

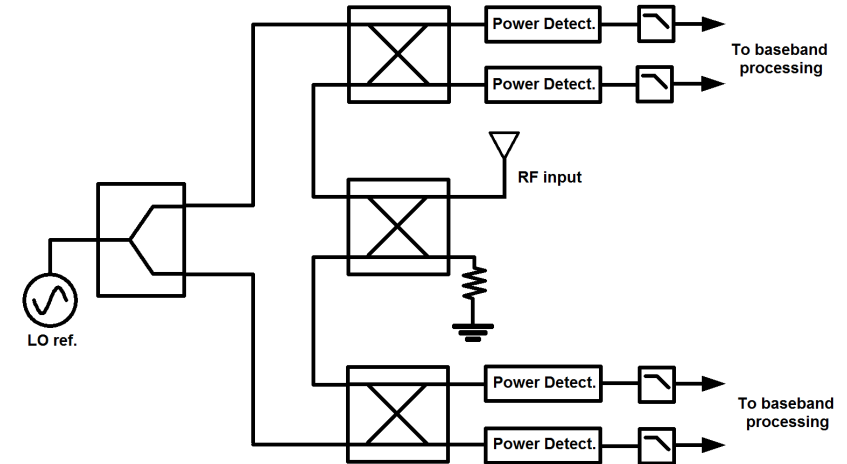
### Background:

Multiport-junction receivers have huge potential in wideband and high data-rate communication receiver applications. Built using passive microwave components like hybrid couplers and power dividers, one can realize extremely wideband receivers with data rates approaching several gigabits per second. The size of microwave components scales down with frequency, therefore, such receivers are suitable for integrated circuit implementation at millimeter wave frequencies. Potentially, 7 GHz of an unlicensed band is available between 57-64 GHz.

Possible these topics could be the implementation of any of the receiver blocks or system-level modeling for performance characterization.

### Topics:

1. Design of broadband microwave devices e.g. hybrid couplers, phase shifters etc.
2. Implementation of digital calibration algorithms for multiport-junction receivers on FPGA
3. High speed analog circuit design
4. 60 GHz VCO design
5. Design of wideband power detectors
6. System-level modeling of multiport-junction receivers



Block diagram of a multiport-junction receiver

**Further information on thesis topics could be delivered by email, telephone or discussion.**

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