A 38 to 44GHz sub-harmonic balanced HBT mixer with integrated miniature spiral type Marchand balun - DTU Orbit (13/12/2018)

A 38 to 44GHz sub-harmonic balanced HBT mixer with integrated miniature spiral type Marchand balun

This work presents an active balanced sub-harmonic mixer (SHM) using InP double heterojunction bipolar transistor technology (DHBT) for Q-band applications. A miniature spiral type Marchand balun with five added capacitances for improved control of amplitude and phase balance is integrated with the SHM. The measured results for the SHM demonstrate a conversion gain of 1.2 dB at an RF frequency of 41 GHz with an associated LO power of 5 dBm. The conversion loss remains better than 3 dB from 38 to 44 GHz. The LO to IF isolation is better than 42 dB within the bandwidth of the mixer and confirms the excellent balance of the integrated spiral type Marchand balun. The DC power consumption of the SHM is only 22.5 mW under normal mixer operation.

General information
State: Published
Organisations: Department of Electrical Engineering, Electromagnetic Systems, Goethe University Frankfurt
Contributors: Johansen, T. K., Krozer, V.
Pages: 317-330
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: Electromagnetic Waves (Progress in electromagnetics research)
Volume: 135
ISSN (Print): 1070-4698
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.05 SJR 0.682 SNIP 1.477
Web of Science (2017): Impact factor 2.874
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.96 SJR 0.493 SNIP 1.233
Web of Science (2016): Impact factor 2.404
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.73 SJR 0.586 SNIP 1.233
Web of Science (2015): Impact factor 1.315
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.82 SJR 0.678 SNIP 1.209
Web of Science (2014): Impact factor 1.229
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 5.04 SJR 1.131 SNIP 2.066
ISI indexed (2013): ISI indexed no
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 5.4 SJR 1.409 SNIP 2.151
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 4.52 SJR 1.258 SNIP 1.928
Web of Science (2011): Impact factor 5.298
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.94 SNIP 1.442
Web of Science (2010): Impact factor 3.745
Scopus rating (2009): SJR 0.887 SNIP 1.502
Scopus rating (2008): SJR 0.68 SNIP 1.899
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.918 SNIP 1.959
Scopus rating (2006): SJR 0.613 SNIP 1.459