

396. 标题: Sub-THz continuous wave generation scheme using high-order harmonics modulated lightwave

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摘要: We propose a sub-THz continuous wave (ON) generation scheme using a high-order harmonics modulated lightwave (HML) to reduce an electronic dependency of a conventional double sideband suppressed carrier (DSB-SC) scheme. The electronic dependency should be overcome to increase frequency tunability of the conventional DSB-SC scheme. This is because the frequency of a local oscillator (LO),  $f(\text{LO})$ , should be one-half frequency of the frequency of a desired sub-THz ON in the conventional DSB-SC scheme. The proposed scheme is formed by adding an optical feedback loop to the conventional DSB-SC scheme. In order to verify our proposed scheme, a 120 GHz CW is generated using the LO with  $f(\text{LO}) = 20$  GHz. Based on our experimental results, we have found that the frequency of the LO can be reduced by our proposed scheme up to one-sixth (20 GHz) of 120 GHz. The 120 GHz ON generated by the proposed scheme has 52 dB higher photomixed output power with narrow spectral linewidth than that of the 120 GHz CW generated by the conventional DSB-SC scheme using the LO with  $f(\text{LO}) = 20$  GHz. Consequently, our proposed scheme can be helpful to reduce the electronic dependency of the conventional DSB-SC scheme. (C) 2012 Elsevier B.V. All rights reserved.

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