VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"Analysis of Antenna Impedance and Radiation Pattern for A Mono-Conical Antenna using MEMS"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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2018-2019

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

Certified that the project work entitled "**ANALYSIS OF ANTENNA IMPEDANCE AND RADIATION PATTERN FOR A MONO-CONICAL ANTENNA USING MEMS**" is a bona fide work carried out by

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in partial fulfillment for the award of **BACHELOR** OF ENGINEERING in **ELECTRONICS & COMMUNICATION ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2018–2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

An antenna is used to radiate electromagnetic energy efficiently and in desired directions. Antennas act as matching systems between sources of electromagnetic energy and space and the goal in design of antennas is to optimize this matching. All antennas may be used to receive or radiate energy. The required wideband omnidirectional mono-conical antenna used for reverberation chamber has been proposed. The antenna performance is analyzed using the COMSOL (v5.2) Multiphysics Simulation Tool. The simulation results show that the antenna has a good impedance and omnidirectional radiation characteristics, and It meets the performance requirements of the antenna used for reverberation chamber. The proposed antenna shows the measured value of VSWR within 0.2-1.5 GHz is less than 20dB which is in accord with the theoretical value.

Conical antennas are useful for many applications due to their broadband characteristics and relative simplicity. This example includes an analysis of the antenna impedance and the radiation pattern as functions of the frequency for a mono conical antenna with a finite ground plane and a 50 Ω coaxial feed. The rotational symmetry makes it possible to model this in axially symmetric 2D. When modelling in 2D, you can use a dense mesh, giving an excellent accuracy for a wide range of frequencies.

In the demonstrated work on conical antenna we are majorly considering 3 factors of antenna parameters they are: improvement in the impedance factor of the antenna, generating suitable radiation factor for the desired frequency, indicating the usage of conical antenna in various applications, verifying the high gain and high frequency operation for conical antenna. The designed antenna can be used as a transmitting antenna, at the same time; it also can be used as a receiving antenna because of its small size and the omnidirectional radiation. The size of the antenna is reduced enormously. It is convenient to take along and install, and it has well practical values.