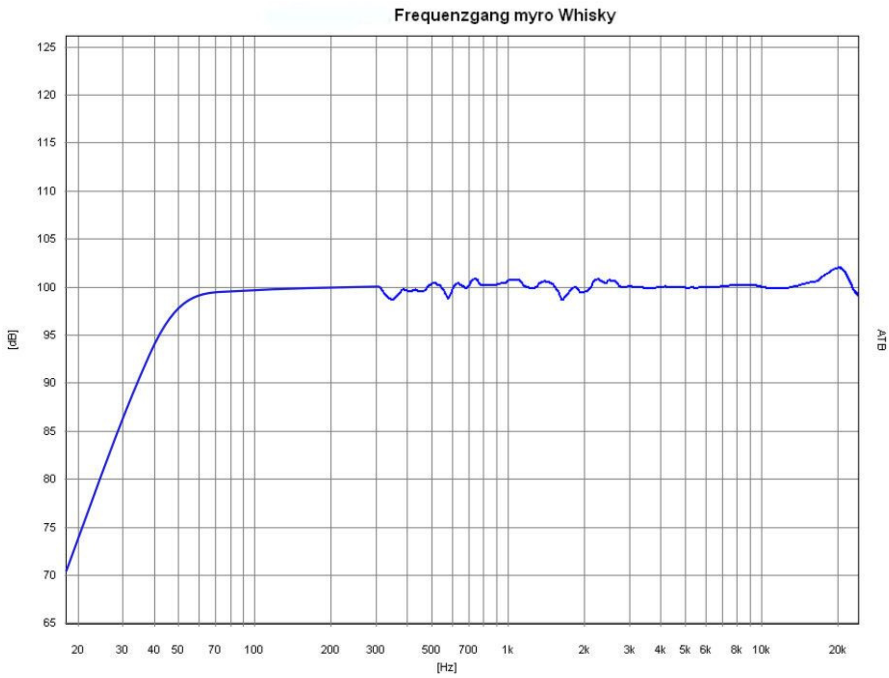
myro

Whisky

Product-Description

Low-Midrange:	SEAS Excel W16-NX001
Tweeter:	Mundorf AMT 2540

Frequency response:



Characteristic Sensitivity (2,83 V, 1m):	91 dB
Nominal Impedance:	3 Ω
Long Term Power Handling:	160 W
Dimensions (W / H / D):	20 / 56 / 36 cm
Price / Pair:	6.980,- €

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Quality of Loudspeakers

- A comparative analysis metrological -

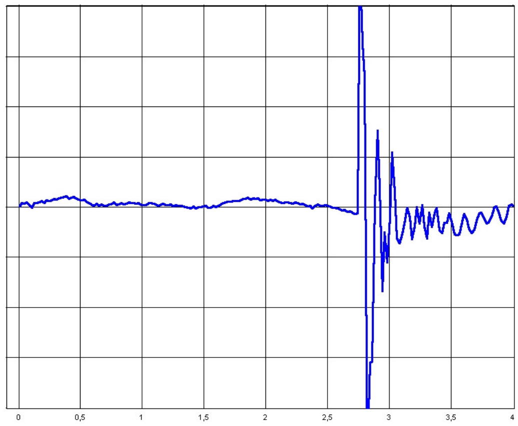
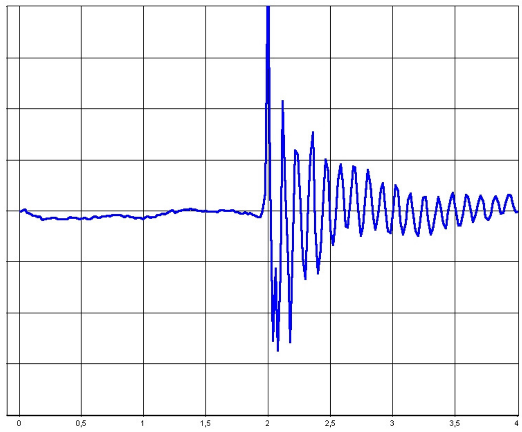
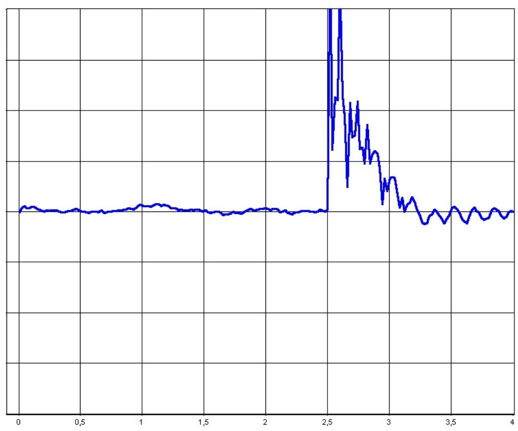
Speakers are electroacoustic converters, whose task is to provide electrical signal structures in the equivalent sound structure.

