

Some distortion and noise measurements of three tube preamps

Setup:

ADC DAC Steinberg UR12

DUT (preamp under test)

47kOhm potentiometer

overload protection for soundcard

Laptop Lenovo X395 (have used 3 different laptops, two of them produced artefacts that showed up irrespectiv of software used)

Software ARTA

Comment

This is not a shoot-out between different preamplifiers. None of the circuits has been optimised and even less so for the specific tubes used.

Andrea Ciuffolis Pre (<http://audiodesignguide.com/PowerFollower/index1.html>) is a very nice design. I bought the inexpensive circuit boards which are of excellant quality.

Nevertheless the measurements give some food for thought

The power supplies deserve a closer look and follow-up. As Pete Millet puts it: High frequency switching noise is easier to filter than low frequency ripply from a classic supply.

The least noisy preamp presented (Pre IF860 and IL861) are the ones that use Pete Millets hvlfback converter. The chinese PS is slightly noisier (this may be due to the different additional filtering compared to the previous one. (and given its price.....who would dare to complain)

Due to the lack of an oscilloscope i was not able to have a look beyond 20khz

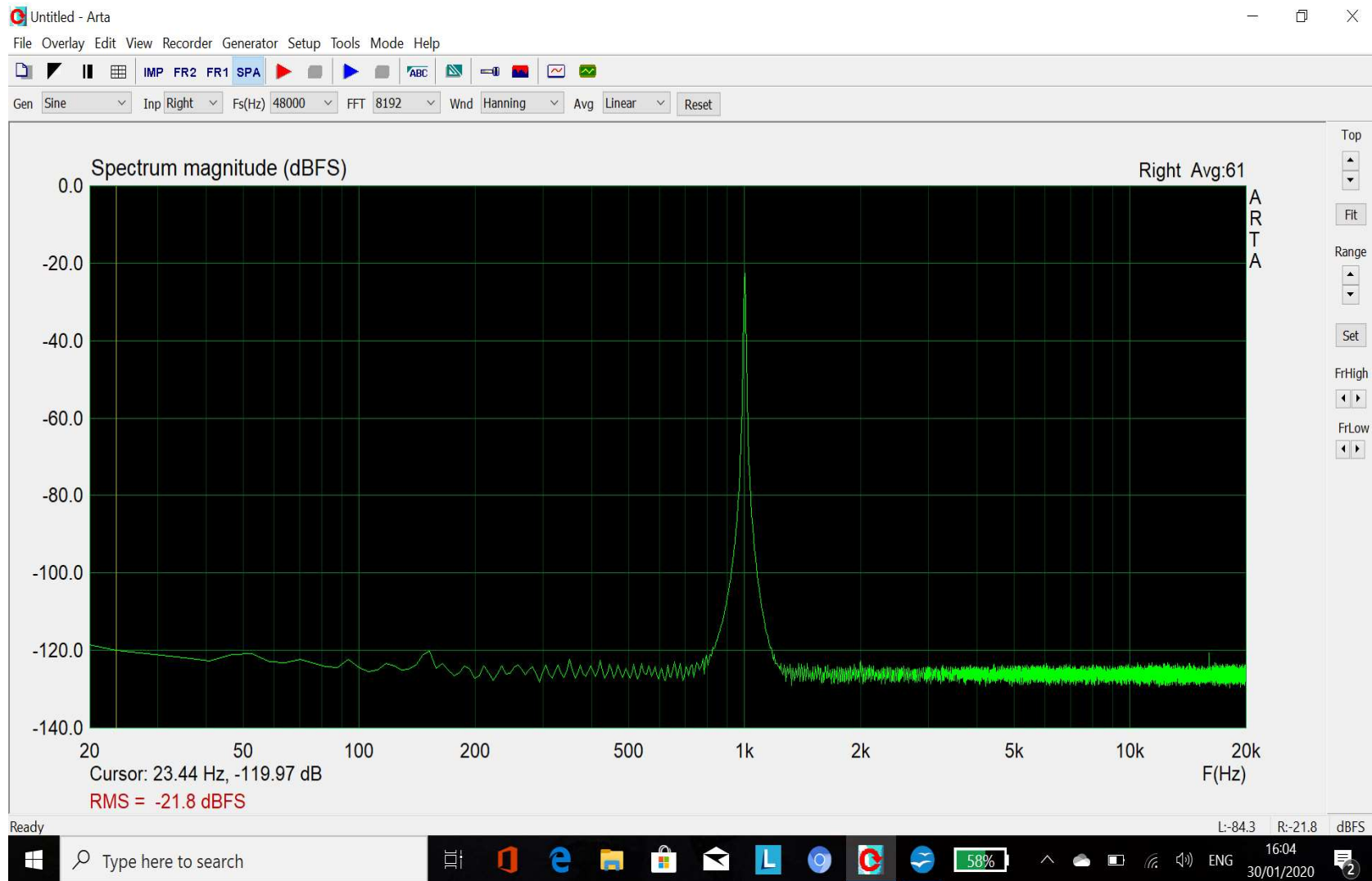
The preamps have voltage gain of between 20x to 40x (depending on the tubes used)

The IF860 (and IL861) with buffer are my favourite. They have voltage gain of 27x and 22x. The output impedance depends on the source resistor value of the mosfet.

