

WorldVu Development LLC
1785 Greensboro Station Place Tower 3
McLean, VA 22102

Exhibit B: Comsearch Coordination Reports

Ka-Band Earth Station – South Pt, HI

Frequency Coordination Report

28 GHz



Prepared on Behalf of
WorldVu Satellites
Limited

September 24, 2019



COMSEARCH
A CommScope Company

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1. Summary of Results

On behalf of WorldVu Satellites Limited, Comsearch performed a coordination notice under Section 25.136(a)(4) of the FCC’s rules for all existing and proposed terrestrial licenses within the coordination contours of their proposed Ka-Band earth station in South Pt, HI, which will transmit at 28 GHz¹. Prior-notification letters were sent to the licensees and a copy of the notification data is provided in section four of this report. The earth station coordination was finalized on September 10, 2019.

No objections were received from any of the incumbent 28 GHz licensees.

2. 28 GHz Common Carrier and LTTS Coordination

In accordance with FCC Rules and Regulations, the Ka-Band earth station in South Pt, HI was prior-coordinated by Comsearch. A notification letter and datasheets for this earth station were sent to the following 28 GHz common carrier fixed microwave licensees. These licensees are authorized to operate temporary fixed operations from 27.5 – 29.5 GHz on a nationwide basis or local basis.

Licensee	Authorized Geographic Area
Frontier Southwest Incorporated	Nationwide
Hawaiian Telcom, Inc.	Statewide: Hawaii
Princeton Scientific Capital Management Corp	Discrete link in Honolulu, HI

A notification letter and datasheets for the Ka-Band earth station in South Pt, HI were also sent to the following 28 GHz local television transmission licensee. This licensee is authorized to operate temporary fixed operations from 27.5 – 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Information Super Station, LLC	Nationwide

No objections were received from the common carrier or local television transmission service incumbents.

¹ The proposed earth station will operate in the 27.5 – 29.1, 29.5 – 30.0 GHz portion of the Ka-Band.

3. 28 GHz UMFUS Coordination

There were no 28 GHz UMFUS licensees identified within the coordination distance of the earth station. The proposed earth station will operate on frequencies that overlap Channel L1 & L2 of the UMFUS service. The total frequency allocation for Channels L1 & L2 of the UMFUS spectrum appears below.

Channel:	L1	27.500 - 27.925 GHz
	L2	27.925 - 28.350 GHz

No objections were received from the UMFUS incumbents

4. Earth Station Coordination Data

This section presents the data pertinent to the proposed Ka-Band earth station in South Pt, HI. This data was circulated to all incumbent licensees in the shared 28 GHz frequency ranges.

Date: 08/09/2019
Job Number: 190809COMSDJ01

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code WORSAT
Licensee Name WorldVu Satellites Limited

Site Information SOUTH PT, HI

Venue Name
Latitude (NAD 83) 19° 1' 28.2" N
Longitude (NAD 83) 155° 40' 1.6" W
Climate Zone B
Rain Zone 4
Ground Elevation (AMSL) 405.9 m / 1331.7 ft

Link Information

Satellite Type Low Earth Orbit
Mode TR - Transmit-Receive
Modulation Digital
Minimum Elevation Angle 5.0°
Azimuth Range 0.0° to 360°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		CPI		CPI	
Model		3.5 meter		3.5 meter	
Gain / Diameter		54.6 dBi / 3.5 m		58.0 dBi / 3.5 m	
3-dB / 15-dB Beamwidth		0.32° / 0.36°		0.21° / 0.23°	
Max Available RF Power	(dBW/4 kHz)			-39.6	
	(dBW/MHz)			-15.6	
Maximum EIRP	(dBW/4 kHz)			18.4	
	(dBW/MHz)			42.4	
Interference Objectives:	Long Term	-152.4 dBW/MHz	20%	-151.0 dBW/4 kHz	20%
	Short Term	-142.4 dBW/MHz	0.01%	-128.0 dBW/4 kHz	0.0025%

Frequency Information

	Receive 18.0 GHz	Transmit 28.0 GHz
Emission / Frequency Range (MHz)	2M16G7D - 18M0G7D / 17800.0 - 18600.0 2M16G7D - 18M0G7D / 18800.0 - 19300.0	230MG7D / 27500.0 - 29100.0 230MG7D / 29500.0 - 30000.0

Max Great Circle Coordination Distance	149.1 km / 92.6 mi	100.0 km / 62.1 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

