

Röcklinger PHA2 user manual



1. Construction idea

This RIAA amplifier is designed to create a product that gives the user great possibilities to use an arbitrary pick-up on his record player. One of the requirements that should be satisfied is that performance shall be better than most other RIAA-amplifiers that are available on the market.

The selected construction with real balanced architecture makes it possible to use symmetrical signal's on both in- och output. It can be mentioned that input impedance, input capacitance, gain and choice of input can be made from the front without opening the apparatus.

The RIAA amplifier follows the standard enhanced RIAA with the time constants $3180 \mu\text{s}$ (50 Hz), $318 \mu\text{s}$ (500 Hz), $75 \mu\text{s}$ (2,120 Hz) and $3,18 \mu\text{s}$ (50 kHz). This choice was made because many today available amplifiers has a high maximum frequency limit. The fact that IEC RIAs zero pole at $7950 \mu\text{s}$ (20 Hz) is not used, depends on that this can be adjusted with existing tone controls on the preamplifier.

The result of the construction work was a RIAA amplifier that on a natural way and without errors can reproduce the input signal. No compromises have been made during construction when it comes to sound quality but rather focus has been to in such a correct way as possible amplify incoming signal according to the RIAA specification.

The amplifier is entirely DC coupled and no capacitors are anywhere in the signal chain. Only operational amplifiers of the highest class are used. To DC-couple has that advantage that room sound with low frequencies also will be reproduced correctly. Therefore it is raised higher demands on the record player's characteristics than usual. Disadvantage will be that low frequency noise from transistors also increases which amplifiers normally filter away. In summary the amplifier gives a higher "presence" to a price of some what higher background noise.

As output buffer an amplifier is used that can deliver 100 mA into the load i.e. long cables with high capacitance can be used on the output. At normal operation the output voltage is around 0,5 – 1,0 V RMS. The output stage over-steering margin of approx 20 dB. This gives the ability to handle eventual "record noise" without overrun. All steps in the amplifier have been designed to have good margin against overrun.

The power supply contains first a 3-step RC-filter followed by a capacitance multiplicity before the linear regulator and an additional RC-filter after it. Besides that the input stages in the amplifier are fed by a special type of regulator that has extra low noise to give the best possible power supply to the input stages.




2. Usage

Connect 1 to 3 record players to the inputs marked 1, 2 and 3 on the rear. Input 1 is for balanced XLR-contact and inputs 2 and 3 are intended for RCA-cables. Left channel is marked L and has black phono contacts. Right channel is marked R and has red phono contacts.

Choose input with the right switch on the front. Position 2 and 3 exists in a unbalanced positions called 4 and 5 unbal. These 2 positions makes RCA inputs outer connection grounded and there by operates the amplifier balanced. This position can be used when the cables from the record player is connected to chassis.



For chosen input, select an input resistance that is closest to the value that the pickup manufacturer recommends as load impedance for optimal performance.

This is done with the switch on the front marked with the symbol  (see picture) and the text Ohm. The switch has 5 positions: 100 Ohm, 200 Ohm, 500 Ohm, 1kOhm and 47 kOhm.



The pickups recommended load impedance is often found in pickup manual if you don't know it already.

The output is connected to a suitable input on the final amplifier or other equipment that is used, where the sensitivity is around 0,5 – 1,0 V RMS Use output depending input type in final amplifier. Both balanced XLR and unbalanced RCA cable can be used. Even if the amplifier can drive both outputs, we don't recommend that.

Observe: For MM (Moving Magnet) we recommend 47k load impedance and 40 dB gain. Even if other combinations freely can be chosen, this will raise requirements on which cable is used to the record player. **Care must be taken to how signal ground is connected and which type of cable that is used.** If you hesitate the least, contact store or dealer for guidance. **Wrong choose will lead to that hum and noise will be picked up by the cable.**

The power switch in on the rear powers on the amplifier. Fuzes is located in the middle of the power inlet and has the value 2x200 mAT. Use with preference ceramic fuzes.

After power on the front LED is lid yellow and start-up of the amplifier is done. This will take approx. 1 second to reach full operating. If everything is as it should the LED on the front turns green to indicate that everything operates normal.

