USB Measurement Microphone ATD5-T

With this USB measurement microphone you easily perform high performance measurements with your PC. Simply connect this microphone to a free USB port, no preamplifier, no external power no driver. It was never easier to measure with your PC.
This system uses capsules with the thread 60UNS. You can connect almost any pre-polarized capsule (class 1 or 2) from world leading brands. e.g. Bruel&Kjaer, GRAS, MTG, PCB and others. Capsules with 200V polarization voltage are **not** supported.

With common mechanical adapters you can use 1" or 1/4" capsules.

The base package does NOT include a capsule.

1.1 Features

- Gain is controlled by the PC allowing absolute level calibrations
- Requires no external power. Simply connect it to USB
- The operating system recognizes this USB microphone directly. There is no driver required. You can use this USB measurement microphone with Windows, MacOS or Linux. This feature will protect your investment, since you not depend on updated drivers.
- Special discrete microphone preamplifier optimized for lowest noise
- Integrated DC/DC converter for very high SPL 10V RMS +/-14V Peak
- **Covers the full dynamic of a 50mV ½" capsule**
- Samplerates up to 192kHz are supported
- The microphone has 2 channels. Channel 1 is high sensitivity, while channel 2 is low sensitivity. This feature is optional.

1.2 Common characteristics

- Frequency range 5Hz-90kHz
- Sample rates 48kHz 96kHz 192kHz
- Sigma-Delta ADC with 16 bit
- Dual channel conversion with dynamic >120dB, which is better than any 24-bit converter
- Thread 60UNS
- USB Audio class 1.1 compliant
- possible cable lengths: 5m with simple passive USB cables, 15m with active cables and 60m with special transceivers for regular CAT5 cables
- Dimensions: length 180mm, diameter body 21mm head 13,1mm

1.3 Architecture

The units consists of:

1. capsule
2. FET behind the capsule as impedance converter
3. low noise discrete preamp
4. DC DC converter from 5V for pre amplifiers
5. USB Audio interface chip with:
   -analog gain
   -ADC 16 bit
   -USB Transceiver

1.4 Software interface

This USB microphone is USB audio class 1.1 compliant. You can use the regular audio API of the operating system to access the audio date and to control the mixer.

- For Windows, Linux, MAC OS, iPad no drivers are required.
- For Android platforms (due to lack of USB audio support) you will need a special driver. For details:

http://www.winaudiomls.de/joomla/index.php/en/shop/product/view/15/127

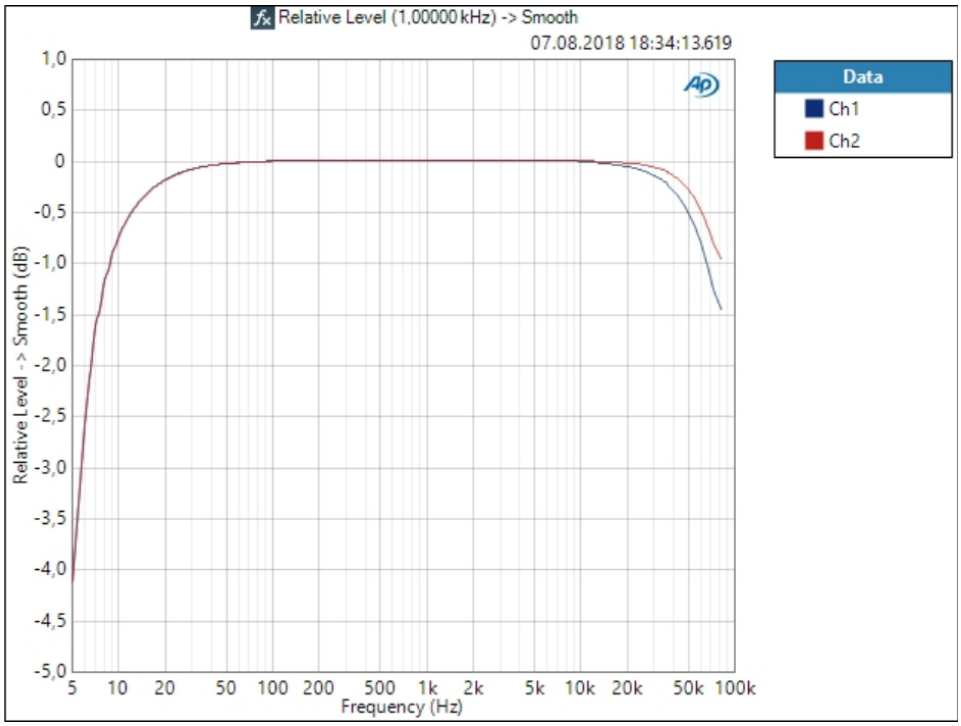
1.5 Measurement results

Setup: measurement is done electrically with a replacement capsule of 22pF.
Signal sine with 1kHz
Reference level: 0dB=50mV
All voltages are measured with **RMS**, unless otherwise noted.