Coordination Values

SOUTH PT, HI

Licensee Name	WorldVu Satellites Limited				
Latitude (NAD 83)	19° 1' 28.2" N				
Longitude (NAD 83)	155° 40' 1.6" W				
Ground Elevation (AMSL)	405.9 m / 1331.7 ft				
Antenna Centerline (AGL)	2.74 m / 9.0 ft				
Antenna Model	CPI 3.5 meter				
Antenna Mode	Receive 18.0 GHz		Transmit 28.0 GHz		
Interference Objectives:	Long Term	-152.4 dBW/MHz	20%	-151.0 dBW/4 kHz	20%
	Short Term	-142.4 dBW/MHz	0.01%	-128.0 dBW/4 kHz	0.0025%
Max Available RF Power			-39.6 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	74.80	11.53	149.10	12.20	100.00
5	0.00	72.97	11.53	149.10	12.20	100.00
10	0.00	71.26	11.53	149.10	12.20	100.00
15	0.00	69.68	11.53	149.10	12.20	100.00
20	0.00	68.24	11.53	149.10	12.20	100.00
25	0.00	66.97	11.53	149.10	12.20	100.00
30	0.00	65.87	11.53	149.10	12.20	100.00
35	0.00	64.95	11.53	149.10	12.20	100.00
40	0.00	64.24	11.53	149.10	12.20	100.00
45	0.00	63.73	11.53	149.10	12.20	100.00
50	0.00	63.44	11.53	149.10	12.20	100.00
55	0.00	63.37	11.53	149.10	12.20	100.00
60	0.00	63.51	11.53	149.10	12.20	100.00
65	0.00	63.87	11.53	149.10	12.20	100.00
70	0.00	64.44	11.53	149.10	12.20	100.00
75	0.00	65.22	11.53	149.10	12.20	100.00
80	0.00	66.19	11.53	149.10	12.20	100.00
85	0.00	67.35	11.53	149.10	12.20	100.00
90	0.00	68.67	11.53	149.10	12.20	100.00
95	0.00	70.15	11.53	149.10	12.20	100.00
100	0.00	71.78	11.53	149.10	12.20	100.00
105	0.00	73.53	11.53	149.10	12.20	100.00
110	0.00	75.40	11.53	149.10	12.20	100.00
115	0.00	77.36	11.53	149.10	12.20	100.00
120	0.00	79.40	11.53	149.10	12.20	100.00
125	0.00	81.51	11.53	149.10	12.20	100.00
130	0.00	83.68	11.53	149.10	12.20	100.00
135	0.00	85.88	11.53	149.10	12.20	100.00
140	0.00	88.11	11.53	149.10	12.20	100.00
145	0.00	90.35	11.53	149.10	12.20	100.00
150	0.00	92.59	11.53	149.10	12.20	100.00
155	0.00	94.81	11.53	149.10	12.20	100.00
160	0.00	97.00	11.53	149.10	12.20	100.00
165	0.00	99.15	11.53	149.10	12.20	100.00
170	0.00	101.24	11.53	149.10	12.20	100.00
175	0.00	103.26	11.53	149.10	12.20	100.00
180	0.00	105.20	11.53	149.10	12.20	100.00
185	0.00	107.03	11.53	149.10	12.20	100.00



WorldVu Satellites Limited
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Coordination Values	SOUTH PT, HI			
Licensee Name	WorldVu Satellites Limited			
Latitude (NAD 83)	19° 1' 28.2" N			
Longitude (NAD 83)	155° 40' 1.6" W			
Ground Elevation (AMSL)	405.9 m / 1331.7 ft			
Antenna Centerline (AGL)	2.74 m / 9.0 ft			
Antenna Model	CPI 3.5 meter			
Antenna Mode	Receive 18.0 GHz		Transmit 28.0 GHz	
Interference Objectives: Long Term	-152.4 dBW/MHz	20%	-151.0 dBW/4 kHz	20%
Short Term	-142.4 dBW/MHz	0.01%	-128.0 dBW/4 kHz	0.0025%
Max Available RF Power	-39.6 (dBW/4 kHz)			

