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Abstract
In this thesis, the front-end passive components such as filter and balun are investigated and fabricated. Since many of the existing WLAN devices use two different unlicensed bands, the 2.4/5.2GHz and 2.4/5.7GHz CPW dual-band bandpass filters are considered and fabricated for this aspect. The T-shape feeding line is used to form coupling structure. This parallel-coupled structure can be designed to resonate at the desired frequency. The ring resonator and U-shape resonator are integrated on the backside of the substrate to create another transmission band. The stepped impedance technology is applied for component's size reduction.
Compared to the conventional Log- Periodic balun, the design of a symmetric Log-Periodic balun can provide better performance over the entire designed band. A novel ultra-wideband balun with 3 to 6 GHz passband is demonstrated for Ultra-Wideband (UWB) applications. The problems of fabrication and measurement of the conventional Log-Periodic balun operated at higher frequency problems can be further improved. The magnitude and phase difference between two output ports are kept balancing at higher band edge portion. The measured amplitude imbalance is about ± 1.1 dB with a corresponding phase difference about ± 4o. The bandwidth of the balun is around 70 %.
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