

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Universal Space Network, Inc.
NAALEHU, HI
Satellite Earth Station

Prepared By:
COMSEARCH
21515 Ridgetop Circle, Suite 300
Sterling, VA 20166
January 30, 2023

TABLE OF CONTENTS

1. CONCLUSIONS	3
2. SUMMARY OF RESULTS	4
3. SUPPLEMENTAL SHOWING	5
4. EARTH STATION COORDINATION DATA.....	7
5. CERTIFICATION.....	12

1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. Further, there will be no restrictions of its operation due to interference considerations.

2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.

3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 01/13/2023.

Company

3G Wireless, LLC
AERIAL VIDEO SYSTEMS
Alascom Inc
Borgeson, Tom R.
Broadcast Sports Inc.
Casper, John
Chicago Comnet Corp
Cincinnati Bell Wireless LLC
Citywide News Network, Inc.
CP Communications, LLC
Cowboys Stadium LP
DCI II, INC.
Direct Broadcast Services, Inc.
Frontier California Inc.
Gray Televisions Licensee, LLC (KTVF)
HF Enterprises, Inc
Hallco Unlimited, Inc.
Heiden, William
im360 Entertainment
Information & Display Systems, Inc.
Information Super Station, LLC
International Communications Group, Inc.
International Electronic Information Services, Inc.
Interlink Network Corp.
Loop, Inc.
MERCURY COMMUNICATIONS
Microwave Video systems, LLC
Moreen, Steven K
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
NSM Surveillance
Navajo Communications Company
Onboard Images
Penn Service Microwave Co., Inc.
Plateau Telecommunications, Inc.
Plum TV, LLC
Production & Satellite Services, Inc.
REMOTE FACILITIES CONSULTING SERVICES
RF Central, LLC
RF Film, Inc
Radiofone, Inc.

Randy Hermes Production
Remote Broadcasts, Inc.
SBE Coordinator
Speedshotz, Inc
TTWN Networks, LLC
Unisat, Inc.
United Telephone – Southeast
Vitec Broadcast Services, Inc
Vyvx, LLC
Westar Satellite Services LP
Winged Vision Inc
Wolfe Air Aviation

4. EARTH STATION COORDINATION DATA

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

COMSEARCH
Earth Station Data Sheet
21515 Ridgetop Circle, Suite 300
Sterling, VA 20166
(703)726-5500 <http://www.comsearch.com>

Date: 01/30/2023
Job Number: 230113COMSGE01

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code UNSPNE
Licensee Name Universal Space Network, Inc.

Site Information **NAALEHU, HI**

Venue Name
Latitude (NAD 83) 19° 0' 50.3" N
Longitude (NAD 83) 155° 39' 46.6" W
Climate Zone C
Rain Zone 4
Ground Elevation (AMSL) 373.0 m / 1223.8 ft

Link Information

Satellite Type Low Earth Orbit
Mode TO - Transmit-Only
Modulation Digital
Minimum Elevation Angle 5.0°
Azimuth Range 0.0° to 360°
Antenna Centerline (AGL) 8.54 m / 28.0 ft

Antenna Information **Transmit - FCC32**

Manufacturer Datron
Model 1453
Gain / Diameter 46.3 dBi / 13.0 m
3-dB / 15-dB Beamwidth 0.76° / 1.46°

Max Available RF Power (dBW/4 kHz) 3.7
(dBW/MHz) 27.7

Maximum EIRP (dBW/4 kHz) 50.0
(dBW/MHz) 74.0

Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%

Frequency Information **Transmit 2.0 GHz**

Emission / Frequency Range (MHz) 1M00G2D / 2041.598

Max Great Circle Coordination Distance 293.2 km / 182.2 mi
Precipitation Scatter Contour Radius 149.4 km / 92.8 mi

COMSEARCH
Earth Station Data Sheet
21515 Ridgetop Circle, Suite 300
Sterling, VA 20166
(703)726-5500 <http://www.comsearch.com>

Coordination Values	NAALEHU, HI
Licensee Name	Universal Space Network, Inc.
Latitude (NAD 83)	19° 0' 50.3" N
Longitude (NAD 83)	155° 39' 46.6" W
Ground Elevation (AMSL)	373.0 m / 1223.8 ft
Antenna Centerline (AGL)	8.54 m / 28.0 ft
Antenna Model	Datron 13 meter
Antenna Mode	Transmit 2.0 GHz
Interference Objectives: Long Term	-154.0 dBW/4 kHz 20%
Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	3.7 (dBW/4 kHz)

