Background

• Since the 1980s, zero-IF structure has gradually been widely used, the volume is much smaller than that of the superheterodyne.
• With the development of semiconductor technology, zero-IF structure has been further studied and applied.
• However, for a zero-IF transceiver, the imbalance of the I/Q channel will produce an image frequency at the zero frequency.
• Here we propose a zero-IF transceiver composed of a 16-channel third-order Wilkinson power divider module. And it adopts the compensation correction of I/Q amplitude and phase imbalance to achieve a better image rejection ratio.

Conclusions

A broadband IF subsystem used in Ku-band satellite transceiver is designed and implemented in this work. By adopting I/Q amplitude and phase imbalance calibration, the measured results show a good image frequency rejection. The proposed IF transceiver has excellent IRR and EVM, which can be utilized in the broadband satellite communication systems.

References