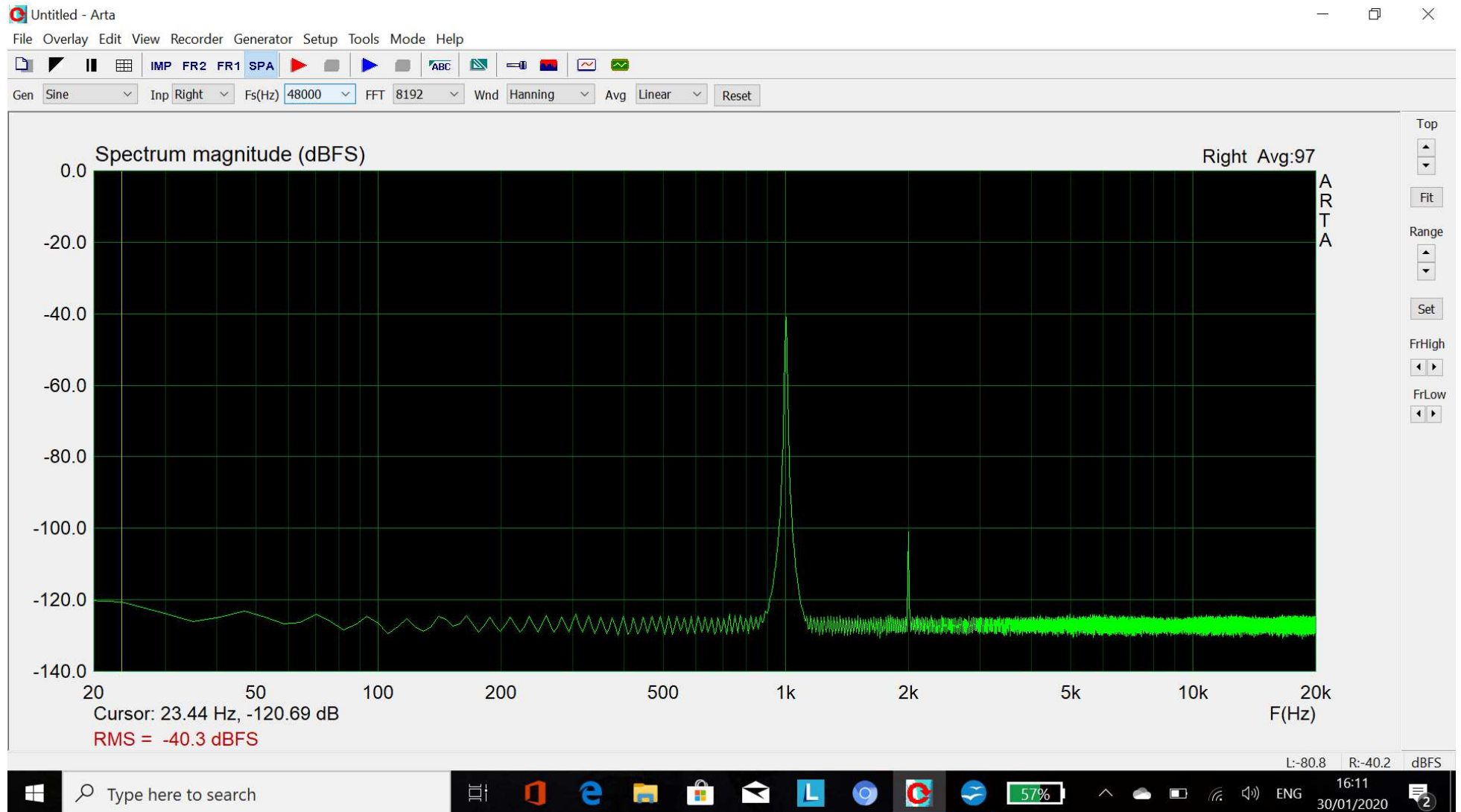
These tubes are very linear, have very long life and are not microphonic. Price is still cheap (probably because of the "abnormal"heater voltage)

The total preamp price for two channels using a chinese hvflback PS does not exceed 50 US.

