InP HPT   OIL-SOM

Optoelectronic frequency up-conversion characteristics of optical injection-locked self-oscillating optoelectronic mixer (OIL-SOM) based on InP HPT

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Abstract   A 30 GHz hybrid-type Optical Injection-Locked Self-oscillation Optoelectronic Mixer (OIL-SOM) based on InP HPT was realized. This OIL-SOM can be used as 60 GHz band frequency up-converter using harmonic mixing characteristic. In this study, we report optoelectronic frequency up-conversion characteristics of the OIL-SOM over supplied optical LO power.

Radio-on-fiber   , remote up-conversion scheme

WDM network   .   ,

,   , phase-

locked   oscillator   .   InP

heterojunction phototransistor

remote up-conversion scheme   .

, LO   phase-locked oscillator   .

, LO   ,   LO

,

.

Optical Injection-Locked Self-oscillating Optoelectronic Mixer (OIL-SOM)

LO   free-running HPT oscillator   injection locking   ,   LO

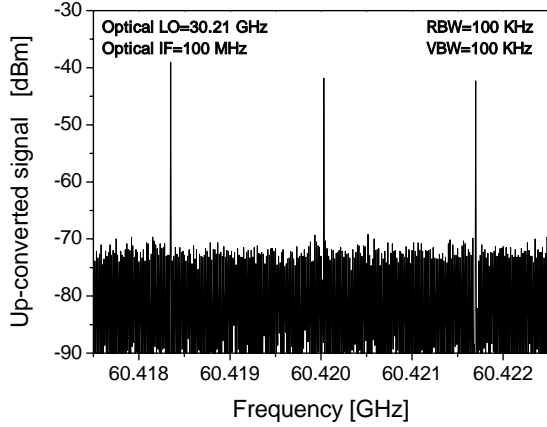phase-locked LO   [1].   LO

[1]   .
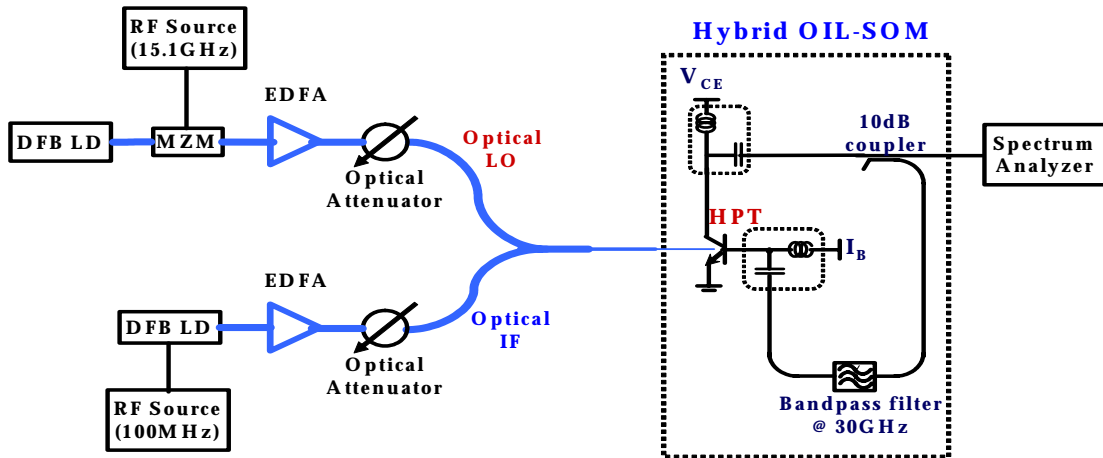
IF

,   .   InP HPT   30 GHz hybrid

OIL-SOM   ,   60 GHz

[1].   [1]   .

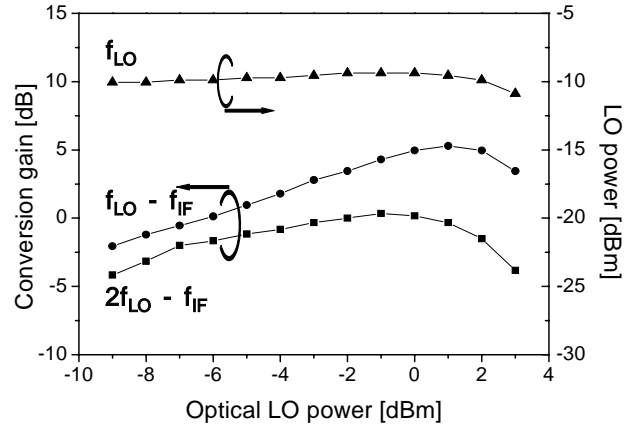un-doped emitter   InP/InGaAs single-heterojunction N-p-n HPT   [2].

[2]   spectrum.   [3] Optical LO power

[2]   -6 dBm   IF   0 dBm   LO   ,

IF   OIL-SOM   60 GHz   .

LO   [3]   .

LO   , injection locking   LO   .

OIL-SOM   ,   LO

LO   . 60

GHz   LO   4 dB

,   DC

.   ,   DC

DC   ,   IF

.   , OIL-SOM   injection locking   ,   LO

LO   ,   LO

,   LO   remote up-

conversion radio-on-fiber   .

REFERENCE

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2.   M. Ida, K. Kurishima, H. Nakajima, N, Watanabe and S. Yamahata, "Undoped-Emitter InP/InGaAs HBTs
      for High-Speed and Low-Power Applications," *IEEE International Electron Device Meeting, pp.854-856,
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