

Phone Apps vs Type 1 Meters — Comparison Pack

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Executive takeaway: Phone apps are fine for quick sense-checks and relative trends on the same device. Type 1 meters are mandatory for compliance, legal defensibility, low-frequency/impulsive content, traceable calibration, and consistent results across sites and teams.

Quick comparison

- Accuracy: typical phone app $\pm 3\text{--}5$ dB (device-dependent); Type 1 meter ± 1 dB or better with accredited calibration.
- Weightings: apps often A-only; Type 1 supports A/C/Z with verified filters.
- Dynamics: apps may miss peaks/impulses; meters measure Fast/Slow/Impulse and Peak correctly.
- Frequency detail: apps limited/inconsistent; meters provide 1/1 & 1/3-octave and FFT with calibration.
- Traceability: phones have no serial-linked calibration; meters provide accredited, auditable chains.

Decision guide — when is a phone app sufficient?

- Directional sense-checks: identifying noisier vs. quieter spots.
- Relative before/after on the same device (e.g., adding a screen, moving a source).
- Awareness content & education (non-critical).
- Non-critical indoor checks where $\pm 3\text{--}5$ dB uncertainty is acceptable.

When you must use a Type 1 meter

- Compliance to IEC 61672 / ISO 16283 / ISO 3382 / local statutes; legal reporting & enforcement.
- Low-frequency, tonal, or impulsive content (clubs, construction, impact/hammering, fireworks).
- Engineering detail: time histories, Lx percentiles, octave/third-octave/FFT, event markers.
- Repeatability across teams/sites; accredited, serial-linked calibration; evidence chains.

Note: Results on phones vary widely across models, OS versions, and mic limiters. Treat phone dB readouts as indicative only—never as a substitute for a calibrated Type 1 meter when decisions, compliance, or disputes are involved.

Practical guidance — test setup & field checklist

Standardized comparison setup

- Position & height: place phone and meter microphones adjacent (≤ 5 cm), at 1.5 m height; avoid body shielding.
- Windscreen: always fit the meter windscreen; avoid wind/handling noise on the phone.
- Duration: log 30–60 s A-weighted Leq; repeat 3×; record Fast/Slow as relevant.
- Content: include a scenario with low-frequency energy and impulsive events to show divergence.
- Metadata: record device model, OS, app version, calibration date/level for the meter, temperature and background.
- Data handling: export raw logs; keep a chain of custody if results inform decisions.

Field checklist (tick before publishing any comparison)

- Same location/height/time window used for both devices.
- Phone case removed; no finger over mic; limiter/AGC effects noted.
- Meter field-calibrated before and after (e.g., 94 dB @ 1 kHz); drift ≤ 0.3 dB.
- Document weighting/time constants (A/C/Z; F/S/I) and measurement units (Leq, Lmax, Peak).
- Screenshots/photos captured of placements.
- Exported data filed with date, site, and operator.

Common pitfalls with phones

- Built-in mics clip or limit around 90–100 dBA; peaks get flattened.
- Bass under-reported due to mic/codec roll-off; A-only approximations mislead.
- AGC and noise suppression vary by model/OS; repeatability is poor across devices.
- No traceable calibration; app ‘cal’ offsets are not a substitute for accredited calibration.

Cite responsibly

If you publish comparisons, disclose device/app versions, setups, and uncertainty. State clearly that phone results are indicative only and not for compliance.