Exhibit B: Technical Annex

Care Weather Technologies, Inc.
Veery-0H Constellation

1. Scope and Purpose

This exhibit contains technical information regarding the Veery-0H non-geostationary orbit (NGSO) satellite system required by Part 25 of the Commission's rules.

2. General Description

The Veery-0H system comprises four (4) 3U CubeSats—Veery-0HA, Veery-0HB, Veery-0HC, and Veery-0HD—each carrying a compact C-band radar scatterometer used to retrieve ocean surface vector winds (OSVW). Each satellite is manufactured in-house by Care Weather, and the design builds upon that of previously tested and flight-proven satellites.[1] The spacecraft uses a combination of magnetorquers and reaction wheels to provide pointing and stabilization. While none of the antenna beams are electronically steered, the Veery-0H satellites spin about the nadir axis to provide multiple looks of the surface of the Earth from different angles (discussed in greater detail in the *Satellite Emissions* section below). Thus, the beam pointings for all antennas are not fixed unless rotation is halted.

The spacecraft will operate in the frequencies listed in Table 1 below.

Table 1: Veery-0H operating frequency bands.

Usage	**Link Direction**	**Proposed Spectrum Range**
Scatterometer	Downlink (space-Earth)	5250–5350 MHz
C-band TX	Downlink (space-Earth)	5250–5255 MHz
X-band TX	Downlink (space-Earth)	8030–8040 MHz
S-band TX	Downlink (space-Earth)	2201.875–2204.125 MHz
VHF TX	Downlink (space-Earth)	137.8825–137.9175 MHz
UHF TX	Downlink (space-Earth)	401.4725–401.5275 MHz
VHF RX	Uplink (Earth-space)	148.585–148.635 MHz
UHF RX	Uplink (Earth-space)	401.4725–401.5275 MHz
S-band RX	Uplink (Earth-space)	2025.875–2028.125 MHz
L-band RX/TX	Downlink/Uplink (space-space)	1618.725–1626.5 MHz

[1] To date, Care Weather has flown five satellites with two currently on orbit: Veery-0F: Call Sign WO2XWE, File No. 0436-EX-CN-2024 (granted July 25, 2024, renewed June 1, 2026); Veery-0G: Call Sign WP2XMW, File No. 1110-EX-CN-2024 (granted June 27, 2025).

3. Orbital Information

The Veery-0H satellites are anticipated to be payloads on separate rideshare missions. Care Weather expects each satellite to be deployed into one of the circular orbits of Table 2.[2]

Table 2: Potential Veery-0H Orbits

Orbit	Inclination	Orbital Altitude
Sun-synchronous	$97.5° \pm 0.5°$	510 ± 20 km
Near-polar	$88° \pm 3.0°$	500 ± 20 km
Mid-inclination	$46.5° \pm 6.5°$	510 ± 25 km

Care Weather expects the launch provider to release expected right ascension of the ascending node (RAAN) and other available launch parameters shortly before the launch. Care Weather will share such information with the Commission as necessary. The Veery-0H satellites will not perform station keeping, so the RAAN will drift throughout the course of each satellite's mission.

Each satellite will passively deorbit and is expected to have an orbital lifetime of no more than six (6) years. Disposal information is discussed in the Orbital Debris Assessment Report (ODAR), attached as Exhibit C.

4. Satellite Emissions

A. C-Band Active Sensor Radar Scatterometer

The C-band radar is the primary payload of each Veery-0H satellite. It operates as an active radar scatterometer for retrieving ocean surface vector winds. The scatterometer antenna is a patch array antenna that provides a long, narrow footprint on the ground with a maximum gain of 17.7 dBi (the antenna is described in greater detail in the *Satellite Antennas* section below). The Veery-0H satellites will operate in two modes to accommodate traditional scatterometry and a novel method called nadir scatterometry.

Traditional scatterometry obtains both wind speed and direction measurements by offsetting the radar beam from nadir. In this mode, the Veery-0H satellites will be canted so that the center of the radar beam is oriented approximately 35 degrees off nadir, allowing for returns from incidence angles between approximately 20 and 60 degrees. For traditional scatterometry, each Veery-0H satellite spins about its central axis to observe the same area of Earth's surface from different angles, providing the variety of perspectives required to obtain both wind speed and direction.

In nadir scatterometry mode, the radar beam will be pointed directly at nadir and receive returns from incidence angles between approximately 0 and 10 degrees on either side of the swath. This mode does not require that the satellite spin.

[2] To be clear, the orbital parameters entered in Schedule S are representative and may not reflect the actual number of satellites deployed in each orbit.

The radar generates pulses using a transmitter of up to 40 W and has two operational frequency modes: a linear frequency-modulated (LFM) pulsed radar and a continuous wave (CW) pulsed radar. Table 3 summarizes the range of radar emission parameters of which the Veery-0H scatterometer is capable. Nominal scatterometer operations will be centered at 5257.5 MHz and are anticipated to have a pulse length of 2 ms and a pulse repetition frequency (PRF) of 60 Hz for a 12% duty cycle.[3] The maximum EIRP for all scatterometer transmissions is 32.9 dBW.

Table 3: Veery-0H radar emission parameters.

Operational Mode	**Frequency Range**	**Pulse Length**	**Bandwidth**	**PRF**	**Duty Cycle**	**Maximum EIRP**
LFM pulsed	5250–5350 MHz	1–4 ms	0.5–2 MHz	1–100 Hz	0.1–40%	32.9 dBW
CW pulsed			250–1000 Hz			

Because the Veery-0H satellites spin during regular operations, the beams of the spacecraft's communications antennas will sweep across the ground in circular patterns. In general, the Veery-0H satellites will halt their spin and point directionally to communicate with ground stations. The satellites will also conduct communications while spinning on an experimental basis.[4]

B. Telemetry, Tracking, and Control and Payload Links

The satellites include multiple communication bands for redundancy and operational flexibility, ensuring that they can reliably deliver critical public safety data with minimal interruption. Such flexibility also enhances frequency coordination.

With the exception of the Iridium inter-satellite relay, all communications to and from the Veery-0H network will be conducted from the ground stations identified in Exhibit D. During any given ground station pass, there will be at most three active bands: TT&C uplink, TT&C downlink, and payload data downlink. The choice of frequency bands will depend on the links available to that ground station and on the requirements for payload data downlink and operations. All frequencies discussed are subject to coordination.

1. VHF TT&C Uplink (148–149.9 MHz) and Downlink (137.825–138 MHz)

The VHF uplink and downlink are two of the main telemetry, tracking, and command (TT&C) bands for the Veery-0H spacecraft. VHF signals are transmitted and received via a single dipole antenna with a near-omnidirectional pattern during all phases of spacecraft operations. The VHF dipole antenna has a peak gain of 2.1 dBi. The VHF downlink channel occupies a 35 kHz bandwidth centered at a preferred frequency of 137.9 MHz. The VHF uplink channel occupies a 50 kHz

[3] To be clear, the maximum EIRP density submitted in Schedule S for the scatterometer beam represents the absolute maximum (calculated using a 4 ms unmodulated pulse with 100 Hz PRF), not nominal parameters.