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Gain (dBi)	Coordination Distance (km)	Gain (dBi)	Coordination Distance (km)
190	0.00	108.74	11.53	149.10	12.20	100.00
195	0.00	110.32	11.53	149.10	12.20	100.00
200	0.00	111.76	11.53	149.10	12.20	100.00
205	0.00	113.03	11.53	149.10	12.20	100.00
210	0.00	114.13	11.53	149.10	12.20	100.00
215	0.00	115.05	11.53	149.10	12.20	100.00
220	0.00	115.76	11.53	149.10	12.20	100.00
225	0.00	116.27	11.53	149.10	12.20	100.00
230	0.00	116.56	11.53	149.10	12.20	100.00
235	0.00	116.63	11.53	149.10	12.20	100.00
240	0.00	116.49	11.53	149.10	12.20	100.00
245	0.00	116.13	11.53	149.10	12.20	100.00
250	0.00	115.56	11.53	149.10	12.20	100.00
255	0.00	114.78	11.53	149.10	12.20	100.00
260	0.00	113.81	11.53	149.10	12.20	100.00
265	0.00	112.65	11.53	149.10	12.20	100.00
270	0.00	111.33	11.53	149.10	12.20	100.00
275	0.00	109.85	11.53	149.10	12.20	100.00
280	0.00	108.22	11.53	149.10	12.20	100.00
285	0.00	106.47	11.53	149.10	12.20	100.00
290	0.00	104.60	11.53	149.10	12.20	100.00
295	0.00	102.64	11.53	149.10	12.20	100.00
300	0.00	100.60	11.53	149.10	12.20	100.00
305	0.00	98.49	11.53	149.10	12.20	100.00
310	0.00	96.32	11.53	149.10	12.20	100.00
315	0.00	94.12	11.53	149.10	12.20	100.00
320	0.00	91.89	11.53	149.10	12.20	100.00
325	0.00	89.65	11.53	149.10	12.20	100.00
330	0.00	87.41	11.53	149.10	12.20	100.00
335	0.00	85.19	11.53	149.10	12.20	100.00
340	0.00	83.00	11.53	149.10	12.20	100.00
345	0.00	80.85	11.53	149.10	12.20	100.00
350	0.00	78.76	11.53	149.10	12.20	100.00
355	0.00	76.74	11.53	149.10	12.20	100.00



5. Contact Information

For questions or information regarding the 28 GHz Frequency Coordination Report, please contact:

Contact person:	Dennis Jimeno
Title:	Engineer III, Telecommunications
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5858
Fax:	703-726-5599
Email:	DJimeno@Comsearch.com
Web site:	www.comsearch.com

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
WorldVu Satellites Limited
SOUTH PT, HI
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
November 05, 2019

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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 08/12/2019.

Company

Coral Wireless Licenses, LLC

Hawaii, State of

Hawaiian Telcom, Inc.

T-Mobile License LLC

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: 11/05/2019
Job Number: 190812COMSGE02

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code WORSAT
Licensee Name WorldVu Satellites Limited

Site Information SOUTH PT, HI

Venue Name
Latitude (NAD 83) 19° 1' 28.2" N
Longitude (NAD 83) 155° 40' 1.6" W
Climate Zone B
Rain Zone 4
Ground Elevation (AMSL) 405.9 m / 1331.7 ft

Link Information

Satellite Type Low Earth Orbit
Mode TR - Transmit-Receive
Modulation Digital
Minimum Elevation Angle 5.0°
Azimuth Range 0.0° to 360°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

	Receive - FCC32	Transmit - FCC32
Manufacturer	CPI	CPI
Model	3.5 meter	3.5 meter
Gain / Diameter	54.6 dBi / 3.5 m	58.0 dBi / 3.5 m
3-dB / 15-dB Beamwidth	0.32° / 0.36°	0.21° / 0.23°
Max Available RF Power (dBW/4 kHz) (dBW/MHz)		-39.6 -15.6
Maximum EIRP (dBW/4 kHz) (dBW/MHz)		18.4 42.4
Interference Objectives:	Long Term -152.4 dBW/MHz 20% Short Term -142.4 dBW/MHz 0.01%	-151.0 dBW/4 kHz 20% -128.0 dBW/4 kHz 0.0025%

Frequency Information

	Receive 18.0 GHz	Transmit 28.0 GHz
Emission / Frequency Range (MHz)	2M16G7D - 18M0G7D / 17800.0 - 18600.0 2M16G7D - 18M0G7D / 18800.0 - 19300.0	230MG7D / 27500.0 - 29100.0 230MG7D / 29500.0 - 30000.0
Max Great Circle Coordination Distance	149.1 km / 92.6 mi	100.0 km / 62.1 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

