



**HAWAII PACIFIC TELEPORT
Maui, HI
27.5-28.35 GHz**

Introduction

On behalf of Hawaii Pacific Teleport, Comsearch has completed analysis for an NGSO earth station transmitting the 27.5-28.35 GHz band at Maui, HI. The purpose of the analysis is to consider whether the earth station would satisfy the limitations in FCC rules §25.136(a)(4)(i), (ii), and (iii) to protect Upper Microwave Flexible Use Service (UMFUS) licenses in the area. The earth station parameters used in the analysis are shown on the attached Data Sheet and Coordination Values report. In §25.136(a)(4)(ii) the earth station coverage of $\text{PFD} = -77.6 \text{ dBm/m}^2/\text{MHz}$ at 10 m above ground level must not affect more than a stated population limit. The proposed earth station location near Maui is in Maui County, HI where the population at the 2010 Census was 154,834. For a county of this size the rule limits the affected population to 450 people.

In addition, FCC rules §25.136(a)(4)(i) requires no more than two other earth stations in the county, and §25.136(a)(4)(iii) prohibits coverage of certain roads, routes, and venues.

Coverage Calculation and Affected Population

Comsearch calculated the coverage of the earth station transmitter considering distance and terrain blockage loss according to the propagation model of ITU-R P.452-16. This calculation includes the effect of an 8 foot (2.44 m) high shielding fence that Hawaii Pacific Teleport intends to install at a radius of 9 m from the antenna. Figure 1 shows the shielding geometry used in the calculations.

The resulting contour of coverage above $-77.6 \text{ dBm/m}^2/\text{MHz}$ @ 10 m is shown in Figure 2 and Figure 3. Figure 3 also shows the 2010 census blocks in the area. The FCC recommends using the actual area method to count the population affected by the PFD coverage. This method apportions population from each census block according to the ratio of covered area to total area. Table 1 shows the area coverage of each census block and the affected population. Because the 2010 census population is zero for all blocks affected by the earth station coverage, the covered population is also zero. Thus, the result of the calculation is that the population predicted to be affected in Maui County, 0, meets the limit of 450.

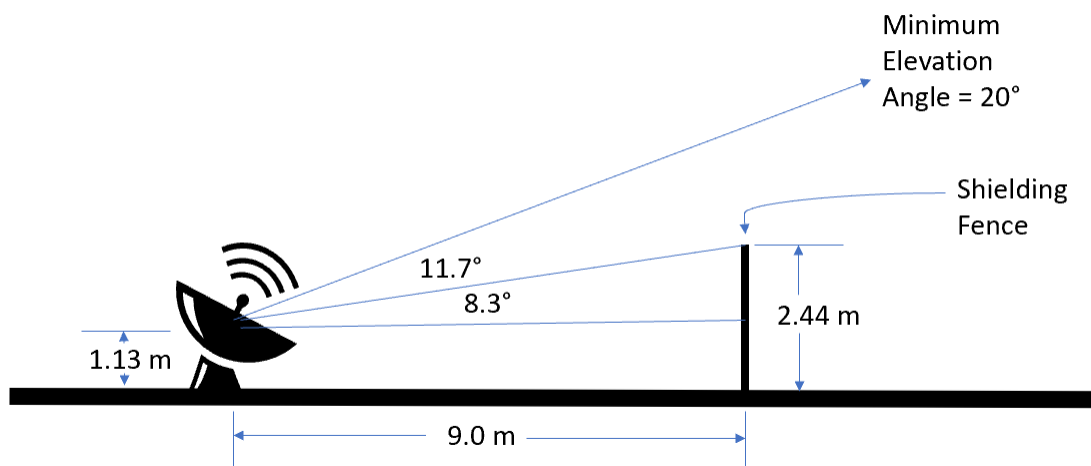


Figure 1: Earth Station Shielding Geometry



Figure 2: Maui Earth Station Location and $-77.6 \text{ dBm/m}^2/\text{MHz}$ @10 m Coverage Contour

