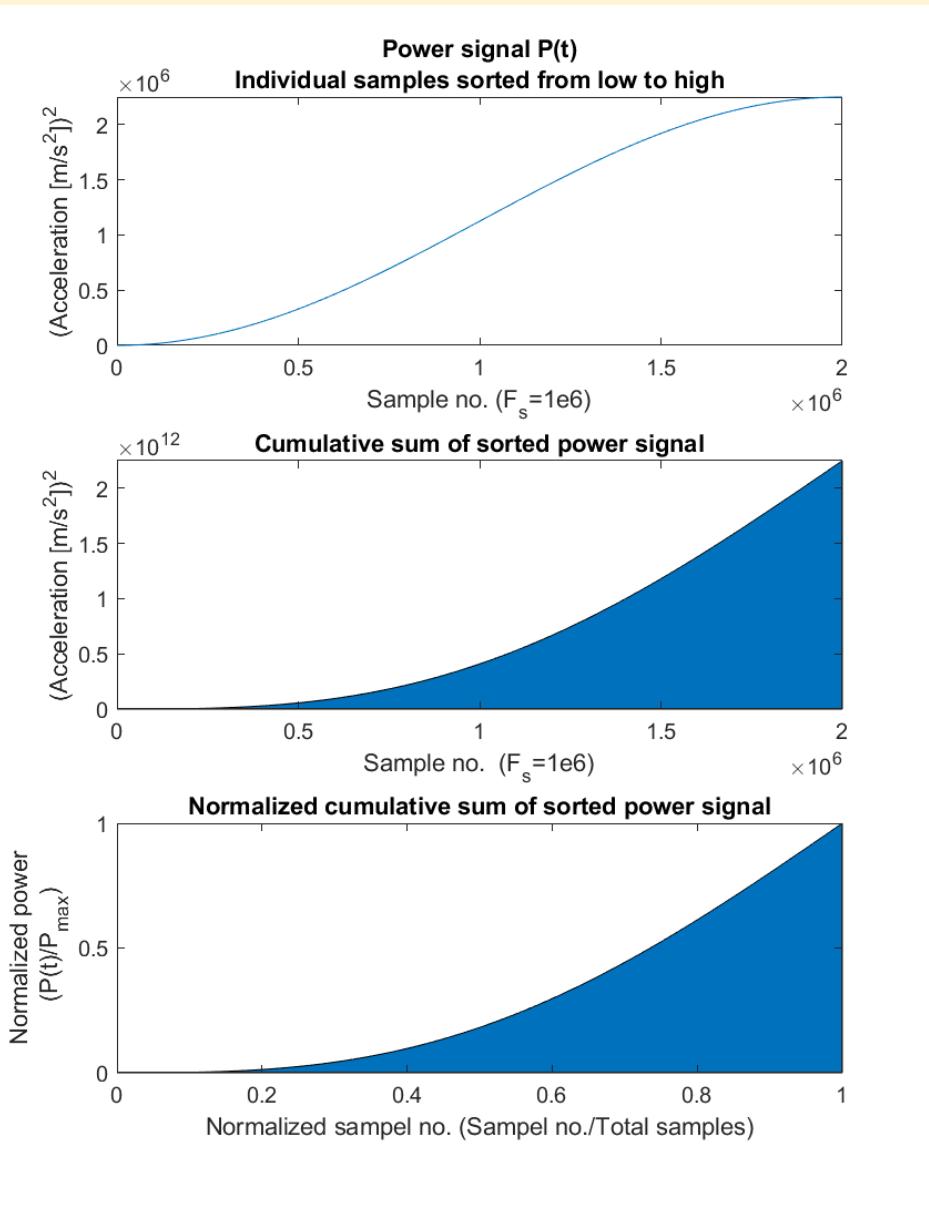


Definition av stöt vibration

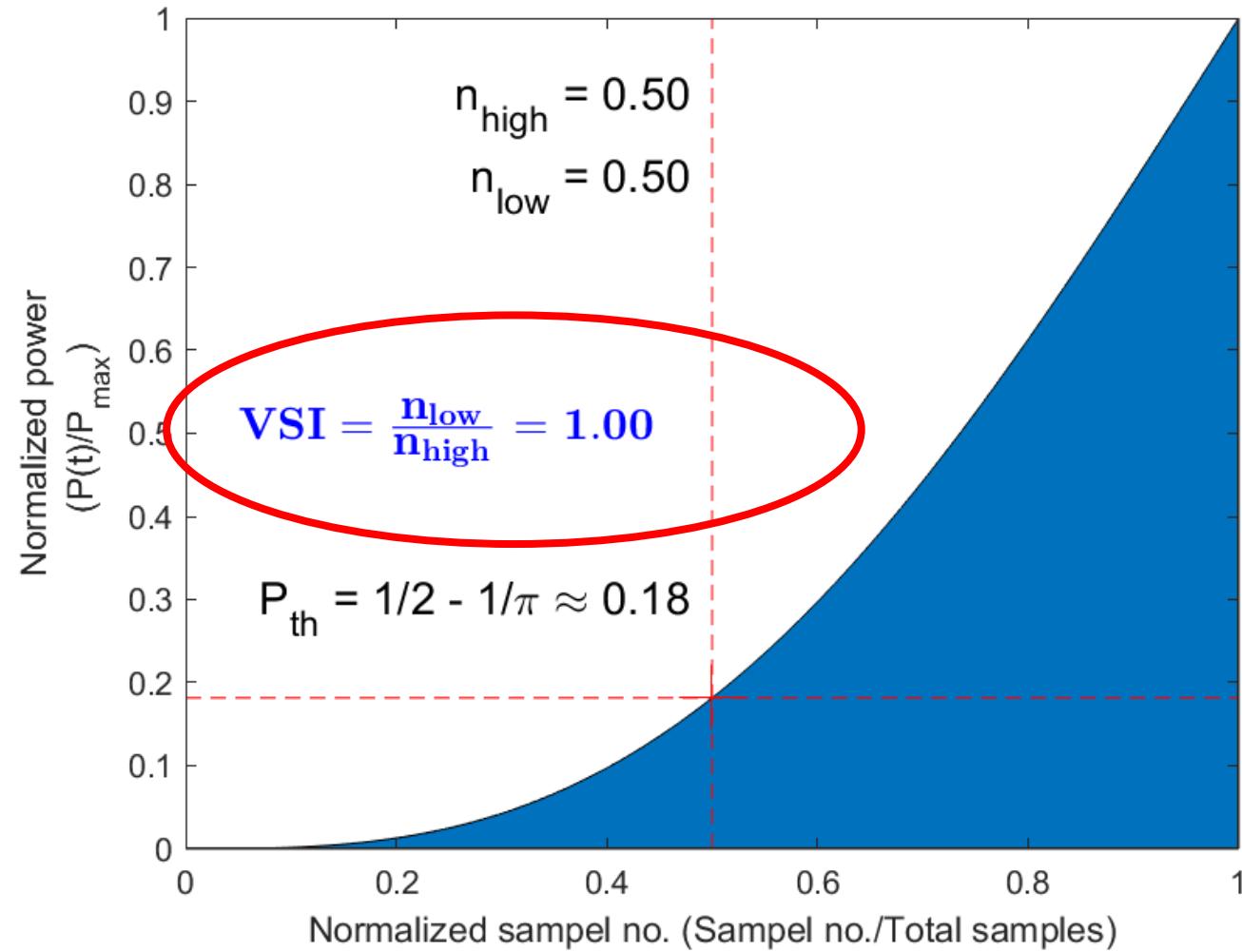
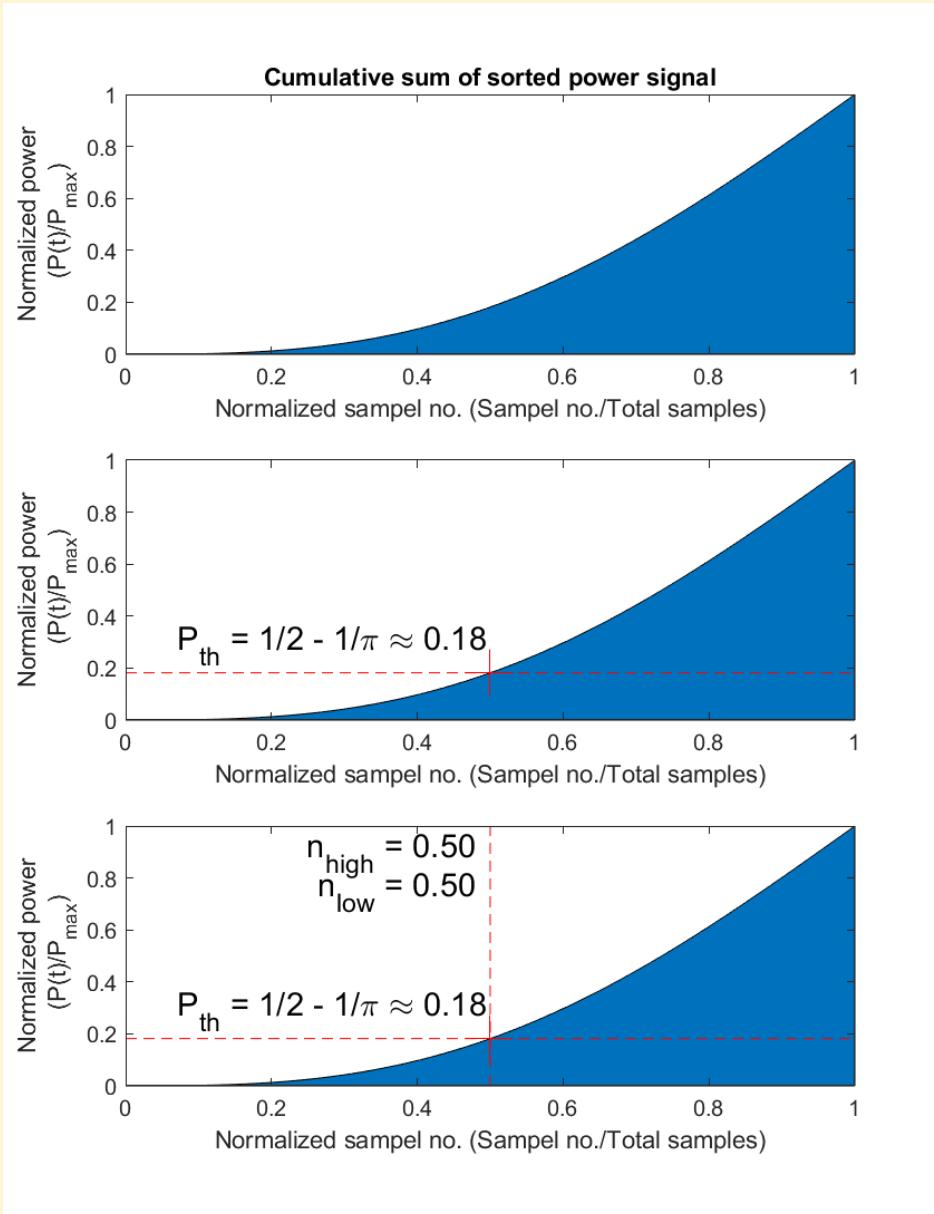
