

YIR RF/mmW/5G

Si and SiGe Reliability

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In 2019 the world was getting ready for the unstoppable transition from 4G to 5G. There was a large amount of activity throughout the year in the area of Si/SiGe (CMOS/Bi-CMOS). Academia, RF companies and semiconductor foundries were very active developing and refining the best suited technologies capable of meeting the stringent requirements needed for RF/mmW 5G solutions. Most key players realize that there is a sizable opportunity for Si and SiGe technology solutions as we transition from the few antennas required in 4G to the multi element antenna array solutions incorporating "Massive MIMO" (Multiple Input Multiple Output) the power requirements have been reduced to a range that is well suited for Silicon and Silicon Germanium technology offerings. To be competitive in this arena RF circuit designers must try to squeeze every bit of performance from the technologies that they are using in their designs. Reliability gates the maximum amount of power/performance that can be safely achieved in a given technology. We will summarize the most significant papers of 2019 dealing with the achievements and reliability of Si and SiGe in this mmW/5G year in review session.