

# ULTRAGRAPH PRO

## FBQ6200/FBQ3102/FBQ1502

Audiophile 31-Band and 15-Band Stereo Graphic Equalizer with FBQ Feedback Detection System

### Effects of Equalization on Music and Voice Reproduction

Center frequency (Hz) 1/3 octave	Effects on music
31 to 63	Fundamentals of bass drum, tuba, double bass and organ. These frequencies give music a sense of power. If over-emphasised they make the music "muddy". The 50 or 60 Hz band is also used to reject AC mains hum.
80 to 125	Fundamentals of lower tympani. Too much boost produces excessive "boom". 100 or 125 Hz are also used for hum rejection.
160 to 250	Drum and lower bass. Too much boost produces excessive "boom". Also useful for 3rd harmonic mains hum rejection.
315 to 500	Fundamentals of strings and percussion.
630 to 1 k	Fundamentals and harmonics of strings, keyboards and percussion. Boosting the 600 to 1 kHz range can make instruments sound horn-like.
1.25 k to 4 k	Drums, guitar, accentuation of vocals, strings and bass. Too much boost in the 1 to 2 kHz range can make instruments sound tinny. Too much boost anywhere between 1 to 4 kHz can produce "listening fatigue".
5 k to 8 k	Accentuation of percussion, cymbals and snare drum. Reduction at 5 kHz makes overall sound more distant and transparent. Reduction of tape hiss and system noise. The 1.25 to 8 kHz governs clarity and definition.
10 k to 16 k	Cymbals and overall brightness. Too much boost causes sibilance. Reduction of tape hiss and system noise.

Center frequency (Hz) 1/3 octave	Effect on voice
40 to 125	Sense of power in some outstanding bass singers.
160 to 250	Voice fundamentals.
315 to 500	Important for voice quality.
630 to 1 k	Important for voice naturalness. Too much boost in the 315 to 1 kHz range produces a telephone-like quality.
1.25 k to 4 k	Voice fricatives-accentuation of vocals. Important for speech intelligibility. Too much boost between 2 and 4 kHz can mask certain speech sounds e.g. "m", "b", and "v" can become indistinguishable. Too much boost anywhere between 1 and 4 kHz can produce "listening fatigue". Vocals can be highlighted by slightly boosting the vocal at 3 kHz and at the same time slightly dipping the instruments at the same frequency.
5 k to 8 k	Accentuation of voice. The range from 1.25 to 8 kHz governs the clarity of voice.
10 k to 16 k	Too much boost causes sibilance.