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Most people would rank the multi-patterned Telefunken ELA M251E/250E one of the three most sought-after tube condenser microphones, along side the Neumann U47 and the AKG C-12. Priced at \$5,000, the Soundelux ELUX 251 is the closest thing to an exact copy you'd ever want of the vintage Telefunken.

Not to denigrate the original 251 but after all it is a 50+ year old microphone using 60 year old materials and manufacturing technologies. For this reason, I did not base this review A/B'ing the new ELUX 251 and any particular Tele M251. With antique microphones, what I'll call the "vintage factor" becomes a significant issue. Vintage factor -the physical condition, upkeep, modification history, how and where they were used and how gracefully they aged -makes finding two M251Es that perfectly match impossible. Without an established "baseline" performance for the average Tele 251, an A/B seems pointless and of little value.

New Vs Old

The original Telefunken ELA M251E (always called the ELAM 251 because the letters all run together on the mic body) was designed and manufactured by AKG for Telefunken and used a CK12 capsule and 6072A vacuum tube just like AKG's C-12 microphone. AKG also made a non-import version using a Telefunken AC701 subminiature tube called the M251 (no "E" suffix). Sister mics are the M250, an omnidirectional and cardioid only microphone and the M252, the exceedingly rare twin capsule stereo version. The Tele used the much smaller T14/1 audio matching transformer rather than the larger Type V1248 used in the first few hundred C12s. With a larger transformer, a mic should have a more linear



response at higher SPL ...especially in the low frequencies. The ELUX 251 uses a special wide bandwidth transformer with the same primary/secondary turns ratio as the Tele and provides a more uniform impedance versus frequency than the original.

The same plated-loaded amplifier circuit as the original is used but with "tweaked" part values to obtain a quieter noise floor. Like the original, only half of the 6072A tube is used running at a low 120 plate voltage and only 6 volts on the filament. Lower voltages mean longer tube life. The other half of the tube is not even lit up so some enterprising person could invent a socket adapter to "rotate" the tube around and use the newer other half- if and when the other half wears out in about 10 years. Sovtek and new-old GE tubes are carefully tested and selected by Soundelux for lowest noise, maximum SPL and minimum distortion.

Modern manufacturing techniques address many of the serious problems that arise in 50 year old microphones such as oxidation that can occur even in reconditioned vintage mics. AKG used polystyrene plastic for the terminal board in the M251E to avoid excessive moisture absorption...a problem many old microphones suffer compromising sonic performance and noise floor. The ELUX 251 uses a Teflon terminal board with a very high dielectric constant (the ability to insulate high voltages) to take care of moisture. Mechanical components such as the tube socket and wire wound resistors are all resonance damped to disallow any mechanical noise. The point-to-point, internal hand-wiring on the ELUX is silver-plated copper with Teflon insulation for maximum conductivity and over time, minimal oxidation and negligible temperature influence within the heated microphone body.

Specifications

Patterns: Cardioid, omni, fig 8
 Freq. Range: 20Hz-20kHz
 Sensitivity: 15mV/Pa (-36dBV/Pa)
 Equiv. Noise: 27dB (unweighted) 17dB "A" weighted
 Max SPL: 132dB for 0.5% THD @ 1kHz
 Impedance: 150 Ohms
 Recommended load impedance: 1k Ohms
 Dynamic Range: 115dB
 Capsule size: 1" dual membrane
 Tube type: 6072A Dimensions: 2.06" x 8.5"
 Weight: 1.5 lbs
 Power: 115/230VAC, factory set

Although some early Soundelux U95 mics were Chinese-made, all of the company's mics-including the ELUX 251-are now manufactured in the USA. Designer David Bock selected a German-made capsule with a 6mil Dupont Mylar® film diaphragm and same close tolerances and asymmetrical design as the famed CK 12 capsule used. Like every part of the ELUX 251, the capsule is hand-built, tuned and strictly tested. The head grille's internal chamber resonance closely matches the Tele M251E in equivalent volume and "mesh count" which affects

high frequency response.