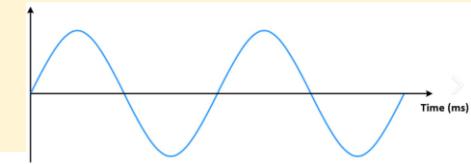
- Vibration Shock Index (VSI)



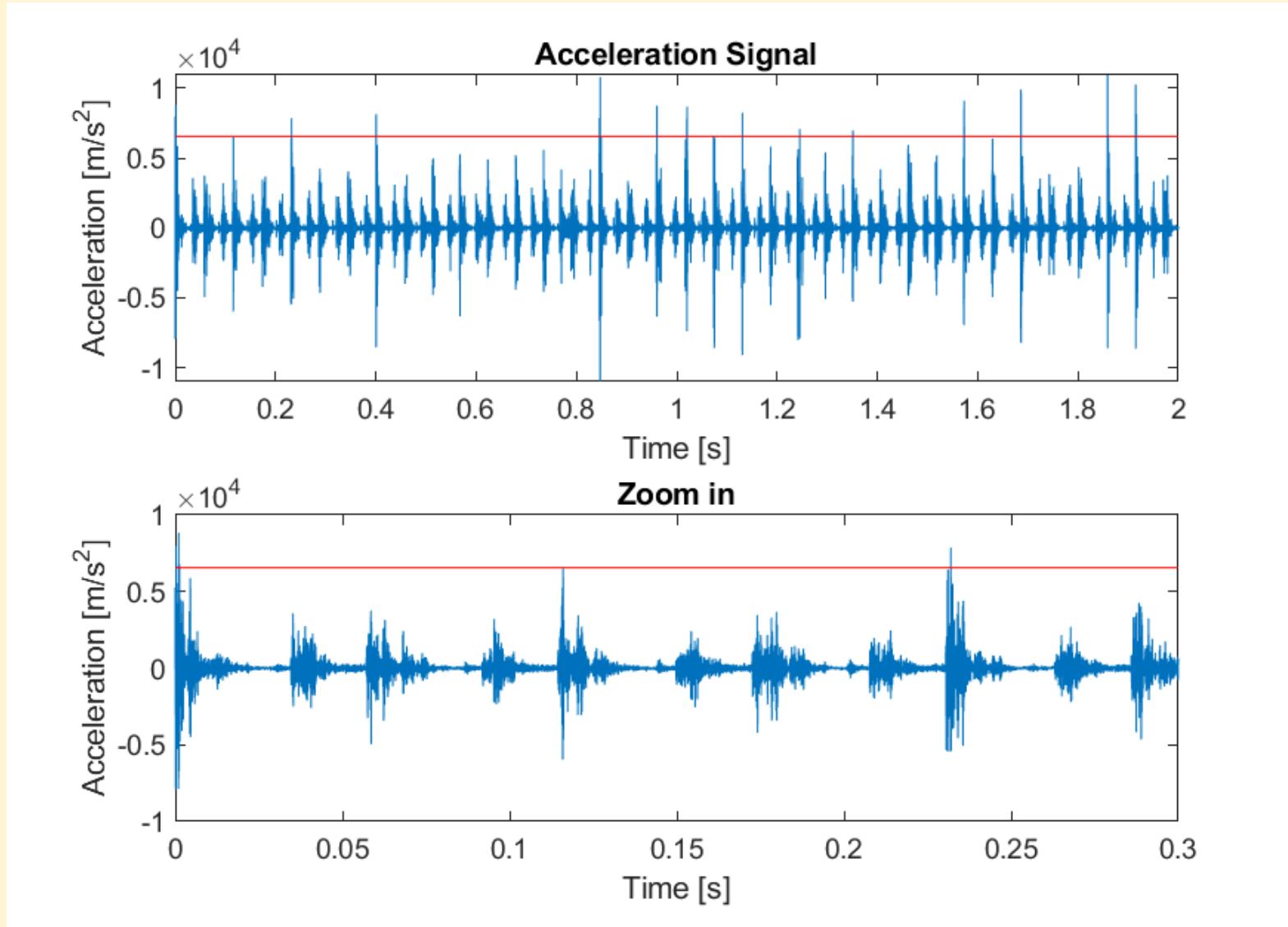
Calculation of VSI on harmonic signal