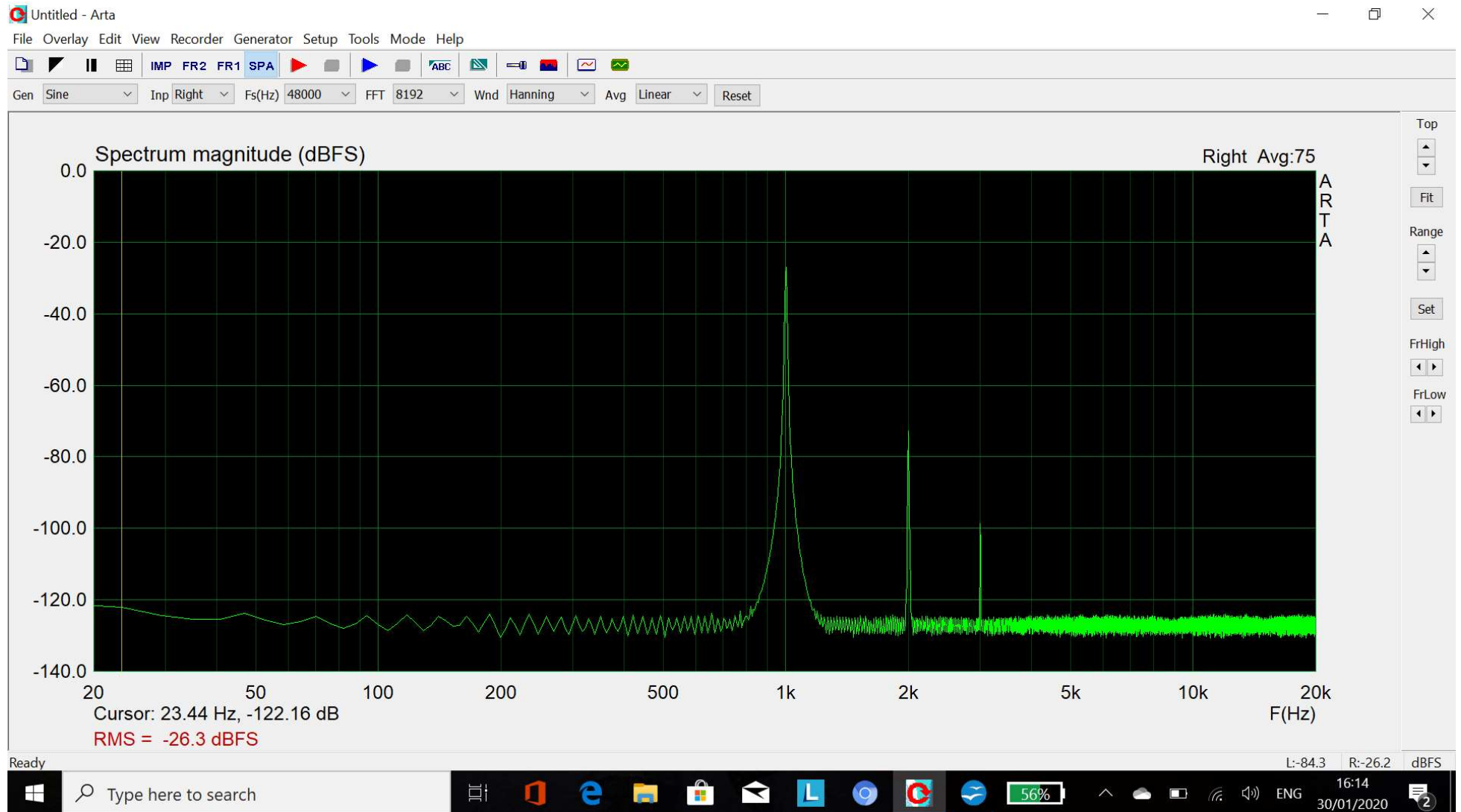
Soundcard Steinberg UR12 high Z in / loop-check



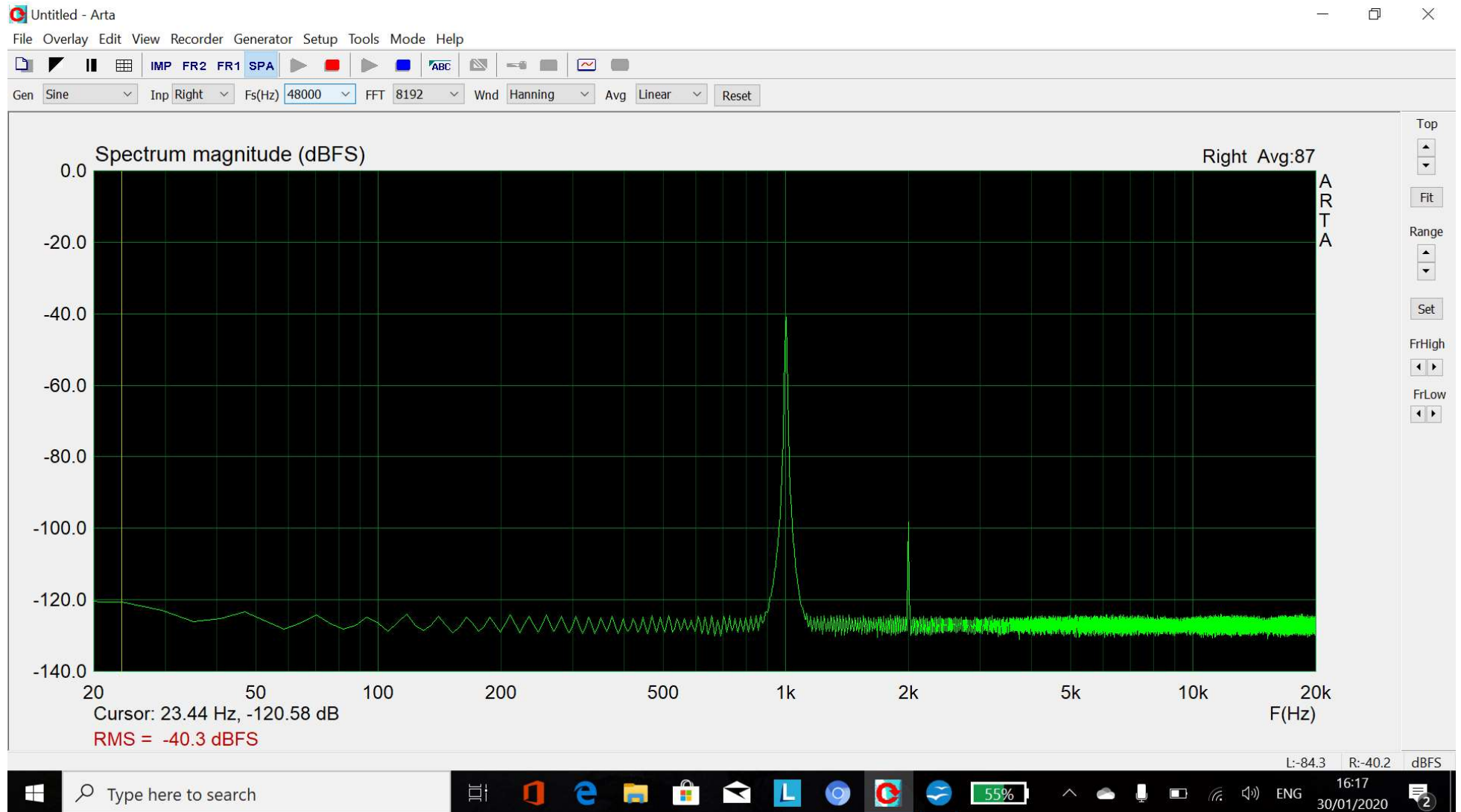
Pre IF860 with mosfet buffer / Tube IF860 RFT / 2.83Vrms into 47kOhm