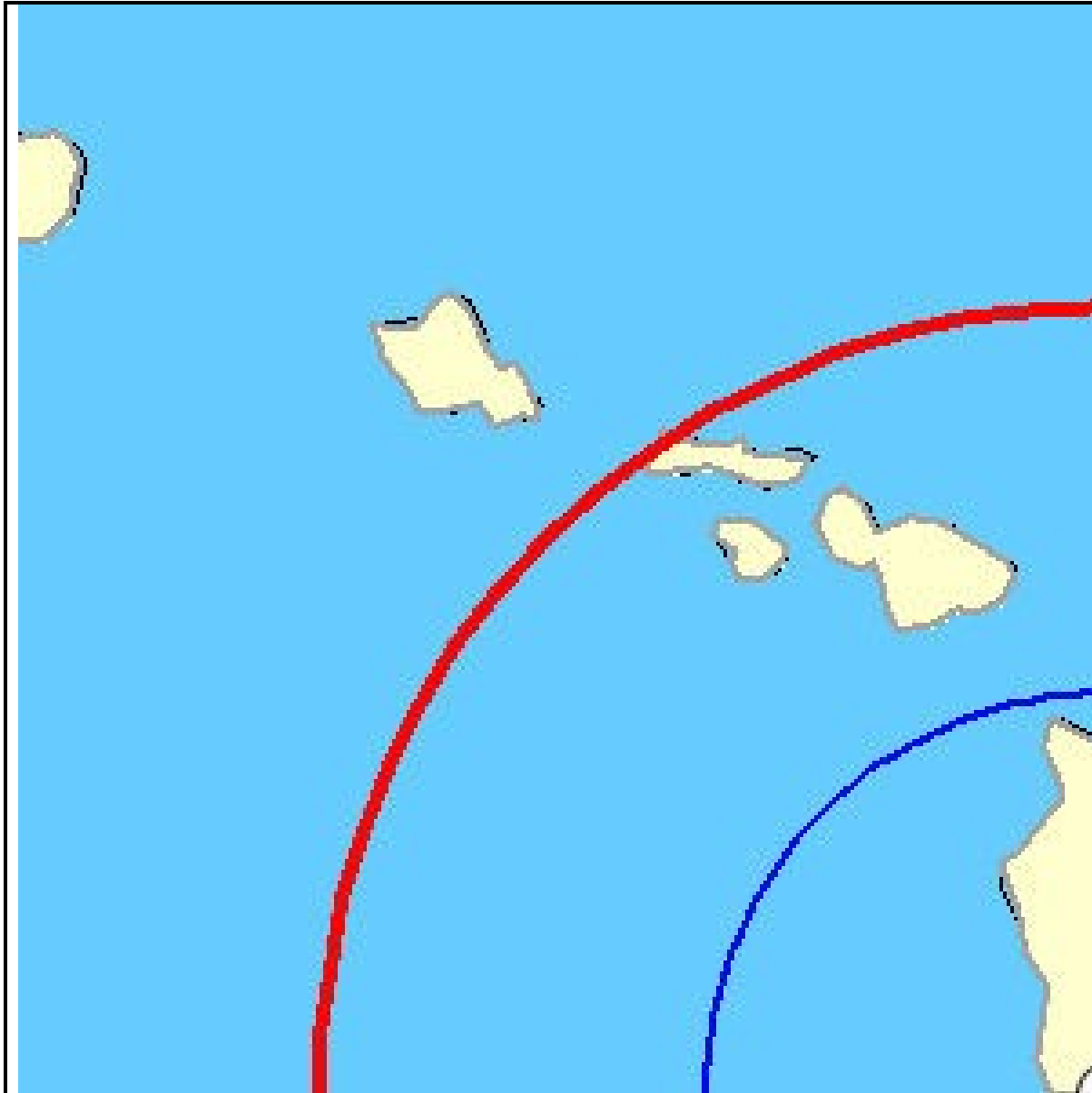
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 2.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	2.82	76.35	4.50	293.25
5	2.67	74.62	4.50	293.25
10	2.48	72.96	4.50	293.25
15	2.35	71.43	4.50	293.25
20	2.17	69.98	4.50	293.25
25	1.96	68.63	4.50	293.25
30	1.73	67.42	4.50	293.25
35	0.98	65.87	4.50	293.25
40	0.39	64.62	4.50	293.25
45	0.00	63.74	4.50	293.25
50	0.00	63.44	4.50	293.25
55	0.00	63.37	4.50	293.25
60	0.00	63.51	4.50	293.25
65	0.00	63.87	4.50	293.25
70	0.00	64.44	4.50	293.25
75	0.00	65.22	4.50	293.25
80	0.00	66.19	4.50	293.25
85	0.00	67.34	4.50	293.25
90	0.00	68.67	4.50	293.25
95	0.00	70.15	4.50	293.25
100	0.00	71.77	4.50	293.25
105	0.00	73.53	4.50	293.25
110	0.00	75.39	4.50	293.25
115	0.00	77.35	4.50	293.25
120	0.00	79.39	4.50	293.25
125	0.00	81.51	4.50	293.25
130	0.00	83.67	4.50	293.25
135	0.00	85.87	4.50	293.25
140	0.00	88.10	4.50	293.25
145	0.00	90.34	4.50	293.25
150	0.00	92.58	4.50	293.25
155	0.00	94.80	4.50	293.25
160	0.00	96.99	4.50	293.25
165	0.00	99.14	4.50	293.25
170	0.00	101.24	4.50	293.25
175	0.00	103.26	4.50	293.25
180	0.00	105.19	4.50	293.25
185	0.00	107.02	4.50	293.25