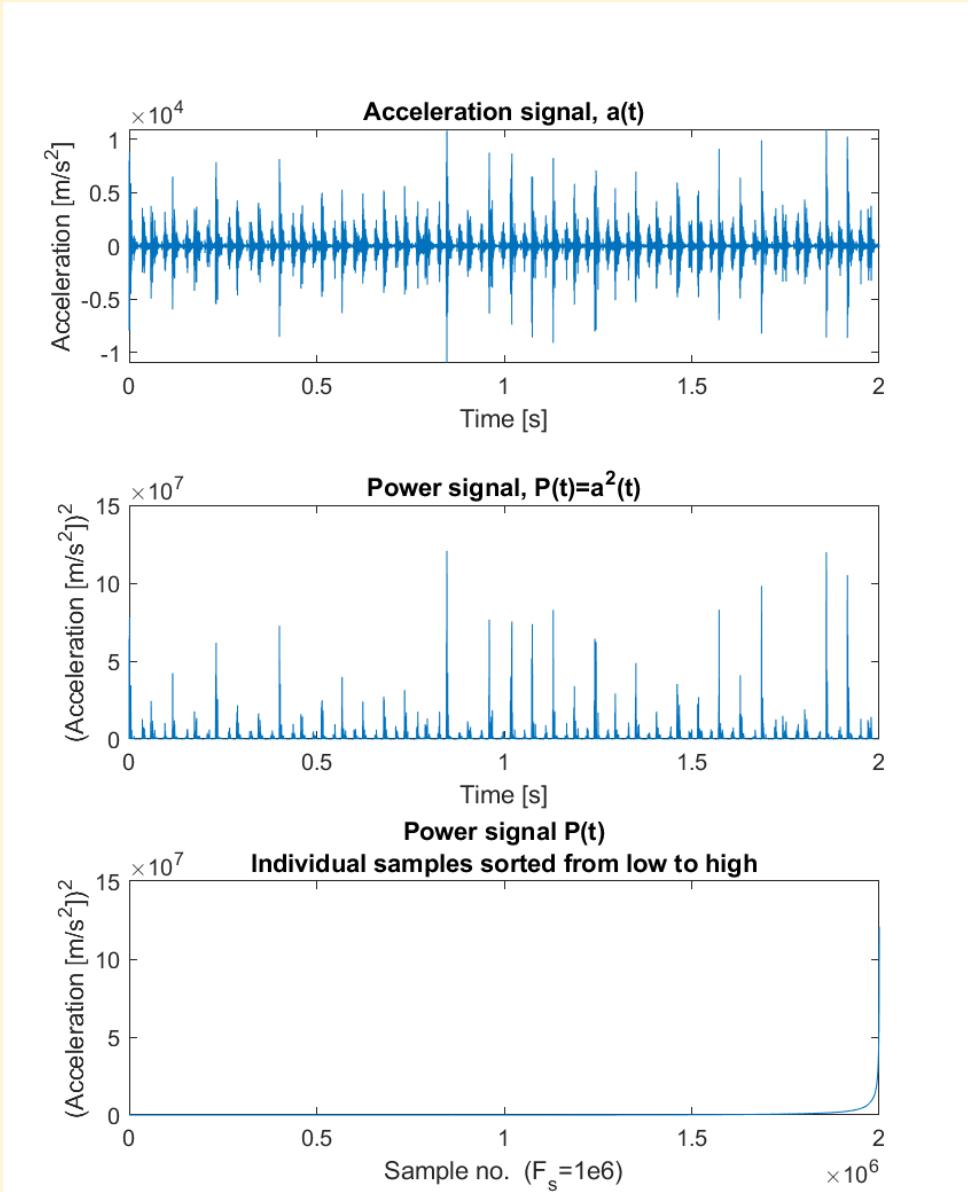
Calculation of VSI on harmonic signal



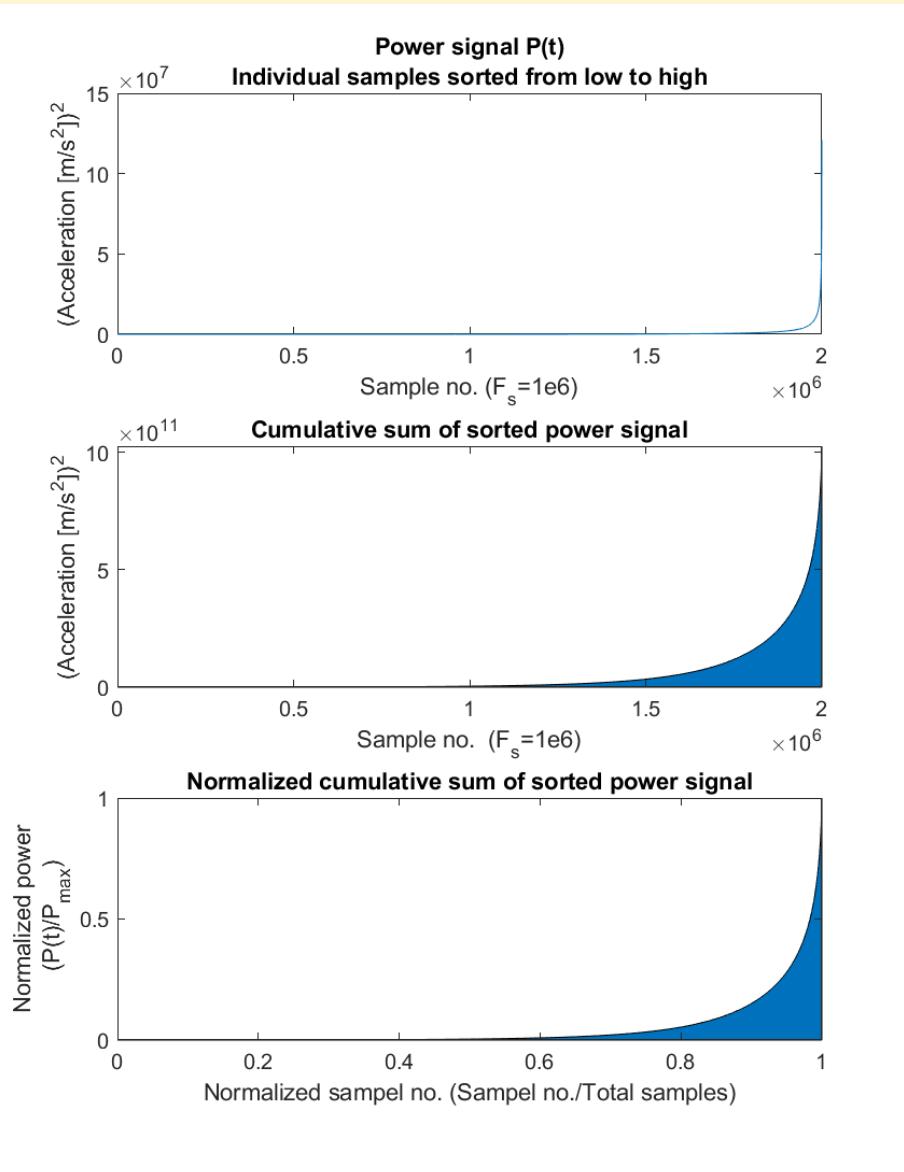
Calculation of VSI on signal from Impact Wrench



