Abstracts

Distributed broad-band frequency translator and its use in a 1-3-GHz coherent reflectometer

P. Akkaraekthalin, S. Kee and D.W. Van Der Weide. "Distributed broad-band frequency translator and its use in a 1-3-GHz coherent reflectometer." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2244-2250.

We present the first frequency translator based on a nonlinear transmission line (NLTL) phase shifter and demonstrate its application in a coherent reflectometer, giving a performance comparable to a commercial network analyzer. Rather than forming shock waves on the NLTL with large signal excitation, we use its voltage-variable delay together with both amplitude and phase linearization to modulate the phase of a small 0.5-3.0-GHz microwave signal. The resultant single sideband modulator exhibits >45 dBc carrier and spurious suppression. This new approach has significant applications in both instrumentation and sensing, particularly because it offers a clear path toward complete integration of a coherent measurement system.

❑ Return to main document.