[4] Antenna pointing and rotational errors reported in Schedule S are given for non-rotating operation. Additionally, because they are not electronically scanned, none of the beams have been marked as steerable in Schedule S. However, when the spacecraft is rotating, the beams will be physically steered in a circle about nadir.

bandwidth centered at a preferred frequency of 148.61 MHz. The maximum EIRP of the VHF downlink is -1.4 dBW. VHF telemetry transmissions will be performed in half-duplex mode.[5]

2. UHF Uplink & Downlink (401–402 MHz)

The UHF uplink and downlink serve as backup TT&C bands. UHF signals are transmitted and received via a single dipole on the spacecraft with a near-omnidirectional pattern during all phases of spacecraft operations. The UHF dipole antenna has a peak gain of 2.1 dBi. The UHF downlink and uplink channels are identical, with each occupying a 55 kHz bandwidth centered at a preferred frequency of 401.5 MHz. The maximum EIRP of the UHF downlink is 4.7 dBW. UHF telemetry transmissions will be performed in half-duplex mode.[5]

3. S-Band Uplink (2025–2110 MHz) and Downlink (2200–2290 MHz)

S-band communications encompass both TT&C and data uplinks/downlinks. Separate patch antennas for transmit and receive are oriented toward nadir during normal operations. Each antenna has a maximum gain of 5 dBiC.

The S-band TT&C link will transmit using one of two bandwidths, 200 kHz and 350 kHz, each centered at a preferred frequency of 2203 MHz. The maximum EIRP is -5.25 dBW. The S-band data downlink (which will be used occasionally to downlink operational data files and some scatterometry data) shares the same center frequency and uses either a 1.5 MHz or 2.25 MHz bandwidth. The maximum EIRP for S-band data downlinks is 5.5 dBW.

The S-band uplink operates at a preferred frequency of 2027 MHz with the same bandwidths used for the downlink channels. The wider uplink bandwidths will be used to perform software updates, while the narrower bandwidths will be used for telecommand. Data in S-band will be transmitted in half-duplex mode.

4. X-Band Downlink (8025–8400 MHz)

The X-band data downlink will be used for payload downlink. The X-band channel has a preferred carrier center frequency of 8035 MHz. Both the X-band channel gain and bandwidth are variable and are modified dynamically according to the volume of data to be transmitted. Targeted bandwidths are 1.75 MHz, 7.2 MHz, and 10 MHz, and the maximum transmitted EIRP is 12 dBW. The X-band downlink beam uses a patch antenna array with a directional pattern and maximum gain of 15 dBiC. Because of development schedules, it is likely that the X-band radio will not be available for the first satellite, Veery-0HA, but it is expected to be integrated on later missions. When first used, the radio will operate on an experimental system and serve as a backup downlink. It will

[5] Care Weather expects that the first two Veery-0H satellites will use only one deployed dipole antenna. This antenna will be designed for either the VHF or UHF band, but not both. The frequency band selected for each early iteration will be used as the main TT&C link in tandem with the S-band radio. The specific deployment orbits for these radios are not yet known, but the VHF and UHF radios are identical across all missions on which they are included. Later missions are expected to include both VHF and UHF dipoles, and will operate as main and backup TT&C channels respectively. The streamlined small satellite certifications described in the Narrative apply to all Veery-0H satellites regardless of variation.

transition to become the primary data downlink after commissioning, a process expected to take at least three months.[6]

5. C-Band Downlink (5250–5255 MHz)

The C-band scatterometer hardware is dual-purpose and can provide payload data downlink capability. The C-band scatterometer antenna is a patch antenna array with a maximum gain of 17.7 dBi. Transmissions occupy a maximum bandwidth of 450 kHz and are nominally centered at 5252.5 MHz. Both the transmission bandwidth and center frequency can be dynamically modified. The maximum transmitted EIRP is 16.4 dBW. C-band data downlink will be limited to ground stations operated by Care Weather and is anticipated to be intermittent.

6. L-Band Iridium Satellite Relay (1618.725–1626.5 MHz)

The Veery-0H satellites will maintain a backup TT&C link using space-to-space transmissions to and from the Iridium satellite network. A patch antenna connected to the Iridium modem onboard the Veery-0H satellites provides 5 dBiC of gain in a hemispherical radiation pattern, and has a maximum EIRP of 8.9 dBW. Communication between the Veery-0H constellation and the Iridium network will occur in extremely short bursts, mainly over the Earth's poles.

5. Frequency Plan

Table 4 lists the representative downlink frequencies planned for the Veery-0H satellites (not including the radar scatterometer). These frequencies are subject to coordination and, accordingly, may change.

[6] To be clear, the X-band radios are identical across all missions on which they are included. The specific deployment orbits for these radios are not yet known. The streamlined small satellite certifications described in the Narrative apply to all Veery-0H satellites regardless of variation. The S-band radio will serve as the main data downlink until X-band communications are fully integrated.

Table 4: Veery-0H downlink emission channels.

Channel ID	Link Type	Center Frequency (MHz)	Bandwidth (MHz)
VTX1	TT&C	137.9	0.035
UTX1	TT&C	401.5	0.055
STX1	TT&C	2203	0.200
STX2	TT&C	2203	0.350
STX3	Data	2203	1.5
STX4	Data	2203	2.25
CTX1	Data	5252.5	0.45
XTX1	Data	8035	1.75
XTX2	Data	8035	7.2
XTX3	Data	8035	10.0

Table 5 (below) lists the representative uplink frequencies planned for the Veery-0H satellites. These frequencies are subject to coordination and, accordingly, may change.

Table 5: Veery-0H uplink emission channels.

Channel ID	Link Type	Center Frequency (MHz)	Bandwidth (MHz)
VRX1	TT&C	148.61	0.050
URX1	TT&C	401.5	0.055
SRX1	TT&C	2027	0.200
SRX2	TT&C	2027	0.350
SRX3	TT&C (software maintenance)	2027	1.5
SRX4	TT&C (software maintenance)	2027	2.25

In addition to the above frequencies, an Iridium inter-satellite link is maintained. Its 41.7 kHz channels are dynamically determined by the Iridium network in the 1618.725–1626.5 MHz band. The C-band scatterometer emissions are described in Table 3.

6. Frequency Tolerance

The Veery-0H satellites meet the frequency tolerance requirements of Section 25.202(e) that the carrier frequency of each space station transmitter be maintained within 0.002% of the reference frequency.

7. Out-of-Band Emissions

The Veery-0H satellites meet the out-of-band emission limits of Section 25.202(f)(1), (2), and (3).

8. Orbital Debris

An ODAR for the Veery-0H constellation is attached as Exhibit C. As discussed in the submitted ODAR, the Veery-0H constellation is compliant with all applicable orbital debris requirements.

9. Cessation of Emissions and Stop Buzzer

All transmissions can be turned on and off by ground command, thereby achieving cessation of emissions to and from the satellite, as required by Section 25.207 of the FCC's rules. The stop buzzer contact for this mission is:

M. Patrick Walton, Chief Executive Officer
Care Weather Technologies, Inc.
683 N 2250 W, Suite P, Springville, UT 84663
spectrum@careweather.com
+1 (385) 325-8844

10. Spectrum Sharing and Interference Analysis

A. General Sharing Considerations

The Veery-0H constellation operations are designed to facilitate spectrum sharing. Each Veery-0H satellite will communicate with a limited number of Earth stations for only short intervals during each pass (typically less than ten minutes), and use conservative bandwidths for transmissions. The Veery-0H satellites' onboard radios can be configured for multiple modulation types to optimize bandwidth usage and mitigate interference. Additionally, redundant communications channels allow the satellites to dynamically choose between transmission frequencies to accommodate existing users and alleviate band congestion. Finally, the spacecraft can cease transmissions on command. In the event that interference occurs, Care Weather will engage in coordination to avoid further instances. Care Weather will conduct frequency information sharing discussions with federal spectrum managers.

B. C-Band Coexistence with Federal Radiolocation

In the shared 5250–5350 MHz spectrum, the Veery-0H satellites' Earth Exploration-Satellite Service (EESS) (active) and Space Research Service (SRS) operations do not claim protection from, and will not cause harmful interference to, the radiolocation service.[7] Care Weather will coordinate with Federal users and modify transmissions as needed to avoid active domestic radar frequencies.

