

UNIVERSITI TEKNOLOGI MARA

**APPLICATION OF GROUND PLANE IN
OPTIMIZATION OF MOBILE MEASUREMENT
TEST FOR LTE NETWORK COVERAGE**

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ABSTRACT

Nowadays, the cellular communication evolution had shown that the demand for two-way voice communication had decreased against data rate demand after the globalization of Internet usage. This is where the cellular systems took another phase of evolution with Long Term Evolution (LTE) known as the fourth generation of cellular systems. LTE network is a system of packet switched network where the architecture had been simplified from the previous Universal Mobile Telecommunication System (UMTS) which is known as the third generation of cellular system. By having a simpler architecture than previous generation technology, the LTE standard has high data performance in wireless mobility. In measuring the performance of the LTE coverage, a lot of cost had been spent for the radio frequency optimization where the activity had been for the unwanted location where the poor coverage area is not applicable. This study is expected to optimize the data collection methodologies in mobile measurement in which could also be the turnkey of the current Telecommunications industry in benchmarking, new site implementation, solving customer complaints, and other related data collection services. The aim of this study is to develop an advanced measurement of LTE coverage by applying a sheet of electrical conductive material with two different sizes under the measurement device. To determine the effectiveness of the proposed method, the measured value of the conventional measurement has been compared with the proposed method together with the theoretical value of the measurement. From the measurement results, it can be found that by increasing the size of the ground plane had improved the impedance thus resulting in optimum performance of the measurement device. The application of ground plane had optimized the mobile measurement compared to conventional measurement method and hence optimized the mobile measurement test for LTE network coverage.

Keywords–LTE, UE, Mobile Measurement, Drive Test, Ground Plane

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