Following we will document on the base of measurement analysis in the form of an compare of the different responses of speakers from different manufacturers the current special position of myro speakers developed by Michael Weidlich.

All measurement technology analysis results - except in relation to the speakers myro "Whisky" itself - are made anonymously due to competition reasons.
The results are internally documented by name and can be disclosed on demand.

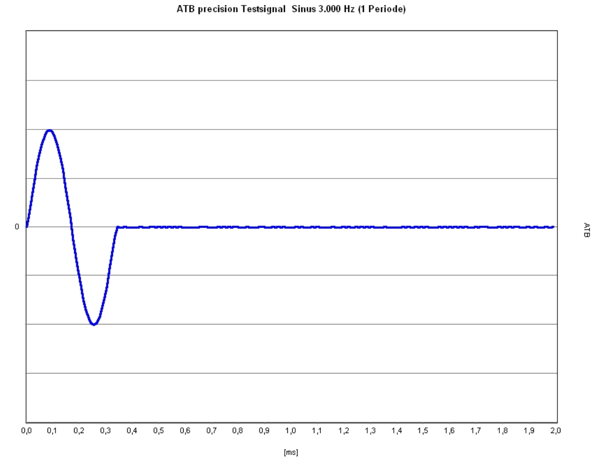
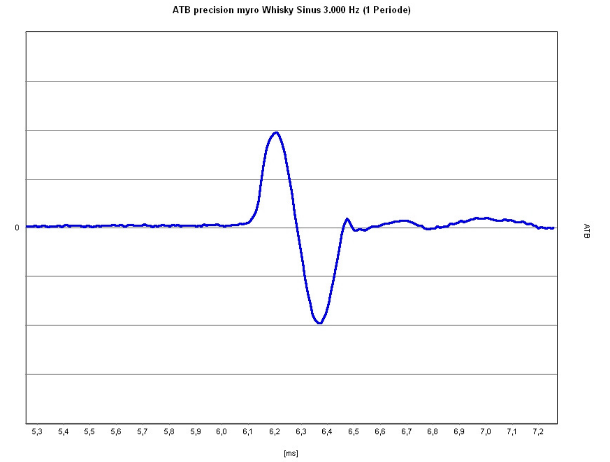
Measuring Technical analysis

Sound events are in their pressure-time-structure in the main from the first few vibrations with high amplitude (transient oscillation) and then swinging with the resonance frequency of the sound generator with fast descending amplitude.
The transient oscillation are therefore in terms of energy content, detection and tracking (space feeling) of paramount importance.

Sound event with greater attenuation of the resonance frequency.	
Sound event with less noise attenuation of the resonance frequency.	
Broadband noise attenuation event with greater resonance frequency.	

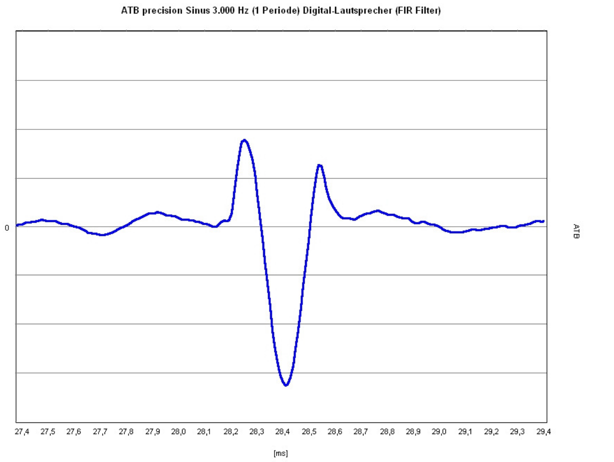
Basically, speakers has to change the electrical signal structure of sound events in the exact sound structure.