Should an error occur, the output is disconnected. LED on the front indicates operating status, yellow (start-up/error) / green (output is available). If the LED don't turn green after start-up / during operation, contact service shop.

3. Specification

Double mono amplifiers

Inputs: 1 ea XLR balanced, 2 ea RCA

Switchable input impedance:

100, 200, 500, 1000 Ohm and 47 kOhm

Switchable input capacitance:

0, 100 och 500 pF

Outputs: 1 ea XLR balanced, 1 ea RCA

Bandwidth 0 – 80 000 Hz -3dB (relative to RIAA curve)

Turn on delay for optima lift expectancy

Power supply 230V -10%, +6% (50 / 60Hz),

Power consumption 25 VAC

Fuzes: 2 x 200 mA ceramic

Toroid transformer 30VA build in a magnetic shield

Linear regulators for lowest noise level and stable operation

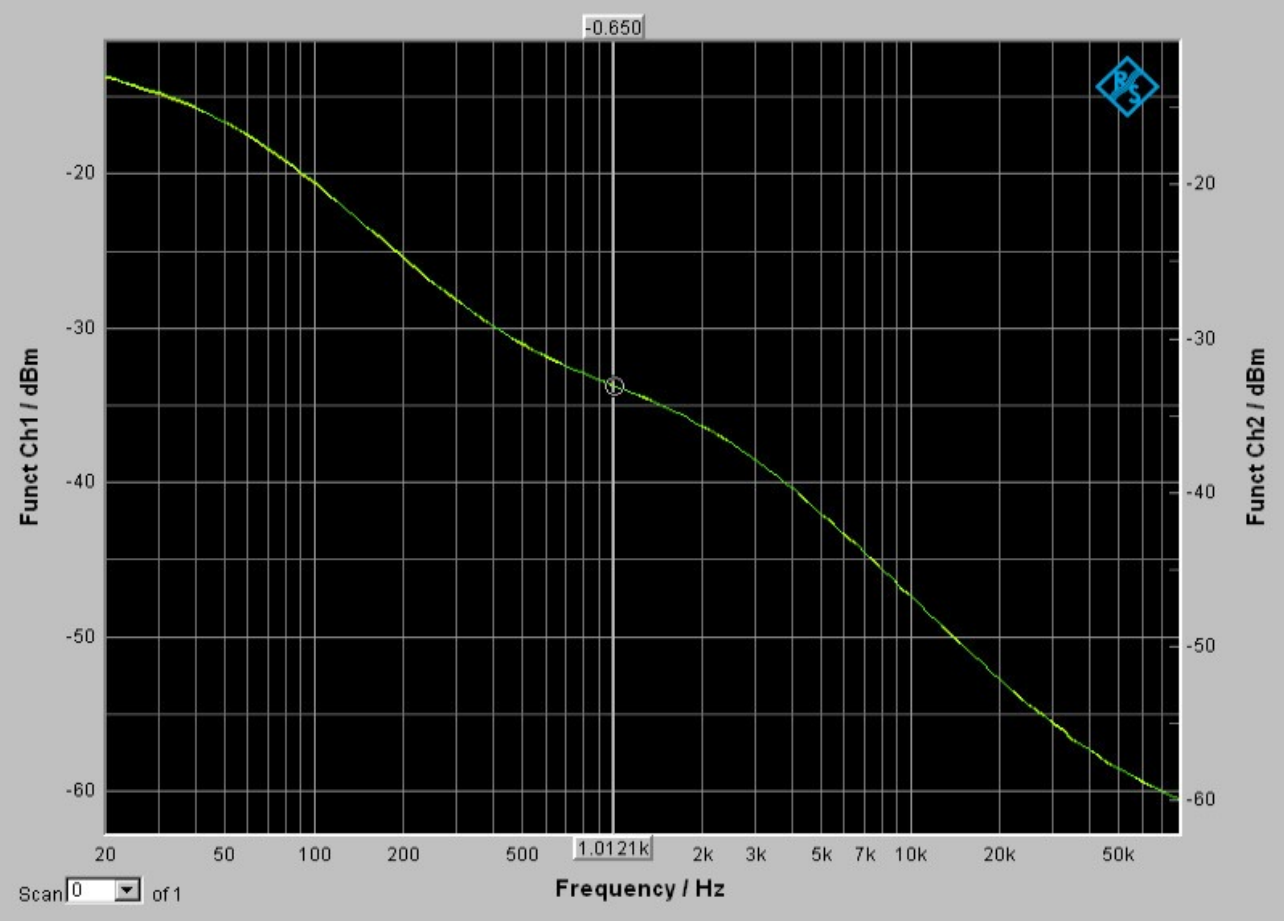
Size 400x285x80 mm

Weight 6,8 kg

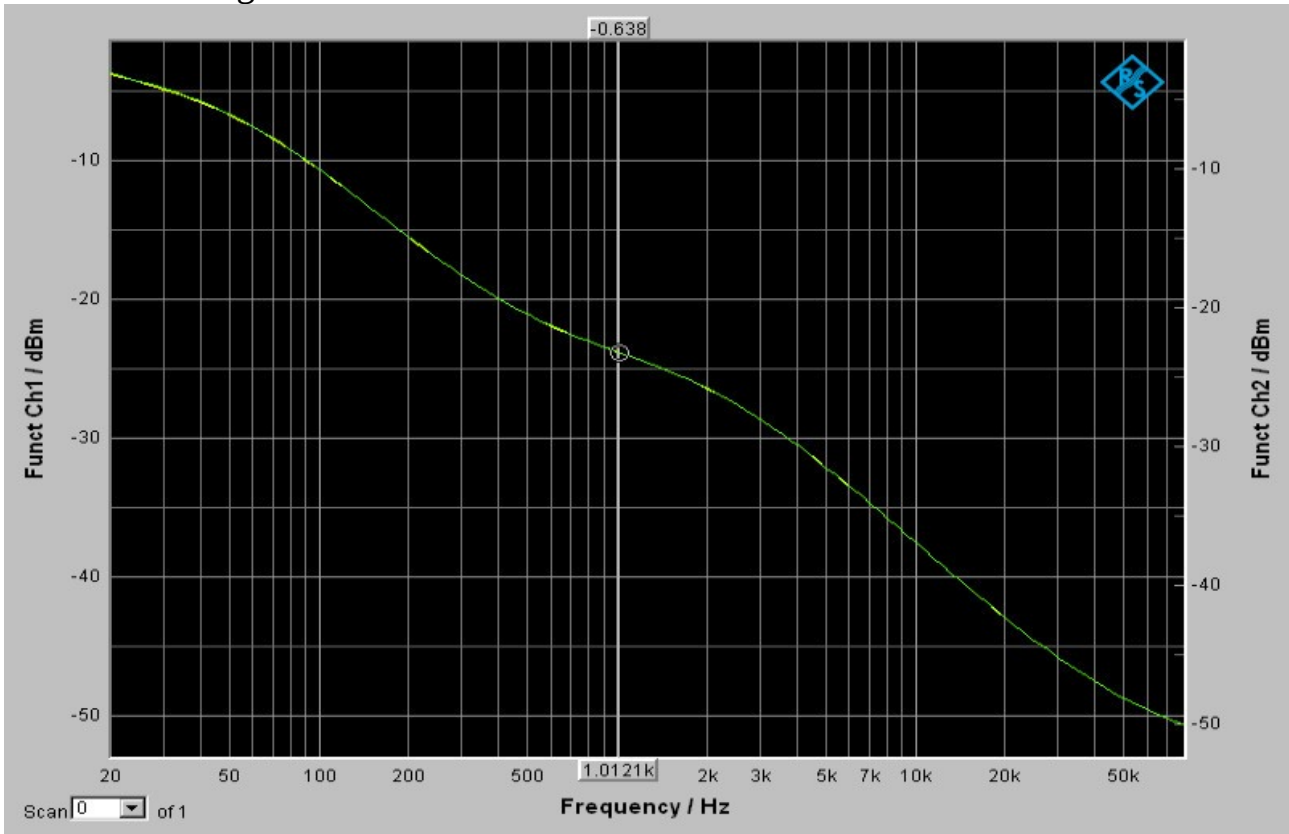