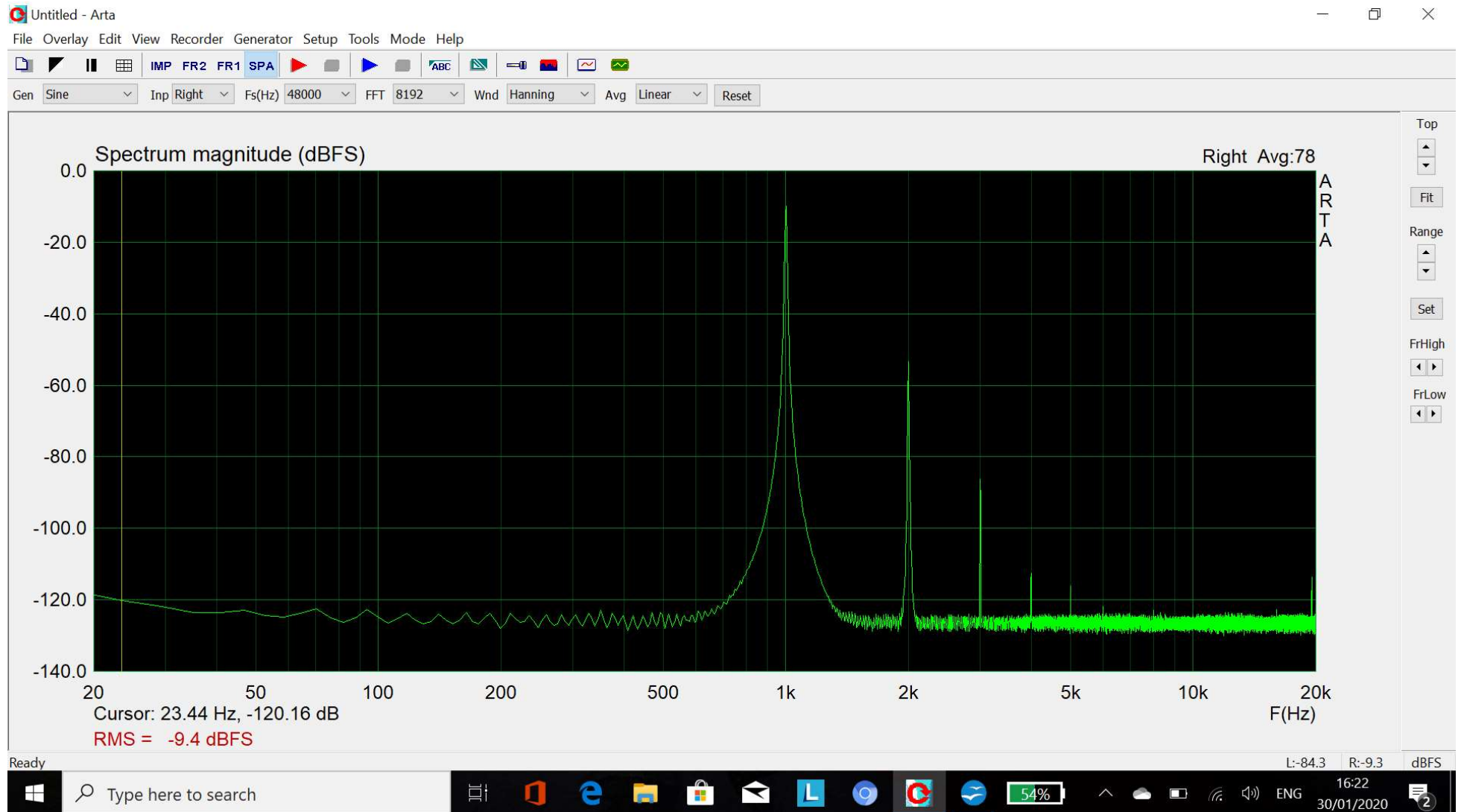
Pre IF860 with mosfet buffer / Tube IF860 RFT / 14Vrms into 47kOhm