11. Power Flux-Density (PFD) Compliance

No power flux-density (PFD) limits exist for the 401–402 MHz band in either the ITU or FCC rules. Likewise, no PFD limits exist for the 5250–5350 MHz band in either the ITU or FCC rules.

A. VHF Downlink (137.825–138 MHz)

No PFD limits exist for the 137.825–138 MHz band in either the ITU or FCC rules for satellites operating in the MetSat service. However, Figure 1 shows that the mission nevertheless complies with the -125 dBW/m^2/4 kHz PFD limit set by the ITU above which coordination with terrestrial services is required for satellites operating in the MSS.[8] Because the satellite can operate at peak EIRP down to the lowest operational altitude, a PFD curve is not provided for the operational orbit altitude.

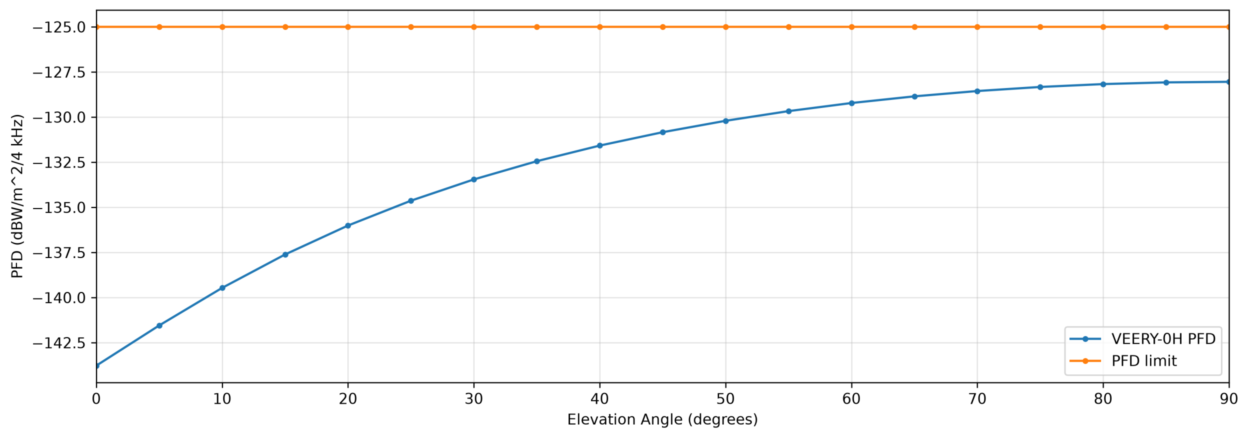

Figure 1: VHF-band Downlink PFD Analysis - 35 kHz Emission, -1.4 dBW EIRP, and 350 km orbit altitude.

B. S-band Downlink (2200–2290 MHz)

The Commission's rules do not specify a PFD limit in the 2200–2290 MHz band; however, there are PFD limits specified in rule No. 21.16 of the ITU Radio Regulations. The maximum PFD levels for Veery-0H spacecraft transmissions were calculated for the 2200–2290 MHz band, and the results are provided in Schedule S and demonstrate that the downlink PFD levels of Veery-0H satellites do not exceed the limits specified in rule No. 21.16 of the ITU Radio Regulations. Plots are provided for each planned transmission bandwidth at both the operational altitude (510 km) and the lowest operational altitude (350 km). The S-band radio adjusts its power dynamically to maintain compliance as the spacecraft's altitude changes.

[7] *See* 47 C.F.R. § 2.106 n. 5.447F and n. 5.448A.

[8] *See* 47 C.F.R. § 2.106 n. 5.208. *See also* ITU Radio Regulations, Appendix 5, Annex 1 ¶1.1.1.

Figure 2 illustrates the S-band TT&C downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 200 kHz, the EIRP is -8.5 dBW, and the orbit altitude is 510 km. Figure 3 below illustrates the S-band TT&C downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 200 kHz, the EIRP is -11.5 dBW, and the orbit altitude is 350 km (the lowest planned operational altitude).

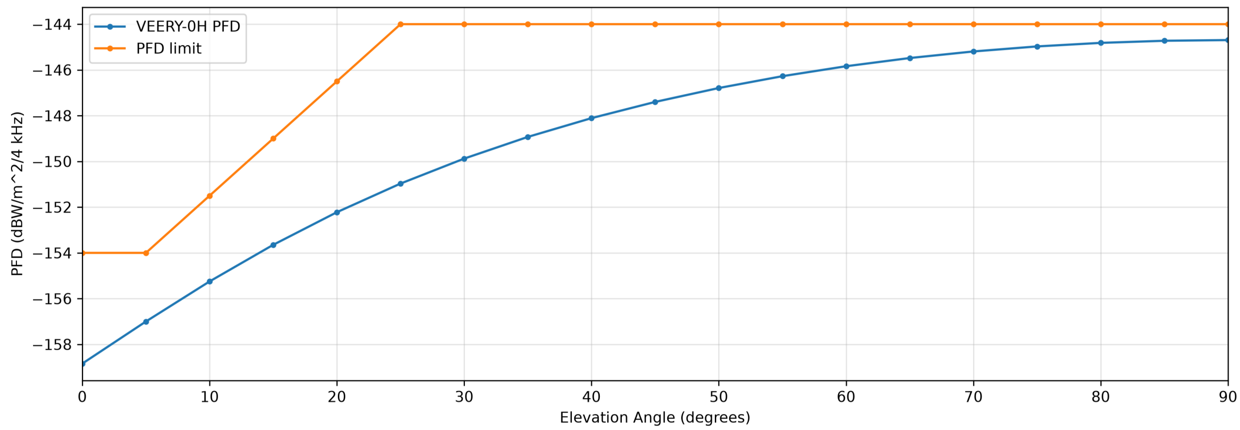

Figure 2: S-band TT&C Downlink PFD Analysis - 200 kHz Emission, -8.5 dBW EIRP, and 510 km orbit altitude.

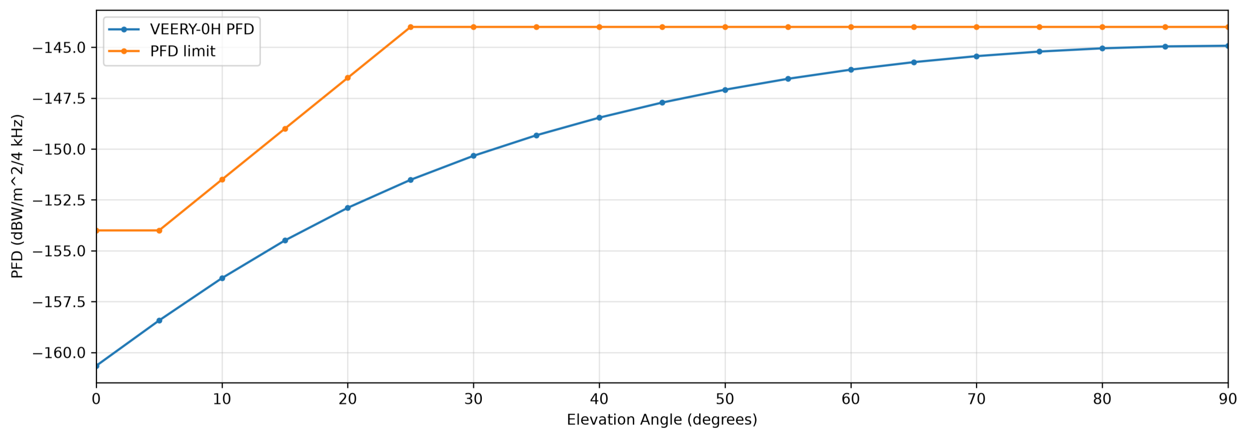

Figure 3: S-band TT&C Downlink PFD Analysis - 200 kHz Emission, -11.5 dBW EIRP, and 350 km orbit altitude.