Every set is run at least 40 hours

4. Measurements

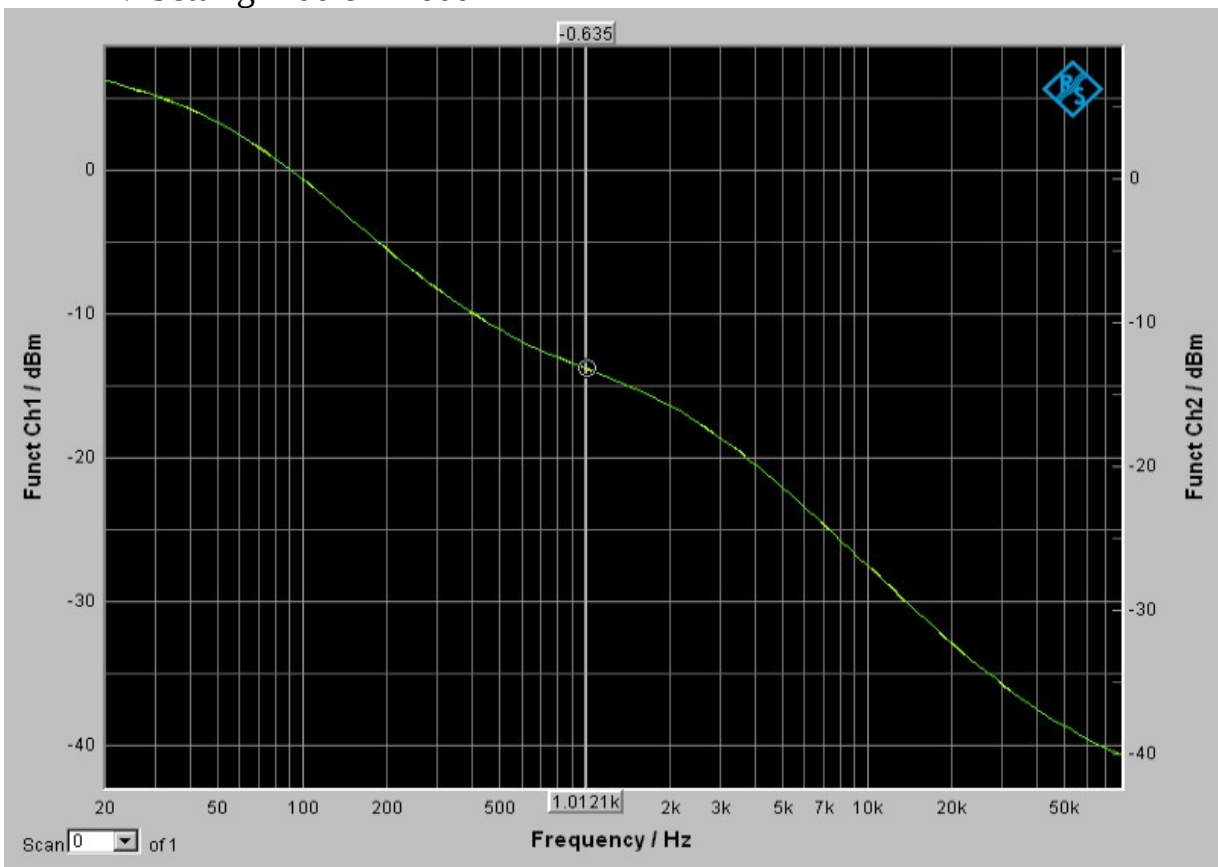
In=1 mV Setting=100 ohm 40dB



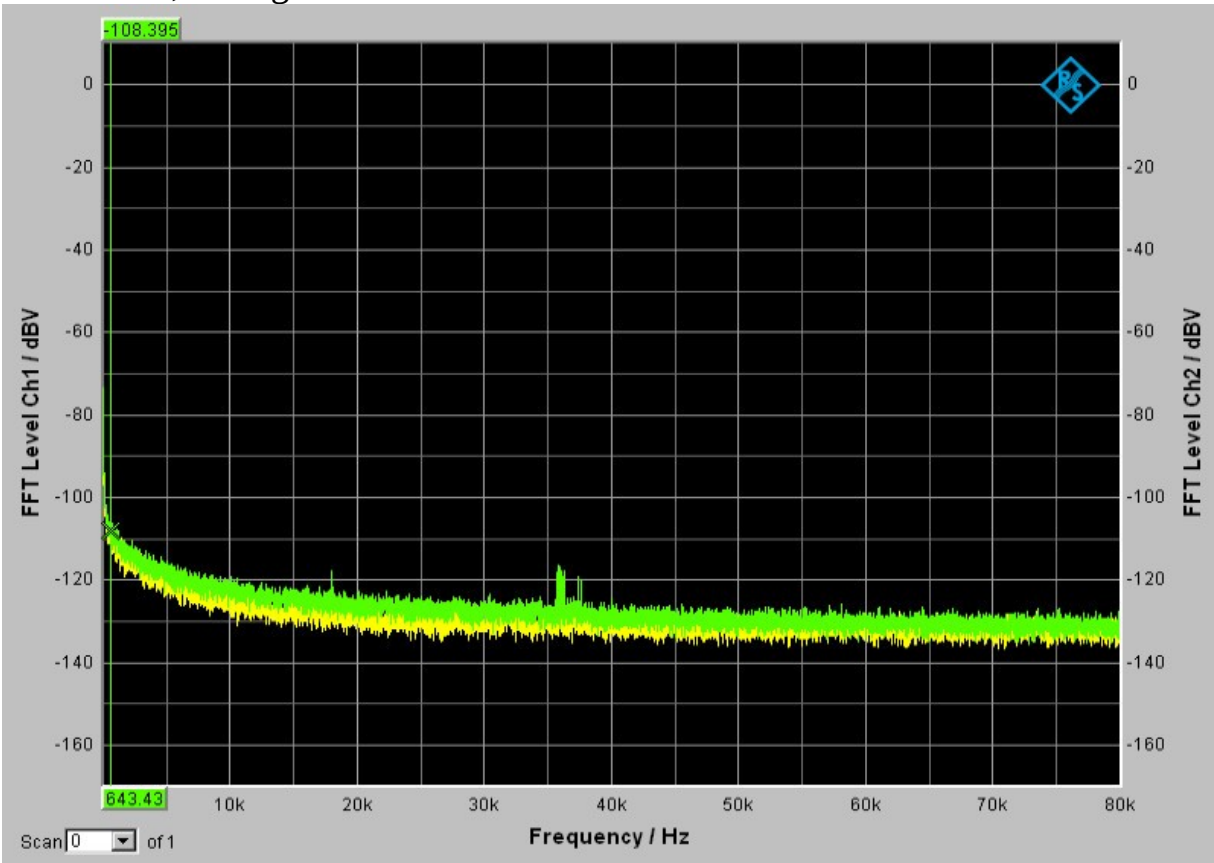
In=1 mV Setting=100 ohm 50dB



