



Obsidian™ Limited Range IR Light

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To See, But Not Be Seen

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1 INTRODUCTION

The capability to operate in the dark, either at night-time or in otherwise very poorly lit environments, is of paramount importance to many military forces and disciplines, including Special Operations Forces (SOF's). The ability to efficiently and safely carry out operative and tactical missions, undetected by enemy or other hostile observation, has become the intrinsic pre-requisite of all mission-critical actions.

2 BACKGROUND

In order to enhance the possibilities to operate in the dark, a number of enabling means have been developed, the most common being those based on light intensifiers and their use in night-vision goggles (NVG's). In addition, to enhance the level of illumination, and simultaneously restrict it to wavelengths invisible to the human eye, illuminators tuned to the infrared (IR) regime of the spectrum have been applied.

However, with time and especially the global proliferation of night-vision capability, predominantly Gen 3 devices, using IR illuminators has become a paradoxical element in the battlefield: while a conventional IR light grants the user enough light to operate, it also provides an enemy equipped with NVG's a clear and obvious indication of presence and activity. In short, it has become more and more precarious to rely on the use of conventional IR illuminators for covert lighting and operations.

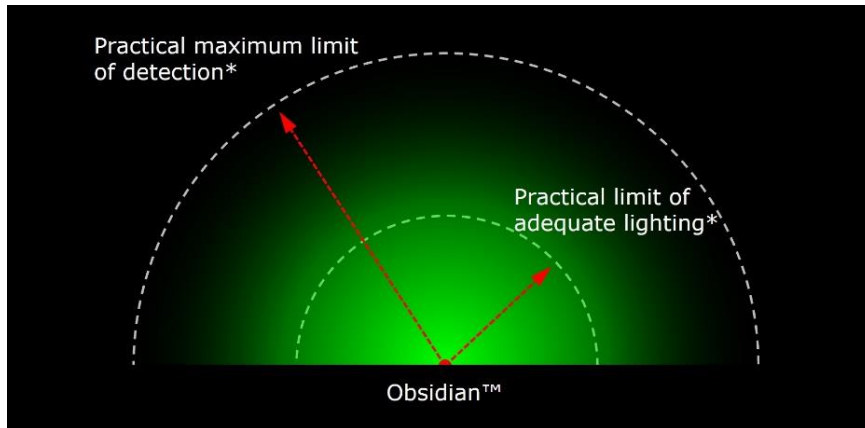
3 PROPOSED SOLUTION

Telva has, in August 2023, launched Obsidian™, a game-changing IR illuminator (see Picture 1) with a controlled and limited range for vehicle and other suitable uses. “Limited range”, in this context, means that Obsidian has a limited and controlled range of detection. In other words, Obsidian illuminates the immediate vicinity (< 100 m) sufficiently to drive a vehicle at near-to daylight speeds, illuminate base or fire position operations areas, enable engineering functions such as bridge and mine laying and more. The light, however, cannot be detected beyond a certain distance, typically ≈300 m, regardless of what observation equipment is used. See Picture 2 for a schematic explanation.



Picture 1. In August 2023, Telva launched Obsidian, an IR illuminator with limited range, intended for vehicle use, either retrofit or integration.

Obsidian’s range of detection is not limited because the light is weak. The vehicle rendition of Obsidian, launched in August 2023, has adjustable output power and beam shape settings, depending on the instantaneous need. The key to Obsidian’s limited range lies in the calibrated, real-time monitored and optically tuned properties of the outbound beam. The beam is adjusted to exhibit very efficient dampening in the surrounding conditions.



Picture 2. Schematic of the approximative limit of adequate close-range lighting and the range of detectability of the Obsidian light.

*subject to ambient conditions, light settings etc.

Obsidian is based on technology developed in Finland and productised by Telva. The concept has been extensively tested and verified, including comprehensive field tests in challenging conditions in Finland. During the conceptualisation and product development stages of Obsidian, FINSOF has participated in both setting the functional requirements and testing the resulting product against said requirements. The first customer deliveries will take place in Q1/2024.

4 CONCLUSION

Using conventional IR lighting for covert operations, be that military, border control, law enforcement or customs related, comes with an increased inherent risk of detection, due to an increase in night-vision capabilities worldwide. In order to significantly reduce the risk of detection, Telva has introduced Obsidian, an IR light with limited range. While Obsidian enables normal close-range activities, using NVG's, it is virtually undetectable from afar.

The first deliveries of Obsidian lights will occur in Q1/2024. Obsidian light products are subject to export control and end-user certificate (EUC) measures as prescribed by the Finnish national authorities. Telva is keen to present Obsidian and the game-changing capabilities it offers to SOF's, vehicle manufacturers and system integrators.

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