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Design of an Audio Multitone Refiner, Simulation of Audio Frequencies & Analysis Using Active Filter

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ABSTRACT

The versatility of signal analyzing tools: Laplace transform, Fourier series, D.C. and transient analysis were the glaring tools or methods used to ascertain the realization of all constructed circuit here; 'Casio fx7400G' language was used during programming of the band pass filter used quite interesting is to also see the practicability of some engineering theories the reality of signal audio frequencies and their response in tone control. Active filters were used through. This adds a lot of cost, efficiency, size compact and better amplification advantages over the inductive (passive) type. Represented in this critique are fundamental of filters, superiority of active filters over passive filter, overview of Chebychev, Ideal Butterworth, Chebyshev, and Bessel in chapter one whole chapter two covers review of transfer function, Thomas Biquads, Akerbergmossberg Biquard, positive Gain single Amplifier Biquads, Negative Gain single Amplifier Biquads parallel active filter, leapfrog filter, band pass architectures, stages type and high orders that are available. Chapter three discussed multiple feedback topologies the design overall circuit diagram, MFB bandpass computation, crossover design, combining performance, filter responses and combining action. The chapters closed with simulated waveform or filter shapes, responses and combining action noise analyses the audio multi-tone refiner technical specification and a section on practical suggestion (chapter five) and an insight for future research. The desired results were achieved to an extent: the circuit design of an audio multi-tone refiner with a ballpark good quality of production that gave room for frequency bands selection (as enviable) within the audio frequency range; the scientific designing tools or methods as stated above were all realistic in frequency dependent electronic circuit(s) design. Here within is intelligence of a designed and constructed audio device, awfully zest but not with case.

FOREWORD

This work was a research work in all its facets that involved laboratory findings typically designed and constructed; with rigorous mathematical analysis, programming, circuit synthesis and stimulation; bearing in mind the necessities to add to the world of audio production.