The test signal sinus (1 term) is especially suited to proof the ability of the reproduction of transient oscillation. Hereafter we compared the test signal sine 3,000 Hz (1 period): The sound response of the myro „Whisky“ and representative different speaker models.

<table>
<tr><td>Test signal sine 3,000 Hz (1 period)</td><td>
</td></tr>
<tr><td>Response myro “Whisky”</td><td>
</td></tr>
</table>

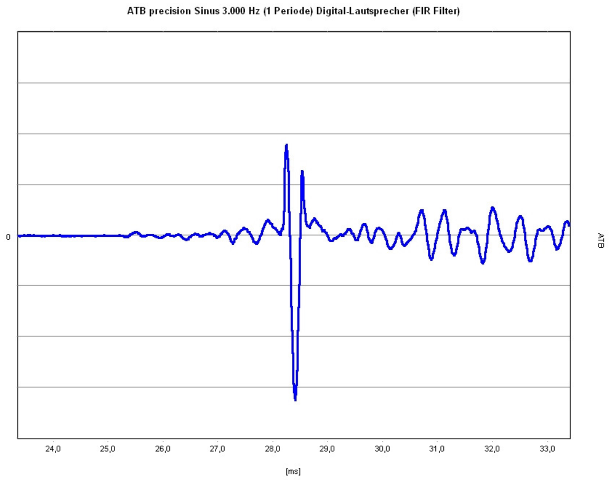
Response of an digital-speaker with FIR-Filter.

Comment:
Even before the actual of sine the speaker generates significant sound waves.
The positive first half of the sine wave is significantly weakened and in the frequency significantly different.
After the negative half of the sine wave a significant swingover is to recognize.



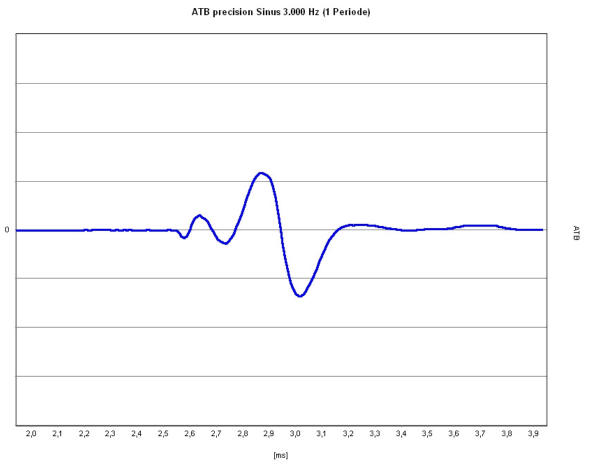
Response of an digital-speaker with FIR-Filter.

Comment:
The opposite result is the same as previously described.
The timeline, however, has a higher band-width compared with the previous graphic.
In this presentation are the transient oscil-lation and swing-overs far-reaching visible.



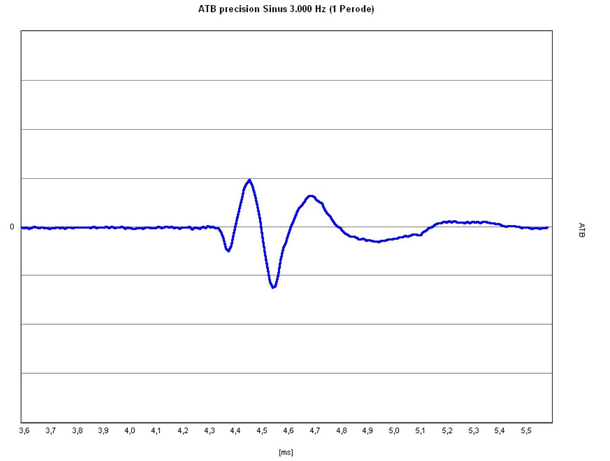
Response of an analog active studio moni-tor.