COMSEARCH
Earth Station Data Sheet
21515 Ridgetop Circle, Suite 300
Sterling, VA 20166
(703)726-5500 <http://www.comsearch.com>

Coordination Values	NAALEHU, HI
Licensee Name	Universal Space Network, Inc.
Latitude (NAD 83)	19° 0' 50.3" N
Longitude (NAD 83)	155° 39' 46.6" W
Ground Elevation (AMSL)	373.0 m / 1223.8 ft
Antenna Centerline (AGL)	8.54 m / 28.0 ft
Antenna Model	Datron 13 meter
Antenna Mode	Transmit 2.0 GHz
Interference Objectives: Long Term	-154.0 dBW/4 kHz 20%
Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	3.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 2.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	108.73	4.50	293.25
195	0.00	110.32	4.50	293.25
200	0.00	111.75	4.50	293.25
205	0.00	113.03	4.50	293.25
210	0.00	114.13	4.50	293.25
215	0.00	115.04	4.50	293.25
220	0.00	115.75	4.50	293.25
225	0.00	116.26	4.50	293.25
230	0.00	116.56	4.50	293.25
235	0.00	116.63	4.50	293.25
240	0.00	116.49	4.50	293.25
245	0.00	116.13	4.50	293.25
250	0.00	115.56	4.50	293.25
255	0.00	114.78	4.50	293.25
260	0.28	113.56	4.50	293.25
265	0.43	112.30	4.50	293.25
270	0.67	110.81	4.50	293.25
275	0.95	109.17	4.50	293.25
280	1.07	107.52	4.50	293.25
285	1.14	105.80	4.50	293.25
290	1.19	103.99	4.50	293.25
295	1.40	102.02	4.50	293.25
300	1.50	100.04	4.50	293.25
305	1.68	97.99	4.50	293.25
310	1.94	95.90	4.50	293.25
315	2.17	93.81	4.50	293.25
320	2.36	91.74	4.50	293.25
325	2.45	89.69	4.50	293.25
330	2.54	87.65	4.50	293.25
335	2.61	85.64	4.50	293.25
340	2.73	83.68	4.50	293.25
345	2.79	81.76	4.50	293.25
350	3.21	80.05	4.50	293.25
355	2.99	78.16	4.50	293.25

COMSEARCH
Earth Station Data Sheet
21515 Ridgeway Circle, Suite 300
Sterling, VA 20166
(703)726-5500 <http://www.comsearch.com>
Universal Space Network, Inc.



Legend:

Scale: 1:5,000,000

Great Circle: 2.0 GHz 

Precipitation Scatter: 2.0 GHz 

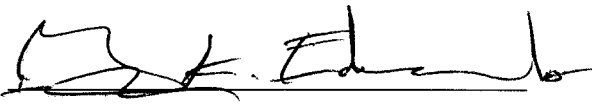
Earth Station Site: 



COMSEARCH®
21515 Ridgeway Circle, Suite
300
Sterling, VA 20166

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: 

Gary K. Edwards
Senior Manager
COMSEARCH
21515 Ridgetop Circle, Suite 300
Sterling, VA 20166

DATED: January 30, 2023