

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Harte Satellite Consultants
KILLEEN, TX
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 26, 2021

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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 05/12/2021.

Company

3 Rooms Communications LLC
325 Internet, LLC
3G Wireless, LLC
AC BidCO LLC
Access MLP Operating LLC
Aerial Video Systems
Air Canopy Internet Services, Inc.
Air Net, LLC
Alascom Inc
Alltel Communications LLC - C TX/N LA/AR
AMA Communications, LLC
AMG Technology Investment Group LLC
Anvil Communications, Inc.
Ascent Media Network Services, LLC
AT&T Corp.
AT&T Mobility Spectrum LLC - NM, N TX
AT&T Mobility Spectrum LLC - North Texas
AT&T Mobility Spectrum LLC - South Texas
Austin Energy
Austin, City of
Bastrop County Information Technology
Baylor Scott and White Hospital - Llano
Bedford City of
Bee Creek Communications, Inc.
Bellsouth Telecommunications, Inc.
BelWave Communications
BKV Barnett, LLC.
Blanco, County of
BM Service Corp.
BNSF Railway Company
Borgeson, Tom R.
Brady Communications LLC
Brazos Electric Power Cooperative Inc
Broadcast Sports Inc.
Broadwaves Communications
Burnet County, Office of Emergency Mgmt
Business Only Broadband, LLC
Capital of Texas Public Telecomm Council
Carolina Telephone and Telegraph Co
Casper, John

Cedar Park, City of
Cellco Partnership - Texas
Cellco Partnership -Texas/Houston GC
Cellco Partnership-C TX/LA/AR/OK
Centerpoint Energy Inc
Centex Web Access
Central Louisiana License Co, LLC
Central Texas Communications, Inc.
CenturyTel of the Southwest, Inc.
CEO Etc.
Chicago Comnet Corp
Choice Providers
Cincinnati Bell Wireless LLC
Cingular Wireless of Texas RSA #16 LP
City of Arlington
City of College Station
City of Corsicana
City of Dallas
City of Georgetown (Texas)
City of Grand Prairie
City of Irving
City of Marble Falls
City of Round Rock
City of Temple
City of University Park
City of Waco
Citywide News Network, Inc.
Clearwire Spectrum Holdings III, LLC
Coleman County Telephone Cooperative, In
Colorado Valley Communications
Colorado Valley Telephone Coop., Inc.
Comanche Electric Cooperative Assn
Community Internet Providers LLC
Computers, Electronics, Office Etc.Ltd
Concierge Broadband
Conterra Ultra Broadband, LLC
Cowboys Stadium LP
Craion, Inc
CT Cube, LP
Dallas Fort Worth International Airport
Dallas MTA, L.P. - Central Texas
DCI II, INC.
Devon Gas Services, L.P.
Digitex.com
Direct Broadcast Services, Inc.
Echo Wireless Broadband, Inc.
Edu-Net, LLC
Electronic Corporate Pages, Inc.
Entercom License, LLC
EOG Resources Inc
Evolve Cellular Inc
Express WISP LLC
Faith Communications LLC
Falcon Internet
FARJO Ranch
Farm to Market Broadband LP

Fast Lane Internet, Inc
FDL Production, LLC
FiberLight LLC
First National Bank of Kemp
Fort Worth, City of
Frontier California Inc.
Fuller Wireless Internet LLC
Global Telecom & Technology Americas, In
Grand Prairie, City of
Grand Prix Pipeline LLC
Grande Communications Networks, Inc
Greasy Bend Ventures, Inc.
Guadalupe Blanco River Authority
Guadalupe Valley Electric Coop., Inc.
Hallco Unlimited, Inc.
Harris County Universal Services
Hawaiian Telecom Inc.
HC Wireless, LLC
Heiden, William
Helmsco, Inc.
Henderson County, Texas
Heroes Computer Repair & Internet
HF Enterprises, Inc
HILCO Electric Cooperative, Inc.
Hill Country High Speed
Houston County Electric Cooperative
Hyper Fusion, LLC
Illinois Bell Telephone Company
Indiana Bell Telephone Company
Information & Display Systems, Inc.
Information Super Station, LLC
Infrastructure Edge
Integrated Roadway Services, Inc.
International Communications Group, Inc.
Invisalink Wireless Texas, LLC
James Bouse Enterprises, LLC
Jet Jet Internet
KAKW License Partnership, L.P.
Kaufman County Sheriff Department
Kentucky RSA #3 Cellular General Partner
Kentucky RSA #4 Cellular General Partner
Kerr County Sheriff
KEYE Licensee, LLC
KVUE Television, Inc.
Legacy ISP, LLC
Linxus Internet, LLC
Lonesome Creek Resort, LLC
Lubbock SMSA Limited Partnership
MERCURY COMMUNICATIONS
MHO Networks
Mica Corporation
Michigan Bell Telephone Company
Midlothian Independent School District
Midlothian, City of
Millenium Telcom LLC dba OneSource Com
Moreen, Steven K