Figure 4 illustrates the S-band TT&C downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 350 kHz, the EIRP is -5.25 dBW, and the orbit altitude is 510 km. Figure 5 below illustrates the S-band TT&C downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 350 kHz, the EIRP is -8.5 dBW, and the orbit altitude is 350 km (the lowest planned operational altitude).

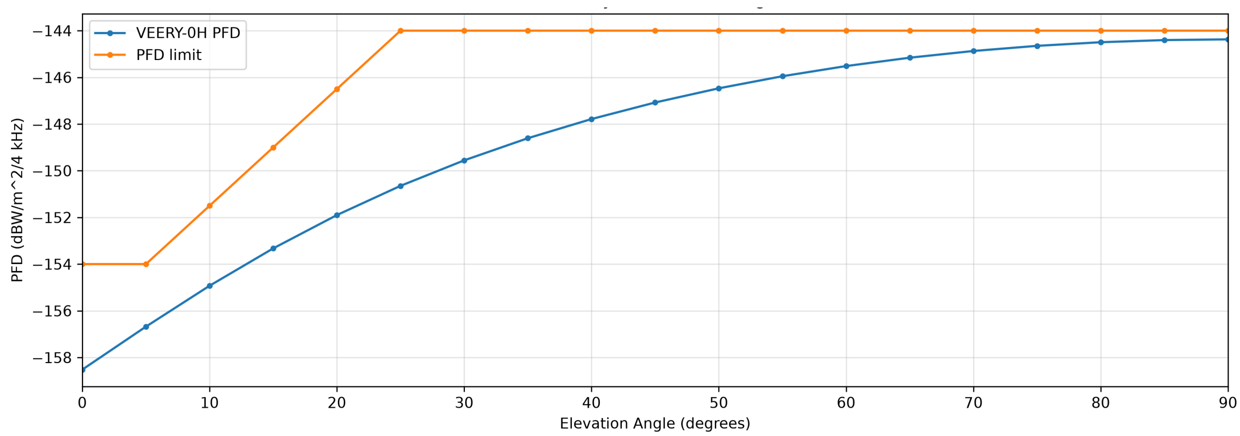

Figure 4: S-band TT&C Downlink PFD Analysis - 350 kHz Emission, -5.25 dBW EIRP, and 510 km orbit altitude.

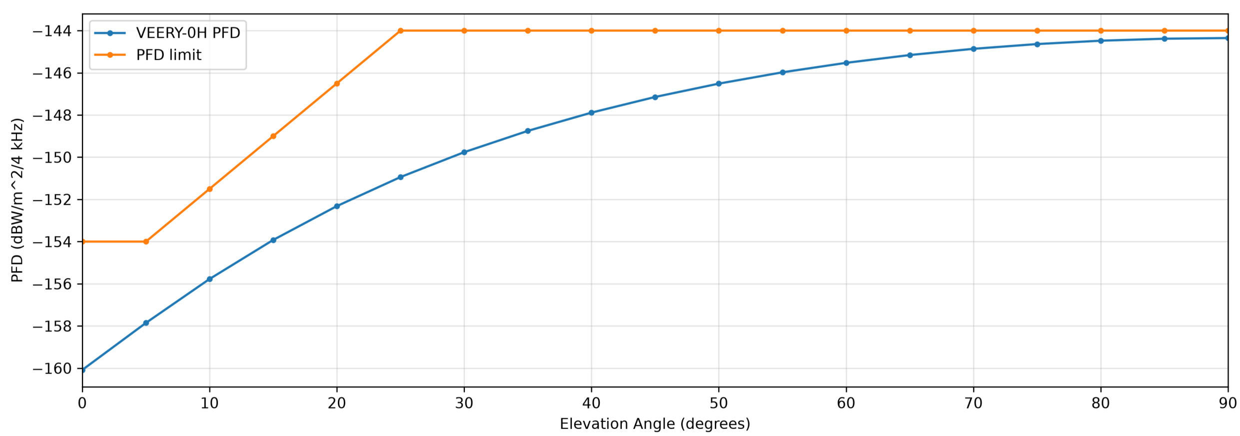

Figure 5: S-band TT&C Downlink PFD Analysis - 350 kHz Emission, -8.5 dBW EIRP, and 350 km orbit altitude.

Figure 6 below illustrates the S-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 1.5 MHz, the EIRP is 2.5 dBW, and the orbit altitude is 510 km. Figure 7 below illustrates the S-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 1.5 MHz, the EIRP is -1 dBW, and the orbit altitude is 350 km (the lowest planned operational altitude).

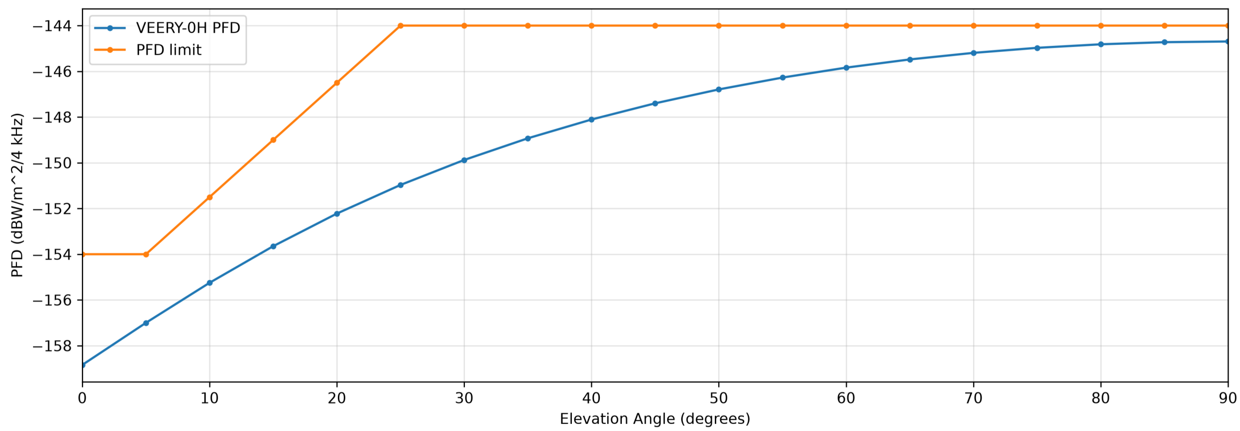

Figure 6: S-band Data Downlink PFD Analysis - 1.5 MHz Emission, 2.5 dBW EIRP, and 510 km orbit altitude.

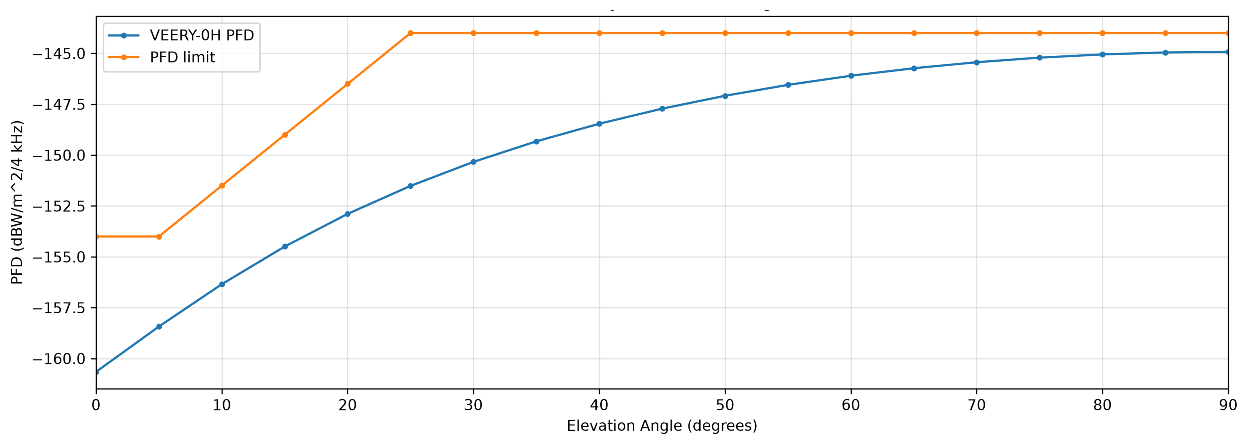

Figure 7: S-band Data Downlink PFD Analysis - 1.5 MHz Emission, -1 dBW EIRP, and 350 km orbit altitude.

