



US 20220376668A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0376668 A1**
Roberto (43) **Pub. Date: Nov. 24, 2022**(54) **AUDIO SYSTEM WITH COMPRESSOR
SIDECHAIN FREQUENCY-BIASING FILTER
FOR SWITCHED-MODE POWER SUPPLY
OVERBOOST ENERGY UTILIZATION***1/0227* (2013.01); *H03F 2200/03* (2013.01);
H03F 2200/105 (2013.01)(71) Applicant: **Cirrus Logic International
Semiconductor Ltd.**, Edinburgh (GB)(72) Inventor: **Miles Klett Roberto**, Austin, TX (US)(21) Appl. No.: **17/323,551**(22) Filed: **May 18, 2021****Publication Classification**(51) **Int. Cl.****H03G 9/02** (2006.01)**H03G 7/00** (2006.01)**H03F 3/217** (2006.01)**H03F 1/02** (2006.01)(52) **U.S. Cl.**CPC **H03G 9/025** (2013.01); **H03G 7/007**
(2013.01); **H03F 3/217** (2013.01); **H03F**(57) **ABSTRACT**

An audio system has an amplifier for driving an audio actuator and includes a switched-mode power supply that draws power from a power source (e.g., battery) to supply power to the amplifier, a capacitor charged by the switched-mode power supply to supply power to the amplifier, and a feed-forward compressor that performs dynamic range compression of an audio input to provide an audio output for amplification by the amplifier. The compressor includes a sidechain frequency-biasing filter that generates a frequency-biased version of the audio input that is attenuated as frequency increases which causes the compressor to decrease the compression as frequency increases. A control block limits current drawn from the battery by the switched-mode power supply independent of audio input frequency, but the frequency-biasing filter enables the amplifier to service audio power transients greater than the current-limited power supply can supply by advantageously concurrently sourcing extra power from the capacitor.

100

