105.Title: Millimeter-Wave Frequency Doubler With Transistor Grounded-Shielding Structure in 0.13-mu m SiGe BiCMOS Technology

Author: Wang, L; Xiong, YZ; Zhang, B; Hu, SM; Lim, TG

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Abstract: A low conversion-loss monolithic frequency doubler has been developed for D-band signal generation in 0.13-mu m SiGe BiCMOS technology. The circuit uses a single-transistor topology with a novel grounded-shielding structure, which can efficiently reduce the parasitic feedback effect between collector and base of a HBT to achieve frequency multiplication. The measurement results show that the doubler exhibits minimum similar to 3.2-dB conversion loss at the output frequency of 134 GHz with the efficiency of similar to 5.8 and maximum -1.4-dBm second-harmonic output power at the output frequency of 132 GHz with the efficiency of similar to 7%, respectively. Moreover, both input and output return loss are better than 10 dB for the input frequency from 64 to 69 GHz and the corresponding doubled output frequency range. In addition, the estimated rejection of the fundamental signal is better than 20 dB.