MP Networks, LLC
Nalcom Wireless Communications, Inc
Navajo Communications Company
Net1 Connect
New Cingular Wireless PCS LLC - N Texas
New Cingular Wireless PCS LLC - S Texas
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
New Source Broadband I LLC
Nexstar Media Inc.
North Central Texas Council of Govt
North Texas Public Broadcasting Inc.
NorthWest Suburbs Community Access Corp
NSM Surveillance
NW Communications of Austin, Inc.
Ohio Bell GTelephone Company
Olympic Wireless, LLC
Onboard Images
One Ring Networks, Inc.
Ovilla, City of TX
Pacific Bell Tel Com dba AT&T California
Parker County
PathFinder LLC
Pathway Com-Tel
Pecan Internet
Penn Service Microwave Co., Inc.
Plains Internet, LLC
Plateau Telecommunications, Inc.
Plum TV, LLC
PowerNet Wireless
Production & Satellite Services, Inc.
Quick Link Connections Inc.
Qwest Corporation
Radiofone, Inc.
Randy Hermes Production
Rayburn Country Electric Cooperative Inc
RCC Minnesota Inc. - MN NE ND SD
Red Oak, City of
Region 6 Education Service Center
Remote Broadcasts, Inc.
REMOTE FACILITIES CONSULTING SERVICES
Resound Networks
RF Central, LLC
RF Film, Inc
Rhino Communications, Inc
Sam Houston Electric Cooperative Inc.
San Antonio MTA, L.P. (HGC Mkt)
SBB Holding, LLC
Seagoville, City of
Shadow Wireless
Silvers, Neal
Sky City Holdings, LLC
Skybeam Acquisition Corporation
SmartSky Microwave, LLC
SOS Communications LLC
South Central Tower Co
Southwest Texas Electric Cooperative

Southwestern Bell Telephone L.P.
Speedshotz, Inc
Sprint Spectrum LLC
Sprintcom, Inc
Spry Wireless Communications Inc.
Systemseven Services, LLC
Tarrant County College
Tarrant Regional Water District
Texas Data
Texas RSA 15B2 Limited Partnership
Texas RSA 6 Limited Partnership
Texas RSA 9B1 Limited Partnership
Texas State University - San Marcos
Texas, State of (DPS)
The Woodlands Fire Department
TierOne Converged Networks, Inc.
TMN, Inc.
T-Mobile License LLC
Totelcom Communications, LLC
Towerstream Corp.
Town of Highland Park, TX
Transworld Network Corp
Travis County Water District No 17
TTWN Networks, LLC
TX-10 Licensee Co., LLC
TXWI Net LLC
Unified Communications, Inc.
Union Pacific Railroad Company
Unisat, Inc.
United Telephone - Southeast
Uniti Fiber LLC
University of Texas At Austin
Verizon Maryland, Inc.
Verizon New England Inc.
Verizon New Jersey, Inc.
Verizon New York, Inc.
Verizon North Inc.
Verizon Northwest Inc.
Verizon Pennsylvania, Inc.
VERIZON SOUTH INC.
Verizon Virginia, Inc.
Verizon Washington DC, Inc.
Verizon Wireless (VAW) LLC - Texas
Verizon Wireless VAW LLC-TX/Houston GC
VGI Technology
Visicom Group, Inc.
VTX Communications LLC
VYVX, LLC
Waco WiFi LLC
West Cedar Creek Municipal Utility Dist
West Central Wireless LP
Westar Satellite Services LP
WesTex Towers
Williamson, County of
Winged Vision Inc
WireStar, Inc.

