Most testing done in Nov 2022.

To test: BlauKraut. So far very very low cpu. Windows only.

Note that there are a few entries with *. Add .02 to those to compare it to the majority of numbers without an *. They are placed in order to reflect the implied +.02. The reason for this is because for most of the testing I had hyperthreading off, but then I found later that I get better cpu usage with it on. Therefor newer measurements (noted with *) get about .02-.03 lower result than they would have during the old non hyperthreading condition. The main usefulness of this list is in comparing plugins' number to each other, and not so much the absolute value (except to see if they are at a generally low cpu usage of course).

For example in Delays, these are actually about the same (UberMod is about .02 less with hyperthreading on):
10. ^ Val UberMod: .05 (2TapChorus)
11. Ohmboyz: .03 *

Low cpu plugins for live use.
Latency plugs do not qualify typically unless delay is tolerable as a send fx and host PDC is disabled or use wrapper (see below).
44k, 128 buffer, 8 Core 9900k all cores locked to 4.8ghz, Presonus Quantum, Win 10
Measurements made in Reaper (numbers are avg high readings)
Close gui in general for highly animated plugs (eq graphs) to get lower cpu
Mda plugins not listed are those I didn't like.
Dead Duck plugins not listed are higher than other comparable/better plugs.
For some fx, test sessions may vary (.01-.05?) but relative measurements remain consistent.
W=Windows Only
GP=GigPerformer
^ = Good default choice (sound, functionality, cpu)

Notes:
Save before using EmRys, sometimes can crash if do too fast extreme param change.
Artillery cumulative fx sum to less than individual plugin measurements.
All Meldas have option to disable "Latency Reporting" so that PDC is not invoked (pitch shifters, etc).

Vst chainers for latency overide:

1. VSTForx - .02 free (discontinued but works)
2. New Sonic Arts Freestyle - .03
3. Kushview Element - .06
4. Mux - .10

--Not:
Wusiks - x42: GP can't mouse ctrl gui. High cpu .40 Other host plugs are buggy.
Jbridge - latency
Metaplugin - latency (latency adjustment doesn't work as of 2020)
Voltage Modular - very high cpu .64, no latency
Contra Free - buggy
Magma - .08, latency
Blue Cat Patchwork - (latency but not as of 2024)

?:
Nryv Agent $99
Bidule

Synths:

- 6 held notes, voices set to 6, fx off, 2 oscs. If this not applicable then measure a typical patch w fx off.

1. mda dx10 .03 (max voices .03), .02 mono
2. mda ePiano .04 (max .08), .02 mono
3. ^ mda jx10 .05 (max .05), .02 mono
4. mda Piano .05 (max .05), .02 mono
5. ReaSynth: .06 (no filter available), mono .02 W
6. Dexed: .08-.12 (PARM>Modern mode. But has no voice limit so +cpu if play fast with long release sound), mono .03 (only has high note priority mode) not obvious to program. [microtuning]
7. ^ Synth1: init sound (direct) .12, mono .05 W? crashed for Prng (Mac) in ableton, crash in GP
8. GSinth2: (no filter) mono only .06
9. ^ FM8: .12 [microtuning], mono .07
10. ^ PPG 2/3: .12 (v3 in Wave Mode 2.V), mono .06
11. Bleass Monolit: mono .09 unison off
12. Synth1 librarian: init sound .14 W, crash in GP
13. Xpand!2: .10-.20 some, mono .05 some. Very limited parameters.
14. Largo: .19, mono .09
15. RS-MET Toolchain w Straightliner: Init preset .20, mono .07 [microtuning via xml]
16. Charlatan: .20, mono .08 (2 voice unison .09) W
17. Triple Cheese: .20, mono .08
18. Zebra: just one dual osc, no filter (but osc fx ok) .20 [microtuning]
19. Reaktor: Junatik .21, mono .17
20. Khs One: .22, mono .10
21. Zebralette: Init .25, mono .10
22. Podolski: init .26, mono .10
23. MPowerSynth: (see ez low cpu preset) two oscs .27, one osc .24 [microtuning], mono .11

--not (high cpu):
TyrellN6: 1.36, mono .28
Vaporizer2, Odin 2, Pigments, Quanta, Vital, Deducktion .55, mono .14, GR-8

Samplers 4 voices:

(different samples)

1. MSF Sampler (multicore off) .24 [microtuning]
2. TX16w .24
3. Maschine (Live Sampling): .25, mono .19
4. Kontakt: .26 [microtuning]

--not: Wusik One

Synths & Samplers as kick trig:

(Idle / playing 4 diff samples simultaneously/sequentially)
Use ReaEQ & JS Drum Trigger v1a - adds .02 & .03 = .05 Below readings include this unless noted not to.

