Analog and RF Passive Chip Design

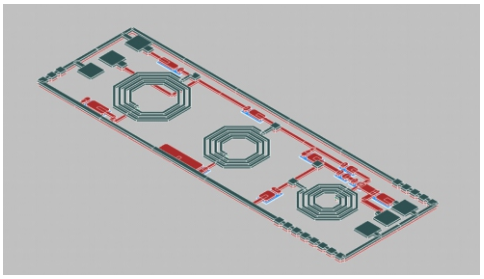
Faraday Dynamics EDA Solutions

Faraday Dynamics

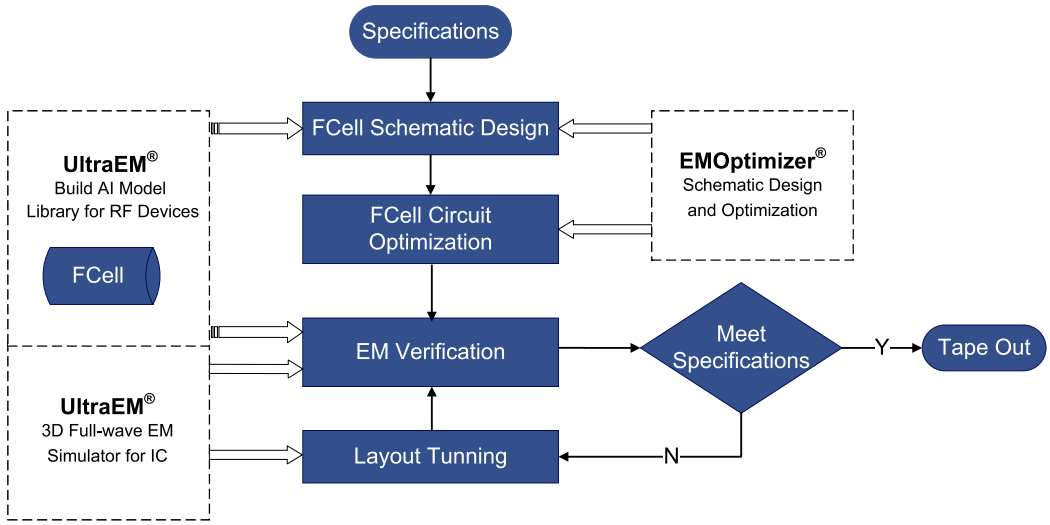
Introduction

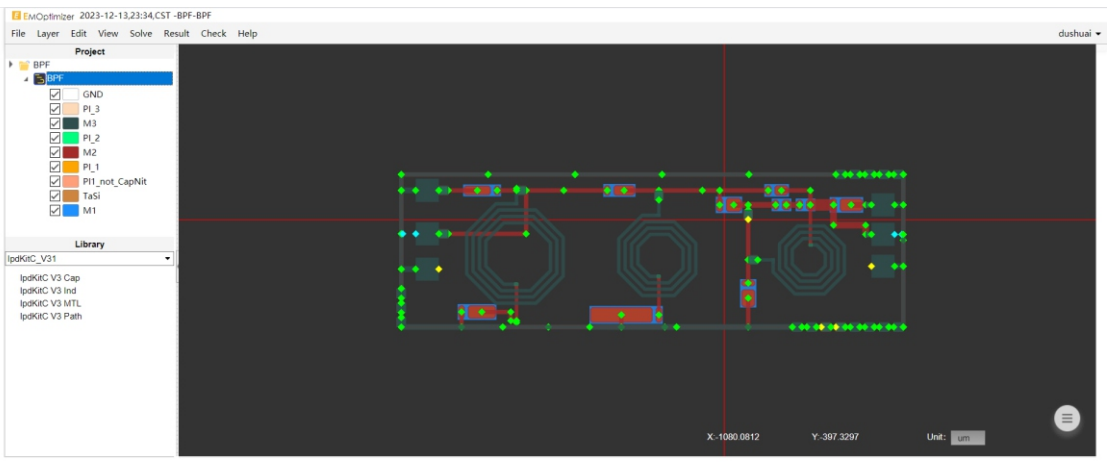
Powered by the FCell modeling technology, EMOptimizer® (which is industry' s first rapid tool for design and optimization of RF circuits developed by Faraday Dynamics) unleashes unpreceded speed for RF circuit design and optimization, empowering RF design engineers to accomplish their designs much faster than ever before.

This reference design case demonstrates design and optimization of a bandpass filter. EMOptimizer® optimizes the filter' s design parameters to achieve a passband of 2.6GHz-3.2GHz with insertion loss (1.1dB) and return loss (17dB). Furthermore, the final filter delivers sharp attenuation in stopbands, 20dB@1.9GHz-2.3GHz, 35dB@1.4GHz-1.8GHz, 20dB@3.8GHz-4.2GHz, and 1.8dB@4.5GHz-6.5GHz.



Design Flow





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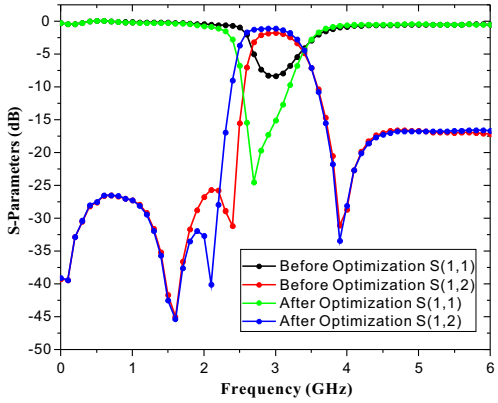
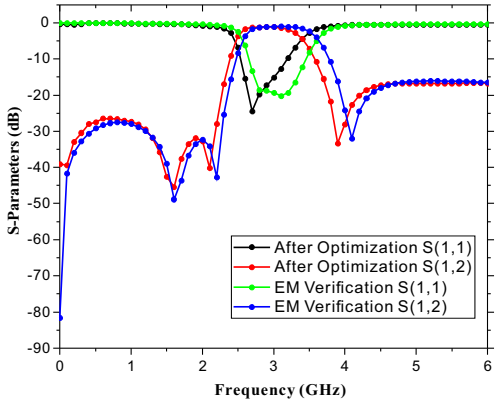
Simulation Results



The figure depicts the simulation results of the designed filter before and after EMOptimizer® performs optimization. After optimization, the passband increases from 2.8GHz-3.2GHz to 2.6GHz-3.2GHz, the insertion loss decreases from 1.8dB to 1.1dB, and the return loss increases from 8.3dB to 17.3dB.



The optimized layout obtained from EMOptimizer® is exported to UltraEM® for rigorous EM simulation and verification. The EM simulation validates that the final layout design meets the design specifications.

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