Abstracts

Evaluation of Integrated Tuning Elements with SIS Devices

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The resonances of integrated tuning stubs in combination with SIS detectors are measured and calculated. The predicted resonances are compared with measurements of stubs integrated with Nb/Al/sub 2/O/sub 3/Nb junctions in a log-periodic antenna. Stubs of different lengths have been investigated on different substrates (on 200 µm thick quartz and on a 7 µm thick silicon membrane) and the results show a fairly good agreement with the model calculations. Quartz substrates showed resonances up to 640 GHz, while for silicon membranes stub resonances reach up to as 480 GHz. An observed resonance at 560 GHz is probably a substrate effect from the membrane. The gap frequency for all the samples is 670 GHz and no resonances are detected above this frequency. Up to the maximum detected frequency dispersion is found to be negligible.

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