1. MH Thump + ReaGate (No eq (but ext might be needed. Not need js trig): .06
2. Sasquatch (No eq (but ext might be helpful. Not need js trig): (v1 & 2 same): .08 /x / .09
3. ^ MDrumReplacer: S4NN min ~.10, Sample ~.08 (Ext eq might not be needed. Not need js trig. depends on sample, engine, drum settings. Faster response 6ms than MH Thump 14ms & Sasq 14ms)
4. MXXX1 4 Sampler modules: .12 / .16 / .14 (with js MIDI Round Robin Faker) Retest= .09/x/.09
5. FM8: .10 / x / 12 but very few kick presets (to program not straight fwd)
6. Poise Sampler .04 / .30 / .13 (RRobin native, mono mode) W
7. MX1 MultiSampler .08/ x / ~.11-.16 (but no custom samples)
8. Waldorf Attack: .13 / x / .14
9. Synth1: .12 / x / .16 ?
10. MX1 Synth Samp & Multi preset .22 / x / .34 Retest=x/x/.17

11. Battery 4 .12/x/.18
12. K1CK: .12 / x / .18
13. MX1 SynthNN .14 / x / .24 Retest=x/x/.18
14. Punchbox: Sample module only .02/x/.19
15. Zebra w just 1 osc: .16 / x / .19 (BT minimal kick 01)
16. Big Kick: .08 / x / .21
17. Test again? MSF Sampler (4 voice limit) .18 / .36 / .29; 2 voice: /.29/.26 ? see above
18. ? Kontakt (4 voice limit): .2 / .4 /.35 ? see above
19. MDrummer: .2 / x / .5

-- not:
Sitala: .08 / .3 / .3 (but would need midi round robin)
Grace: .1 / +.48

Loopers:

1. Augustus Loop: .06
2. MSuperLooper (Track Count setting uses cpu even if a track is not filled): 1 Track=.10, 4=.13, 8=.16, 12=.18, 16=.20
3. Enso: .11 (normal & reverse playback), .14 (speed change)

Delays:

1. EmRys pongdelay2: (no filter) .01-.02 (make bus stereo in GP)
2. Readelay: 2 taps .02 W (only as insert in GP?)
3. GDelay: (but only ms, no filter) .02
4. RS-MET Toolchain w Echolab, 1 pingpong tap w two eq nodes: .03
5. GDuckDelay: (but only ms, no filter) .03
6. khs Delay: but no filter .03
7. Meringue: but always does bkwards .03
8. Echobox D7: .03 W
9. Camelface: .03 (only as insert in GP)
10. ^ Val UberMod: .05 (2TapChorus)
11. Ohmboyz: .03 *
12. Waves SuperTap 2 & 6: .05 (param changes cause clicks)
13. Artillery with internal eq: .06 (diffusion delay is only one that is stereo)
14. Val SuperMass: Lyra .05, Capri .07
15. Augustus Loop: .06
16. Anwida C-Delay: .04 * (no sync, no filter)
17. Surge Effects Bank: .05 *
18. RP-Delay: one module: .07, reverse .06
19. A1 TrigGate as delay: .07
20. Dubstation 2: .08
21. FM8: Ch/D / PsychD w pitch (but sync mode not clear) .08
22. kHz Delay: .07 *
23. Noise ash action delay: .08, w eq .09
24. MFM: .10 including reverby
25. Voxengo Tempo Delay: with filters .10
26. MDelayMB: .11 (Tap 2 =.12)
27. Timeless 2: .11
28. GtrRig 5: Traktor Delay/Twin/Quad/Tape no verb/DMan .11
29. Val Delay: HiFi .11, Ducks .16, Others .13 (diffusion adds .11)
30. Imperial Delay: without effects or special functions .11
31. GSI Varispeed: .12 (retro fdbk overload distortion, mono)
32. Soundhack Delay: .12 (higher lfo spd = +cpu)
33. SToys Crystallizer: .13
34. Deleight: .13, when looping and modulating speed, seems to keep increasing in cpu significantly(?)

