

August 24, 2021

BY ELECTRONIC FILING

Kerry E. Murray
Federal Communications Commission
45 L Street, N.E.
Washington, DC 20554

Re: *E202122 (Roll, AZ)*

Dear Ms. Murray:

This letter is in response to requests from the Federal Communication Commission to provide supplemental information with regard to the earth station application referenced above. Specifically, the Commission requested the following information:

1. Addition of county boundaries and distance/mileage scale to PFD contour plots
2. .kml file with PFD contour and census block boundaries
3. Clarification of power density ("clear sky power" value)
4. Confirmation that PFD contour will not cross any roads classified as "Other Freeways and Expressways or Other Principal Arterials," with details on related analysis and assumptions
5. Clarification of discrepancy in height above ground level
6. Explanation of clutter assumptions
7. Technical details related to site shielding

Responses are as follows:

1) Addition of county boundaries and distance/mileage scale to PFD contour plots

In accordance with 47 CFR § 25.136(a)(4)(ii) and 47 CFR § 25.136(a)(4)(iii), county boundaries and map legends with distance/mileage scale for measuring the relative size of the proposed PFD contour are included as Figures 1-3 in the appendix of this document.

2) .kml files for PFD contours

The Federal Communications Commission has requested that a .kml file representing the PFD contour and relevant census block boundaries be submitted. This .kml file has been submitted as an attachment along with this supplement pleading.

3) Clarification of power density

To ensure compliance with 47 CFR § 25.136(a)(4)(ii) and 47 CFR § 25.136(a)(4)(iii) for the earth station related to this supplemental pleading, SpaceX used worst-case input power density. SpaceX did not change maximum power during rain fade conditions, so clear-sky maximum power is the same as during rain fade for this earth station application. This SpaceX license application is conservative and currently accounts for worst-case antenna input power density of -19.7 dBW/MHz.

4) Confirmation that PFD contour will not cross any roads classified as “Other Freeways and Expressways or Other Principal Arterials,” with details on related analysis and assumptions

In accordance with 47 CFR § 25.136(a)(4)(iii), SpaceX certifies that the PFD contour of the earth station related to this supplemental pleading will not cross any roads classified as “Other Freeways and Expressways or Other Principal Arterials.”

To make this certification, SpaceX uses QGIS software to conduct an analysis of a comprehensive dataset of roadways obtained from the 2017 release of the HPMS¹ ARNOLD² dataset, belonging to the Federal Highway Administration of the Department of Transportation. To ensure compliance with 47 CFR § 25.136(a)(4)(iii), SpaceX analysis considers the following categories within the dataset: “Interstate,” “Principal Arterial – Other Freeways and Expressways,” and “Principal Arterial – Other”. SpaceX uses QGIS and the comprehensive dataset of roadways to ensure that the PFD contour does not cross any roads classified as “Other Freeways and Expressways or Other Principal Arterials.” According to the website from which the dataset is obtained³: “[the dataset] derives and is collected from State DOT road data. ARNOLD consists of locations of all roads in the U.S.” Therefore, relevant state roadways are considered in our analysis.

¹ Highway Performance Monitoring System

² All Road Network of Linear Referenced Data

³ Source: <https://www.bts.gov/geography/geospatial-portal/NTAD-direct-download>

5) Clarification of discrepancy in height above ground level

The “height above ground level” in all earth station applications (1.7m), is the true centerline height of the antennas, and the value SpaceX uses to calculate the PFD contours. The “Antenna Centerline (AGL)” value previously used in Comsearch (0.91m) has been found to be a clerical error, and will be changed to 1.7m in all future Comsearch reports. Comsearch has informed us that it is not necessary to re-do coordination or update Comsearch reports based on this change, because the change is not expected to impact any relevant analyses. Related email correspondence with Comsearch has been submitted as an attachment along with this supplement pleading.

6) Explanation of clutter assumptions

No clutter was assumed in the PFD contour analysis for this earth station.

