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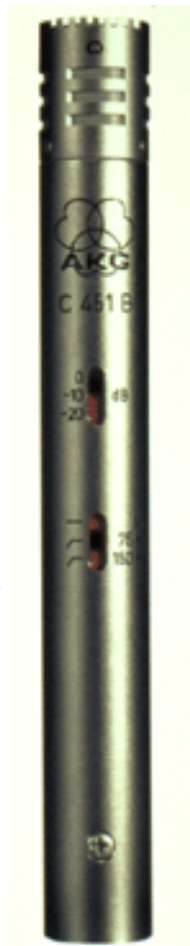
Although the mic was designed as an homage to its famed ancestry, I'm glad AKG chose not to call the new C-451 B a reissue microphone. The C-451 B is an entire rethinking of the classic C-451 E/CK-1 capsule design, and it sounds better than the original--the result of improved specs, modern componentry and updated construction techniques.

A LITTLE HISTORY

Made from the late '60s through the mid-'80s, the original AKG C-451 C Condenser Modular System (CMS Series) was a best-selling "chameleon" of a mic. It was designed to be adaptable to nearly any purpose; it could be outfitted with any of a whole system of modular components --such as screw-on capsule attenuator pads, extension tubes and swivels -- that greatly increased its versatility. The original mic used the N-46E dual-AC power supply that supplied 12-volt phantom power and had a two-position, bass roll-off filter switch. As I found out by accident in my distant past as a second engineer, the mic would accept up to 52-volt phantom powering without smoking. The original, externally biased CK-1 capsule had an extremely low mass, making the mic insensitive to handling noise making it a favorite for handheld radio and TV use.

Capsules Made For The CMS Series

For AKG, the C-451 C (the "C" suffix indicates a DIN connector; the "E" designates a standard XLR output) was the first solid-state condenser mic using the then-new Field Effect Transistor (FET) instead of a tube. It replaced both the great-sounding AKG/Norelco C 60 pencil condenser, which used an AC701K tube, and the C-61 with its miniature RCA 7586 Nuovistor tube. With the C-451 EB came a switchable -12dB/octave high-pass filter with flat/75/150Hz positions. Much later, the C-452 EB arrived, which is the same but runs on 48-volt phantom only.



CK-1S: cardioid with +6 dB @ 10 kHz shelf curve

CK-2: original omni-directional

CK-3: hypercardioid

CK-4: figure-of-eight (1-inch double-diaphragm capsule)

CK-5: cardioid with shock mount and windscreen

CK-6: switchable pattern with omni/cardioid/figure-of-eight

CK-8: short shotgun

CK-9: long shotgun

CK-22: newer omni-directional

CK-26: omni-directional (capsule from C-60/61 mics)

CK-28: cardioid (capsule from C-60/61 mics)

Sadly, for economic reasons, AKG discontinued the CMS Series and the CK-1 capsule in 1994.

SO WHAT'S NEW?

AKG's R&D department gathered 12 of what was considered the *creme de la creme* of vintage CK-1 capsules from around the world to measure and determine their original acoustic properties. The new C-451 B capsule uses a backplate electret, self-polarized design with a three-micron, gold-sputtered Mylar diaphragm suspended just 35 microns from the printed-circuit backplane. The new capsule has the same cardioid polar pattern as the CK-1 because it has the same diameter and thickness.

Once the CK-1 was reinvented, AKG completely updated the mic's body with Surface Mount Technology (SMT) components on a miniature printed-circuit board and gold-plated XLR and capsule connectors. The old mics were laboriously hand-soldered and prone to intermittents...a well-known fact amongst live sound engineers who shun their use on the road.

One new design criteria for the new C-451 E is passing AKG's dreaded drop test, which simulates a 6-foot fall from drum overhead mic stands. This test is repeated six times on each of a group of mics that are randomly selected from the production line.

To make the mic even more rugged, the new capsule is permanently attached to the C-451 B preamp body. A one-piece mic is a welcome feature of the C-451 B, especially to any engineer who, in the middle of a session in a dimly lit studio, has struggled to attach the CK-1 onto the old C-451/452 bodies properly, without cross-threading those very fine, Swiss watch-like threads! However, I do miss the C-451/452's capsule swivel adapters, which were great for sneaking around drum kits.

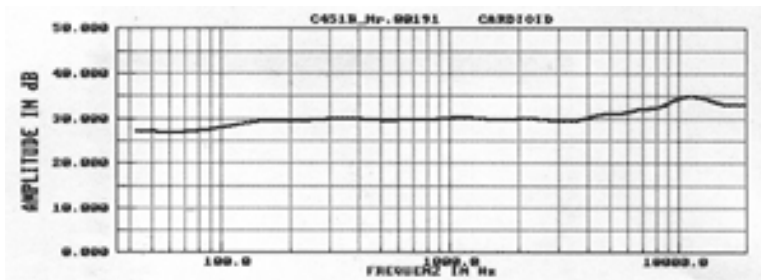
One thing I don't miss is the need to insert screw-on capsule mic attenuator pads like the ones the old C-451/452 EB mics had. Right on the C-451 B body, near the bass roll-off switch, are -10 and -20dB capsule attenuation switches. Also, both the pad and HP filter switches are improved over the original switches. The new switches are easy-to-see red, and they seem to be better made and easier to change with the tip of a ball-point pen. The old EB's roll-off switches often broke, stuck or disappeared inside the mic body, making it impossible to know (by looking at them) how they were set. Cosmetically, the C-451 B looks similar to the old mics, with sandblasted, all-metal, nickel-plated housing, and engraved wording and symbols. Often, on late '80s-vintage C-451 E mics, the decals (without engraving) wore off.