Comment:
Three pre-swinging sound waves with signi-ficantly higher and increasing frequency.
It should be noted that the energy content of the sine wave supplied to all the sound response contained sound waves will be distributed.
The amplitude of the 3,000 Hz sine term will be significantly weakened.
The dynamic hearing impression is signifi-cantly subdued in this frequency range.



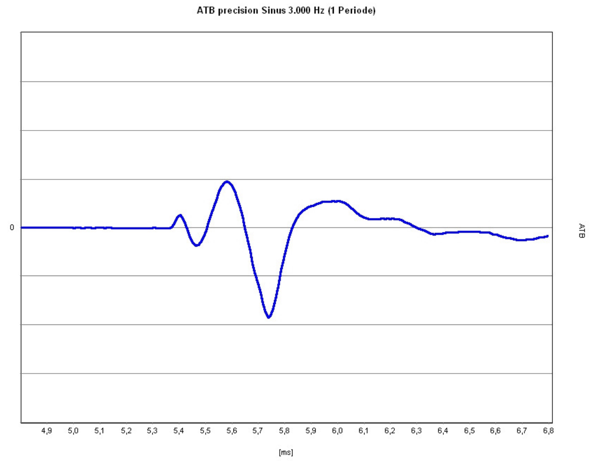
Response of an analog active studio monitor.

Comment:
A negative, pre-swinging wave with much higher frequency, and after an extremely strong swing-over shared with lower frequency parts in this answer.
Again, there is a strong impression subdued hearing. Added to this is a tonal shift to higher and lower frequencies.



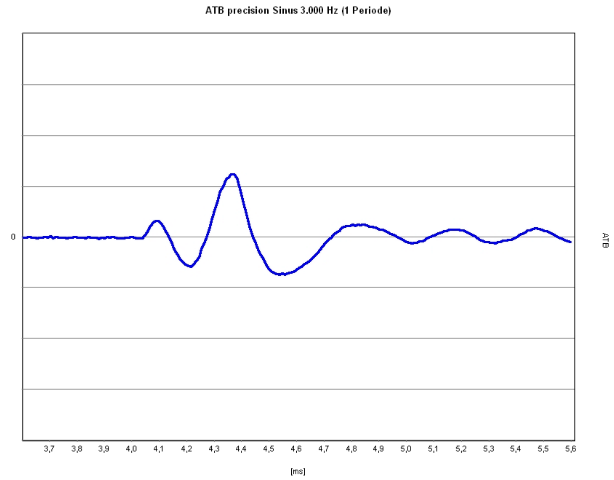
Response of an analog active studio monitor.

Comment:
Again, the vibration process completely distorted.
Such a frequency analysis answers often point out that the origin oscillation is no longer included.
That means 100% distortion.
What hearing impression such a sound wave mixture triggers at the ear is quite conceivable, and in aural eamination to be comprehensible.



Response of a widespread studio monitor.

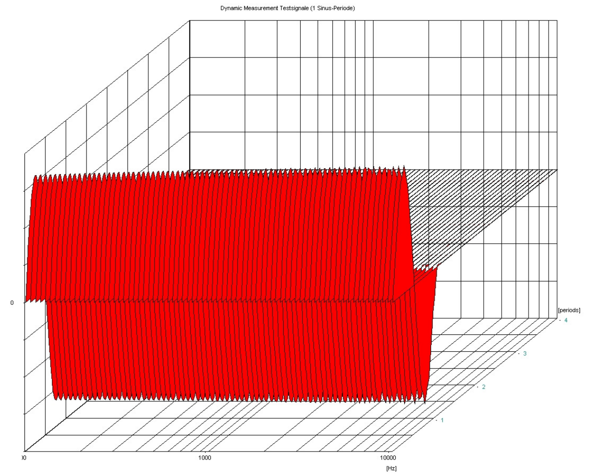
Comment:
You can see the total alienation of the input signal.
Particularly striking is an extremely long, low damped swing-over.
The speakers are used in the direction of compatibility with the radio equipment of the consumers, which is virtually hopeless due to the enormous diversity of playback-characteristics.