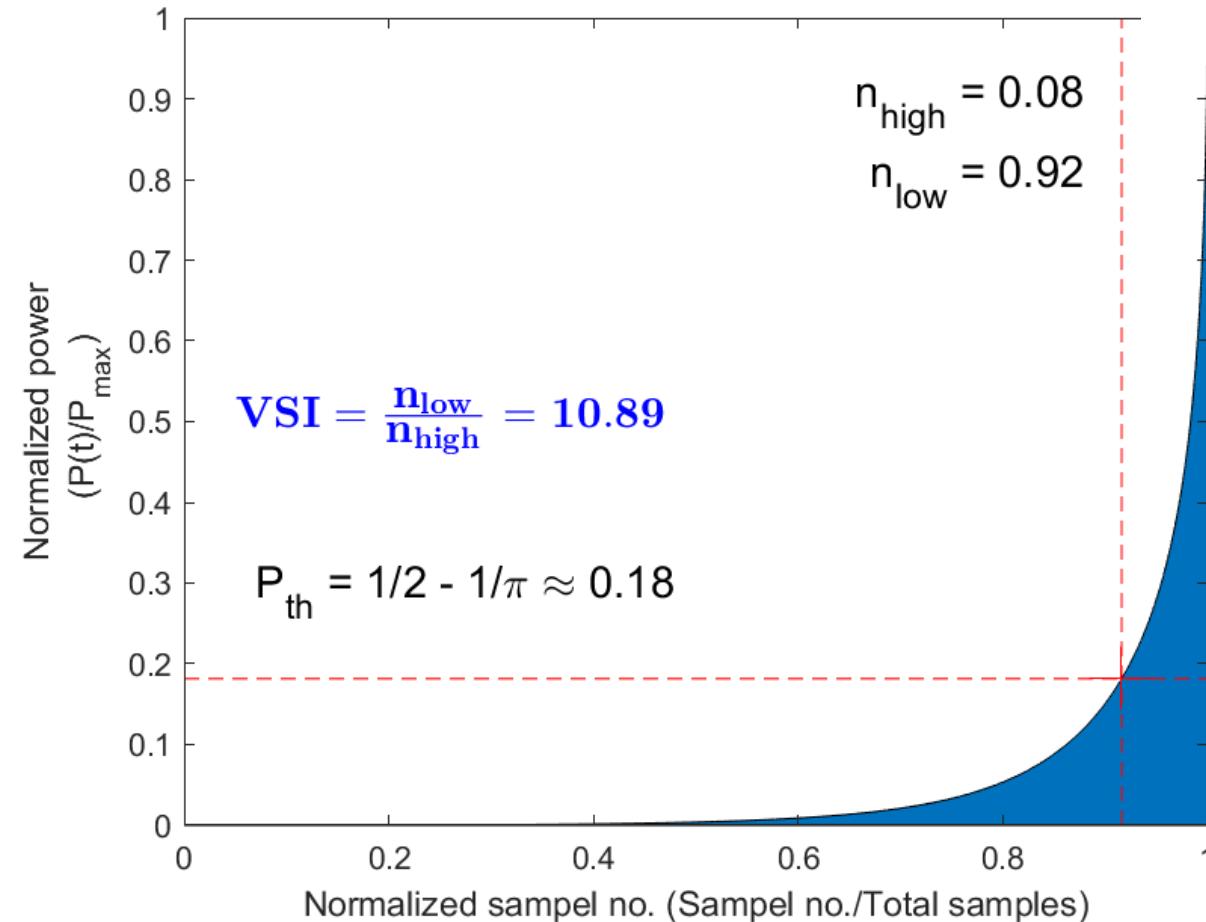
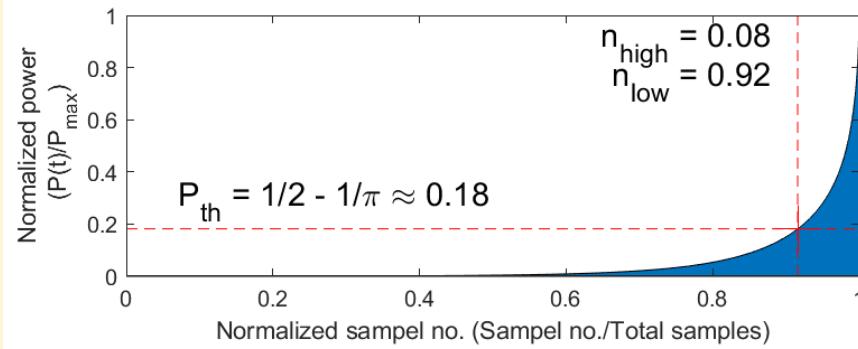
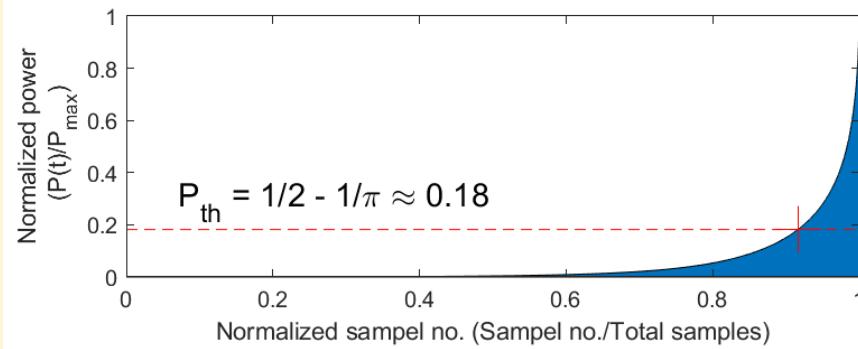
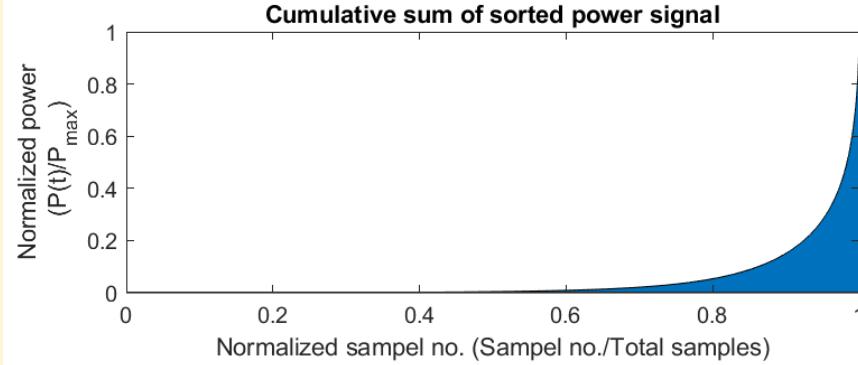
Calculation of VSI on signal from Impact Wrench



Calculation of VSI on signal from Impact Wrench



Calculation of VSI on signal from Impact Wrench



Kvantivering av stötvibrationer

Stötamplituden beräknas enligt: $a_{shock} = [\Sigma_{a_i}^6]^{1/6}$

Detta är samma algoritm som används för helkropp:

Mechanical vibration and shock – Evaluation of human exposure to whole-body vibration – Part 5: Method for evaluation of vibration containing multiple shocks (ISO 2631-5:2004, IDT)