

Thesis Title	The Design of Planar Slotted-Waveguide Array Antenna
Student	Mr.Komsak Meksamoot
Thesis Advisor	Assoc. Prof. Dr. Monai Krairiksh
Level of Study	Master of Engineering Electrical Engineering
Department	Telecommunication Engineering, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang
Year	1997

Abstract

This thesis describes the design, construction and experimental results of the, low profile, linear polarization, planar resonant array of longitudinal slots on broad-wall of rectangular waveguide. The design frequency is in the Ku-band at the frequency of 12.66 GHz. The antenna size is specified to be 16×16 slots with the physical size of $30 \times 30 \text{ cm}^2$. The amplitude excitation of radiating slots on branch-line waveguide is uniform distribution and mutual coupling compensation for every slots was included in the design. Feeding system for branch lines is used in the form of centered-inclined slot on broad-wall of main-line waveguide.

The experiment gave the satisfactory results namely the resonant frequency of 12.66 GHz, 20 MHz bandwidth with standing wave ratio not over 2:1, half power beamwidth of radiation pattern 4.4 degrees in E-plane and 4.0 degrees in H-plane, the gain of 28 dB, 30% aperture efficiency, the antenna temperature 530 Kelvins and the figure of merit 0.76 dB/Kelvins under the situation and test site of experiment.