Abstracts

Microwave SAW Bandpass Filters for Spacecraft Applications

H. Shinonaga and Y. Ito. "Microwave SAW Bandpass Filters for Spacecraft Applications." 1992 Transactions on Microwave Theory and Techniques 40.6 (Jun. 1992 [T-MTT] (Special Issue on Microwaves in Space)): 1110-1116.

Surface acoustic wave (SAW) bandpass filters are small in size, light in weight, and reliable, and can be designed to possess very sharp frequency selectivity and/or a linear phase response. When such stringent filter characteristics were required, not a few satellites used SAW bandpass filters in their transponders in spite of their relatively large insertion losses. These on-board SAW bandpass filters were limited to be operation in the IF (lower than 400 MHz) frequency range. This paper describes microwave SAW bandpass filters for spacecraft applications. Two SAW bandpass filters were designed and fabricated in the 1.5 GHz band using temperature-stable ST-cut quartz substrates. The SAW bandpass filters were then assembled in a SAW filter bank. One unique feature of the SAW filter bank is that a broader band is available merely by adding the outputs of SAW bandpass filters adjacent in the frequency domain. Measured electrical responses as well as results of a transmission experiment show satisfactory performance. Finally, effects of the temperature and aging stability characteristics are investigated based on the measured and calculated responses.

❑ Return to main document.