Wisconsin Bell Telephone Company
Wolfe Air Aviation
XTO Energy, Inc.
Zeecon Wireless Internet LLC
Zero2 Wireless

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: 05/12/2021
Job Number: 210512COMSGE11

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign:
Licensee Code: HARSAT
Licensee Name: Harte Satellite Consultants

Site Information

KILLEEN, TX

Venue Name:
Latitude (NAD 83): 31° 6' 33.5" N
Longitude (NAD 83): 97° 43' 15.6" W
Climate Zone: A
Rain Zone: 2
Ground Elevation (AMSL): 254.15 m / 833.8 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 25° W to 171° West Longitude
Azimuth Range: 99.1° to 261.2°
Corresponding Elevation Angles: 6.1° / 5.6°
Antenna Centerline (AGL): 1.49 m / 4.9 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer	TTI	TTI
Model	27E01-1000-A	27E01-1000-A
Gain / Diameter	30.1 dBi / 0.45 m	30.6 dBi / 0.45 m
3-dB / 15-dB Beamwidth	4.40° / 9.00°	3.9° / 7.6°
Max Available RF Power (dBW/4 kHz)	-20.1	-20.1
(dBW/MHz)	3.9	3.9
Maximum EIRP (dBW/4 kHz)	10.5	10.5
(dBW/MHz)	34.5	34.5
Interference Objectives:	Long Term	-156.0 dBW/MHz 20%
	Short Term	-146.0 dBW/MHz 0.01%
		-151.0 dBW/4 kHz 20%
		-128.0 dBW/4 kHz 0.0025%

Frequency Information

Receive 11.0 GHz

Transmit 13.0 GHz

Emission / Frequency Range (MHz)	25M0G7W / 10700.0 - 10950.0 25M0G7W / 11200.0 - 11450.0	7M00G7W / 12750.0 - 13250.0
Max Great Circle Coordination Distance	314.1 km / 195.2 mi	140.9 km / 87.6 mi
Precipitation Scatter Contour Radius	595.9 km / 370.2 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

KILLEEN, TX

Licensee Name	Harte Satellite Consultants				
Latitude (NAD 83)	31° 6' 33.5" N				
Longitude (NAD 83)	97° 43' 15.6" W				
Ground Elevation (AMSL)	254.15 m / 833.8 ft				
Antenna Centerline (AGL)	1.49 m / 4.9 ft				
Antenna Model	TTI 0.45 meter				
Antenna Mode	Receive 11.0 GHz		Transmit 13.0 GHz		
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz	20%	
Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz	0.0025%	
Max Available RF Power			-20.1 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.49	98.79	-10.00	205.26	-10.00	100.00
5	0.45	94.11	-10.00	208.94	-10.00	100.00
10	0.54	89.14	-10.00	204.89	-10.00	100.00
15	0.43	84.16	-10.00	210.36	-10.00	100.00
20	0.39	79.19	-10.00	214.09	-10.00	100.00
25	0.40	74.21	-10.00	212.78	-10.00	100.00
30	0.45	69.24	-10.00	208.82	-10.00	100.00
35	0.45	64.27	-10.00	208.36	-10.00	100.00
40	0.42	59.30	-10.00	211.44	-10.00	100.00
45	0.40	54.34	-10.00	212.44	-10.00	100.00
50	0.36	49.38	-10.00	216.19	-10.00	100.00
55	0.33	44.43	-9.19	222.78	-9.19	100.00
60	0.32	39.49	-7.91	229.22	-7.91	100.00
65	0.29	34.56	-6.46	238.28	-6.46	102.48
70	0.26	29.66	-4.80	249.11	-4.80	108.56
75	0.22	24.79	-2.86	263.80	-2.86	117.03
80	0.21	19.98	-0.52	277.42	-0.52	123.84
85	0.00	15.36	2.34	294.04	2.34	130.44
90	0.00	10.96	6.01	314.11	6.01	140.94
95	0.79	6.71	11.33	296.66	11.33	119.60
100	0.99	5.16	14.18	304.45	14.18	119.12
105	1.04	7.73	9.79	276.39	9.79	105.40
110	1.02	11.86	5.14	249.64	5.14	100.00
115	0.98	16.03	1.87	233.48	1.87	100.00
120	1.00	20.11	-0.59	220.59	-0.59	100.00
125	1.05	24.11	-2.55	210.48	-2.55	100.00
130	1.01	28.06	-4.20	204.43	-4.20	100.00
135	0.90	31.94	-5.61	203.30	-5.61	100.00
140	0.79	35.67	-6.81	203.20	-6.81	100.00
145	0.71	39.21	-7.84	203.21	-7.84	100.00
150	0.70	42.47	-8.70	202.37	-8.70	100.00
155	0.76	45.38	-9.42	196.36	-9.42	100.00
160	0.81	47.93	-10.00	191.51	-10.00	100.00
165	0.91	49.97	-10.00	186.22	-10.00	100.00
170	0.96	51.51	-10.00	183.71	-10.00	100.00
175	0.92	52.52	-10.00	186.05	-10.00	100.00
180	1.00	52.76	-10.00	181.62	-10.00	100.00
185	1.10	52.34	-10.00	178.28	-10.00	100.00

