UMBRA

November 4, 2021

Kerry E. Murray
Deputy Chief, Satellite Division
International Bureau
Federal Communications Commission
45 L Street, N.E.
Washington, D.C. 20554

Re: Umbra Lab, Inc., IBFS File No. SAT-LOA-20210616-00080; Call Sign S3095

Dear Ms. Murray:

On November 2, 2021, Umbra Lab, Inc. (Umbra) filed the Revised Attachment C ODAR in connection with Umbra's above-referenced application. Umbra desires to revise the Compliance Statement for Requirement 4.5-2[1] contained therein by replacing it in its entirety as follows:

Compliance Statement (4.5-2):
Compliant. As shown in the below Table 8, the probability of collision with small objects resulting in PMD failure for each satellite in their intended operational orbits is always less than 1.4E-04, well below the 0.01 requirement. These probabilities were calculated using an orbital lifetime of greater than six years and the target operational orbit (565 km). Both the highest and lowest possible operational altitudes proposed show a similarly low PMD failure due to collision with small objects (probability of 1.489E-04 at 595 km and probability of 8.478E-05 at 535 km respectively). Table 8 also includes the Umbra-2001 spacecraft. Requirement 4.5-2 was not applicable to the original experimental filing for Umba-2001, however all critical surface analysis is identical with launch year being the only variable in the below results.

Table 1. Probability of PMD failure due to collision with small objects

Launch Year	Vehicle(s)	Probability of Collision with Small Objects
2021.05	2001	1.108E-04
2021.95	02	1.059E-04
2022.55	03/04	1.076E-04
2022.95	05/06	1.090E-04

Sincerely,

/s/ Iulia Davies
Iulia Davies
Legal Counsel
Umbra Lab, Inc.

Attachments

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[1]Revised Attachment C ODAR, at 17-18.