ABSTRACT

Tandem coupler is one of type hybrid coupler with a tandem consisting of two coupled-line directional coupler with a phase that requires a two-line 90^0 which realized using a bondwire bridge that can result in coupling of -3 dB. This coupler ever made at the previous final project of making a duplexer, but the results are unsatisfactory, causing a duplexer is not working in accordance with the expected frequency.

Tandem coupler made at the final project through four stages, namely: the study of literature and dimensional calculation, simulation and optimization using CST simulator, prototype realization, and measurement using a network analyzer. Tandem kopler is designed using FR-4 epoxy substrate with relative permittivity 4.4 and 1.6 mm thick.

At this final project has been designed built prototype tandem coupler frequency 2.6GHz - 2.7GHz with center frequency of 2.65GHz, the following is the specification of the tandem coupler that has been realized: 3006-dB coupling ratio, terminal impedance 48.75Ω on port 1, port 2 on the 61.46Ω , 51.72Ω at port 3, port 4 on danVSWR 52.12Ω of 1.23 at port 1, port 2 at 1:23, 1:36 at port 3, port 4 at 1:06, not exactly the phase difference is 900 ± 900 100. Substrates used in the manufacture of the final project is epoxy FR-4 with a relative permittivity 4.4 and 1.6 mm thick substrate.

Keywords: LTE, Tandem coupler, Coupled Line Directional Coupler, Hybrid Coupler