Figure 8 below illustrates the S-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 2.25 MHz, the EIRP is 5.5 dBW, and the orbit altitude is 510 km. Figure 9 below illustrates the S-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 2.25 MHz, the EIRP is 2 dBW, and the orbit altitude is 350 km (the lowest planned operational altitude).

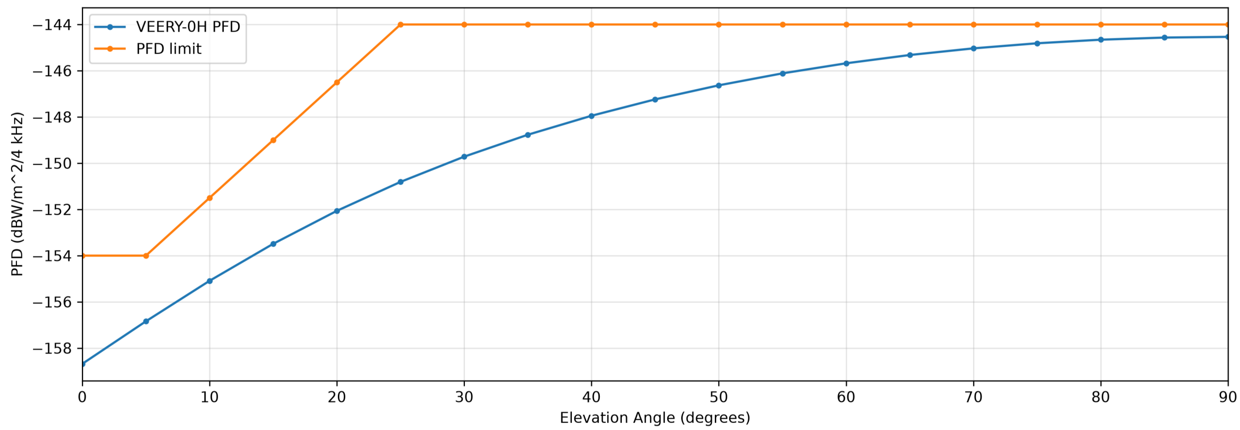

Figure 8: S-band Data Downlink PFD Analysis - 2.25 MHz Emission, 5.5 dBW EIRP, and 510 km orbit altitude.

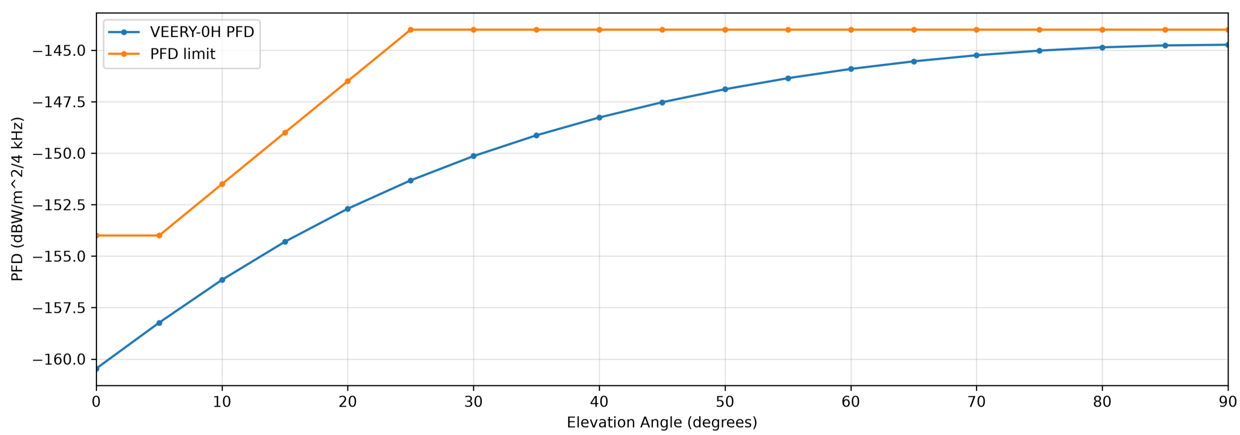

Figure 9: S-band Data Downlink PFD Analysis - 2.25 MHz Emission, 2 dBW EIRP, and 350 km orbit altitude.

C. X-band Downlink (8025–8400 MHz)

The Commission's rules do not specify a PFD limit in the 8025–8400 MHz band; however, there are PFD limits specified in rule No. 21.16 of the ITU Radio Regulations. The maximum PFD levels for Veery-0H spacecraft transmissions were calculated for the 8025–8400 MHz band, and the results are provided in Schedule S and demonstrate that the downlink PFD levels of the Veery-0H satellites do not exceed the limits specified in rule No. 21.16 of the ITU Radio Regulations. Plots are provided for each planned transmission bandwidth at both the operational altitude (510 km) and the lowest operational altitude (350 km). The X-band radio adjusts its power dynamically to maintain compliance as the spacecraft's altitude changes.

Figure 10 below illustrates the X-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 1.75 MHz, the EIRP is 3.5 dBW, and the orbit altitude is 510 km. Figure 11 below illustrates the X-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 1.75 MHz, the EIRP is 0 dBW, and the orbit altitude is 350 km.

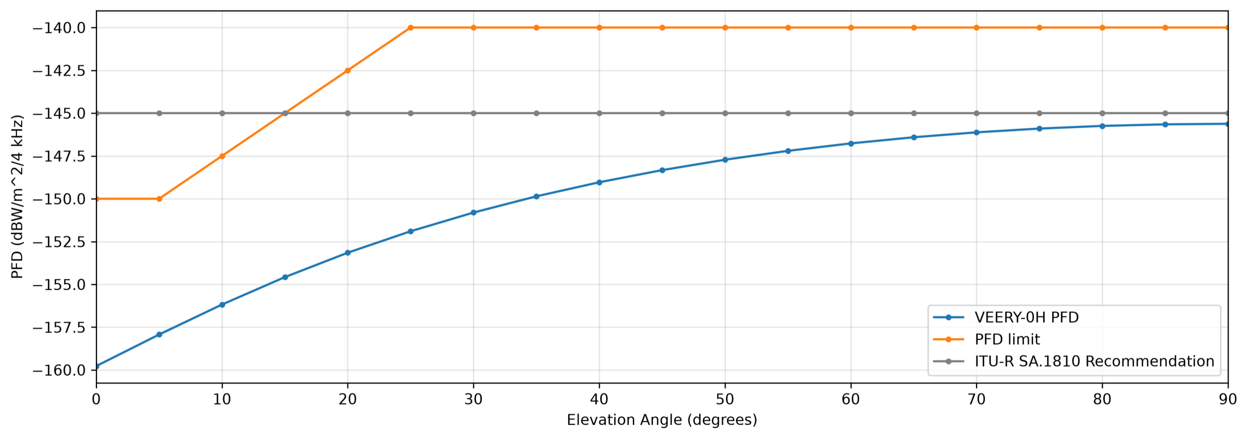

Figure 10: X-band Data Downlink PFD Analysis - 1.75 MHz Emission, 3.5 dBW EIRP, and 510 km orbit altitude.

