

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
March 20, 2023

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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 02/23/2023.

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

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Date: 03/20/2023
Job Number: 230223COMSGE05

Administrative Information

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

Site Information

NAALEHU, HI
Venue Name: XRISM
Latitude (NAD 83): 19° 0' 49.6" 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: 46.1 dBi / 13.0 m
3-dB / 15-dB Beamwidth: 0.76° / 1.46°

Max Available RF Power (dBW/4 kHz): -5.1
(dBW/MHz): 18.9

Maximum EIRP (dBW/4 kHz): 41.0
(dBW/MHz): 65.0

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): 2M00G1D / 2099.96

Max Great Circle Coordination Distance: 293.2 km / 182.2 mi
Precipitation Scatter Contour Radius: 100.0 km / 62.1 mi

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Coordination Values

NAALEHU, HI

Licensee Name Universal Space Network, Inc.
Latitude (NAD 83) 19° 0' 49.6" 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 -5.1 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 2.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	2.81	76.34	4.50	293.25
5	2.66	74.61	4.50	293.25
10	2.47	72.94	4.50	293.25
15	2.35	71.42	4.50	293.25
20	2.16	69.97	4.50	293.25
25	1.94	68.62	4.50	293.25
30	1.71	67.40	4.50	293.25
35	0.96	65.85	4.50	293.25
40	0.38	64.61	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	103.25	4.50	293.25
180	0.00	105.19	4.50	293.25
185	0.00	107.02	4.50	293.25

COMSEARCH

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Coordination Values

NAALEHU, HI

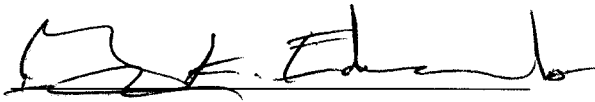
Licensee Name Universal Space Network, Inc.
Latitude (NAD 83) 19° 0' 49.6" N
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Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -5.1 (dBW/4 kHz)

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	0.25	113.59	4.50	293.25
265	0.38	112.34	4.50	293.25
270	0.57	110.89	4.50	293.25
275	0.88	109.21	4.50	293.25
280	1.05	107.53	4.50	293.25
285	1.13	105.80	4.50	293.25
290	1.16	104.00	4.50	293.25
295	1.37	102.03	4.50	293.25
300	1.49	100.05	4.50	293.25
305	1.65	98.00	4.50	293.25
310	1.93	95.90	4.50	293.25
315	2.15	93.82	4.50	293.25
320	2.35	91.74	4.50	293.25
325	2.44	89.69	4.50	293.25
330	2.54	87.65	4.50	293.25
335	2.60	85.64	4.50	293.25
340	2.73	83.68	4.50	293.25
345	2.77	81.76	4.50	293.25
350	3.20	80.05	4.50	293.25
355	2.98	78.16	4.50	293.25

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: March 20, 2023