	Hi Sense CH 1	Low sense CH2
Level offset (50mV)	+40 dB	0dB
Max Input level	125mV	10000mV
Equivalent input noise	8.9dBA 22dBZ	45dBA 62dBZ
THD 125mV	0.006%	0.06%
THD 10000mV	--	0.5%
Low cut frequency (-3dB)	6Hz	6Hz
Hi cut frequency (-3dB)	90kHz	90kHz

1.5.1 Frequency response of the amplifier and USB Interface

Frequency response input 50mV

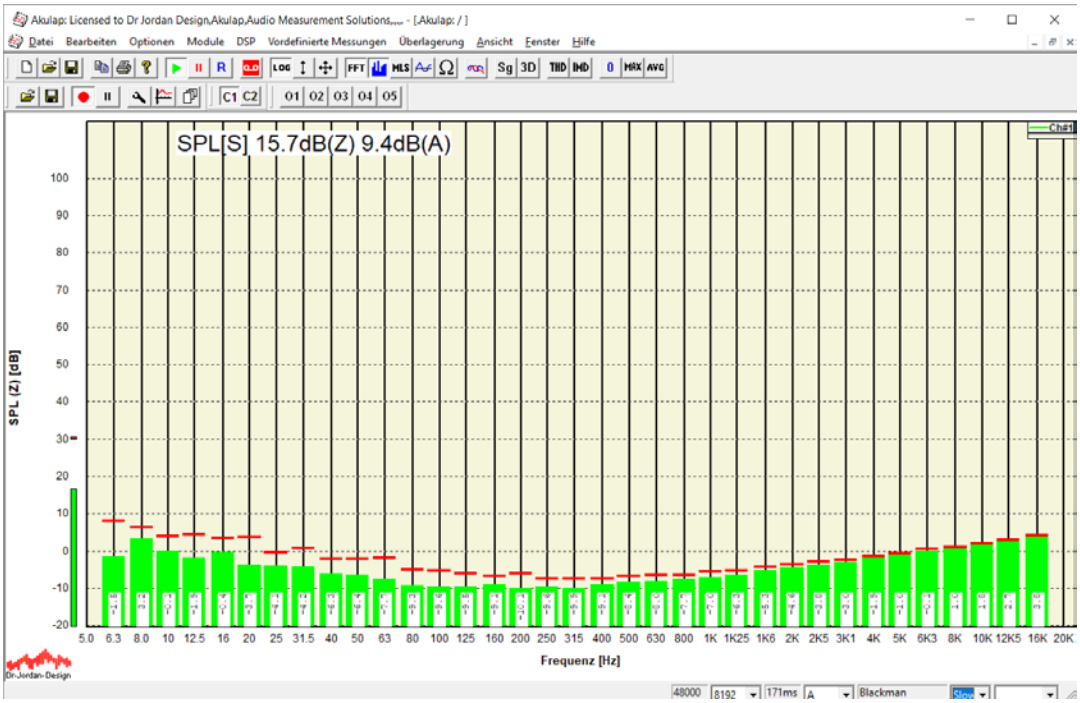


1.5.2 Channel offset

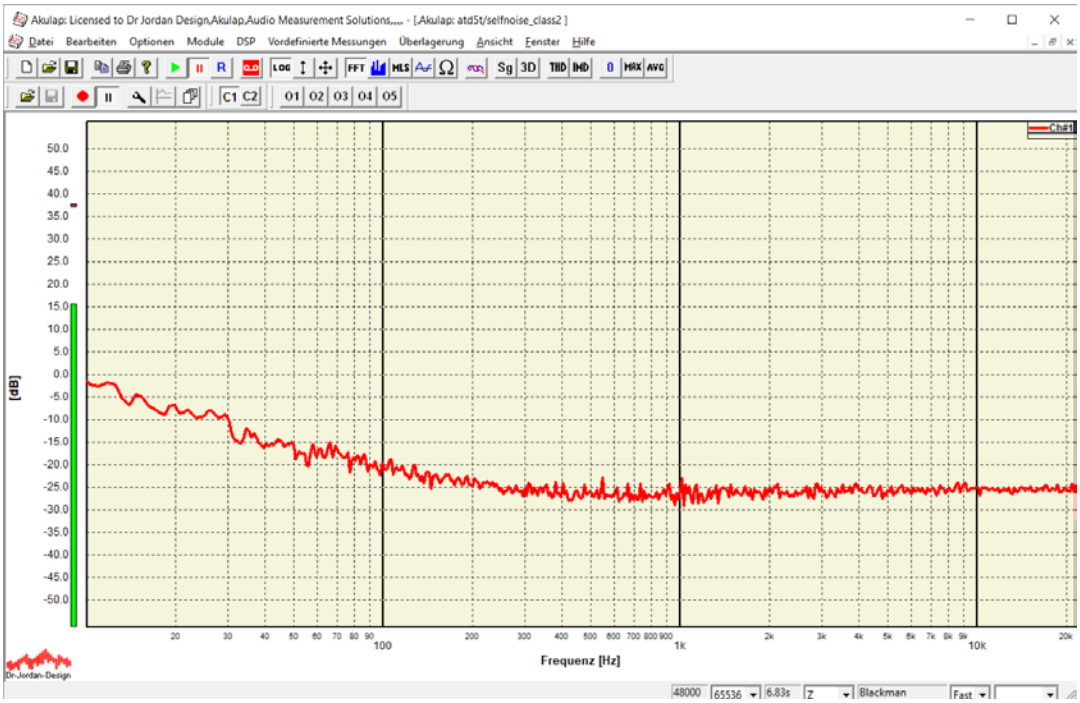
40dB (+/-0.15dB)