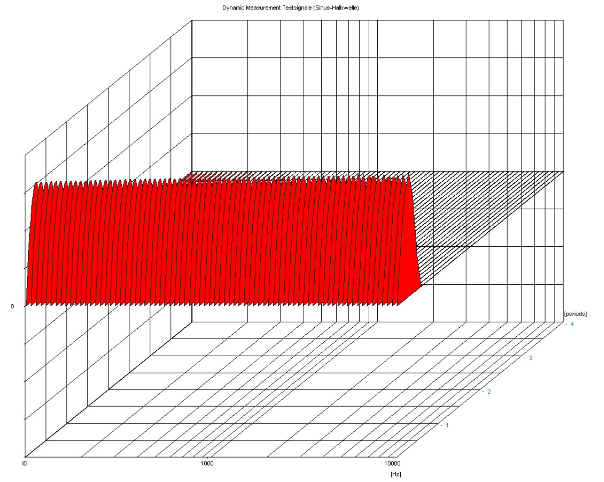
The following measurement methods of Dynamic Measurement allows in a 3D graphics an overview on a variety of measurements with test signals sine (1 period) or half-sine wave.
The measurement software offers several insights into the 3D graphics and displays in a 2D graphics each measuring frequency including FFT analysis.
For the viewer the self-similarity of the half-sine wave measurements with the measurement of the step-response (test signal rectangle) is easily recognizable.
The Dynamic Measurement measuring method is thus also an analysis of step-responses, assists in their interpretation and promotes understanding of complex interrelationships.

<table>
<tr>
<td>Dynamic Measurement test signals
1 sine period

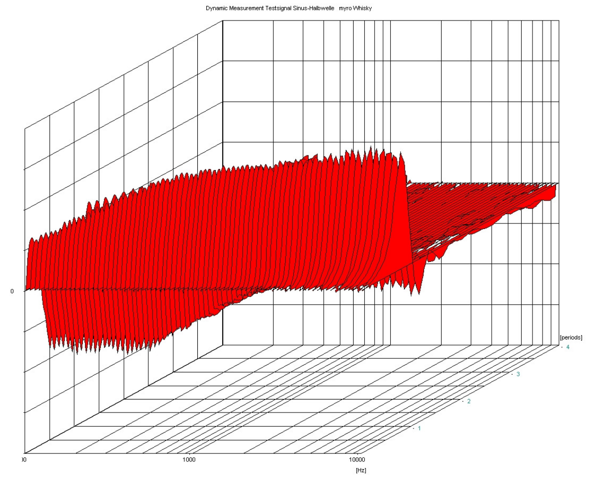
Comment:
The graph shows a variety of sinus periods in the frequency range
100 – 10.000 Hz.

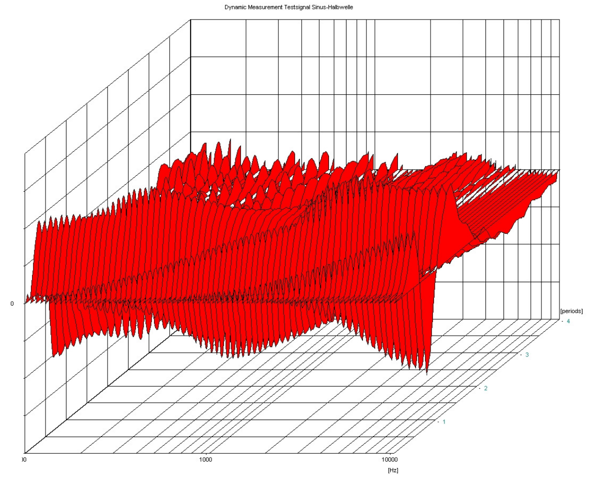
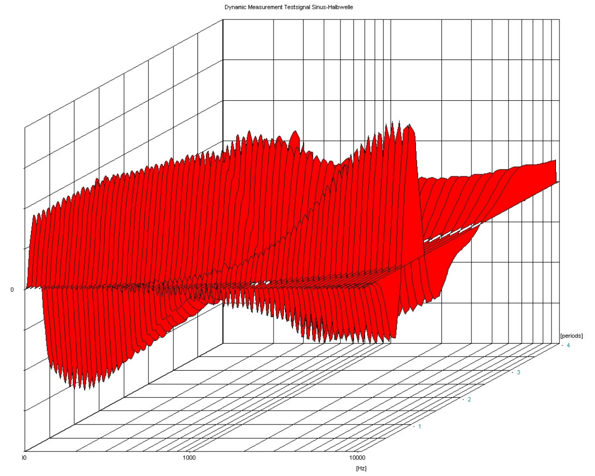
X-axis: frequency
Y-axis: amplitude
Z-axis: time (periodic presentation)</td>
<td>
</td>
</tr>
<tr>
<td>Dynamic Measurement test signals
1 half-sine wave

