

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Space Exploration Holdings
MCGREGOR, TX
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
October 20, 2020

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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.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

AMA Communications, LLC
AMG Technology Investment Group LLC
Brazos Electric Power Cooperative Inc
Sprint Spectrum L.P.

No other carriers reported potential interference cases.

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 09/18/2020.

Company

3 Rooms Communications LLC
325 Internet, LLC
360 Communications, Inc.
903 Broadband
AC BidCO LLC
AMA Communications, LLC
AMG Technology Investment Group LLC
ANTS-Technology, Inc.
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
Abilene, City of
Access MLP Operating LLC
Air Canopy Internet Services, Inc.
Air Net, LLC
Alamo Broadband, Inc
Alltel Communications LLC - C TX/N LA/AR
Alpha Media Licensee LLC
American Tower, LLC
Anvil Communications, Inc.
Argon Technologies Inc.
Austin Energy
Austin, City of
BM Service Corp.
BNSF Railway Company
Bastrop County Information Technology
Baylor Scott and White Hospital - Llano
Bedford City of
Bee Creek Communications, Inc.
BelWave Communications
Brady Communications LLC
Brazos Electric Power Cooperative Inc
Broadwaves Communications
Business Only Broadband, LLC
CBTR Services, LLC
CEO Etc.
CT Cube, LP
Carrollton City of Texas/ACS
Cedar Park, City of

Celairo, LLC
CellTex Networks, LLC
Cellco Partnership - Texas
Cellco Partnership -Texas/Houston GC
Cellco Partnership-C TX/LA/AR
Centerpoint Energy Inc
Centex Web Access
Central Louisiana License Co, LLC
Central Texas Communications, Inc.
Choice Providers
Cingular Wireless of Texas RSA #16 LP
City Of San Antonio
City of Allen, Texas
City of Arlington
City of College Station
City of Corsicana
City of Dallas
City of Dallas
City of Denton Water Production Division
City of Frisco
City of Georgetown (Texas)
City of Grand Prairie
City of Houston
City of Irving
City of Lewisville
City of Marble Falls
City of Plano
City of Round Rock
City of Sugarland, Texas
City of Temple
City of University Park
City of Waco
Clearwire Spectrum Holdings III, LLC
Clearwire Spectrum Holdings 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
ConocoPhillips Communications Inc.
Conterra Ultra Broadband, LLC
Craion, Inc
Daisy Brand, Inc.
Dallas Fort Worth International Airport
Dallas MTA, L.P. - Central Texas
Denton Commercial Internet, Inc
Denton County
Devon Energy
Devon Energy Corporation
Devon Gas Services, L.P.
Digitex.com
EOG Resources Inc
ERF Wireless Bundled Services, Inc.
Echo Wireless Broadband, Inc.

Edu-Net, LLC
Electronic Corporate Pages, Inc.
EnLink Midstream Operating, LP
Encana Oil & Gas (USA) Inc.
Entercom License, LLC
Enterprise Products Operating, LLC
Express WISP LLC
FARJO Ranch
FDL Production, LLC
Faith Communications LLC
Falcon Internet
Farm to Market Broadband LP
Farmers Electric Cooperative Inc.
Fast Lane Internet, Inc
FiberLight LLC
First National Bank of Kemp
Fort Worth, City of
Fox Television Stations, LLC
GTE Mobilnet of South Texas LTD Partners
GTT Americas LLC
Garland, City of
Gigabit Communications LLC.
Global Telecom & Technology Americas
Graham Media Group, Houston, Inc
Grand Prairie, City of
Grande Communications Networks, Inc
Greasy Bend Ventures, Inc.
Greater Harris County 911 Emergency Net
Guadalupe Blanco River Authority
Guadalupe Valley Electric Coop., Inc.
HC Wireless, LLC
HILCO Electric Cooperative, Inc.
Harris County Emergency Svcs No. 9
Harris County ITC (TX)
Harris County Public ITC
Helmsco, Inc.
Henderson, County of (TX)
Heroes Computer Repair & Internet
Hill Country High Speed
Hill Country High Speed
Houston County Electric Cooperative
Integrated Roadway Services, Inc.
Invisalink Wireless Texas, LLC
James Bouse Enterprises, LLC
Jet Jet Internet
KHOU-TV, Inc.
KSBJ Educational Foundation, Inc.
Kaufman County Sheriff Department
Kerr County Sheriff
L3Harris Technologies, Inc
La Vernia Holdings, Inc.
Last Mile Networks
Legacy ISP, LLC
Legacy Texas Bank
Linux Internet, LLC
Lubbock SMSA Limited Partnership

