

Bluetooth Audio Codecs - Cheat Sheet

SBC vs LC3 vs LC3plus, the quality numbers, what LE Audio unlocks, and the fallback pitfall.

The one fact

LC3 matches SBC quality at about HALF the data rate. LC3 @ 160 kbps beats SBC @ 345 kbps (ITU-R BS.1116-3 tests). Half the data = less radio energy = longer battery, smaller buds, and headroom for Auracast.

SBC vs LC3 vs LC3plus

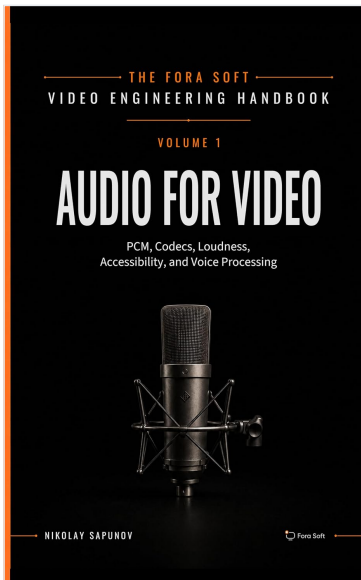
Criterion	SBC	LC3	LC3plus
Body	SIG (A2DP)	SIG (LE Audio)	ETSI 103 634
Stack	Classic	LE Audio	LE Audio / A2DP
Frames	fixed	10 / 7.5 ms	down to 1.25 ms
Good-quality rate	192-345 kbps	80-160 kbps	configurable
Max sample rate	48 kHz	48 kHz	96 kHz
Lowest latency	high	low	~7 ms
Packet-loss	basic	PLC advised	Adv. PLC ~3x

What Bluetooth LE Audio (LC3) unlocks

Multi-stream TWS	independent synced stream per earbud
Hearing aids	one interoperable standard, low power
Auracast	one stream, unlimited listeners (like public Wi-Fi)
Lower power	half the data rate cuts radio energy

Pitfall: a 'new' earbud does NOT guarantee LC3

LC3 lives in LE Audio, a different stack from the Classic Bluetooth that SBC runs on. Both ends must support it. Many devices still fall back to SBC. Design for the SBC floor; treat LC3 / LC3plus as upside you detect.



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This sheet compares SBC, LC3 and LC3plus and explains why the SBC fallback still sets the floor. Volume 4 covers audio codecs and the material they work with: sampling, bit depth and channel layouts, Opus, AAC and speech codecs, loudness, and real-time voice processing such as echo cancellation and noise suppression.

WHAT YOU WILL FIND INSIDE

- Sampling, bit depth and channel layouts
- Loudness targets and LUFS
- Opus, AAC and speech codecs compared
- Real-time voice: AEC, AGC, noise suppression

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