Comment:
The graph shows a variety of half-sine waves in the frequency range
100 – 10.000 Hz.

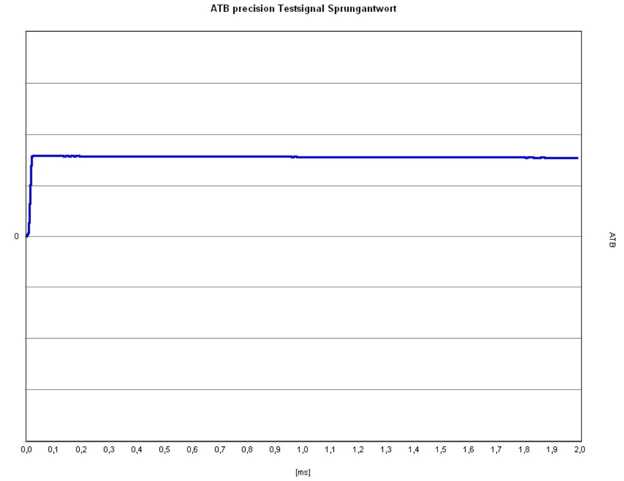
This measurement leads to a better understanding of the following measurements of the step-response (test signal rectangle).</td>
<td>
</td>
</tr>
<tr>
<td>Dynamic Measurement test signals
1 half-sine wave

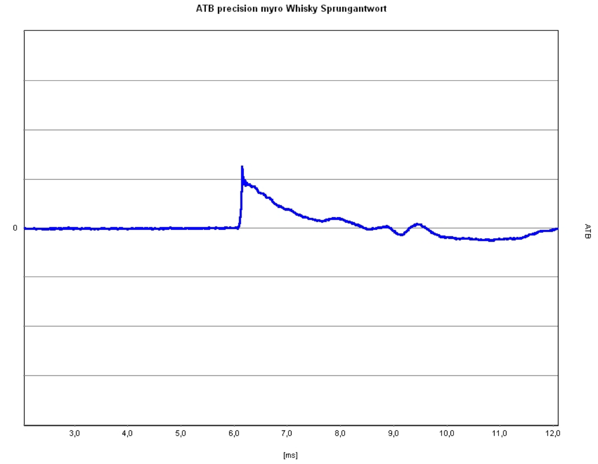
Response myro „Whisky“

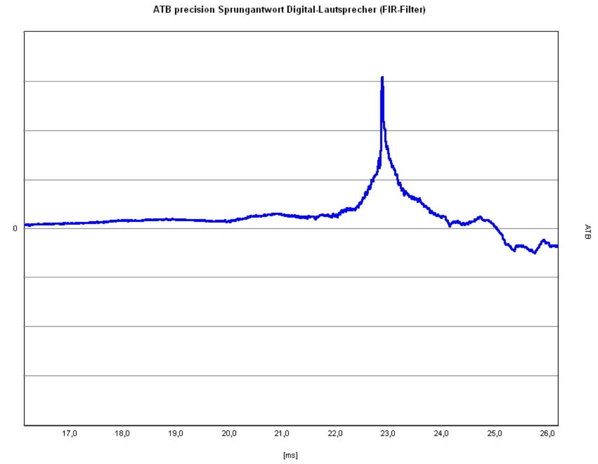
Comment:
The sound response shows a single course. The transition between the low-midrange speakers and the tweeter is dynamically perfect in phase and amplitude.</td>
<td>
</td>
</tr>
</table>