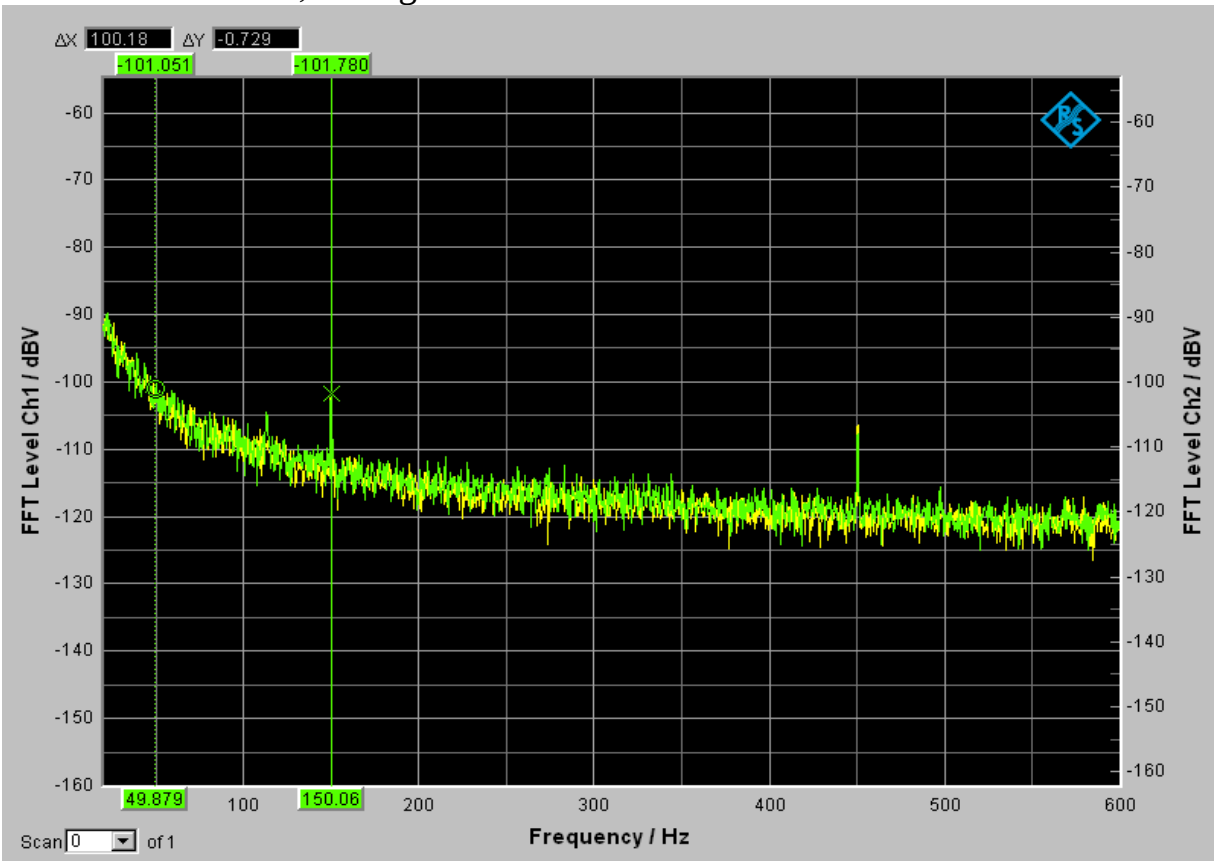
In=1 mV Setting=100 ohm 60dB



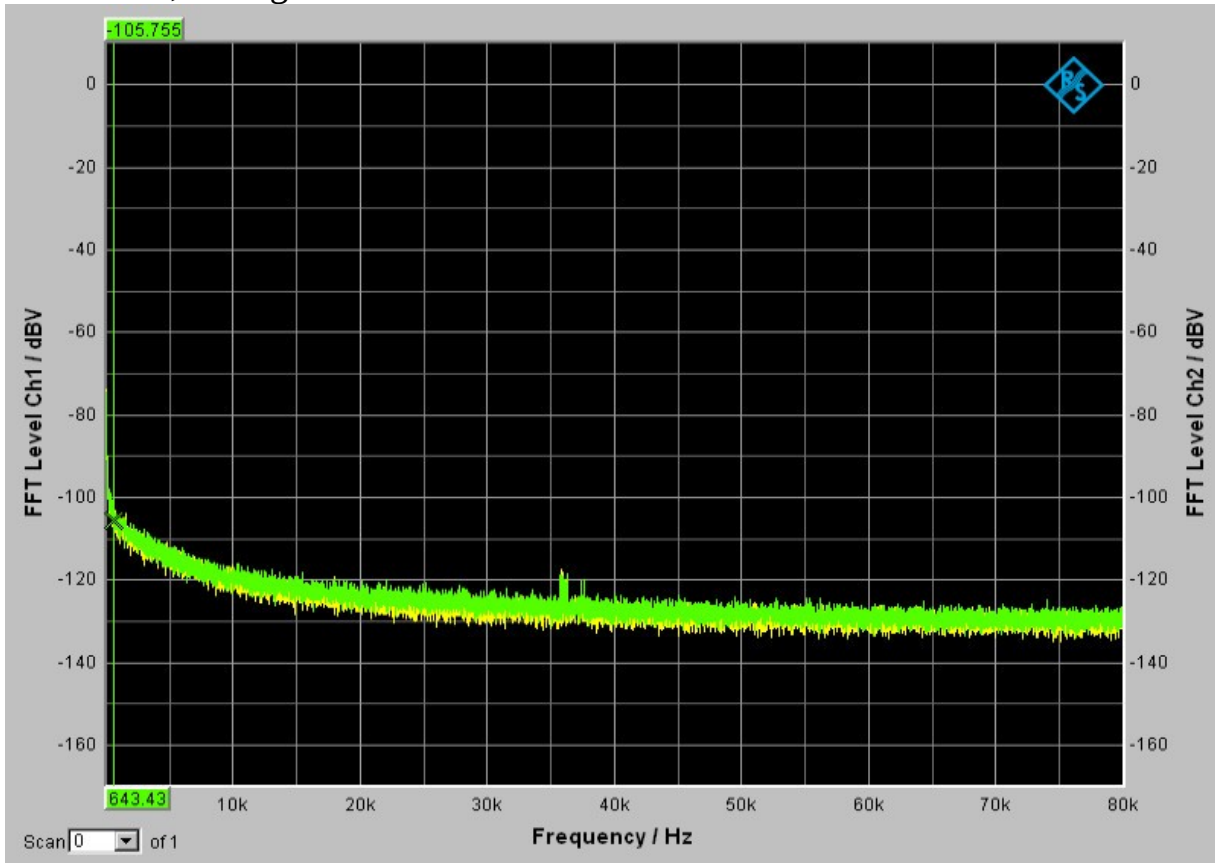
Noise level, setting=100 ohm 40dB



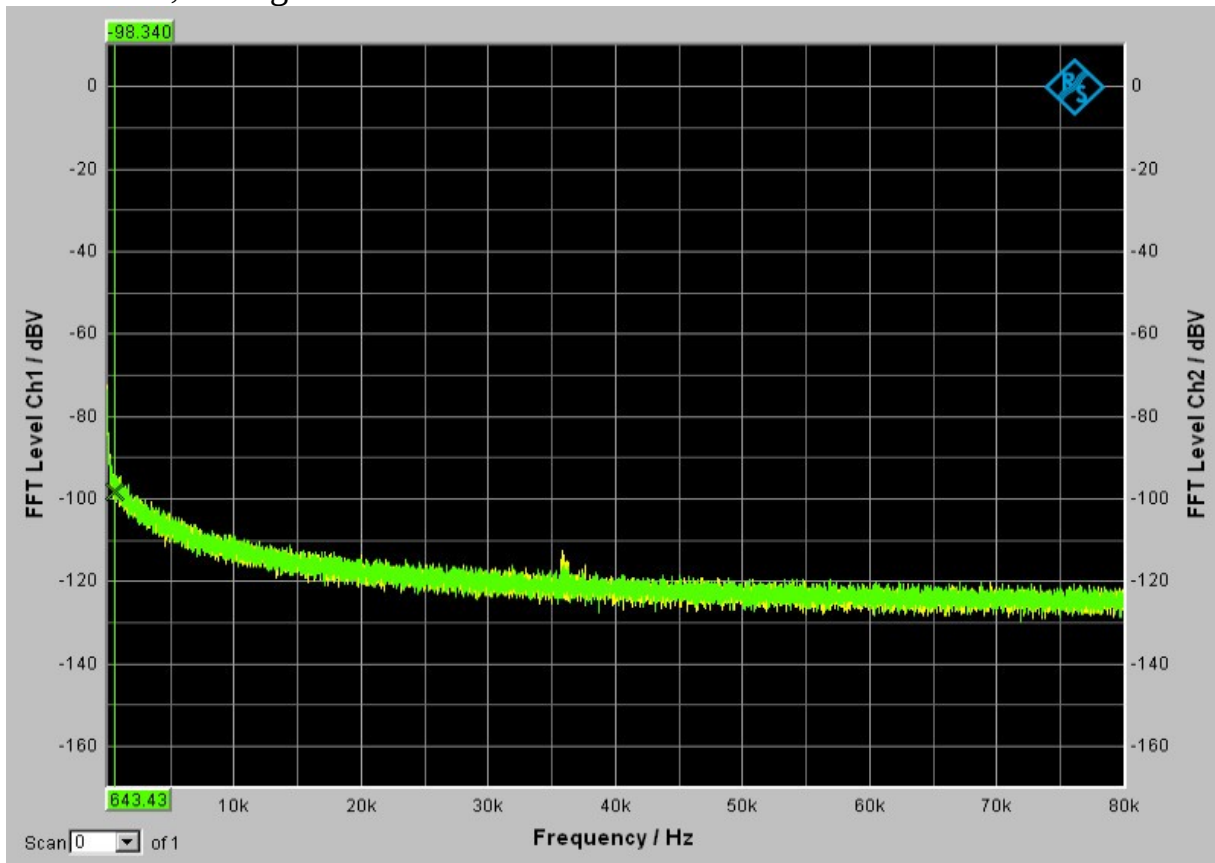
Noise level detailed, setting=100 ohm 40dB