THE SOUND!

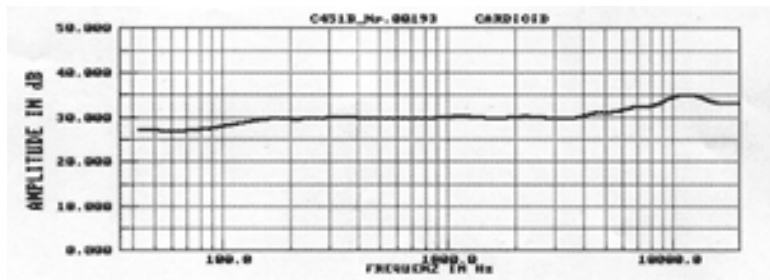
In my A/B tests, I found the C-451 B's new transformerless output improved LF reproduction, especially at higher SPLs. I also noticed more output level than the C-451 E, C-451 EB, C-452 E and C-452 EB. Without going into explicit detail, all the mics sounded great, but overall, the C-451

B is simply more pleasant-sounding than the others. It's warmer than the C-452s, with a better bass roll-off sound, and the bottom end is cleaner than the original. I like the LF sound of the original C-451s, too...just as I like using vintage Neve modules for the sonics of those transformers. The C-451 B still uses the FET design, so everything you'd use the old mics on sounds the same, only better.

You can buy the C-451 B in two ways. As a single mic, it comes with a clip/stand adapter and windscreen in a zippered bag. For this review, I received a stereo pair of two computer-matched microphones. They come with two clips, two windscreens and the H 50 stereo-mounting bar--all in a foam-lined carrying case. "Matched" is an understatement! All new C-451 Bs come with individually measured frequency response (20 to 20kHz, +/- 1.5 dB) curve plots. My two mics' curves are identical; in fact, I can place the two tissue-paper charts (shown in Curves 1 and 2 below) on top of each other and see no differences. AKG uses a computer database comprising all of the frequency response results from a production run of mics. The computer comes up with the best matching pair: Both frequency response and sensitivity measurements must be within +/- 0.5 dB of each other.



Curve 1



Curve 2

IN THE STUDIO

The most popular studio applications for the C-451/452 have always been drum kits, overheads and acoustic guitar. Small-diaphragm mics excel at accurately reproducing the percussive transients of these instruments. For drums, I always liked the C-451 E on hi-hat and/or snares. Both jobs usually require the attenuator pad, and it is so nice **not** to have to take the mic down to screw in the -20dB pad when the -10dB pad wasn't enough! The C-451 B, with an increased SPL rating of 135 dB (no pad), would have been fine without a pad on the quieter songs. Even without EQ, both snare drums and hi-hats sound crisp, sharp and "open." The cardioid pickup pattern is not too tight, which provides plenty of ambience for a close-miked instrument, while I can hear more drummer subtleties such as grace notes and stick drags.

The H 50 stereo bar is just the ticket for X/Y or close-spaced cardioid miking of percussion instruments like congas or marimba. In live sound use, I like eliminating one mic stand in a usually crowded percussion-miking setup.

Acoustic guitar recording is exactly the same as with the old mics, except the C-451 B produces tighter, cleaner lows. I also had fewer problems when my guitar player

Side-by-Side Comparison of Specifications

C-451 B	C-451 E
Cardioid Polar Pattern	Cardioid Polar Pattern

unexpectedly went from quiet finger-picking to full strumming--the mic and recording chain didn't instantly distort. I like the presence of miking close on guitars, but proximity can be a problem. On a Gibson jumbo-body guitar, I put the mic about six inches over the soundhole, aimed toward the bridge, and I used the 150Hz roll-off. Sometimes I used the 75Hz position and rolled off with an equalizer when I needed a song/production/arrangement-specific LF contour. The C-451 B's high-frequency lift is pleasing for acoustic guitar recording and much better than winding on a lot of EQ.

The AKG C-451 B reinforces my fond memories of using the venerable C-451 E with the same but improved sound, and without the old, impractical quirks. The C-451 B retails at \$549, or \$1,250 for a matched stereo pair.

Thanks to Tom and Nate Murphy for letting me raid their fine microphone cabinet and use their new SSL 9000 J console at [Track Record](#), their North Hollywood studio. Also, thanks to Dan and Eric at [LAFX Studios](#) here in NoHo and to engineer/producer Alan Parsons for all their help.

AKG Acoustics, 914 Airport Center Drive, Nashville, TN 37217; 615/620-3800; fax 615/620-3875; www.akgusa.com.

Barry Rudolph is an L.A.-based recording engineer. Visit his Web site at: WWW.BARRYRUDOLPH.COM

Frequency response: 20 to 20kHz +/- 1.5dB (graph supplied)	not stated in manual (graph supplied)
Sensitivity: 9 mV/Pa=-41dBv ref. to 1V/Pa	-61 dBv ref. to 1V/ μ bar
Impedance: <200 ohms	200 ohms
Recommended load Impedance: >1000 ohms	>500 ohms
Max SPL: 135dB (no pad) 145dB (-10dB pad) 155dB (-20dB pad)	120dB SPL for 0.5%
Equivalent Noise: 18dBA (A-weighted)	22dB (DIN 45 404-RMS)
Dynamic Range: 117dB (A-weighted)	Not stated
Pre-attenuation: Switchable to 0dB, -10dB, -20dB	in line pad KF-2 -10dB or -20 dB
Powering: 9 to 52 volts phantom	7.5 to 52 volts DC
Operating Temperature: -20 degrees C to +60 C	-5 to +160 degrees F
Diameter: 3/4 in diameter Length: 6.3 in	4.5 in long (w/o CK-1)



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