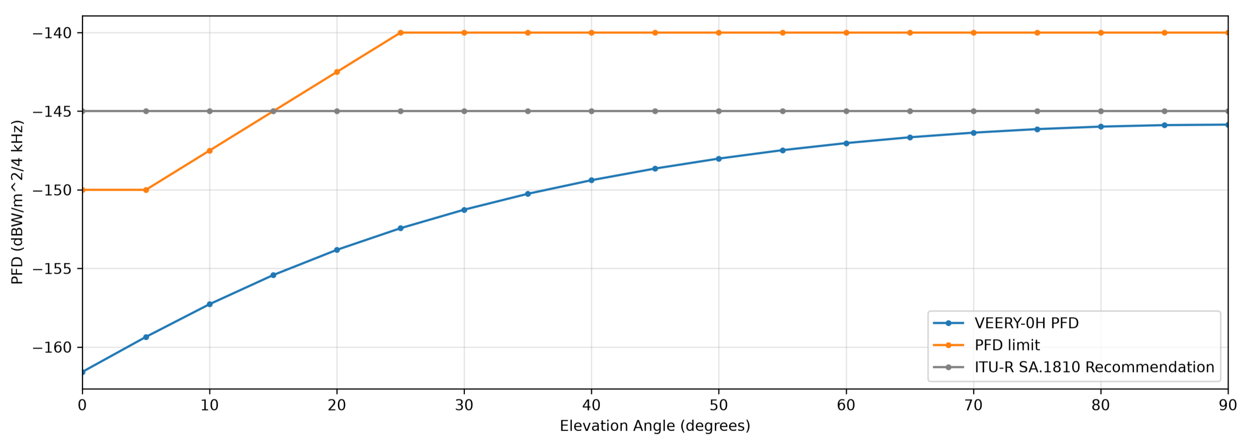

Figure 11: X-band Data Downlink PFD Analysis - 1.75 MHz Emission, 0 dBW EIRP, and 350 km orbit altitude.

Figure 12 below illustrates the X-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 7.2 MHz, the EIRP is 10 dBW, and the orbit altitude is 510 km. Figure 13 below illustrates the X-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 7.2 MHz, the EIRP is 7 dBW, and the orbit altitude is 350 km.

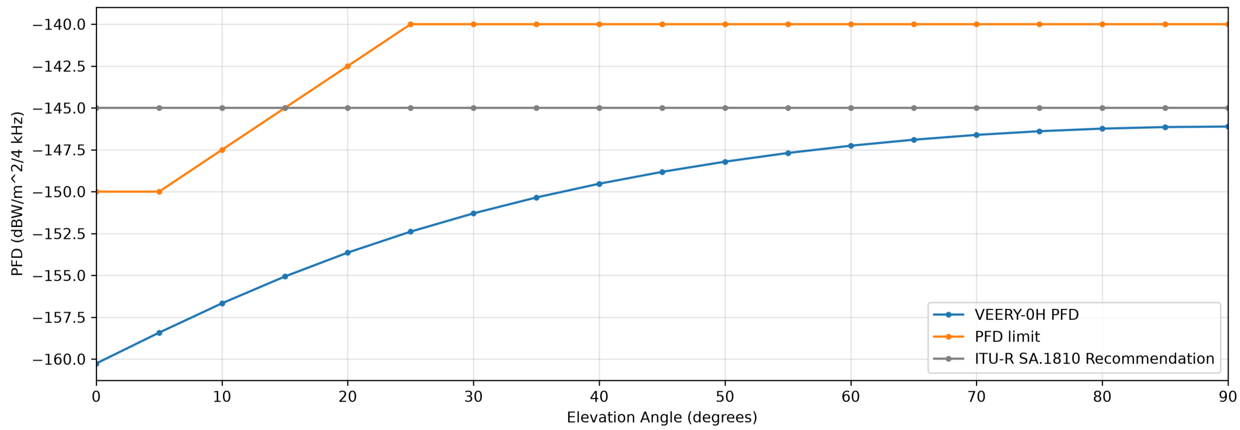

Figure 12: X-band Data Downlink PFD Analysis - 7.2 MHz Emission, 10 dBW EIRP, and 510 km orbit altitude.

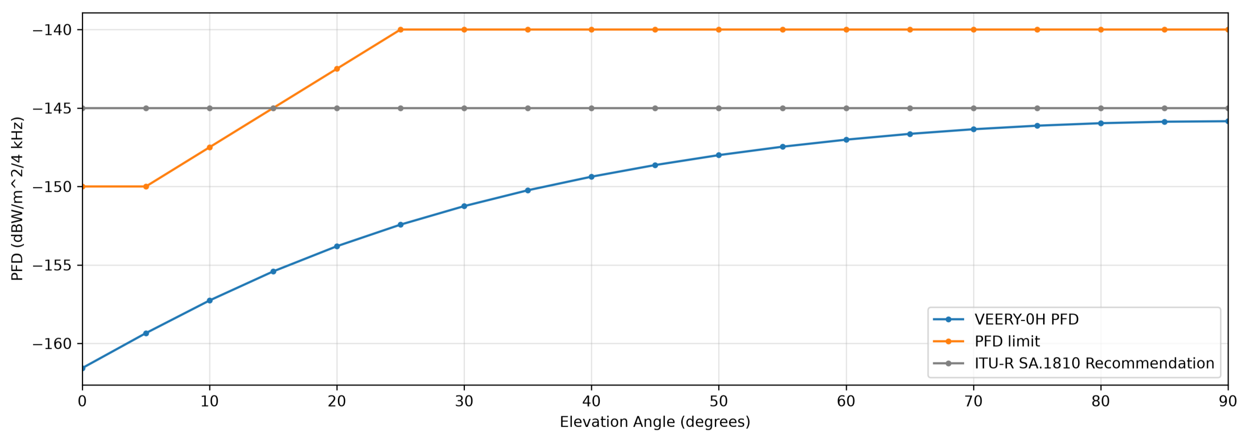

Figure 13: X-band Data Downlink PFD Analysis - 7.2 MHz Emission, 7 dBW EIRP, and 350 km orbit altitude.

Figure 14 below illustrates the X-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 10 MHz, the EIRP is 12 dBW, and the orbit altitude is 510 km. Figure 15 below illustrates the X-band data downlink PFD values in comparison with the ITU PFD limits in No. 21.16 when the emission bandwidth is 10 MHz, the EIRP is 8.5 dBW, and the orbit altitude is 350 km.

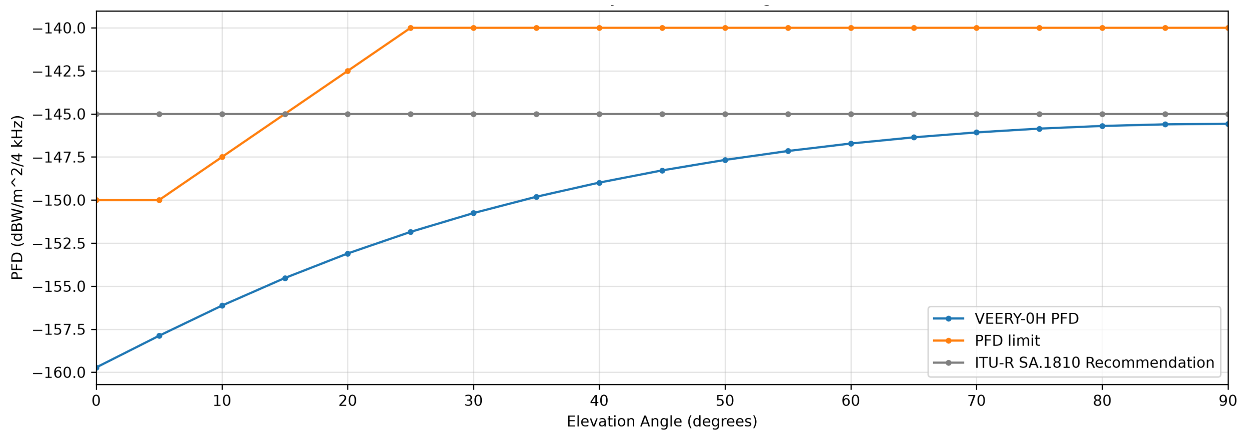

Figure 14: X-band Data Downlink PFD Analysis - 10 MHz Emission, 12 dBW EIRP, and 510 km orbit altitude.