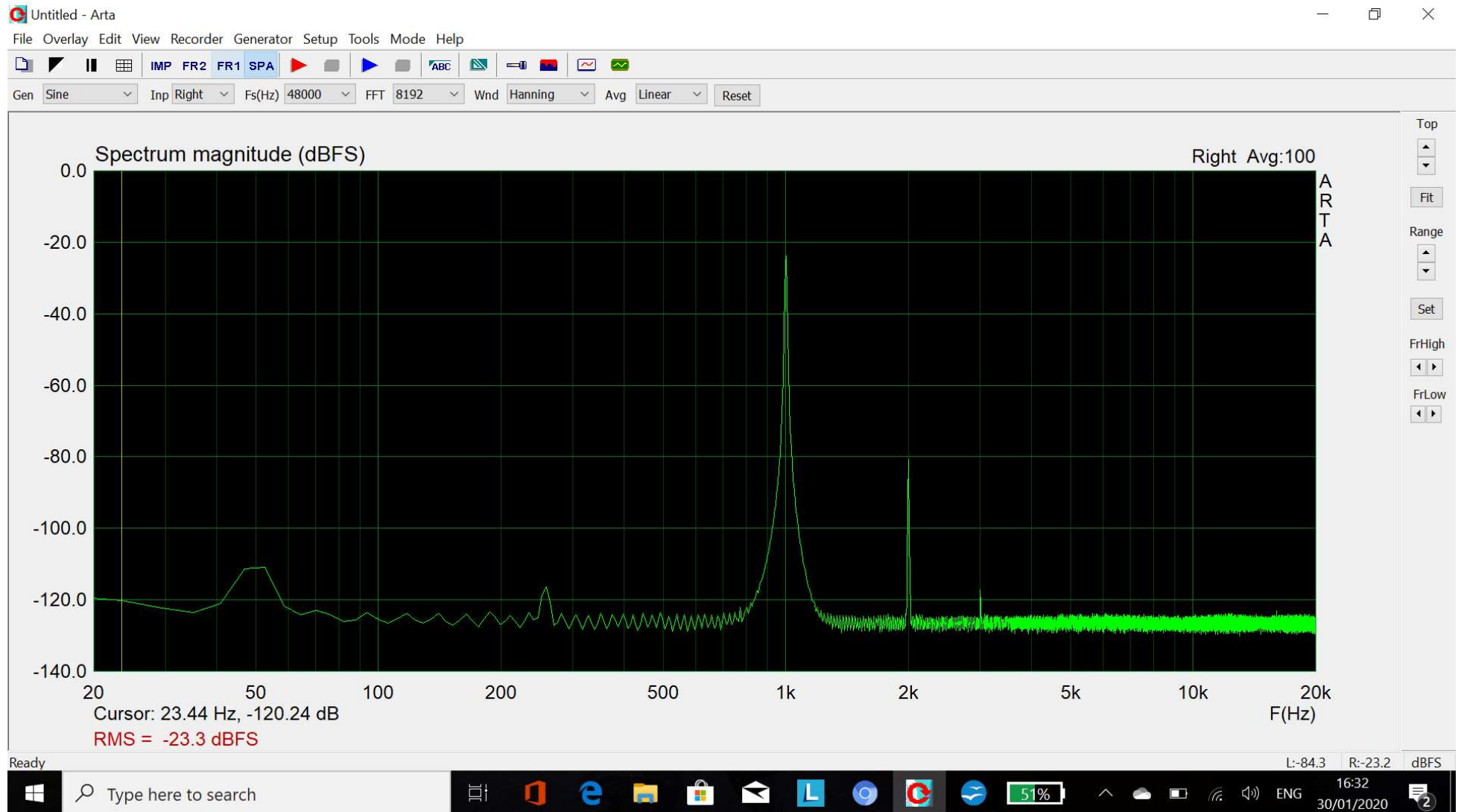
Pre IL861 with mosfet buffer / Tube IL861 RFT / 2.83Vrms into 47kOhm