7) Technical details related to site shielding

All ground-based SpaceX earth stations in the US are surrounded with a solid metal panel fence, which is 8 feet in height and is set 11 feet and 6 inches from the centerline of the outermost antennas. Each earth station is analyzed independently to determine the shielding value required to comply with 47 CFR § 25.136(a)(4)(ii) and 47 CFR § 25.136(a)(4)(iii), based on PFD contours. The independent nature of the analysis explains the variation in shielding values between applications. SpaceX installs shielding at all sites with effectiveness equal to or greater than the value required to remain in compliance with 47 CFR § 25.136(a)(4)(iii) and 47 CFR § 25.136(a)(4)(iii).

Sincerely,

David Liptsyn

David Liptsyn
Gateway Site Acquisition Analyst
SpaceX

Appendix

Figure 1: PFD Contour with county boundaries and distance/mileage scale

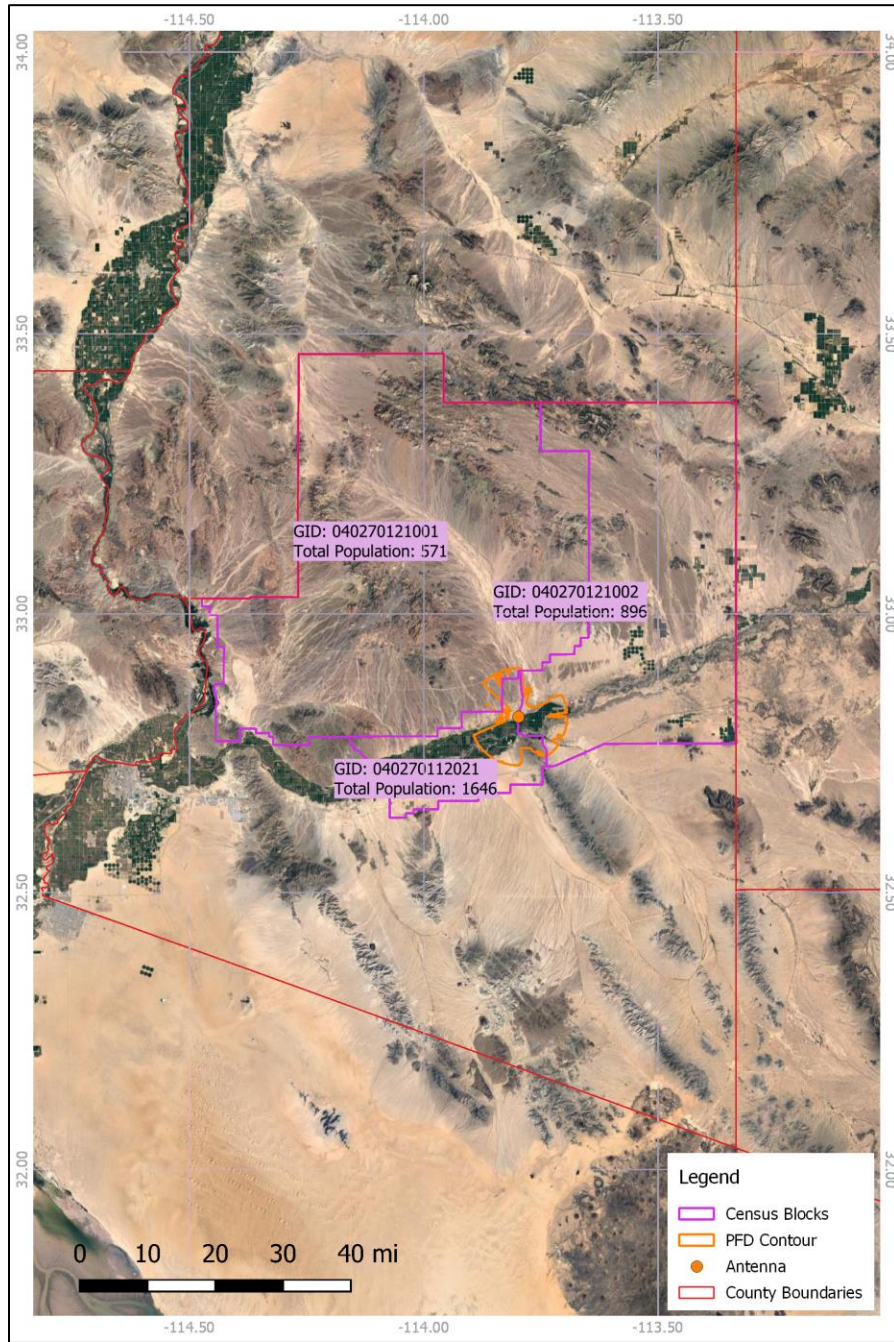


Figure 2: PFD Contour with distance/mileage scale and population coverage

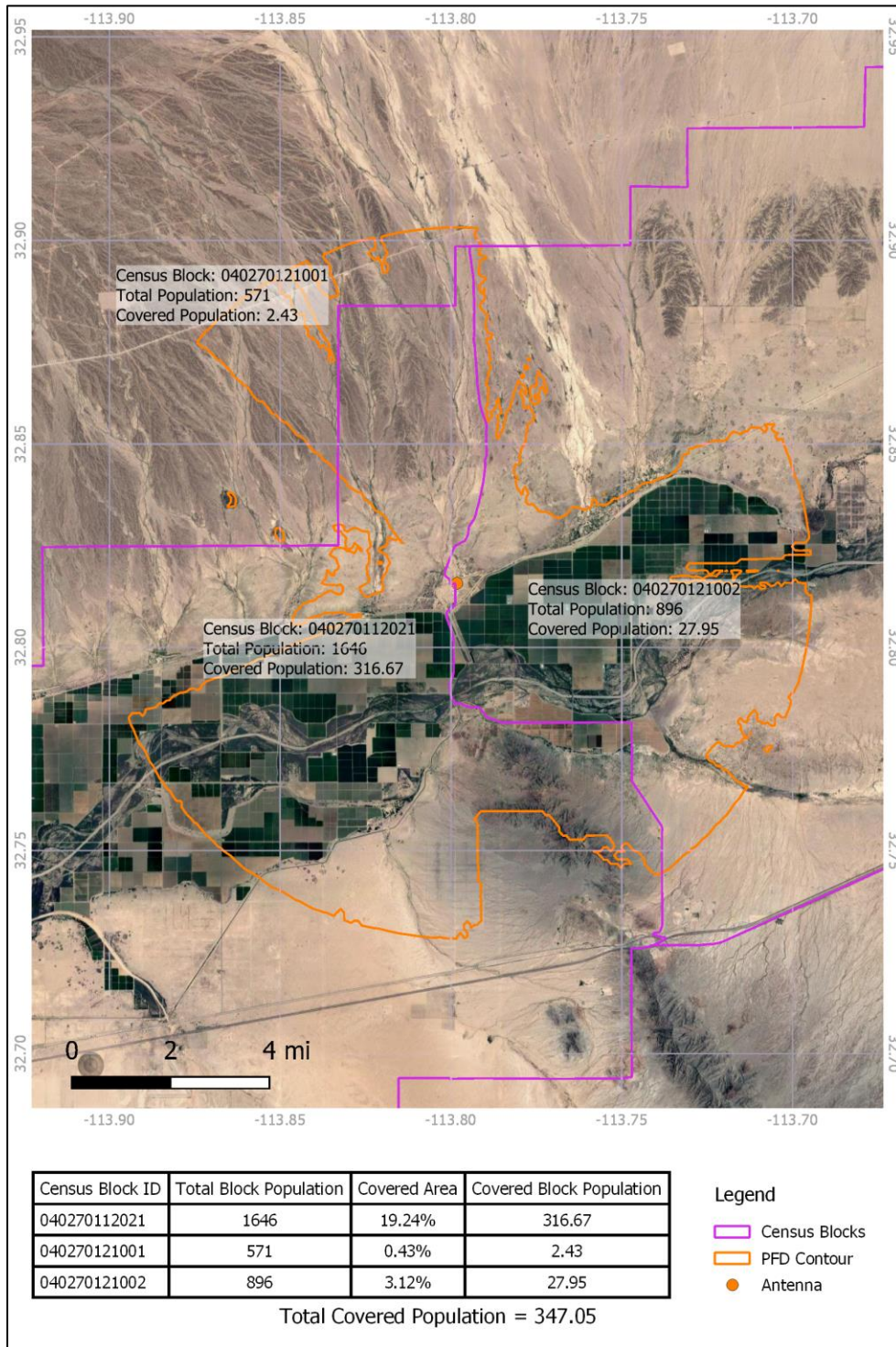


Figure 3: PFD Contour with population density and distance/mileage scale