MHO Networks
MP Networks, LLC
Marathon Oil Company
Mesquite, City of
Mica Corporation
Midlothian Independent School District
Midlothian, City of
Millenium Telcom LLC dba OneSource Com
Muenster Telephone Corporation of Texas
Nalcom Wireless Communications, Inc
Net1 Connect
New Cingular Wireless PCS LLC - N Texas
New Cingular Wireless PCS LLC - S Texas
New Source Broadband I LLC
Nextwave Tower LLC
Nextwave Wireless LLC
Nokia Siemens Networks, US LLC
North Central Texas Council of Govt
North Texas Emergency Comm Center
North Texas Public Broadcasting Inc.
Northeast Texas Consortium(NETnet)
Northwest Communications Inc.
Olympic Wireless, LLC
One Ring Networks, Inc.
Ovilla, City of TX
PathFinder LLC
Pathway Com-Tel
Pecan Internet
Plains Internet, LLC
Prosper, City of
Rayburn Country Electric Cooperative Inc
Razer Wireless
Red Oak, City of
Region 6 Education Service Center
Rhino Communications, Inc
Rockwall County Sheriff's Office
SBB Holding, LLC
SOS Communications LLC
Sam Houston Electric Cooperative Inc.
San Antonio MTA, L.P. (HGC Mkt)
San Antonio Water System
Seagoville, City of
Sense Broadband , LLC
Shadow Wireless
SignalNet Inc.
SiimpleFiber
Silvers, Neal
Sky City Holdings, LLC
SkyWave Broadband Internet, LLC
Skybeam Acquisition Corporation
Skynet Communications (Houston)
Skynet Country, LLC
SmartBurst LLC
SmartSky Microwave, LLC
South Central Tower Co
Speed of Light Broadband

Sprint Spectrum L.P.
Sprintcom, Inc
Spry Wireless Inc.
Systemseven Services, LLC
T-Mobile License LLC
TGM Pinnacle Network Solutions LLC
TM Concepts LLC
TMN, Inc.
TX-10 Licensee Co., LLC
TXWI Net LLC
Targa Midstream Services LLC
Tarrant County College
Tarrant Regional Water District
Texas CellNet, Inc.
Texas Data
Texas New Mexico Power Company
Texas RSA 15B2 Limited Partnership
Texas RSA 20B1 LTD Partnership
Texas RSA 6 Limited Partnership
Texas RSA 7B1 Limited Partnership
Texas RSA 7B3 LP
Texas RSA 9B1 Limited Partnership
Texas State University - San Marcos
Texoma Communications, LLC
The Woodlands Fire Department
TierOne Converged Networks, Inc.
Totelcom Communications, LLC
Towerstream Corp.
Town of Highland Park, TX
Transcontinental Gas Pipe Line Co., LLC
Transworld Network Corp
Travis County Water District No 17
USFon, Inc.
Unified Communications, Inc.
Union Pacific Railroad Company
Uniti Fiber LLC
University of Texas At Austin
Univision Radio Stations Group, Inc.
Upper Trinity Regional Water District
VGI Technology
VTX Communications LLC
Verizon Wireless (VAW) LLC - Texas
Verizon Wireless VAW LLC-TX/Houston GC
Verona Networks LLC
Waco WiFi LLC
WesTex Towers
West Cedar Creek Municipal Utility Dist
West Central Wireless LP
Wharton County Electric Cooperative, Inc
Williamson, County of
WireStar, Inc.
Wise Electric Cooperative
Wood County Electric Cooperative, Inc.
Worldcall Interconnect Inc.
XO Communications, LLC
XTO Energy, Inc.

