

High Speed Data Transmission over a Visible Light Link Employing Smartphones Xenon Flashlight as a Replacement of Magnetic Cards

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Abstract— This paper uses built-in Xenon flashlight in today's smartphones to experimentally replace the magnetic card. Due to the high dependence of the users nowadays on their smartphones and their wide availability and use in nearly all everyday tasks, the idea of integrating smartphones in financial transactions such as payments and withdrawals has attracted the interest of many researchers. Therefore, in this paper, we experimentally modulate the embedded Xenon flashlight in a smartphone with the required information of a traditional magnetic card and transmit the light over a secure high speed optical link at 15 bps with no additional hardware at the user end to a small, inexpensive supplementary circuit module, easily attached to a contemporary card reader or Automatic teller machines (ATM).

Keywords—*Visible light communication; Xenon flashlight; ATM machines; smartphones; smart payments*