35. GRig: Psych w pitch .16
36. ERS Echorek2: .20

--not:
Excalibur (latency 32)
Sandmans (cpu, some clicks), Instant Delay .19,
Modnetic: echo only .38
Arturia 201: .48,
Echoes T7E .60 (Lite Mode)
Plexitape .82

Reverb:

1. EmRys easyReverb: .02 * (check for glitches (param chg?) in Bitwig) (make bus stereo in GP)
2. EmRys sReverb: .05 (check also)
3. ^ AnwidaSoft Spatio Light: .03 *
4. Val SuperMass - Lyra .05, Capri .07 but attacks have echo (others around .11)
5. PSP PianoVerb2: .06 (a bit odd)
6. ADVerb (1): .05 *
7. MangleVerb: .05 *
8. Turnado: FreezeVerb .05 (a bit metallic), Reverb .07
9. 2BReverbed: .06*
10. Looperator: Reverb2 .05 (a bit metallic), Reverb .08
11. Khs Reverb: .07 (good clean sound, but can get similar sound in Val Vint Conc)
12. ^ Val Vint - Mode: Concert Hall .08, Bright Hall .09 (others .10-.14)
13. Airwindows Verbity: .08 (but mono source returns mono verb)
14. Artillery Rev HQ: .08 (not hq maybe ok for short .06)
15. ADVerb2: .09 (shaping controls not fine tunable)
16. Val UberMod: .09 (diffusion), .12 (+drive)
17. Digital Systemic Giant Verb: .09
18. MFM: .10
19. Waves TrueVerb: .10
20. MCharmVerb - low cpu presets .11
21. MTurboRev - low cpu preset .11
22. Noise ash frozen verb: .11, w eq .13
23. Waves RVerb: approx (not tested on main comp)
24. Lexicon PCM: Concert Hall .12, others .14-.16
25. Reverberate 2 (Liquid Sonics): 1 IR, no modu, Parallel Stereo, .12
26. MConvoEZ: .13
27. Orilriver: .15
28. Reaktor Springtime: .15
29. PSP N20: Room/Plate .16/.18 (Hall/Cath .33/.35)
30. Val Shimmer .17
31. MConvoMB: 1 IR, no modu, Parallel .17 (modu .20)
32. Reaktor Floodverb: .19
33. Reaktor Space Master 2: .20

---not:
Voxengo OldSkool .21
ElephantDSP Room: .20 *
Exponential Audios default preset (retest):
- Phoenix .22
- Nimbus .23
- R2 .26
- R4 .27

RC24 .25

SP2016 .25
Reaktor Dark Star (verb only): .25
Airwindows Reverb and MatrixVerb: .24 (not good for long times)
Val Delay (diffusion) .26-.29
IRCAM Verb3 .35/.58
Reaktor Dark Star 2: .36
Voxengo OldSkool+ .38
PSP 2445 .4
Spirit .40+
BYOME .40+
ERS 250 .42
RC48 .45,
Toraverb2 .57
Cloud Seed .60+
Raum .73,
Arturia REV 140 .77
H-Reverb .78
Voxengo CRTIV .92
Adaptiverb: Live mode 1.25, normal mode 1.7

Modulation

(also can try delays)

1. mda detune .02
2. mda leslie .02
3. mda stereo .02
4. Emrys TwinPhaser: .02
5. mda roundpan .04
6. GChorus: .04
7. Adam Szabo Phazor: .04-.05 (depending on stages)
8. khs Chorus: 2 taps .04, 3 .06
9. Modul8: .04, filter .05 (phase gives stereo but cancels self if monod) W
10. GLFO: Pan, Amp, LP Filter .04
11. DDuck Phaser: .05-.09 W
12. Tal Chorus LX: .05
13. Val UberMod: .05
14. Artillery Mods: .05
15. MVibrato as a chorus when blended with dry .06
16. Thorus: .06
17. Svep: .06
18. Val SpaceMod: .06-.08
19. RP-AMod (1 engine): Chorus .06, Flange/Phaser .07, Ens .10, Tape modes .12
20. khs Phaser: Order 2=.06, 7=.10
21. MFlanger: .07
22. MDblTrk: .07
23. MFlanger: .08
24. Quatromod: .08
25. MPhaser: Mode 4=.08, 7=.10
26. Arturia Jun-06: .09
27. Baby Audio Magic Switch: .09
28. khs Comb: manual mod .09
29. GTriChorus: .09
30. khs Ensemble: 2 voices=.10, 6=.15
31. khs Flanger: Scroll Off=.10, On=.15
32. MChorusMB: .13

33. Syntorus: .14

--not:

Wamplers, ERS DimD .28, NI Choral .28, Chorus GAS .26, NI Phasis .30

Pitch Shifters & Vocal oriented

1. Sonic Charge BitSpeek (host needs to disable pdc): Sample & Frame Rate correlate to cpu. 44khz is x2 usage of 22khz.
    a. .07 = Passable lowest setting seems Sample 22khz & Frame 40hz. 44khz = .10
    b. Use detune for second voice (same cpu). Legacy mode same cpu. Set tracking to 0 for absolute note (has midi note control).
2. MHarmonizer (no formant):
    a. Granular no latency, Vocoder buffer 2048. Low latency mode 1024.
    b. Granular: 1 voice=.10/4 voices=.14
    c. Vocoder: normal & low latency= .22/4 vc=.28, Hi quality= .32/.44
    d. Harmonizer: 1 vc=.32/4 vc=.42
3. GRig Pitch Pedal: .11 (doesn't sound good on voice)
4. MUnison (has formant): Buffer selectable 2048 default. 8192 cpu increases. 2048 & 4096 below same cpu.
    a. 1 vc=.15/ 4 vc=.19
5. Khs Pitch Shifter: .15 (host needs to disable pdc)
6. Nembrini: .15 (delay same as MHarmonizer, but doesn't sound as good with polyphonic audio)
7. Waves Vocal Bender: .20 (with no modulation). No direct midi note control.
8. Eventide Quadravox: .25 (no formant control for voice. Does not change with # of voices active)
9. Pitch Wheel: 1 voice .30, with formant .5
10. Antares Harmony: .35-.45 (increases with active voices, 1-4)
11. Eventide Octavox: .37
12. MIDI Choir Martin Vicanek: .38/.40 5 vc= .42 (only via midi notes. Chorusy sound)
13. Dodo MIDI (voice to midi): .68
14. Waves Ovox: .75-2.1

--not: Zynaptic Pitch Map 2.0+

Octave Dividers:

like boss pedal (usually needs prefiltering)

1. PM Octaplexer: .05 (worst tracking)
2. MBassador: .07
3. Guitar Rig Oktaver: .08
4. Zebrify pitch tracking 1-2 oscs: .08
5. Audiority 82: .16 (best tracking, no pre filter needed)

FSU Glitchers or like ableton beatrepeat

1. ^ Looperator: Loop/Slice .03
2. ^ Artillery Granulars: (Bt Rpt, Reverse, etc) .03/4
3. Instalooper3:
4. JS Auto Looper (mono), Loop Sampler (mono), LiveBeatRepeater .04 W
5. Kammerl (can blend with source well): Looper (glitcher) .04, Pitcher .07, Slicer .03
6. Glitch2: singles .03-.05, combos .07/.08, all same time .13
7. Frosting .04/5
8. Replicant2 (also has manual btrpt) .05
9. MRhythmizer: .05-.07
10. Turnado most glitchers around .05, modulations .06, Pattern Delay .12, Spectralizer .18
11. Sequent: looper (glitcher) .05, delay .07, looper+delay+filter+panner .13
12. The Finger .15-.20 usually
13. Permut8 .15-.20 usually

--not:

Stutter Edit .50-1.6

FSU Other:

1. mda subsynth .02
2. Emrys Reverse: .02
3. mda tracker .03
4. Emrys EasyGater: .03
5. ^ Camel: gate only .03, "Complex" preset .05
6. GRM Evolution: .03 (must disable host's delay compensation)
7. GRevDelay: .03 (ms only)
8. khs Trance Gate: .04
9. Khs Reverser: .04
10. Khs Resonator: .05
11. mda talkbox .05
12. mda vocinput + vocoder .05
13. A1 Trigger Gate: .05, +delay sometimes .06
14. Soundhack Flipper (reverser good on drums): .06
15. Cassette Transport Wavesfactory: .06 *
16. Crossfade Loop Synth FX: one note .04, 6 notes .07
17. Val FreqEcho: .07
18. khs Ring Mod: .07
19. Kammerl: .03-.07 see above. Can do reverse and pitch slices.
20. Turnado: .05+
21. MFreqShifter: .06
22. ^ Looperator: Various fx .03-.08-.12,
23. GSnap: pitch corrector .08
24. Soundhack Pitchdelay: .08-.12 (depending on time)
25. khs Tape Stop: .09
26. DtBlkFx: .10 Contrast
27. BLEASS Slow Machine .10 *
28. GSinthG: pitch tracker oscs (no lower octave ctrl) .11
29. khs Freq Shifter: .11
30. MGranular: 1 Copy = .11, 4 = .14
31. khs Bitcrush: .12
32. Lector Vocoder:
    Bands <=14: .06, <=25: .07, <=49: .09, 100: .14
    Additional usage with Internal Synth - 1 note: Wave shape: .03 (6 notes .07), Sample: .04 (6 notes .11)
    FX OvrDrv 0, Chorus/Delay .015, Rvb .07
33. Reaktor Trance Gate (Bayer): .13
34. khs Faturator: .14
35. khs Distortion: .15
36. Soundhack Bubbler: .17
37. Gatekeeper: .16-.30
38. Cableguys Halftime: .19
39. MAutopitch: .19
40. Waves Tune Real Time: .25