Zeecon Wireless Internet 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: 10/20/2020
Job Number: 200918COMSGE06

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code SPACEX
Licensee Name Space Exploration Holdings

Site Information MCGREGOR, TX

Venue Name
Latitude (NAD 83) 31° 24' 17.7" N
Longitude (NAD 83) 97° 26' 17.3" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 237.79 m / 780.1 ft

Link Information

Satellite Type Low Earth Orbit
Mode TR - Transmit-Receive
Modulation Digital
Minimum Elevation Angle 25.0°
Azimuth Range 0.0° to 360°
Antenna Centerline (AGL) 0.91 m / 3.0 ft

Antenna Information

	Receive - FCC32	Transmit - FCC32
Manufacturer	Cobham	Cobham
Model	MK3 series	MK3 series
Gain / Diameter	39.3 dBi / 1.0 m	40.1 dBi / 1.0 m
3-dB / 15-dB Beamwidth	1.50° / 3.40°	1.20° / 2.80°
Max Available RF Power (dBW/4 kHz)		-1.2
(dBW/MHz)		22.8
Maximum EIRP (dBW/4 kHz)		38.9
(dBW/MHz)		62.9
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%

Frequency Information

	Receive 11.0 GHz	Transmit 14.0 GHz
Emission / Frequency Range (MHz)	240MD7W / 10700.0 - 12700.0	62M5D7W - 240MD7W / 14000.0 - 14500.0
Max Great Circle Coordination Distance	265.5 km / 165.0 mi	202.3 km / 125.7 mi
Precipitation Scatter Contour Radius	487.7 km / 303.0 mi	137.9 km / 85.7 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

MCGREGOR, TX

Licensee Name Space Exploration Holdings
Latitude (NAD 83) 31° 24' 17.7" N
Longitude (NAD 83) 97° 26' 17.3" W
Ground Elevation (AMSL) 237.79 m / 780.1 ft
Antenna Centerline (AGL) 0.91 m / 3.0 ft
Antenna Model Cobham 1 meter
Antenna Mode Receive 11.0 GHz Transmit 14.0 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 -1.2 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	86.24	-5.50	265.50	-5.50	202.30
5	0.00	81.41	-5.50	265.50	-5.50	202.30
10	0.00	76.58	-5.50	265.50	-5.50	202.30
15	0.00	71.76	-5.50	265.50	-5.50	202.30
20	0.00	66.94	-5.50	265.50	-5.50	202.30
25	0.00	62.15	-5.50	265.50	-5.50	202.30
30	0.00	57.37	-5.50	265.50	-5.50	202.30
35	0.00	52.62	-5.50	265.50	-5.50	202.30
40	0.00	47.90	-5.50	265.50	-5.50	202.30
45	0.00	43.23	-5.50	265.50	-5.50	202.30
50	0.00	38.63	-5.50	265.50	-5.50	202.30
55	0.00	34.11	-5.50	265.50	-5.50	202.30
60	0.00	29.73	-5.50	265.50	-5.50	202.30
65	0.00	25.56	-5.50	265.50	-5.50	202.30
70	0.00	21.71	-5.50	265.50	-5.50	202.30
75	0.00	18.39	-5.50	265.50	-5.50	202.30
80	0.00	15.94	-5.50	265.50	-5.50	202.30
85	0.00	14.79	-5.50	265.50	-5.50	202.30
90	0.00	15.25	-5.50	265.50	-5.50	202.30
95	0.00	17.17	-5.50	265.50	-5.50	202.30
100	0.00	20.16	-5.50	265.50	-5.50	202.30
105	0.00	23.80	-5.50	265.50	-5.50	202.30
110	0.00	27.85	-5.50	265.50	-5.50	202.30
115	0.00	32.15	-5.50	265.50	-5.50	202.30
120	0.00	36.61	-5.50	265.50	-5.50	202.30
125	0.00	41.18	-5.50	265.50	-5.50	202.30
130	0.00	45.82	-5.50	265.50	-5.50	202.30
135	0.00	50.52	-5.50	265.50	-5.50	202.30
140	0.00	55.26	-5.50	265.50	-5.50	202.30
145	0.21	60.06	-5.50	265.50	-5.50	202.30
150	0.00	64.81	-5.50	265.50	-5.50	202.30
155	0.00	69.62	-5.50	265.50	-5.50	202.30
160	0.00	74.43	-5.50	265.50	-5.50	202.30
165	0.00	79.26	-5.50	265.50	-5.50	202.30
170	0.00	84.09	-5.50	265.50	-5.50	202.30
175	0.00	88.93	-5.50	265.50	-5.50	202.30
180	0.00	93.76	-5.50	265.50	-5.50	202.30
185	0.00	98.59	-5.50	265.50	-5.50	202.30

