

**Before the
Federal Communications Commission
Washington, DC 20554**

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In the Matter of	)	
	)	
Umbra Lab, Inc.,	)	File No.: SAT-MOD-_____
	)	
Modification Application for a Non-	)	Call Sign: S3095
Geostationary Satellite Orbit System in the	)	
Earth Exploration-Satellite Service	)	
	)	

MODIFICATION APPLICATION

Umbra Lab, Inc. (“Umbra”) hereby requests that the International Bureau modify Umbra’s satellite space station license¹ (“Umbra SAR Constellation”) as follows:

- Change the operational altitude range from 565 km ± 30 km to 517 km ± 30 km; and
- Change the deployment altitude range from 550 km ± 25 km to 525 km ± 25 km.

The changes do not materially affect Umbra’s Orbital Debris Assessment Report (“ODAR”), and the satellites remain compliant with the Commission’s orbital debris mitigation requirements.

To verify that Umbra satellites will operate within the required limits even at the potential lowest orbital altitude of 487 km, we are providing the following updated power-flux density (“PFD”) calculations. For the 2200-2290 MHz band, the nominal power-flux density as a function of grazing angle is shown in Figure 1 below.

¹ See Stamp Grant, Umbra, IBFS File No. SAT-LOA-20210616-00080 (granted March 28, 2022) (“License”).

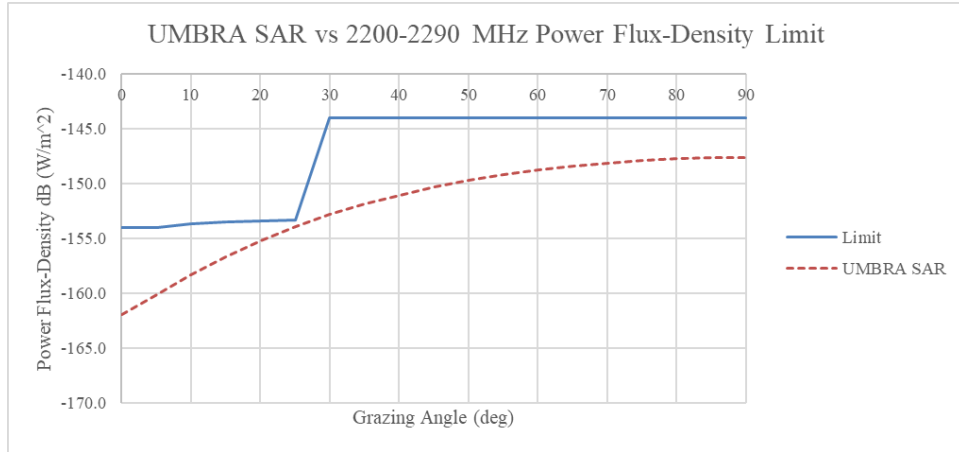


Figure 1. S Band PFD Compliance

For the 8025-8400 MHz band, the PFD is shown as a function of grazing angle in Figure 2.

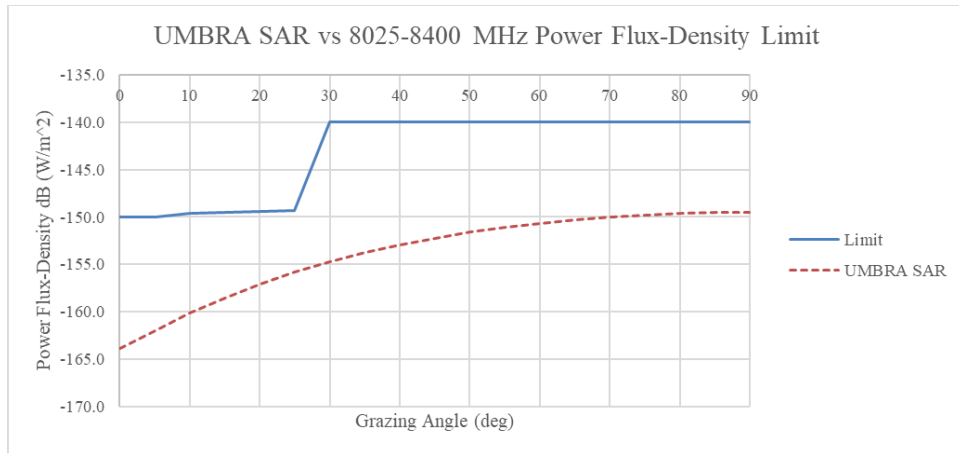


Figure 2. 8025-8400 MHz Compliance

For the 9900-10400 MHz band, the PFD is shown as a function of grazing angle in Figure 3 below.

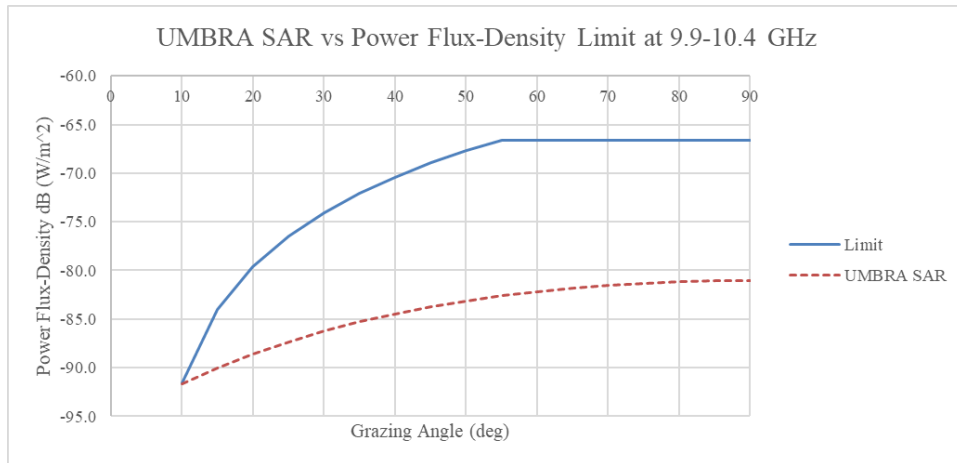


Figure 3. X Band Compliance

At the revised altitude, Umbra spacecraft will remain in compliance with requirements to produce no more than a maximum power-flux density of -174 dBW/m² in any 4 kHz band at the geostationary satellite orbit (“GSO”), as outlined in No. 22.5 of the ITU radio regulations.

Grant of this application serves the public interest. The requested authorization will better align the capabilities of the Umbra SAR Constellation with customer demands and improve system operations.

Except as stated specifically in this application, Umbra is not requesting any other changes to its authorized satellite operations and certifies that such operations remain unchanged.

For these reasons, Umbra requests that the Commission grant this application to allow Umbra to make the proposed changes before Umbra’s next satellite launch in November 2022.

Respectfully submitted,

By: /s/ Iulia Davies

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Dated: June 27, 2022

ATTACHMENT

Technical Certification

I, Alexander Potter, hereby certify, under penalty of perjury, that I am the technically qualified person responsible for the preparation of the engineering information contained in the technical portions of the foregoing application, that I am familiar with Part 25 of the Commission's rules, and that the technical information is complete and accurate to the best of my knowledge and belief.

By: /s/ Alexander Potter

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