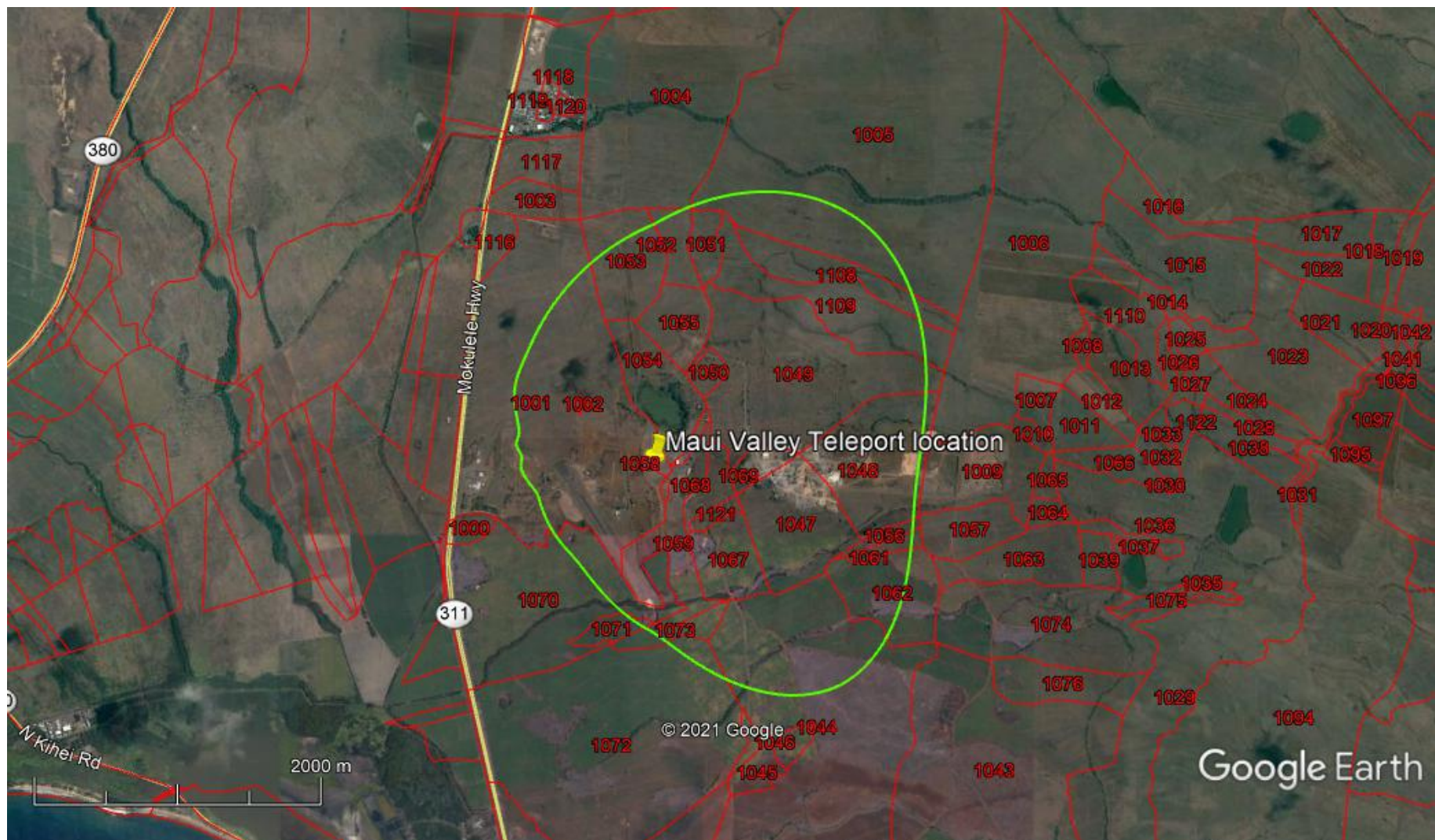


Figure 3: ITU-R P.452-16 Coverage ($-77.6 \text{ dBm/m}^2/\text{MHz}$ @10m) with 2010 Census Blocks. Includes 8ft/2.44 m shielding fence.

2010 Block ID	County Name	2010 Population	Block Area (mi ²)	Covered Area (mi ²)	Covered Area (%)	Covered Population
150090307051001	Maui County, HI	0	0.915	0.502	54.83%	0
150090307051002	Maui County, HI	0	0.002	0.002	100.00%	0
150090307051004	Maui County, HI	0	0.597	0.000	0.05%	0
150090307051005	Maui County, HI	0	1.295	0.148	11.43%	0
150090307051044	Maui County, HI	0	0.800	0.265	33.17%	0
150090307051047	Maui County, HI	0	0.186	0.186	100.00%	0
150090307051048	Maui County, HI	0	0.229	0.211	92.09%	0
150090307051049	Maui County, HI	0	0.426	0.418	98.24%	0
150090307051050	Maui County, HI	0	0.021	0.021	100.00%	0
150090307051051	Maui County, HI	0	0.037	0.037	100.00%	0
150090307051052	Maui County, HI	0	0.046	0.041	88.03%	0
150090307051053	Maui County, HI	0	0.133	0.094	70.78%	0
150090307051054	Maui County, HI	0	0.125	0.125	100.00%	0
150090307051055	Maui County, HI	0	0.077	0.077	100.00%	0
150090307051056	Maui County, HI	0	0.016	0.015	90.63%	0
150090307051058	Maui County, HI	0	0.007	0.007	100.00%	0
150090307051059	Maui County, HI	0	0.127	0.127	100.00%	0
150090307051060	Maui County, HI	0	0.009	0.009	100.00%	0
150090307051061	Maui County, HI	0	0.019	0.015	80.38%	0
150090307051062	Maui County, HI	0	0.143	0.080	56.14%	0
150090307051067	Maui County, HI	0	0.091	0.091	100.00%	0
150090307051068	Maui County, HI	0	0.039	0.039	100.00%	0
150090307051069	Maui County, HI	0	0.032	0.032	100.00%	0
150090307051070	Maui County, HI	0	0.437	0.083	18.89%	0
150090307051071	Maui County, HI	0	0.027	0.003	9.99%	0
150090307051072	Maui County, HI	0	0.821	0.019	2.31%	0
150090307051073	Maui County, HI	0	0.039	0.025	65.16%	0
150090307051108	Maui County, HI	0	0.102	0.087	85.22%	0
150090307051109	Maui County, HI	0	0.185	0.166	89.68%	0
150090307051121	Maui County, HI	0	0.015	0.015	100.00%	0