COMSEARCH

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Coordination Values

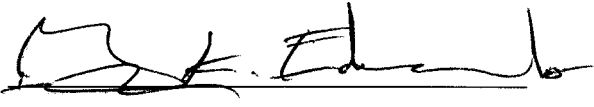
MCGREGOR, TX

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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 -1.2 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	103.42	-5.50	265.50	-5.50	202.30
195	0.00	108.24	-5.50	265.50	-5.50	202.30
200	0.00	113.06	-5.50	265.50	-5.50	202.30
205	0.00	117.85	-5.50	265.50	-5.50	202.30
210	0.00	122.63	-5.50	265.50	-5.50	202.30
215	0.23	127.33	-5.50	265.50	-5.50	202.30
220	0.26	132.04	-5.50	265.50	-5.50	202.30
225	0.29	136.69	-5.50	265.50	-5.50	202.30
230	0.33	141.26	-5.50	265.50	-5.50	202.30
235	0.36	145.75	-5.50	265.50	-5.50	202.30
240	0.37	150.09	-5.50	265.50	-5.50	202.30
245	0.35	154.24	-5.50	265.50	-5.50	202.30
250	0.33	158.07	-5.50	265.50	-5.50	202.30
255	0.33	161.34	-5.50	265.50	-5.50	202.30
260	0.31	163.77	-5.50	265.50	-5.50	202.30
265	0.29	164.91	-5.50	265.50	-5.50	202.30
270	0.26	164.50	-5.50	265.50	-5.50	202.30
275	0.24	162.62	-5.50	265.50	-5.50	202.30
280	0.22	159.68	-5.50	265.50	-5.50	202.30
285	0.21	156.08	-5.50	265.50	-5.50	202.30
290	0.00	152.15	-5.50	265.50	-5.50	202.30
295	0.00	147.85	-5.50	265.50	-5.50	202.30
300	0.00	143.39	-5.50	265.50	-5.50	202.30
305	0.00	138.82	-5.50	265.50	-5.50	202.30
310	0.00	134.18	-5.50	265.50	-5.50	202.30
315	0.00	129.48	-5.50	265.50	-5.50	202.30
320	0.00	124.74	-5.50	265.50	-5.50	202.30
325	0.00	119.98	-5.50	265.50	-5.50	202.30
330	0.00	115.19	-5.50	265.50	-5.50	202.30
335	0.00	110.38	-5.50	265.50	-5.50	202.30
340	0.00	105.57	-5.50	265.50	-5.50	202.30
345	0.00	100.74	-5.50	265.50	-5.50	202.30
350	0.00	95.91	-5.50	265.50	-5.50	202.30
355	0.00	91.07	-5.50	265.50	-5.50	202.30

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: October 20, 2020