SOUTH PT, HI

Licensee Name WorldVu Satellites Limited
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Interference Objectives: Long Term -152.4 dBW/MHz 20% -151.0 dBW/4 kHz 20%
Short Term -142.4 dBW/MHz 0.01% -128.0 dBW/4 kHz 0.0025%
Max Available RF Power -39.6 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	74.80	11.53	149.10	12.20	100.00
5	0.00	72.97	11.53	149.10	12.20	100.00
10	0.00	71.26	11.53	149.10	12.20	100.00
15	0.00	69.68	11.53	149.10	12.20	100.00
20	0.00	68.24	11.53	149.10	12.20	100.00
25	0.00	66.97	11.53	149.10	12.20	100.00
30	0.00	65.87	11.53	149.10	12.20	100.00
35	0.00	64.95	11.53	149.10	12.20	100.00
40	0.00	64.24	11.53	149.10	12.20	100.00
45	0.00	63.73	11.53	149.10	12.20	100.00
50	0.00	63.44	11.53	149.10	12.20	100.00
55	0.00	63.37	11.53	149.10	12.20	100.00
60	0.00	63.51	11.53	149.10	12.20	100.00
65	0.00	63.87	11.53	149.10	12.20	100.00
70	0.00	64.44	11.53	149.10	12.20	100.00
75	0.00	65.22	11.53	149.10	12.20	100.00
80	0.00	66.19	11.53	149.10	12.20	100.00
85	0.00	67.35	11.53	149.10	12.20	100.00
90	0.00	68.67	11.53	149.10	12.20	100.00
95	0.00	70.15	11.53	149.10	12.20	100.00
100	0.00	71.78	11.53	149.10	12.20	100.00
105	0.00	73.53	11.53	149.10	12.20	100.00
110	0.00	75.40	11.53	149.10	12.20	100.00
115	0.00	77.36	11.53	149.10	12.20	100.00
120	0.00	79.40	11.53	149.10	12.20	100.00
125	0.00	81.51	11.53	149.10	12.20	100.00
130	0.00	83.68	11.53	149.10	12.20	100.00
135	0.00	85.88	11.53	149.10	12.20	100.00
140	0.00	88.11	11.53	149.10	12.20	100.00
145	0.00	90.35	11.53	149.10	12.20	100.00
150	0.00	92.59	11.53	149.10	12.20	100.00
155	0.00	94.81	11.53	149.10	12.20	100.00
160	0.00	97.00	11.53	149.10	12.20	100.00
165	0.00	99.15	11.53	149.10	12.20	100.00
170	0.00	101.24	11.53	149.10	12.20	100.00
175	0.00	103.26	11.53	149.10	12.20	100.00
180	0.00	105.20	11.53	149.10	12.20	100.00
185	0.00	107.03	11.53	149.10	12.20	100.00

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

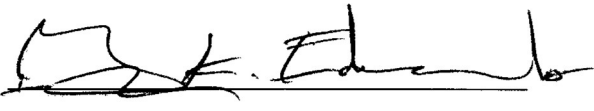
SOUTH PT, HI

Licensee Name	WorldVu Satellites Limited		
Latitude (NAD 83)	19° 1' 28.2" N		
Longitude (NAD 83)	155° 40' 1.6" W		
Ground Elevation (AMSL)	405.9 m / 1331.7 ft		
Antenna Centerline (AGL)	2.74 m / 9.0 ft		
Antenna Model	CPI 3.5 meter		
Antenna Mode	Receive 18.0 GHz		
Interference Objectives: Long Term	-152.4 dBW/MHz	20%	Transmit 28.0 GHz
Short Term	-142.4 dBW/MHz	0.01%	-151.0 dBW/4 kHz 20%
Max Available RF Power		-39.6 (dBW/4 kHz)	-128.0 dBW/4 kHz 0.0025%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	108.74	11.53	149.10	12.20	100.00
195	0.00	110.32	11.53	149.10	12.20	100.00
200	0.00	111.76	11.53	149.10	12.20	100.00
205	0.00	113.03	11.53	149.10	12.20	100.00
210	0.00	114.13	11.53	149.10	12.20	100.00
215	0.00	115.05	11.53	149.10	12.20	100.00
220	0.00	115.76	11.53	149.10	12.20	100.00
225	0.00	116.27	11.53	149.10	12.20	100.00
230	0.00	116.56	11.53	149.10	12.20	100.00
235	0.00	116.63	11.53	149.10	12.20	100.00
240	0.00	116.49	11.53	149.10	12.20	100.00
245	0.00	116.13	11.53	149.10	12.20	100.00
250	0.00	115.56	11.53	149.10	12.20	100.00
255	0.00	114.78	11.53	149.10	12.20	100.00
260	0.00	113.81	11.53	149.10	12.20	100.00
265	0.00	112.65	11.53	149.10	12.20	100.00
270	0.00	111.33	11.53	149.10	12.20	100.00
275	0.00	109.85	11.53	149.10	12.20	100.00
280	0.00	108.22	11.53	149.10	12.20	100.00
285	0.00	106.47	11.53	149.10	12.20	100.00
290	0.00	104.60	11.53	149.10	12.20	100.00
295	0.00	102.64	11.53	149.10	12.20	100.00
300	0.00	100.60	11.53	149.10	12.20	100.00
305	0.00	98.49	11.53	149.10	12.20	100.00
310	0.00	96.32	11.53	149.10	12.20	100.00
315	0.00	94.12	11.53	149.10	12.20	100.00
320	0.00	91.89	11.53	149.10	12.20	100.00
325	0.00	89.65	11.53	149.10	12.20	100.00
330	0.00	87.41	11.53	149.10	12.20	100.00
335	0.00	85.19	11.53	149.10	12.20	100.00
340	0.00	83.00	11.53	149.10	12.20	100.00
345	0.00	80.85	11.53	149.10	12.20	100.00
350	0.00	78.76	11.53	149.10	12.20	100.00
355	0.00	76.74	11.53	149.10	12.20	100.00

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
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: November 05, 2019