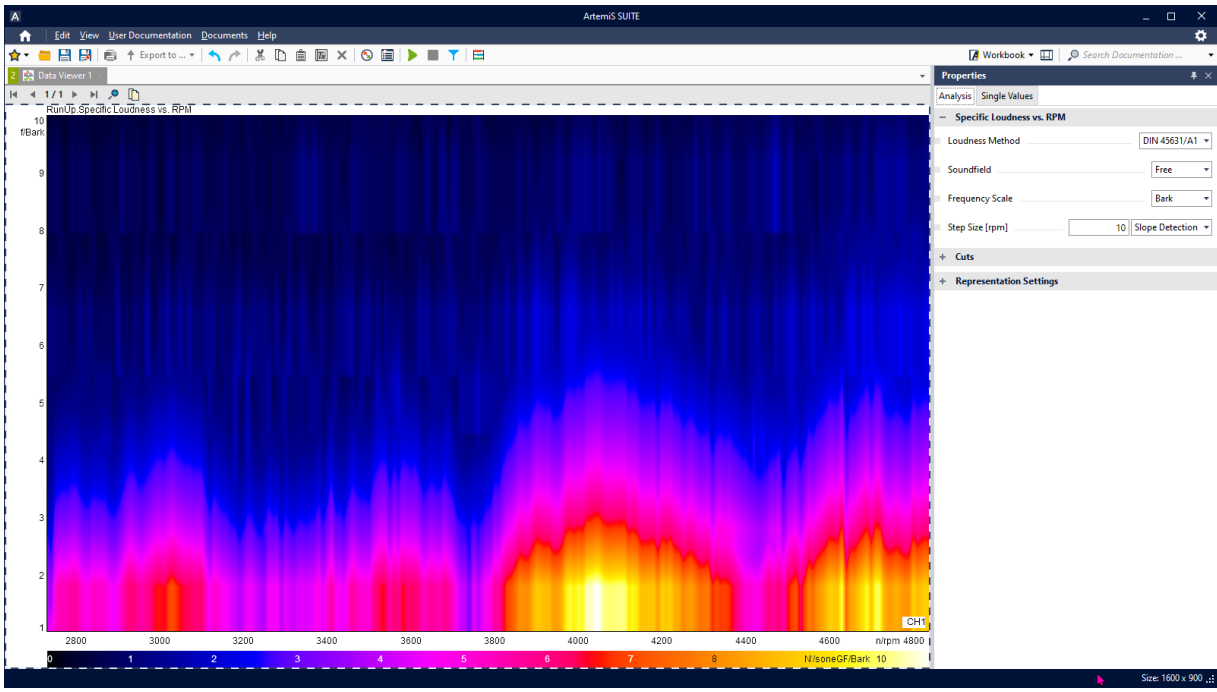
HEAD acoustics

DATA SHEET



ArtemiS SUITE
Signal Processing

Code 51102

ASP 102 Psychoacoustics - Basic Analysis vs. Control Channel

Psychoacoustics - Basic Analysis vs. Control Channel of ArtemiS SUITE provides a range of psychoacoustic analyses versus a number of different control channels (RPM, force, ...).

OVERVIEW

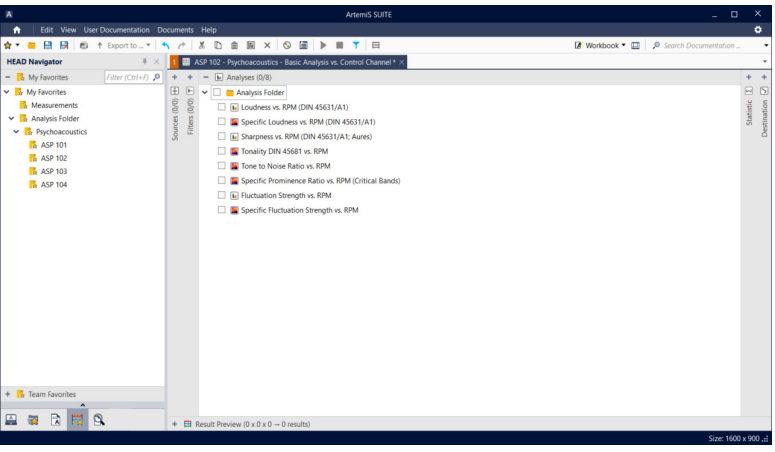
ASP 102 Psychoacoustics - Basic Analysis vs. Control Channel

Code 51102

ASP 102 provides various psychoacoustic analyses versus a number of different control channels.