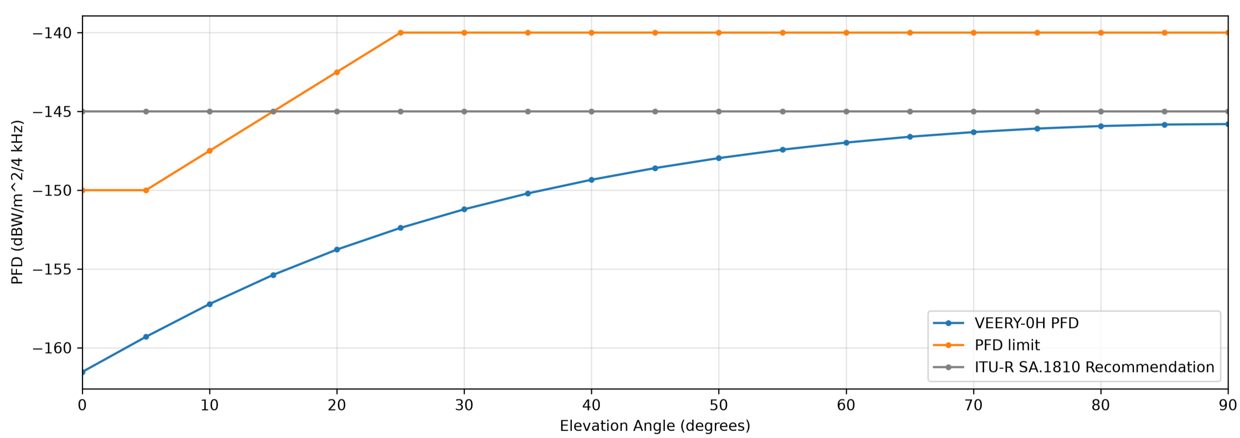

Figure 15: X-band Data Downlink PFD Analysis - 10 MHz Emission, 8.5 dBW EIRP, and 350 km orbit altitude.

D. X-band PFD at the Geostationary-Satellite Orbit

ITU RR 22.5 states that in the 8025–8400 MHz band, the maximum power flux-density produced at the geostationary-satellite orbit by any Earth Exploration-Satellite Service space station shall not exceed -174 dB(W/m^2) in any 4 kHz band. At the maximum 535 km altitude for the Veery-0H satellites, and assuming the spacecraft is pointed directly at geostationary orbit, the maximum PFD would be approximately -182.37 dB(W/m^2) and complies with the limit.

PFD Calculation:

EIRP = 12 dBW

EIRP Density = -20.43 dBW per 4.0 kHz Ref BW

$\theta = 0°$

D = 35251.0 km

PFD = -182.37 dBW/m^2 @ 4.0 kHz Ref BW

12. Satellite Antennas

A. Communications Antennas

The VHF antenna for both TT&C uplink and downlink is the same dipole antenna with a peak gain of 2.1 dBi. The UHF TT&C uplink and downlink antenna is a separate dipole antenna, also with a peak gain of 2.1 dBi. Both antennas are omnidirectional, though each has a null directly in line with each end of the antenna. The S-band uplink uses the same patch antenna for both the TT&C and service link uplinks. A separate patch antenna is used for both the TT&C and service S-band downlinks. Each antenna has a peak gain of 5 dBiC toward nadir and a half-power beamwidth of 115 degrees. The X-band downlink antenna is a directional patch antenna array with a maximum gain of 15 dBiC at nadir and a beamwidth of 26 degrees. The Iridium antenna for L-band communications provides 5 dBiC of gain with a half-power beamwidth of 90 degrees.

B. Scatterometer Antenna

The scatterometer antenna is a directional patch antenna array with a maximum gain of 17.7 dBi at nadir. Figure 16 below illustrates the shape of the beam, which is very narrow (half-power beamwidth of 8 degrees) when $\phi = 0°$ and wide (half-power beamwidth of 60 degrees) when $\phi = 90°$. This beam shape creates the narrow, long footprint required for retrieval of ocean surface vector winds by the scatterometer. Figure 17 below illustrates the projection of the scatterometer antenna over Lake Mountain, Utah (a Care Weather ground station site). In practice, the spacecraft will be canted 35 degrees from nadir and spun about its axis to provide multiple looks of the surface of the Earth from different angles.

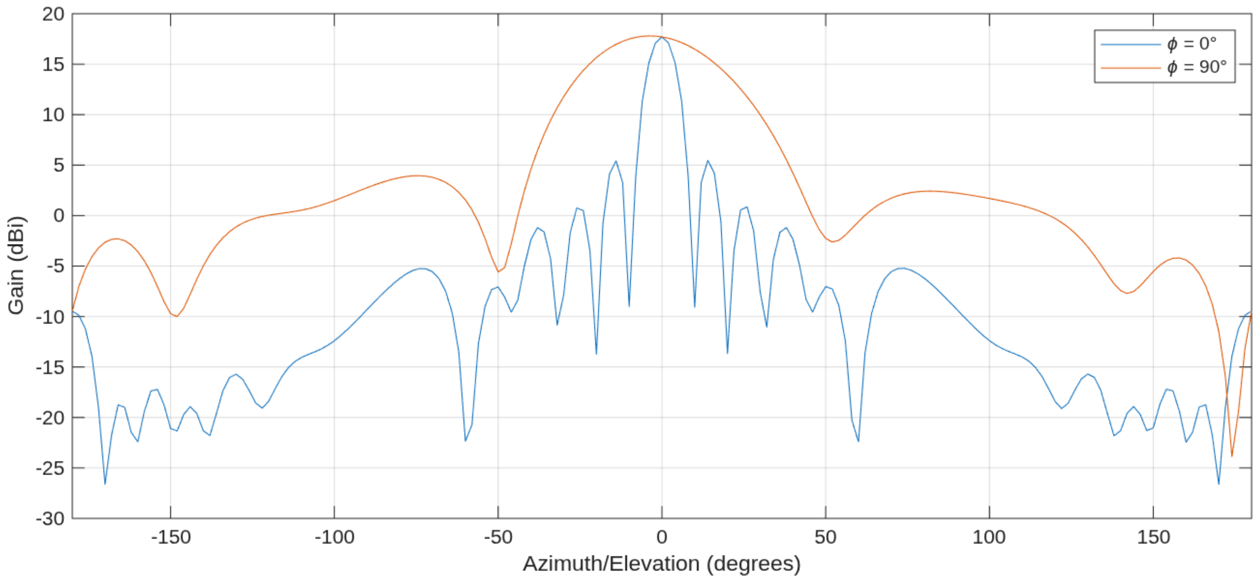

Figure 16: Scatterometer radiation pattern cuts.