COMSEARCH

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Coordination Values

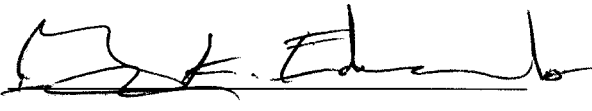
KILLEEN, TX

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Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz	20%	
Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz	0.0025%	
Max Available RF Power			-20.1 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	1.25	51.24	-10.00	173.30	-10.00	100.00
195	1.40	49.55	-10.00	168.24	-10.00	100.00
200	1.64	47.28	-9.87	158.13	-9.87	100.00
205	1.64	44.74	-9.27	161.28	-9.27	100.00
210	1.76	41.74	-8.51	161.15	-8.51	100.00
215	1.73	38.55	-7.65	169.54	-7.65	100.00
220	1.72	35.09	-6.63	175.05	-6.63	100.00
225	1.51	31.57	-5.48	187.26	-5.48	100.00
230	1.43	27.81	-4.11	195.84	-4.11	100.00
235	1.28	23.97	-2.49	204.36	-2.49	100.00
240	1.32	19.93	-0.49	211.96	-0.49	100.00
245	1.29	15.86	1.99	224.71	1.99	100.00
250	1.28	11.72	5.27	241.89	5.27	100.00
255	1.23	7.56	10.03	271.66	10.03	101.39
260	1.25	4.51	15.64	306.00	15.64	116.96
265	1.25	5.79	12.93	289.57	12.93	108.93
270	1.23	9.84	7.17	254.25	7.17	100.00
275	1.33	14.46	3.00	228.36	3.00	100.00
280	1.41	19.27	-0.12	211.33	-0.12	100.00
285	1.30	24.19	-2.59	203.58	-2.59	100.00
290	1.17	29.14	-4.61	200.71	-4.61	100.00
295	0.91	34.11	-6.32	202.25	-6.32	100.00
300	0.76	39.08	-7.80	203.39	-7.80	100.00
305	0.66	44.05	-9.10	202.50	-9.10	100.00
310	0.57	49.02	-10.00	203.61	-10.00	100.00
315	0.54	53.99	-10.00	204.97	-10.00	100.00
320	0.48	58.96	-10.00	206.40	-10.00	100.00
325	0.39	63.94	-10.00	213.80	-10.00	100.00
330	0.52	68.91	-10.00	203.27	-10.00	100.00
335	0.35	73.89	-10.00	216.96	-10.00	100.00
340	0.39	78.87	-10.00	213.37	-10.00	100.00
345	0.64	83.85	-10.00	200.05	-10.00	100.00
350	0.62	88.83	-10.00	201.30	-10.00	100.00
355	0.50	93.81	-10.00	204.37	-10.00	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: August 26, 2021