# Algorithm Comparison Chart for ACCESS Codecs

| Required Bitrate | Coding Delay | Audio Bandwidth | **AAC**: Provides near transparent audio at relatively high data rates. Best used on non-constrained data networks - for situation where latency is not important. |
|---|---|---|---|
| 64 kb/s | 69 ms | 20 kHz | **D1 Mono** |
| 96 kb/s | 69 ms | 20 kHz | **D2 Stereo** |
| 128 kb/s | 69 ms | 20 kHz | **D3 Dual Mono** allows independent programming to be sent on both L&R channels |
| 128 kb/s | 69 ms | 20 kHz | **D4 Stereo 128Kb** |
| 256 kb/s | 69 ms | 20 kHz | **D5 Dual Mono 256Kb** allows independent programming to be sent on both L&R channels |
| 56 kb/s | 69 ms | 20 kHz | **D6 Mono 56Kb** |
| 96 kb/s | 69 ms | 20 kHz | **D7 Mono 96Kb** |
| 160 kb/s | 69 ms | 20 kHz | **D8 Stereo 160Kb** |
| | | | **HE-AAC**: Provides near transparent audio at low data rates - for situations where latency is not important. |
| 48 kb/s | 146 ms | 20 kHz | **E1 Mono** |
| 64 kb/s | 146 ms | 20 kHz | **E2 Stereo** |
| 96 kb/s | 146 ms | 20 kHz | **E3 Dual Mono** allows independent programming to be sent on both L&R channels |
| | | | **Linear PCM:** Delivers transparent audio with no compression and very low delay - for use on high throughput networks. |
| 768 kb/s | 19 ms | 20 kHz | **F1 Mono** |
| 1536 kb/s | 19 ms | 20 kHz | **F2 Dual Mono** |
| 512 kb/s | 19 ms | 15 kHz | **F3 Mono** |
| 1024 kb/s | 19 ms | 15 kHz | **F4 Dual Mono** |
| | | | **HE-AAC V2**: Provides medium quality HE-AAC implementation using Spectral Band Replication. |
| 18 kb/s | 212 ms | 12 kHz | **G1 Mono 18Kb** |
| 24 kb/s | 269 ms | 12 kHz | **G2 Stereo 24Kb** adds Parametric Stereo to SBR for higher quality audio at low data rate |
| 32 kb/s | 184 ms | 20 kHz | **G4 Stereo 32Kb** adds Parametric Stereo to SBR for higher quality audio at low data rate |
| 48 kb/s | 184 ms | 20 kHz | **G3 Stereo 48Kb** adds Parametric Stereo to SBR for higher quality audio at low data rate |
| 56 kb/s | 184 ms | 20 kHz | **G5 Stereo 56Kb** adds Parametric Stereo to SBR for higher quality audio at low data rate |
| | | | **AAC-LD**: Requires higher data rates but provides near transparent voice or music with low delay. |
| 96 kb/s | 30 ms | 20 kHz | **I1 Mono** |
| 128 kb/s | 30 ms | 20 kHz | **I2 Stereo** |
| 192 kb/s | 30 ms | 20 kHz | **I3 Dual Mono** allows independent programming to be sent on both L&R channels |
| 256 kb/s | 30 ms | 20 kHz | **I4 Stereo 256Kb** |
| 128 kb/s | 30 ms | 20 kHz | **I6 Mono 128Kb** |
| 64 kb/s | 30 ms | 20 kHz | **I7 Mono 64Kb** |
| | | | **AAC-ELD**: combines the aspects of HE-AAC and AAC-LD to provide low delay, good audio quality and low bitrate. The best choice for low delay applications on the Internet. |
| 48 kb/s | 47 ms | 20 kHz | **J1 Mono** |
| 64 kb/s | 46 ms | 20 kHz | **J2 Stereo** |
| 96 kb/s | 47 ms | 20 kHz | **J3 Dual Mono** allows independent programming to be sent on both L&R channels |
| 24 kb/s | 47 ms | 20 kHz | **J4 Mono 24Kb** |
| | | | **FLAC:** Free Lossless Audio Compression provides transparent audio while conserving bandwidth. FLAC bitrate is variable and based on audio input. |
| ~537 kb/s | 26 ms | 20 kHz | **K1 Mono** |
| ~1075 kb/s | 26 ms | 20 kHz | **K2 Dual Mono** |
| ~358 kb/s | 26 ms | 15 kHz | **K3 Mono** |
| ~717 kb/s | 26 ms | 15 kHz | **K4 Dual Mono** |
| | | | **Opus:** A newer offering that combines low delay and low network utilization. Opus is included primarily for compatibility with softphone apps and Internet connections using WebRTC. (Special CBR modes are offered for compatibility with Tieline products - avoid these in other applications). |
| 48Kb/s | 41 ms | 20 kHz | **N4.1 Mono 48kbps** |
| 56Kb/s | 41 ms | 20 kHz | **N4.2 Mono 56kbps** |
| 64Kb/s | 41 ms | 20 kHz | **N4.3 Mono 64kbps** |
| 64Kb/s | 41 ms | 20 kHz | **N5.1 Stereo 64kbps** |
| 96Kb/s | 41 ms | 20 kHz | **N5.2 Stereo 96kbps** |
| 128Kb/s | 41 ms | 20 kHz | **N5.3 Stereo 128kbps** |
| 48Kb/s | 41 ms | 20 kHz | **N6.1 CBR Mono 48kbps** |
| 64Kb/s | 41 ms | 20 kHz | **N6.3 CBR Mono 64kbps** |
| 64Kb/s | 41 ms | 20 kHz | **N7.1 CBR Stereo 64kbps** |
| 96Kb/s | 41 ms | 20 kHz | **N7.2 CBR Stereo 96kbps** |
| 128Kb/s | 41 ms | 20 kHz | **N7.3 CBR Stereo 128kbps** |
| | | | **VoIP:** G.711 and G.722 coding algorithms for compatibility with SIP-style VoIP phones. |
| 64 kb/s | 35 ms | 3 kHz | **X1 G.711 a-law** |
| 64 kb/s | 35 ms | 3 kHz | **X2 G.711 μ-law** |
| 64 kb/s | 35 ms | 7 kHz | **X3 G.722** |

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