

Readiness report — Backyard Brains SpikerBox — Open-Source Neuroscience Bioamplifier

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Verdict: Ready with caveats · 2026-07-19 · est. parts cost \$63-\$110

The SpikerBox remains implementable, particularly for through-hole versions v1 and v2, which utilize standard DIP-8 components. This cold check establishes the baseline but identifies that the v3 design is at risk due to the total obsolescence of the specified thumbwheel potentiometer and a housing mismatch for the status LED. Sourcing for several through-hole mechanical parts (RCA jack, resistors) must shift to secondary distributors like Mouser as DigiKey stock has depleted.

Action required

Part	Problem	Recommended action
R1-R5 (Axial)	Specified Panasonic series is largely discontinued.	Substitute with generic 1/4W 1% metal film axial resistor kits.
RCJ-014	Zero stock at DigiKey.	Source from Mouser Electronics.
SSF-LXH104GD	Zero stock at DigiKey; housing is 5mm (mismatch).	Use substitute SSF-LXH103GD (3mm).
EVU-TW7B45C14	Obsolete; zero stock globally.	Use 3352T-1-103LF; requires v3 PCB footprint modification.

Parts

Integrated Circuits

Part	Spec/Package	Status	Stock	Price	Source
U1 (AD623ANZ)	DIP-8	Active	2,409	\$9.04	DigiKey
U2 (LM386N-3/NOPB)	DIP-8	Active	1,869	\$1.18	DigiKey
U3 (TLC2272CP)	DIP-8	Active	176	\$6.18	DigiKey
U4 (LM567CN/NOPB)	DIP-8	Active	874	\$3.18	DigiKey

Part	Spec/Package	Status	Stock	Price	Source
U5 (TLC2274CN)	DIP-14	Active	9,285	\$3.48	DigiKey

Passive Components (Resistors)

Part	Spec/Package	Status	Stock	Price	Source
R1 (Gain Resistor)	10 kΩ Axial	Discontinued	—	\$0.10	DigiKey (SMT alternative)
R2	1 kΩ Axial	Discontinued	—	—	—
R3	100 kΩ Axial	Discontinued	—	—	—
R4	68 kΩ Axial	Discontinued	—	—	—
R5	220 kΩ Axial	Discontinued	—	—	—

Passive Components (Capacitors)

Part	Spec/Package	Status	Stock	Price	Source
C1 (ECA-1EM221)	220 μF Radial	Active	5,534	\$0.45	DigiKey
C2 (ECE-A1EN100U)	10 μF Radial	Active	6,497	\$0.42	DigiKey
C3	0.47 μF Ceramic	Active	Ready	\$0.50	SparkFun
C4	0.1 μF Ceramic	Active	Ready	\$0.10	DigiKey
C5	0.22 μF Ceramic	Active	Ready	\$0.53	DigiKey
C6	0.047 μF Ceramic	Active	Ready	\$0.10	Jameco
C7	560 pF Ceramic	Active	Ready	\$0.11	DigiKey

Electromechanical and Connectors

Part	Spec/Package	Status	Stock	Price	Source
BATT (BH9V-PC)	9V PCB Mount	Active	1,435	\$2.33	DigiKey
J1 (Sj1-3524NG)	3.5mm Stereo	Active	14,493	\$1.20	DigiKey
J2 (RCJ-014)	RCA RA PCB	Active	500	\$1.06	Mouser
LED1 (SSF-LXH104GD)	3mm/5mm RA	Out of stock	0	—	DigiKey
SW1	SPDT RA PCB	Active	722	\$6.58	DigiKey
EVU-TW7B45C14	Thumbwheel Pot	Obsolete	0	—	—

Support Hardware

Part	Spec/Package	Status	Stock	Price	Source
Electrodes	Stainless Needle	Active	Ready	\$4.62	Acubest
Enclosure	Plastic Box	Active	Ready	\$2.50	RS America

Substitutes

For part	Substitute	Differences	Judgment
R1-R5	1/4W 1% Metal Film Axial	Generic axial kit; matches specs.	Acceptable.
SSF-LXH104GD	SSF-LXH103GD	3mm housing vs 5mm housing; matches snapshot 3mm requirement.	Better match.
EVU-TW7B45C14	3352T-1-103LF	9mm top-adjust vs 14mm thumbwheel.	Hard stop: Requires PCB modification.

Verify any substitute against its datasheet before ordering.

Other dependencies

- **PCB Fabrication:** Legacy Eagle binary files must be converted to modern XML/Gerber formats before fabrication. Status: not checked.
- **Software:** Backyard Brains Spike Recorder available as a free download for iOS, Android, Windows, and Mac. Status: [Available](#).
- **Cables:** 3.5mm male-to-male audio cable required. Status: [Available \(\\$1.45\)](#).
- **Biological Component:** Live crickets or cockroaches required. Status: [Available \(\\$13.99\)](#).

Watch list

- **v3 Thumbwheel Potentiometer:** This part is completely obsolete. Future v3 builds require a board redesign to accommodate standard 9mm pots.
- **TLC2272CP (U3):** Stock is currently low (176 units) at the primary distributor.
- **PCB File Integrity:** Legacy binary Eagle files are increasingly difficult to open without conversion; integrity of conversion should be verified before ordering boards.