

Ultra-wideband and off-optimised five-port reflectometer using power splitters

ABSTRACT

This paper presents an ultra-wideband (UWB) and off-optimised Five-Port Reflectometer (FPR) configured by power splitters. The proposed non-multi-state FPR is characterised and realised for complex reflection coefficient determinations. The measurement system can be easily setup using commercial power splitters, three detectors and a microwave source. The transmission lines method is used as calibration standard for FPR measurement system. Both the FPR setup and the transmission lines are characterised with a Vector Network Analyser prior to be used for the off-optimised measurement system. The results show good agreement between actual and calculated reflection coefficient for frequency range of 0.1 to 40 GHz. This novel FPR setup provides a simple, cost effective and accurate alternative in measuring broadband complex reflection coefficient.

Keyword: Five-port reflectometer; Ultra-wideband; Six port reflectometer; Complex reflection coefficient; Power splitters