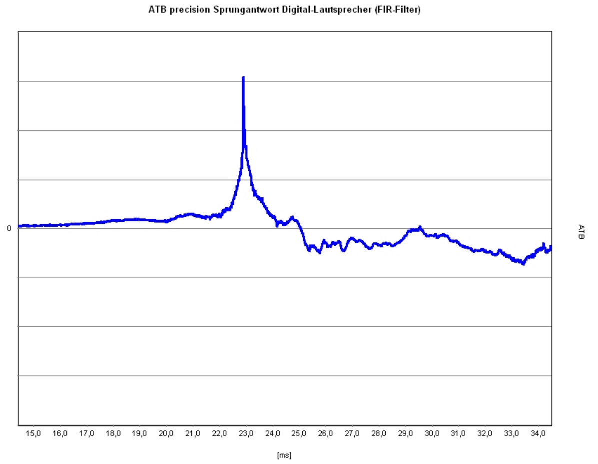
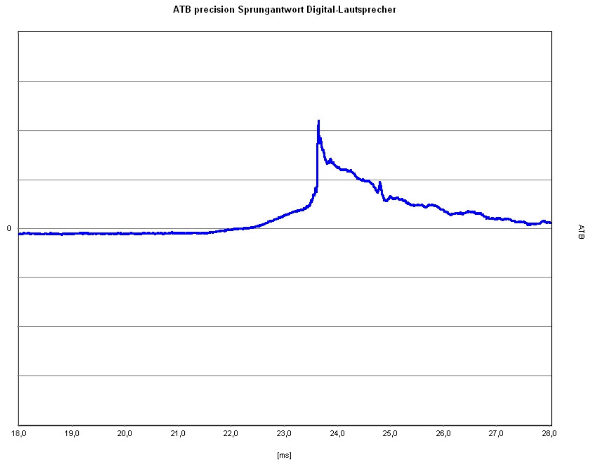
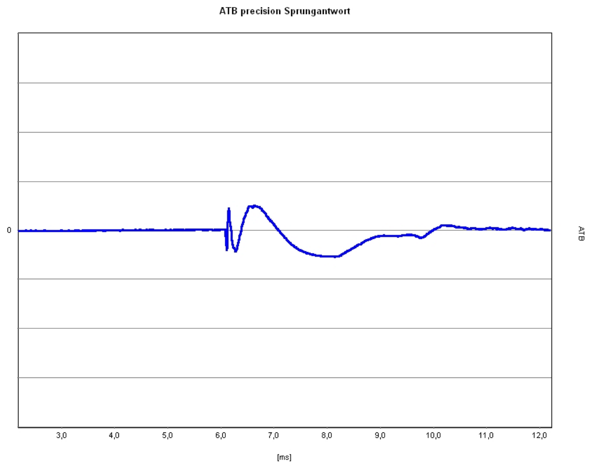
Dynamic Measurement test signals *1 half-sine wave* Sound response from the 3-way speaker of one well-known manufacturer. Comment: You can see the three shifted time courses of each speaker system. The signal reproduction is incorrect over the entire frequency range.	
Dynamic Measurement test signals *1 half-sine wave* Sound response of a passive loudspeaker. (Coaxial speakers with a separate super tweeter) Comment: The low-midrange and the two tweeters are not oscillating in phase. The alienation of the signal begins at 250 Hz. Again the characteristic of the produced sound waves allows clear conclusions on the sound.	