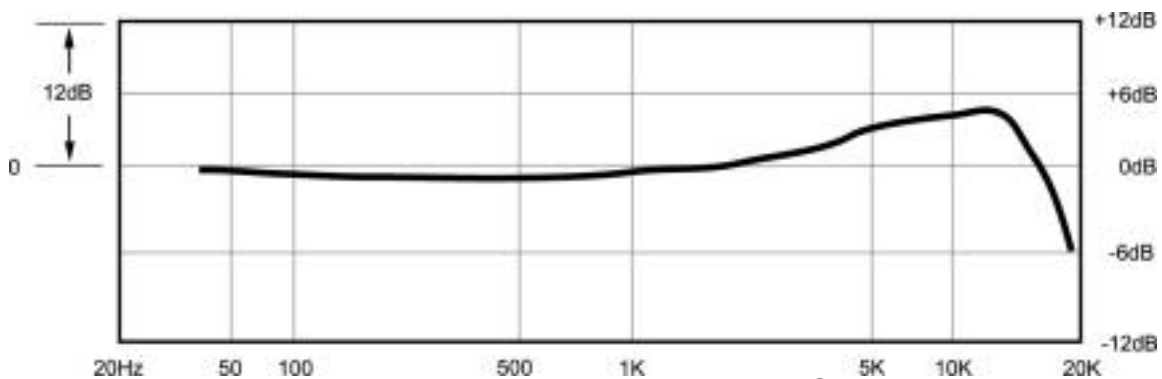
Impressive Package

The ELUX 251 comes in a large, aluminum briefcase with the 110/220VAC P251 power supply, the mic itself, all cables, instructions and shock mount. The black-colored shock mount is a stout affair with upper and lower knurled thumb screws that tighten two constricting metal bands around the mic's body. The bands are covered in felt to avoid scratching the "Institution Green" painted microphone body...an exact color match to the M251E. You have to take care that the upper band does not compress over the pattern switch...bad news! Unlike the

Neumann U47, there is no need to worry about placing the ELUX 251 capsule up or down since the mic generates very little radiating heat.

The P251 power supply is a significant improvement over the old M251E's unregulated power supply. The original supply emitted an acoustical noise and, since it was unregulated, "shocked" the capsule with an excessive momentary spike of polarizing voltage when the microphone was first turned on. The ELUX 251 uses a power transformer twice the size needed and a shunt regulator (zener diode) for the high voltage. This linear shunt design is preferred sonically over series regulators and/or switching power supplies common in computerized gear. A constant-current source circuit provides regulated DC filament voltage. Soundelux could do a good business selling power supplies for old M251Es-instantly improving the sound of those mics.

The ELUX 251 connects to the P251 power supply with a supplied double shielded cable using 6-pin German broadcast Tuchel connectors. The Tuchel threaded and locking connector was chosen over a multi-pin XLR connector for two reasons: less likelihood of disconnect and zero mechanical noise. An XLR can wiggle around in its socket and cause crackles or microphonic noise. Mechanical inertness of all components within a sensitive microphone is important so loud sounds vibrating them don't contribute to the sound of the mic.



ELUX 251 Frequency Response Curve

In The Studio

My first trial for the mic was in a session with a loud, male rock vocalist. In the past with loud singers, the ELA M251E would not be my first choice since the Teles tended toward a brighter and edgier sound near or at clip a lot of the time. I also find more need to de-ess every time I use a typical sounding Tele 251E. Comparing the frequency response curves of the ELUX and the original, you can see that the ELUX is smoother with a less boost in the upper midrange and high frequencies.

For my rocker, the ELUX was really good...better than any Tele I have ever tried for loud guys. I got a bigger sound with good low end eventhough it was placed 10 inched back from his mouth. At that distance, older condensers do not typically have a overload problem, and there was certainly none here. I did use an industrial strength pop filter and slightly tilted the mic out of the direct wind path. With a modicum of EQ (a bit of cut at 2.5kHz) and compression (4:1 ratio, RMS compression of about 3 to 6dB) my singer loved "working" the mic as its cardioid response is even all around the front.

One problem I often have with the old Teles is noise. After setting a good hot mic gain level, using a little EQ and compression, there was usually a constant background noise. These days, with 24-bit digital, everything else is so quiet that mic noise is unacceptable. The ELUX 251 is very quiet for a vintage design at about 27dB "A" unweighted.

Female rock vocals faired equally well but I had a chance to use the mic more dynamically on the song since the verses were quieter. My singer like the fat sound of this mic and I tried recording in omni pattern with smooth results. In a friendly sounding room, the omni patterns adds a more transparent, "openness." Soundelux points out that the main focus for the mic is the cardioid pattern but besides omni pattern, users will appreciate, I am sure, the mic's Figure-8 versatility for distant coincident M/S orchestra miking or just about any other application. Two of them would "rule" for drum overheads!

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