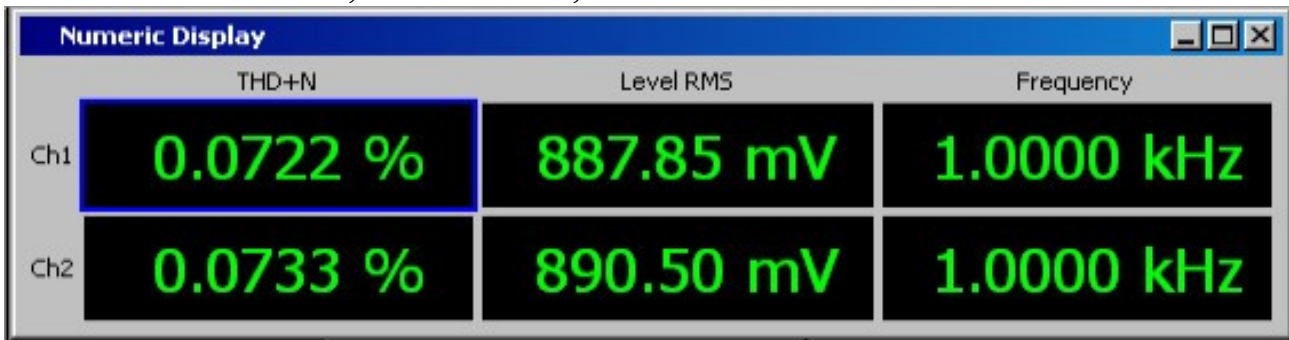
Noise level, setting=100 ohm 50dB



Noise level, setting=100 ohm 60dB



Distortion at $U_{in}=1\text{mV}$, $R_{in}=500\Omega$, $F=60\text{dB}$



	THD+N	Level RMS	Frequency
Ch1	0.0722 %	887.85 mV	1.0000 kHz
Ch2	0.0733 %	890.50 mV	1.0000 kHz

For further detailed information, see homepage www.rocklinger.se

5. Warrant

Warranty holds for first registered user and is valid for intended use. Other usage, is not covered by warranty as well as unintentional / intentional damage on the amplifier.

According to Swedish consumer law, extended to:

3 year against fabrication errors in electronics

Faulty product is resent to purchasing place for reparation. Freight is not covered by warranty.

6. Key to symbols

RIAA = Record Industry American Association

XLR = comes from Cannon X Series Latch Rubber, which refers to that is was cable of type X with latch (coupling made so that the contact don't fall out) and rubber (rubber dielectric)

7. CE-marking



This product conforms with EMC Directive (89/336/EEC) and low voltage directive (73/23/EEC) published by European Commission.

Conformation with these directives brings conformance with following European Legislation (within parenthesis international corresponding standard is referred):

- SS-EN55032 (CISPR 32) - Electromagnetic Interference
- SS-EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11) - Electromagnetic Immunity
- SS-EN61000-3-2 (IEC61000-3-2) - Power Line Harmonics
- SS-EN61000-3-3 (IEC61000-3-3) - Power Line Flicker
- SS-EN60950 (IEC60950) - Product Safety



The blitz symbol in the triangle notifies uninsulated dangerous voltage inside the apparatus. The voltage can be sufficient powerful to cause electric shock.



Exclamation mark in triangle notifies on important usage and maintenance instructions in this manual.