ArtemiS SUITE offers further options for psychoacoustic analysis:
ASP 101 (Psychoacoustics - Basic Analysis),
ASP 103 (Psychoacoustics - Advanced Analysis),
ASP 104 (Psychoacoustics - Advanced Analysis vs. Control Channel)

- ASP 101 and 102 provide the standards and methods: DIN 45631/A1, ISO 532-1, 532-3, ANSI S3.4-2007, DIN 45681, Aures, von Bismarck, DIN 45692
- ASP 103 and 104 provide the standards: DIN 38455, ECMA 418-2 (1st Edition) / (2nd Edition), ECMA 74 (15th Edition) / (17th Edition)



KEY FEATURES

ASP 102 provides psychoacoustic analyses, which can be calculated versus RPM, force, temperature, or other control channels

ASP 102 includes:
- Loudness vs. RPM
- Specific Loudness vs. RPM
- Sharpness vs. RPM
- Tonality DIN 45681 vs. RPM
- Tone to Noise Ratio vs. RPM
- Specific Prominence Ratio vs. RPM
- Fluctuation Strength vs. RPM
- Specific Fluctuation Strength vs. RPM

Available standards and methods:
- DIN 45631/A1, ISO 532-1, 532-3, ANSI S3.4-2007 (FFT) / (FFT/3rd Oct)
- DIN 45681
- Aures, von Bismarck, DIN 45692

ASP 102 can be used in Pool Projects (APR 010 is required), Automation Projects (APR 050 is required), Standardized Test Projects (APR 220 is required), and Metric Projects (APR 570 is required)

APPLICATIONS

- Simulating human perception with suitable analyses
- Improving the sound quality of products
- Evaluation of environmental noise

OVERVIEW ASP 101 – ASP 104

PSYCHOACOUSTICS – BASIC ANALYSIS (ASP 101)

- Loudness vs. Time
- Specific Loudness
- Specific Loudness vs. Time
- Sharpness vs. Time
- Tonality DIN 45681
- Tonality DIN 45681 vs. Time
- Tone to Noise Ratio
- Tone to Noise Ratio vs. Time
- Specific Prominence Ratio
- Specific Prominence Ratio vs. Time
- Fluctuation Strength vs. Time
- Specific Fluctuation Strength
- Specific Fluctuation Strength vs. Time

PSYCHOACOUSTICS – ADVANCED ANALYSIS (ASP 103)

- Loudness (Hearing Model) vs. Time
- Specific Loudness (Hearing Model)
- Specific Loudness (Hearing Model) vs. Time
- Tonality (Hearing Model) vs. Time
- Specific Tonality (Hearing Model)
- Specific Tonality (Hearing Model) vs. Time
- Tonality (Hearing Model) Frequency vs. Time
- Roughness (Hearing Model) vs. Time
- Specific Roughness (Hearing Model)
- Specific Roughness (Hearing Model) vs. Time
- Impulsiveness (Hearing Model) vs. Time
- Specific Impulsiveness (Hearing Model)
- Specific Impulsiveness (Hearing Model) vs. Time
- Spectrum (Hearing Model) vs. Time
- Relative Approach 2D
- Relative Approach 3D

PSYCHOACOUSTICS – BASIC ANALYSIS VS. CONTROL CHANNEL (ASP 102)

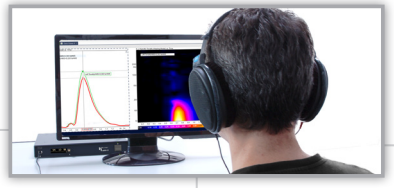
- Loudness vs. RPM
- Specific Loudness vs. RPM
- Sharpness vs. RPM
- Tonality DIN 45681 vs. RPM
- Tone to Noise Ratio vs. RPM
- Specific Prominence Ratio vs. RPM
- Fluctuation Strength vs. RPM
- Specific Fluctuation Strength vs. RPM

PSYCHOACOUSTICS – ADVANCED ANALYSIS VS. CONTROL CHANNEL (ASP 104)