Table 1: Affected Population for ITU-R P.452-16 Coverage (2010 Census Data)

Additional Requirements

With respect to the requirements of §25.136(a)(4)(i), the proposed Maui earth station complies because there are no other authorized earth stations in the 27.5–28.35 GHz band within Maui County, HI.

With respect to the requirements of §25.136(a)(4)(iii), the proposed Maui earth station complies because the -77.6 dBm/m²/MHz @ 10m coverage does not cross any roads classified as Interstate, Other Freeways and Expressways, or Other Principal Arterial, and does not

contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. The study showed the nearest road in the above classifications is Mokulele Hwy, classified as Other Principal Arterial, to the West of the earth station location. The shielding fence to be used at the earth station is predicted to prevent the coverage from reaching or crossing the highway.

Thus, the results of our analysis are that the earth station meets the requirements of FCC rules §25.136(a)(4)(i) and §25.136(a)(4)(iii).

Conclusion

Our analysis using the parameters listed on the attached Data Sheet and Coordination Values report and the shielding shown in Figure 1 indicates the -77.6 dBm/m²/MHz @ 10 m PFD contour of the proposed Maui earth station meets the limit on covered population. The coverage does not cross any roads classified as Interstate, Other Freeways and Expressways, or Other Principal Arterial, and does not contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. There are no other authorized earth stations in the 27.5–28.35 GHz band within Maui County, HI. Thus, we conclude that the proposed earth station is compliant with the limitations in FCC rules §25.136(a)(4)(i), (ii), and (iii).

If you have any questions or need further assistance, please contact us.

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COMSEARCH
Earth Station Data Sheet
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Date: 06/11/2021
 Job Number:

Administrative Information

Licensee Code HAWPAC
 Licensee Name Hawaii Pacific Teleport, L.P.

Site Information
MAUI, HI

Venue Name
 Latitude (NAD 83) 20° 49' 1.5" N
 Longitude (NAD 83) 156° 27' 16.9" W
 Climate Zone C
 Rain Zone 4
 Ground Elevation (AMSL) 36.0 m / 118.1 ft

Link Information

Satellite Type NGSO
 Mode Transmit
 Modulation Digital
 Minimum Elevation Angle 20.0°
 Azimuth Range 0.0° to 360°
 Antenna Centerline (AGL) 1.31 m / 4.3 ft

Antenna Information
Transmit - FCC29

Manufacturer FCC REFERENCE
 Model 29-25LOG(THETA)
 Gain / Diameter 54.0 dBi / 2.4 m
 3-dB / 15-dB Beamwidth 0.31° / 0.74°

Max Available RF Power (dBW/4 kHz) -41.0
 (dBW/MHz) -17.0

Maximum EIRP (dBW/4 kHz) 13.0
 (dBW/MHz) 37.0
 (dBW) 64.0

Frequency Information
Transmit 28.0 GHz

Emission / Frequency Range (MHz) 500MD7W / 27500.0 - 28350.0

COMSEARCH**Earth Station Data Sheet**

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5681 <http://www.comsearch.com>

Coordination Values

Licensee Name	MAUI, HI
Latitude (NAD 83)	Hawaii Pacific Teleport, L.P.
Longitude (NAD 83)	20° 49' 1.5" N
Ground Elevation (AMSL)	156° 27' 16.9" W
Antenna Centerline (AGL)	36.0 m / 118.1 ft
Antenna Model	1.31 m / 4.3 ft
Antenna Mode	FCC Reference 29-25LOG(THETA)
Max Available RF Power	Transmit 28.0 GHz
	-41.0 (dBW/4 kHz)

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)
0 to 360	8.30	11.70	2.30