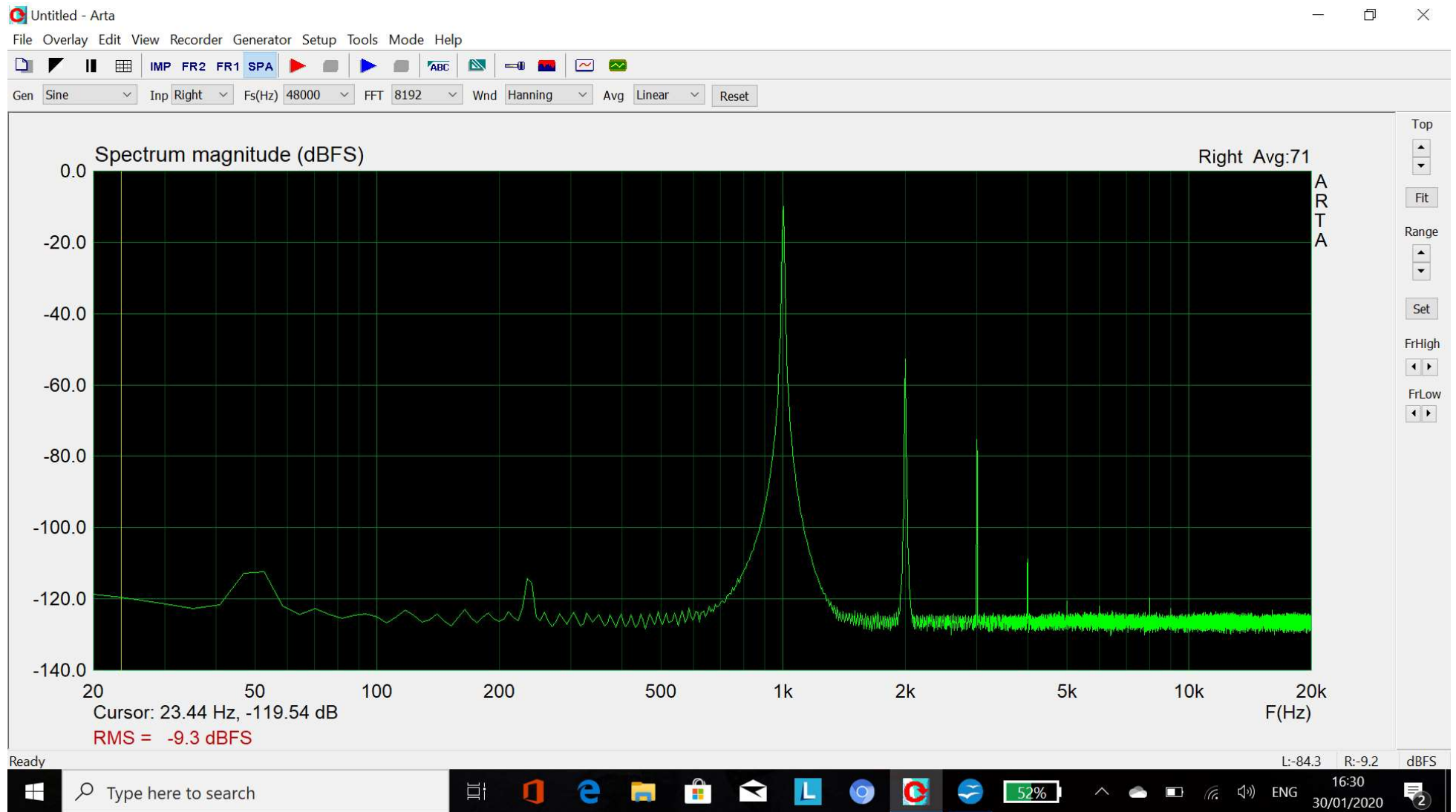
Pre IL861 with mosfet buffer / Tube IL861 RFT /14Vrms into 47kOhm



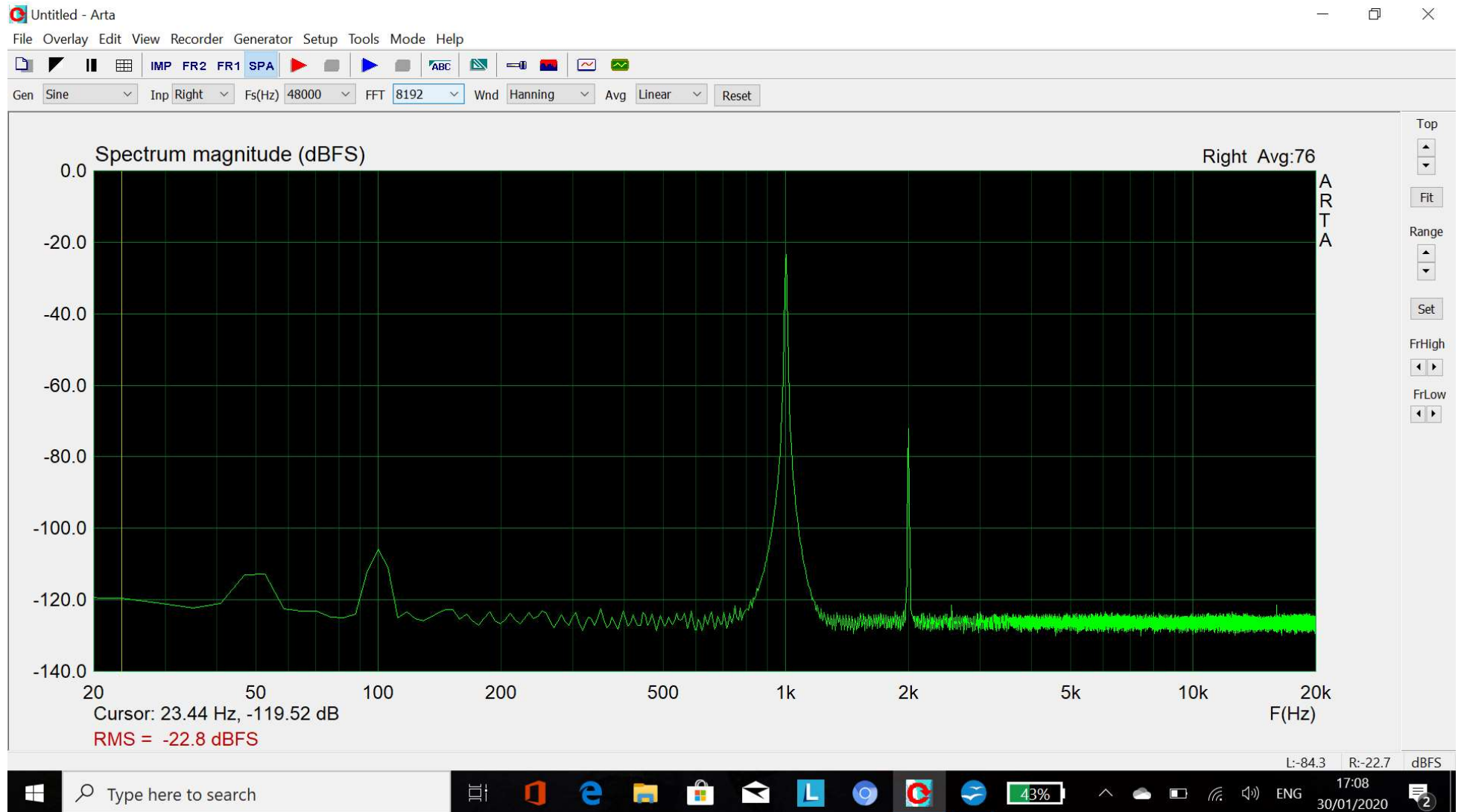
Pre IF860 (without buffer) / Tube IF860 RFT /2.83Vrms into 47kOhm (power supply chinese hvflyback)



