

ARNULL

NULL TESTER



01 WHAT IT DOES

ARNULL subtracts one signal from another and tells you what is left. The signal you are testing goes into the main input; the one you are comparing it with goes into the **sidechain** input. ARNULL lines the two up, subtracts them, and reports the **null depth**: how far below the main signal the remainder sits.

It answers questions that are otherwise guesswork. Is this plugin really transparent when you leave it at its default? Does the file you exported match what you heard? Does switching oversampling on change anything? Are these two chains the same? In each case you route both versions in and read one number.

When the two inputs are the same signal and the only thing between them is a whole number of samples of delay – which is what plugin latency is – the remainder is **exactly zero**. Not a small number: zero. The interpolation filter is not in the path at all in that case, so nothing is left to round. The display says BIT IDENTICAL and it means it.

02 INSTALLING

macOS: open the package and choose the formats you want. The plugin installs to the shared plugin folders. Windows: run the installer; the VST3 goes to the common VST3 folder. Rescan plugins in your DAW afterwards.

ARNULL reports **8256 samples** of latency, which is 172 ms at 48 kHz. That is how it can align a reference that arrives up to 8192 samples early or late. Your DAW compensates for it automatically. Put ARNULL on a bus you are measuring, not in a chain you are recording through.

03 SETTING IT UP

Put ARNULL on the track carrying the signal you want to test. Route the reference into its sidechain input – in most DAWs that is a send, or the sidechain selector on the plugin header. Until something arrives there the display says NO REFERENCE and the difference is simply the main input.

THE USUAL TEST: IS THIS PLUGIN TRANSPARENT?

Duplicate the track. Put the plugin under test on one copy and leave the other untouched. Send the untouched one into ARNULL's sidechain. Play. If the plugin is doing nothing at its current settings the reading is BIT IDENTICAL; if it is doing something, the number tells you how much and the curve below tells you where.

WHY THE SPECTRUM MATTERS

One number says how different. The spectrum says **what** is different. The faint curve is the main signal, the bright one is the remainder. A plugin that only touches the top end leaves a remainder that climbs on the right; one that adds a little of its own leaves a flat floor. Two plugins can read the same depth and be wrong in completely different ways.

ALIGNMENT

Sidechain sends are often not delay compensated, so the reference usually arrives earlier than the processed signal by exactly the latency of whatever you are testing. ARNULL finds that offset itself and shows it in samples and milliseconds. If it cannot find a match it says so rather than showing a number that means nothing. Press RE-ALIGN after changing what you feed it.

04 PARAMETERS

OUTPUT	What leaves the plugin. DIFFERENCE is the remainder, MAIN passes the main input through untouched, REFERENCE passes the sidechain through. Default DIFFERENCE.
ALIGNMENT	AUTOMATIC searches for the offset and keeps it. MANUAL uses the OFFSET control. OFF subtracts the two inputs as they arrive. Default AUTOMATIC.
OFFSET	-8192 to +8192 samples in hundredths, used when ALIGNMENT is MANUAL. Positive means the reference arrives later than the main input. Default 0.
GAIN MATCH	Ignores a level difference between the two inputs, so a plugin that only changes level still nulls. The gain it applies is shown. Default off.
POLARITY	AUTOMATIC follows the solver, which finds an inverted reference on its own. NORMAL and INVERTED force it. Default AUTOMATIC.
LISTEN GAIN	0 to 60 dB, applied to the DIFFERENCE output only, so you can hear a remainder that is too quiet to hear otherwise. A ceiling at -1 dBFS keeps it from becoming loud if the reference stops. The readings are taken before this. Default 0.
MEASUREMENT WINDOW	100 ms, 400 ms, 1 s or 3 s. How long the depth reading averages over. Longer is steadier, shorter follows changes. Display only. Default 400 ms.

05 MEASURED

Every number here comes from the plugin's own test suite, run on the shipped build at 48 kHz. Tests/ARNULLTest in SOURCE.

EXACT ZERO	The same signal with a whole-sample delay of 0, 1, 64, 2048 or 8000 samples: not one sample of the remainder differs from zero . The interpolation filter is bypassed whenever the offset lands on a whole sample.
SUB SAMPLE	Reference shifted by half a sample: remainder 103.5 dB below the signal. At a quarter sample 104.0 dB, at a tenth 97.6 dB. Measured on material band limited to 12 kHz, with the shifted reference generated analytically rather than by a filter.
SOLVER	Reference delayed 333 samples and inverted: found at 333.00 samples , polarity reported inverted.
GAIN MATCH	Reference 6 dB quieter: remainder 149.6 dB down with GAIN MATCH on, and exactly 6.02 dB down with it off – which is what a half-level reference should leave.
THE READING ITSELF	With a known amount of noise added to the main input, the depth the plugin reports and the depth calculated independently by the test agree to within 0.24 dB .
MAIN OUTPUT	Bit identical to the input, delayed by the reported latency: 0 samples differ .
LATENCY	8256 samples, reported to the host and measured the same.
LISTEN CEILING	With LISTEN GAIN at 60 dB and the reference cut off mid-play, the largest output sample is 0.89 – the ceiling holds.
PROCESSOR	0.06 % of one core when the alignment is a whole number of samples, 0.20 % when it is not and the 32 tap filter runs on every sample. The solver runs on its own background thread: 12.3 ms per pass, about once a second.
TEXT	All 28 values written on screen read back to the same value if you type them in.

06 WHAT A DEEP NULL DOES NOT PROVE

A periodic signal nulls against itself at every multiple of its period, so a steady sine tone can show a deep null at an offset that is musically wrong. Use real material. And a deep null says the two signals are the same where you measured – it says nothing about the part you did not play.

07 SUPPORT

Instagram @ajanssrecords.