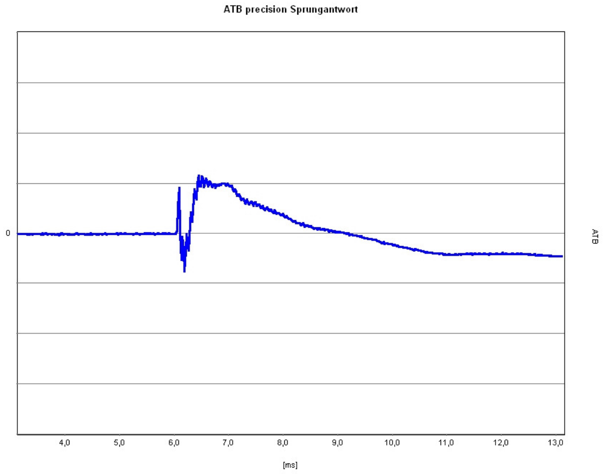
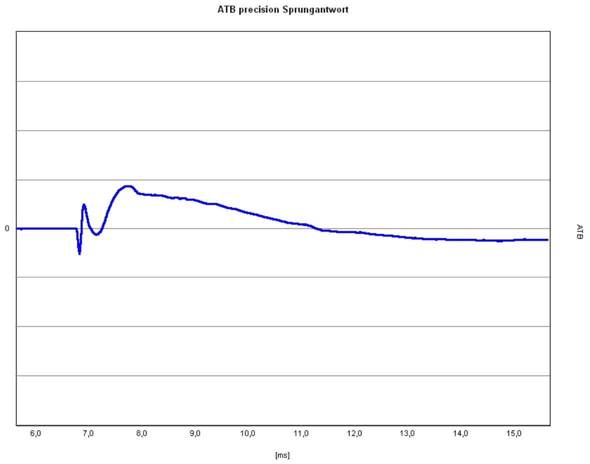
Test signal rectangle
This test signal unites the entire frequency bandwidth in a dynamic process. The jump in at the beginning requires the speaker an extremely short time and rise to the level of frequency consideration describable with the highest frequency. The test signal also has the energy content to stimulate the deepest contained frequencies.
Since the sound response of a speaker dont’t include a static change in air pressure, the pressure deflated after the surge.
A subsequent under pressure reconstruct the initial pressure of the surrounding air again.

<table>
<tr><td>Test signal rectangle</td><td>
</td></tr>
<tr><td>Response myro Whisky

Comment:
The sound response shows the ideal course.</td><td>
</td></tr>
<tr><td>Response of a digital loudspeaker with FIR filter.

Comment:
The response clearly shows that the swing-in-problem, visible in the sine measurement, exists throughout the transmission area.
In addition, the upper limit of just over 20 kHz, making this sharp step-response.</td><td>
</td></tr>
</table>

Response of a digital loudspeaker with FIR filter. Log timebase 20 ms Comment: Here the very long pre- and post-swinging is visible more clearly. The frequency response of this speaker is also very linear. The dynamic behavior shows, however deformations of the broadband signal structure.	
Response of a digital loudspeaker. Comment: Again we can see the, for digital speakers typically, broadband pre-swing problem. Due to the swing-in delay in the treble area energy is also time-shifted and this generates the strong lead of the sound answer. The frequency responses only minor nonlinearities.	
Response of a 3-way passive loudspeaker Comment: The swing-in and phase errors are covering nearly the entire transmission. The tweeter is inverted.	

Response of a 2 way passive loudspeaker. Comment: Swing-in errors are covering a wide frequency bandwidth. The 27 kHz resonance of metal membrane of the tweeter is very poorly damped, and visible in the jagged overlay of the sound pressure line. It is a widespread speaker brand, used in home hi-fi and studios.	
Response of a loudspeaker. (coax loudspeaker with separate super tweeter) Comment: The tweeter in the coaxial system is inverted, while the external super tweeter is in phase with the middle woofer polarity. This results in two consecutive fast rise flanks with the impression of a specific, pronounced high-frequency playback. The reproduction of the original signal structure with this speaker is impossible.	
For comparison: *Dynamic Measurement test signals half-sine wave* *Response from the same speaker.* Comment: This chart is measuring the X-axis clinched. We're looking from this perspective on the 10 kHz curve and the underlying lower frequency measurement results. Amazing to see the reflection of the above response in the 3D half-wave measurement of Dynamic Measurement.