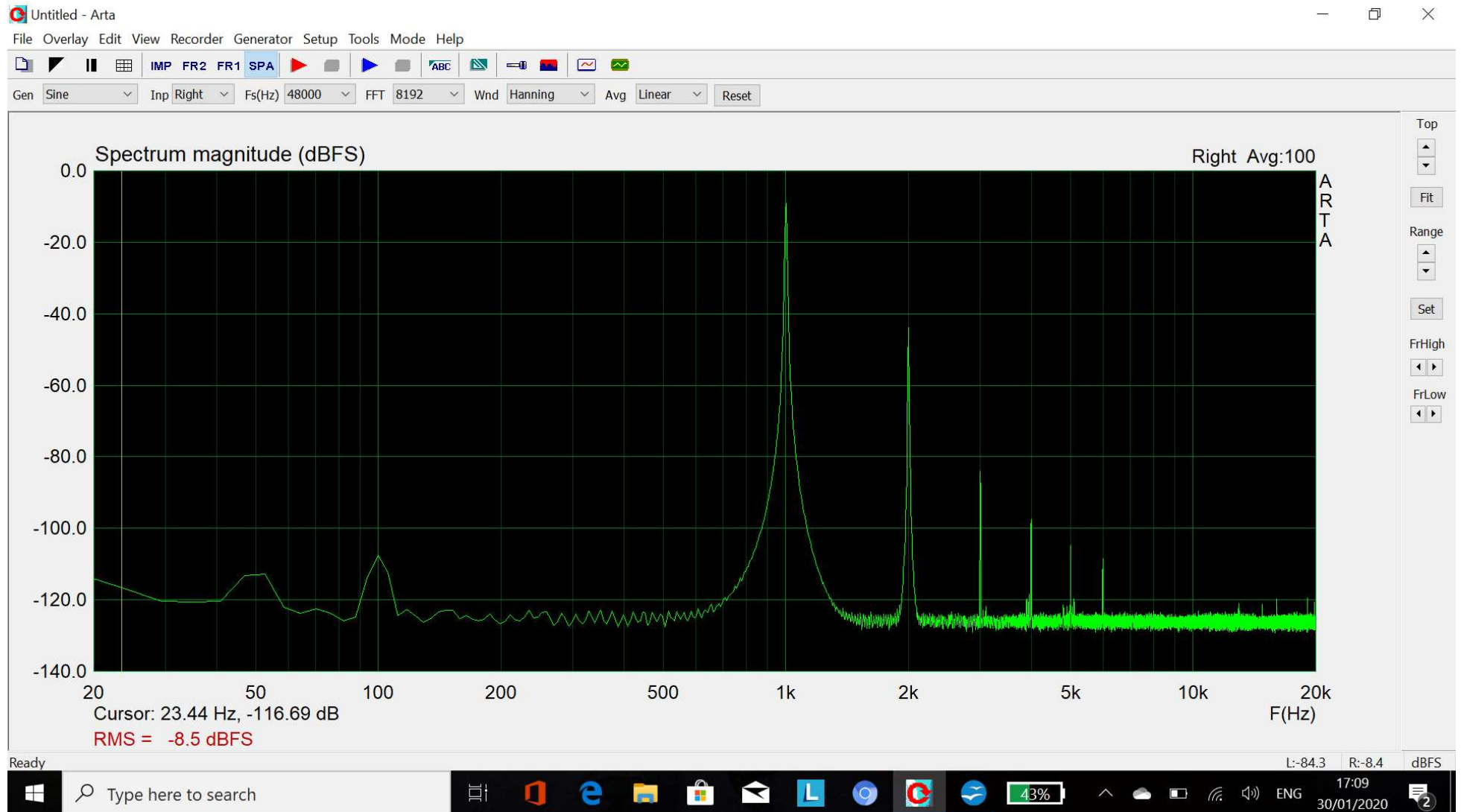
Pre IF860 (without buffer) / Tube IF860 RFT / 14Vrms into 47kOhm (power supply chinese hvflyback)