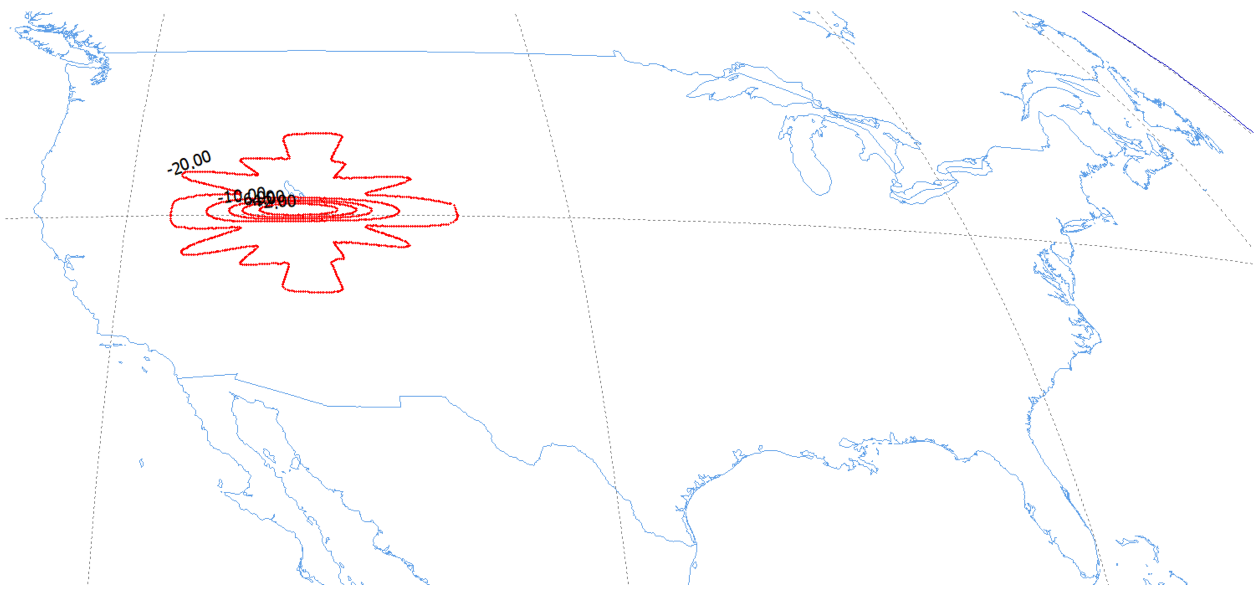

Figure 17: Projection of nadir C-band scatterometer antenna over Lake Mountain, Utah (a Care Weather ground station site).

C. Antenna Beam Projections

Projections of all satellite antenna beams on the Earth are provided as Exhibit F and Exhibit G. The radar beam and the C-band downlink are modeled for both spinning and stationary operations. For spinning operations, the projections show the beams produced as the footprint carves out a circular pattern underneath the satellite (shown in Exhibit G). For stationary operations, the narrow beamwidth is used for both cross sections of the radar and C-band downlink beams. All other

Earth-to-space and space-to-Earth beams are modeled for stationary operations only (shown in Exhibit F).

D. Protection of Deep Space Research in the 8400–8450 MHz Band

ITU-R Recommendation SA.1157-1 specifies a maximum allowable interference power spectral flux density (PSFD) at the Earth's surface to protect ground receivers in the deep-space research band operating in the 8400–8450 MHz frequencies.[9] The chosen data rate and center frequency for the X-band transmissions from the Veery-0H satellites should guarantee that no close-in sidelobes are within the deep-space band. However, the satellites are not expected to perform deep-space filtering and so, to the extent the spacecraft's emissions do not meet the limits of Recommendation SA.1157-1, they will achieve compliance by suspending all X-band transmissions when in line of sight of deep-space research receivers. Figure 18 shows the overlap of the Veery-0H ground station service areas with those of deep-space research receivers, and illustrates where Veery-0H will safely transmit.

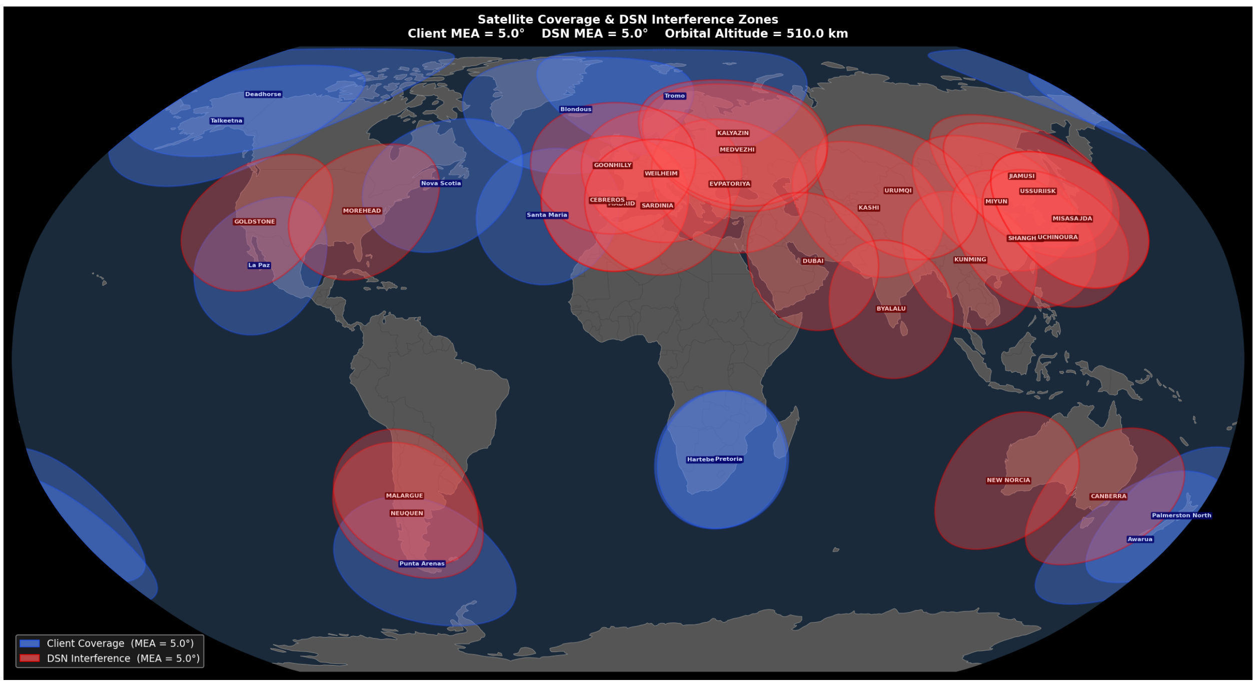

Figure 18: Transmission footprints for possible ground stations for the Veery-0H satellites (in blue) and deep-space network stations (in red). Areas where the possible Veery-0H ground stations do not overlap with those of deep-space research receivers are safe for Veery-0H satellites to transmit in X-band (Alaska and South Africa).

[9]*See* Recommendation ITU-R SA.1157-1 (Protection criteria for deep-space research) (2006).

13. Earth Stations

Care Weather will use the Leaf Space ground station network to perform TT&C operations and downlink data. Leaf Space provides S-band (downlink and uplink) and X-band capabilities. In addition, Care Weather plans to deploy its own network of ground stations that will provide VHF (downlink and uplink), UHF (downlink and uplink), S-band (downlink and uplink), C-band, and X-band capabilities. The ground stations shown in Exhibit D represent a superset of possible Leaf Space and Care Weather ground stations under consideration.

CERTIFICATION OF PERSON RESPONSIBLE FOR PREPARING ENGINEERING INFORMATION

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this application, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the engineering information submitted in this application and that it is complete and accurate to the best of my knowledge and belief.

/s/ David C. Morse

David C Morse, Ph.D.
Avaliant, LLC
Bellevue, WA USA
(425) 246-3080

Date: August 7, 2026