- Loudness (Hearing Model) vs. RPM
- Specific Loudness (Hearing Model) vs. RPM
- Tonality (Hearing Model) vs. RPM
- Specific Tonality (Hearing Model) vs. RPM
- Tonality (Hearing Model) Frequency vs. RPM
- Roughness (Hearing Model) vs. RPM
- Specific Roughness (Hearing Model) vs. RPM
- Impulsiveness (Hearing Model) vs. RPM
- Specific Impulsiveness (Hearing Model) vs. RPM

STANDARDS

- Loudness
  - DIN 45631/A1
  - ISO 532-1, ISO 532-3
  - ANSI S3.4-2007 (FFT) / (FFT/3rd Oct)
- Sharpness
  - Aures
  - Von Bismarck
  - DIN 45692
  - DIN 45631/A1
  - ISO 532-1, ISO 532-3
  - ANSI S3.4-2007 (FFT) / (FFT/3rd Oct)
- Tonality
  - DIN 45681
- Loudness (Hearing Model)
  - ECMA 418-2 (2nd)
- Roughness (Hearing Model)
  - DIN 38455
  - ECMA 418-2 (1st) / (2nd)
- Tonality (Hearing Model)
  - ECMA 74 (15th) / (17th)
  - ECMA 418-2 (1st) / (2nd)



ARTEMIS SUITE PROJECTS

- Pool Project (APR 010)
- Automation Project (APR 050)
- Standardized Test Project (APR 220)
- Metric Project (APR 570)

Additional solutions from HEAD acoustics

JURY TESTING SOFTWARE SQALA

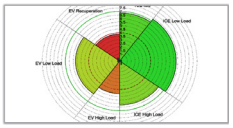
- Jury Testing - SQala Basic (APR 500)
- Jury Testing - SQala Net (APR 501)
- Jury Testing - SQala Server (APR 501)

BINAURAL MEASUREMENT AND PLAYBACK

- Artificial heads HMS V, HSU
- HEAD*lab* systems
- Mobile frontend SQuadriga III, ...
- ...

SOUND QUALITY INDEX

- Metric Project (APR 570)



DETAILS

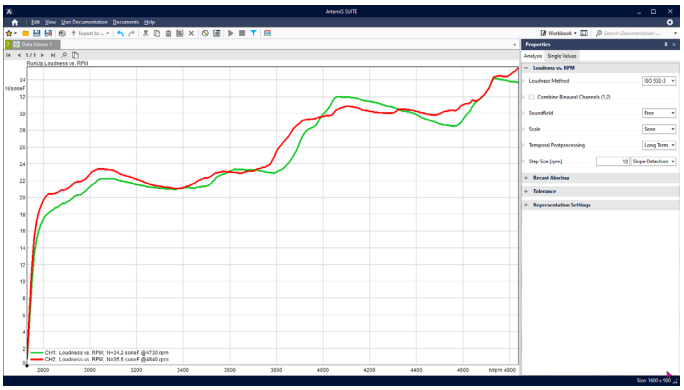
Loudness

Loudness is the sensation value for the human perception of loudness. Since the loudness perception of the human auditory system is dependent on frequency, sound events with the same level but different frequency do not always evoke the same loudness perception in humans. Therefore, the loudness scale is characterized by the fact that a sound that is perceived as twice as loud also has a sone value that is twice as high on the loudness scale.

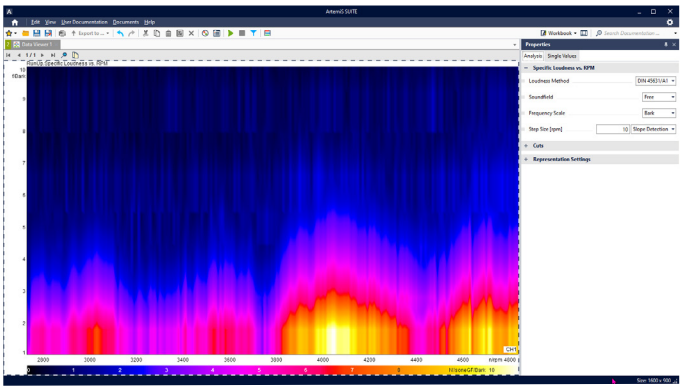
LOUDNESS VS. RPM, SPECIFIC LOUDNESS VS. RPM

The analyses Loudness vs. RPM and Specific Loudness vs. RPM map the human perception and calculate the distribution of loudness and specific loudness of the input signal versus control channels.

