**Scope:** This Physical (PHY) Layer amendment defines Optical Camera Communications (OCC) using light frequencies over the spectral range of near Infrared (IR) to near Ultra Violet (UV). Transmitting devices include such sources as displays, such as those typically found on cameras and other mobile devices, and other LED based sources such as flashes, flashlights, and some current generation projectors. Receiving devices are the lens and image sensors typically found in a camera. Techniques are put forward which do not require any hardware modifications for many classes of applications in existing mobile devices.

**Purpose:** This amendment addresses the unique problems of using existing camera and display technology as a data communications medium in order to deliver a large amount of unlicensed bandwidth for a variety of interesting new or additional applications without burdening existing RF spectrum or adding materially to the cost of the hardware.

**Need:** There is a growing need to increase the degree of connectivity of mobile devices, both new and existing, to support a growing set of applications, but doing so without overloading existing RF spectrum or requiring additional hardware. Off-loading is an important part of today’s mobile networking infrastructure.

OCC based solutions to this problem address a significant opportunity, extending to billions of existing devices, to provide secure non Radio Frequency (RF) based communications capability between mobile devices and/or between mobile devices and fixed infrastructure on either a one to one, or one to many or many to one basis. Using light frequencies rather than RF allows for significant additional unlicensed bandwidth without interference. The ability to use existing mobile hardware for many applications contains the cost.

Potential applications include secure point-to-point communication, Location Based Services (LBS), secure point-to-multipoint communication (office, hospital, air plane), Intelligent Transportation Systems (ITS), General Information Broadcasting, Line-of-Sight (LOS) marketing, Augmented Reality, and many more.

As a secondary benefit, derived from the presence of a camera lens and the formation of an image, is the ability to achieve spatial separation of multiple sources opening up the possibility of multiple data transmission such as MIMO (Multi input multi output) or multi-LED arrays for a variety of more sophisticated applications.