1.5.3 Electrical noise with replacement capsule

The measurement is calibrated to a 50mV/PA capsule 50mV=94dB



Same setup but with high resolution FFT.
We would like to emphasize, that the **ATD5-T shows no USB interference**. Most other designs show significant 1kHz and harmonics.



1.6 Maximum input level

The maximum input level is limited by the maximum voltage of the pre-amplifier. It has a limit of 10V RMS by the first-stage FET.

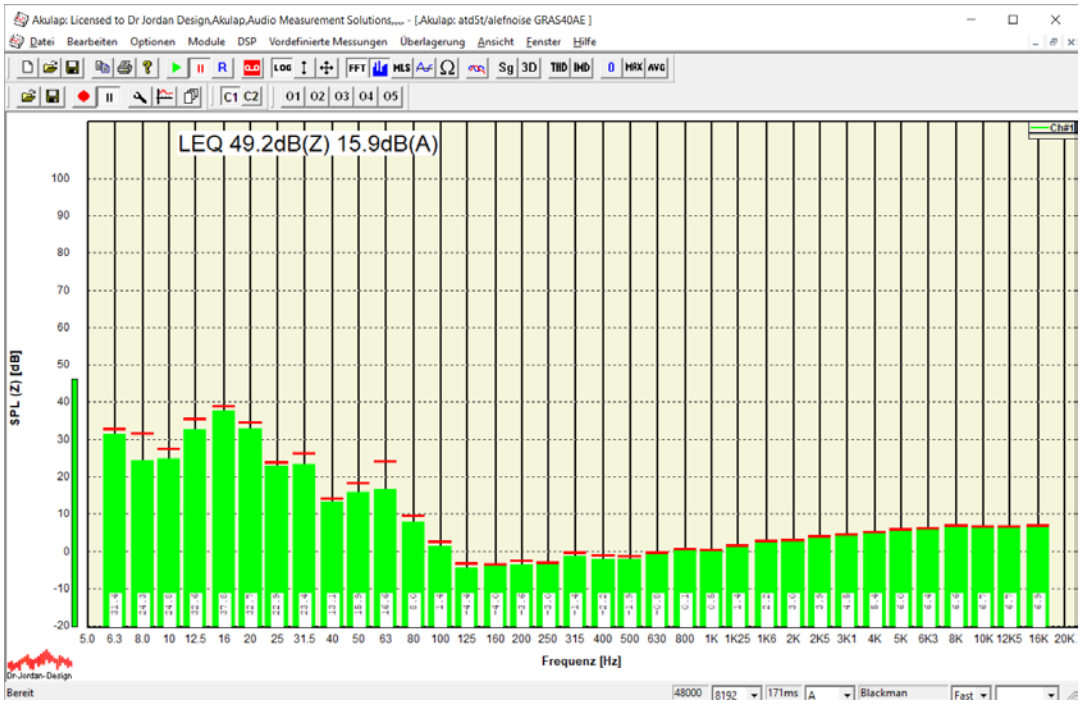
This is a list for typical maximum linear levels with common capsules.

Capsule sensitivity [mV/Pa]	max SPL RMS [dB]	max SPL peak [dB]
2,5	166,0	169,0
5	160,0	163,0
10	154,0	157,0
20	148,0	151,0
25	146,0	149,0
30	144,5	147,5
50	140,0	143,0

1.7 Microphone capsules class 1

Since you can connect almost any pre-polarized class 1 capsules with thread 60UNS, we can give some generic information, only.

The acoustical noise floor is below 16dB(A) (1/2” 50mV/Pa). In this example we use a GRAS 40AE capsule. Please note, that the infra sound noise, is caused by traffic near to our lab.



1.8 Microphone capsules class 2

Since you can connect almost any pre-polarized class 2 capsules with thread 60UNS, we can give some generic information, only.

The acoustical noise floor is below 18dB(A). In this example we use a ½" capsule with 25mV/PA. Please note, that the infra sound noise, is caused by traffic near to our lab.