Khs Snap Heap: loading multiple inside compared to not in heap may be about the same (without using other functions).
--not:
MOsc pitchtracking: .40-.87
Filter Organ
Grainspace

Filters

(also try EQs)

1. DDuck DualFilter: .04 W
2. khs Formant Filter: manual mod .05
3. khs Filter: 2 pole=.06
4. khs Ladder Filter: .06 (Sat=.31)
5. Camel: Filter only w mod: .08
6. MFilter: LP sine modulated=.08, Vowel 3 node & mod=.12
7. MWobbler: LP w mod=.10, Vowels=.10
8. 2BFiltered: .10
9. Volcano2: 1 filter (clean) 1 lfo=.10, 2 filters 2 lfos=.13
10. GRig Talk Wah: .11
11. Khs Nonlinear: .12+
12. GRig Formant Filter: .13
13. AD Filterstation2: .16-.21

EQ 4 nodes:

(close gui)

1. ^ ReaEQ: .02 (js are not less) W
2. Sender Spike SN04: .02-.03 W
3. ^ DDMF IIEQ free (10 nodes active, no freq graph): .04
4. Khs 3 band: .04
5. MEq: .05
6. MDynEq: no dynamics .05
7. Epure: .05-.06
8. Crave EQ 2 (digital mode): .06
9. Voxformer: 4 nodes .06 (close gui)
10. GlissEq: 4 nodes no dynamics .07

Dynamic EQ/MBComps (1 band):

(close gui)

1. ^ ReaXcomp: .05 W
2. GMulti: .06
3. MDynamicsMB: .08
4. MDynEQ: .08 (close gui)

-- not:

Venomode DeeQ: .2

TB FLX: latency

Compressor

1. ^ ReaComp: .03 W
2. Sender Spike 01: .03 W
3. GComp2: .04
4. Khs Compressor: .05
5. GComp: .05
6. Direct Approach CompPlus: .05
7. MCompressor: .06
8. Khs Dynamics: .06
9. Voxformer: one compressor .07 (close gui), two comps .12
10. Waves MaxxVol: .08
11. MDynamics: .08
12. DC8C3 .13

--not:

Waves H-Comp: .08 (latency)

Limiter:

1. GMax: .03
2. ^ SSpike Limiter: .03 W
3. Direct Approach LimitX: .05
4. Khs Limiter: .06
5. Flux Pure Limiter: .12
6. MLimiterX: .14

--not:
LoudMax (latency): .02
Maximal: .24
Bx limiter: .24
Ozone (latency)

Utility:

Volume Cntrl:

1. GFader: .01/.02 (zippering noise)
2. FreeG: .02 (no zip, not fully soft mute)
3. Kilohearts Gain: .02-.03 (no zip)
4. JS Midi Fade X: .02 (uses track midi input) W
5. JS Smoothvolume fade (made a ms based): .02 (remote mapping, good for muting) W
6. ^ DMG TrackControl: .03 (no zip, soft mute)
7. Venn Utility: .04 (hard mute)
8. MRatio: .05
9. MUtility: .05

--not: HOFA Meter 4U: .06 (zippering), A1StCtrl (hard mute, cpu)

Zebrify:

(adding multiple fx results in lower cpu usage than individually)

Pitch tracking 1-2 oscs: .08

VCF LP Xcite filter: .13
VCF LP Allround: .23
Other filters: .13-.23
Comb: .14
XMF: .29

ModFX: .14
Delay: .14
Delay+LP Xcite+LFO to Cutoff: .15

Reverb: .18 (MetalVerb .22)
NuRev: .29

SB: .12
Comp: .15
EQ: .13

Shape: .14
Fold: .22
Dist: .30+

Other:

1. ^ ReaGate: .02 W
2. GGate: .02
3. GHi/Lowpass: .02
4. GBand: hi/lo pass .03
5. DDuck Gate: .05 W
6. UA G8: .09

Autobalancers:

(don't know if will actually be helpful for live situations)

1. Soundbrigade: varies widely. Modes: Tame up to .38, Control .45, Wake .37, Master .37
2. ^ TEOTE: 10 bands: .27?, Master mode .35?

--not:

Gullfoss normal mode (latency but if monitoring before plugin ok) .06
Hornet 31 Auto 1.39
DSM .27 (latency)
SmartEQ Live (didn't get good sound)
Soniformer (latency)
MSpectDyn (latency)