

## A COMPARISON OF SEVERAL SELF-STRUCTURING ANTENNA TEMPLATES

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Successful operation of a self-structuring antenna (SSA) depends both on the large number of available antenna states, and the underlying characteristics of the antenna template. For example, if an antenna template is too small, an SSA likely won't perform well for low frequency applications, regardless of the switch states. Another possibility is that an SSA template is of appropriate size; in this case, the performance of the antenna depends on both the switch states and the configuration of the antenna elements. Up to this point, the effect of the underlying characteristics of the antenna template, i.e., the configuration of the antenna elements, has not been thoroughly studied. This paper looks to characterize the effect of the SSA template layout, using measured data such as standing wave ratio (SWR), antenna patterns, and input impedance. By finding the effect of template layout on the performance of the SSA, guidelines can be created by which future layouts can be designed. Through this process, self-structuring antenna templates can be custom designed to better fit particular applications.

This paper uses measured performance criteria to compare and contrast several SSA template designs. These designs include a "standard", linearly spaced SSA template, as described in previous work, a variation based on a log-periodic design, and several templates that are fairly application specific. The application specific templates are configured such that all switches and control hardware are aligned along one edge of the template. This allows the SSA to be used in applications where the placement of both the feed network and the switches are desired to be hidden away.