DYNAMIC BAND STEERING FILTER BANK MODULE WITH PASSBAND ALLOCATIONS

Field of the Disclosure

[0001] The present disclosure relates in general to radio frequency processing. In particular, the present disclosure relates to filter bank modules.

Background

[0002] To support the newly released Wireless Fidelity (Wi-Fi) spectrum at 6 GHz while supporting the existing Wi-Fi bands at 2.4 GHz and 5 GHz, customers use complex banks of filters, along with switches, diplexers, and an assortment of surface-mount technology matching components. As such, filter bank modules incorporating these components are relatively large in size and have relatively high cost and relatively poor performance. What is needed is a new type of filter bank module having a substantial reduction in size and cost while also substantially improving performance.

Summary

[0003] Disclosed is a filter bank module having a substrate, an antenna port terminal, and a filter bank die. The filter bank die is fixed to the substrate and includes a first acoustic wave (AW) filter having a first antenna terminal coupled to the antenna port terminal and a first filter terminal, wherein the first AW filter is configured to pass a first passband and attenuate frequencies outside the first passband, and a second AW filter having a second filter terminal, and a second antenna terminal coupled to the first antenna terminal to effectively diplex signals that pass through the first AW filter and the second AW filter, wherein the second AW filter is configured to pass a second passband that is spaced from the first passband to minimize interference between first bandpass and the second bandpass while attenuating frequencies outside the second passband.

[0003a] According to another aspect, a filter bank module comprising: a substrate; an antenna port terminal; and a first filter bank die fixed to the substrate, the first filter bank die comprising: a first acoustic wave (AW) filter

having a first antenna terminal coupled to the antenna port terminal and a first filter terminal, wherein the first AW filter is configured as a bandpass filter to pass Unlicensed National Information Infrastructure (UNII) bands with a filter skirt having a falling slope that spans up to a 160 MHz gap between adjacent passbands; and a second AW filter having a second filter terminal, and a second antenna terminal coupled to the first antenna terminal to effectively diplex signals that pass through the first AW filter and the second AW filter.

[0004] In some exemplary embodiments, at least one switch such as a single-pole double-throw switch or a multi-pole multi-throw switch is integrated within the filter bank module with the filter bank die. Also, in some exemplary