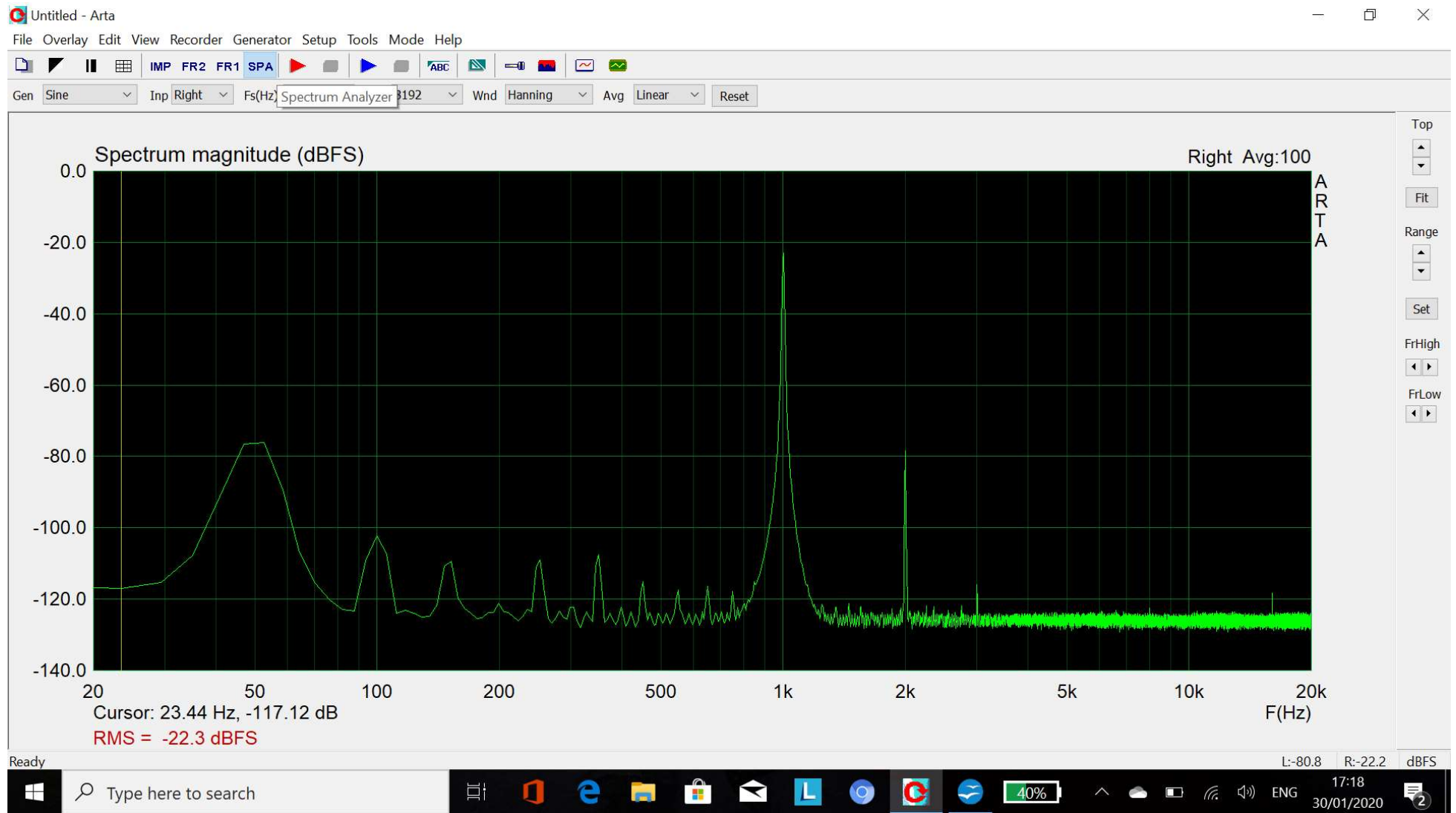
Andrea Ciuffoli Pre with raised heater to be within limits of used tubes / 12AT7 Siemens / 2.83Vrms into 47kOhm



Andrea Ciuffoli Pre with raised heater to be within limits of used tubes / 12AT7 Siemens / 14Vrms into 47kOhm



Andrea Ciuffoli Pre with raised heater to be within limits of used tubes / 5751 RCA / 2.83Vrms into 47kOhm



Andrea Ciuffoli Pre with raised heater to be within limits of used tubes / 5751 RCA / 14Vrms into 47kOhm

