

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202341066956 A

(19) INDIA

(22) Date of filing of Application :05/10/2023

(43) Publication Date : 20/10/2023

(54) Title of the invention : ARTIFICIAL INTELLIGENCE (AI) ENABLED HIGH-FREQUENCY RF ENERGY HARVESTING CIRCUIT WITH IMPROVED EFFICIENCY

(51) International classification :G06N20/00, G06N3/08, H02J50/00, H02J50/20, H02J50/90, H04B17/00, H04W24/02, H04W24/04

(86) International Application No :NA
 Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
 Filing Date :NA

(62) Divisional to Application Number :NA
 Filing Date :NA

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(57) Abstract :
 ARTIFICIAL INTELLIGENCE (AI) ENABLED HIGH-FREQUENCY RF ENERGY HARVESTING CIRCUIT WITH IMPROVED EFFICIENCY ABSTRACT The present invention pertains to an artificial intelligence (AI) enabled high-frequency RF energy harvesting circuit 100 engineered to efficiently harness radiofrequency (RF) energy. The circuit comprises a high-frequency RF energy harvesting module 102 that captures and transforms RF energy into electrical power. Crucially, an AI processing unit 104 is integrated, dynamically optimizing the harvesting module's operation in real-time. The AI processing unit 104 employs machine learning algorithms to analyze incoming data from the RF energy harvesting module 102 and other sensors, adjusting operational parameters for optimal efficiency. By adapting impedance matching, duty cycles, frequencies, and other settings, the AI processing unit 104 maximizes energy capture and conversion efficiency based on real-time RF signal characteristics and environmental conditions. Predictive modeling is employed to forecast RF energy availability and adapt harvesting strategies accordingly. This invention heralds a paradigm shift in RF energy harvesting, significantly improving its efficiency through AI-powered adaptive optimization.

No. of Pages : 17 No. of Claims : 8