The calculation is based upon the standards DIN 45631/A1, ISO 532-1, ISO 532-3, ANSI S3.4 2007 (FFT), and ANSI S3.4 2007 (FFT) / (3rd Octave).



Loudness vs. RPM



Specific Loudness vs. RPM

Sharpness

Sound signals whose spectral components are mainly located in the high frequency range are perceived as “sharp” or “shrill” by human hearing. As a measure for this impression, the sharpness parameter has been introduced. The decisive factor for sharpness is the balance point of the area below the envelope of the spectrum. The farther this point is shifted towards high frequencies the sharper is the acoustic impression of a sound.

SHARPNESS VS. RPM

The calculation of the sharpness versus a control channel is based upon the specific loudness distribution of the sound.

The methods Aures, DIN 45692, and von Bismarck are available. The von Bismarck calculation method is based on the distribution of the specific loudness throughout the critical band rate. The procedure refers to sounds of equal loudness, meaning that the influence of the absolute loudness upon sharpness is not taken into consideration. The Aures calculation method takes the influence of loudness into account, too. In DIN 45692, a method for the calculation of the sharpness is standardized which is similar to the one developed by von Bismarck.

The calculation is based upon the standards DIN 45631/A1, ISO 532-1, ISO 532-3, ANSI S3.4 2007 (FFT), and ANSI S3.4 2007 (FFT) / (3rd Octave).

Tonality

Sounds are perceived as tonal if they contain distinct individual tones or narrow-band noise. Undesired tonal noise is perceived as more annoying than comparable noise without tonal components. If a product or machine causes tonal noise components, this will have a negative effect on the perceived overall quality.

TONALITY DIN 45681 VS. RPM

The analysis Tonality DIN 45681 vs. RPM can be used for the automatic determination of tones and tone groups from narrow band spectra.

TONE TO NOISE RATIO VS. RPM

Tone to Noise Ratio is defined as the power of a tone compared to the noise power of the critical band surrounding the tone.

The analysis Tone to Noise Ratio vs. RPM can be used to analyze tonal components of a signal. The analysis enables users to find tonal components of a signal and to present them as numeric values.

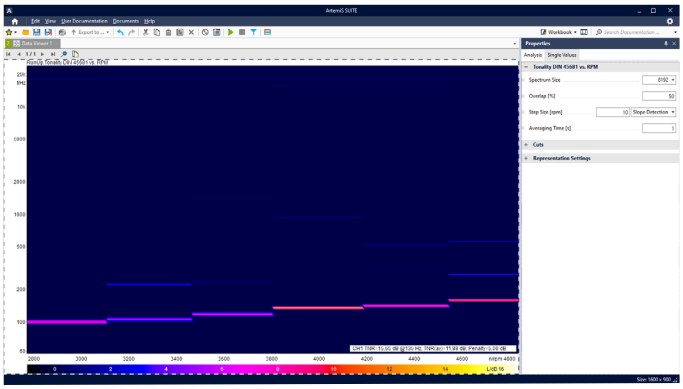
SPECIFIC PROMINENCE RATIO VS. RPM

The analysis Specific Prominence vs. RPM can be used for the identification of tonal components in a signal and their numerical representation.

Fluctuation Strength vs. RPM, Specific Fluctuation Strength vs. RPM

The analysis Fluctuation Strength maps the human impression of amplitude modulations up to frequencies of about 25 Hz to a linear scale. The calculation of the fluctuation strength is derived from the calculation of the Roughness (Hearing Model) analyses (ASP 103 or ASP 104 are required).

Sharpness vs. RPM



Tonality DIN 45681 vs. RPM

Required: APR Framework (Code 50000)

and/or: HEAD System Integration and Extension (ASX) programming interfaces

HEAD acoustics

Contact Information

Ebertstrasse 30a
52134 Herzogenrath, Germany
Phone: +49 (0) 2407 577-0
E-Mail: sales@head-acoustics.com
Website: www.head-acoustics.com