

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
SES Americom, Inc.
HAWLEY, PA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
March 02, 2017

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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 02/16/2017.

Company

256Q Networks
AB Services LLC
ALGONQUIN GAS TRANSMISSION, LLC
AT&T Wireless Services 3 LLC - PA
AWC Networks
Allentown SMSA Limited Partnership
Auburn Data Systems, LLC
BRADFORD COUNTY
Binghamton MSA Limited Partnership(NY)
Binghamton MSA Limited Partnership(PA)
Blueline Communications
Broome County Emergency Services
CONSOLIDATED EDISON COMPANY OF NEW YORK
Carbon, County of 911 Center
Cellco Partnership - (W-NY)
Central Hudson Gas & Electric Corp.
China Cat Productions LLC
Commonwealth of Pennsylvania-Radio Proj.
Conterra Ultra Broadband, LLC
Coralinks
County of Pike
County of Warren, NJ
DSRC
Delaware County Emergency Services Dept
Dutchess County Emergency Response
ECW Wireless, LLC
EMS OF NORTHEAST PENNSYLVANIA
Eastern MLG LLC
Eastern Pennsylvania EMS Council
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
FELHC, INC
Goosetown Network Services, LLC
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Jefferson Microwave, LLC
Kryptick Technologies
Lackawanna, County of
Luzerne County 9-1-1
Mifflin Mobilecom

Monroe County Control Center (PA)
Morris, County of
NYNEX Mobile of New York LP
National Tower Company LLC
New Cingular Wireless PCS, LLC - PA
New Jersey State Police
New Jersey, State of -NJ Transit
New Line Networks, LLC
New York Communications Co., Inc
Northeast Pennsylvania SMSA LTD Prtnrsh
Northumberland County DPS/911
Orange County Dept of Emergency Services
Orange Poughkeepsie SMSA LTD Partnership
Orange and Rockland Utilities, Inc.
Pennsylvania Turnpike Commission
Pitt Power
Rendezvous Communications LLC
SCS Networks
SW Networks
State of New York, Div of State Police
Sullivan County DPW
Texas Eastern Communications, LLC
Transwave Communication Systems, Inc.
ULSTER COUNTY OF
Uniti Fiber PEG, LLC
Verizon Wireless (VAW) LLC (NY)
Verizon Wireless (VAW) LLC-Pennsylvania
WYOMING, COUNTY OF
Weblin Holdings LLC
Wireless Internetwork LLC
World Class Wireless, LLC
xWave Engineering 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: 03/02/2017
Job Number: 170216COMSGE01

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign:
Licensee Code: P3210
Licensee Name: SES Americom, Inc.

Site Information

HAWLEY, PA

Venue Name:
Latitude (NAD 83): 41° 27' 49.8" N
Longitude (NAD 83): 75° 7' 51.3" W
Climate Zone: A
Rain Zone: 2
Ground Elevation (AMSL): 275.14 m / 902.7 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 15° W to 142° West Longitude
Azimuth Range: 110.8° to 254.2°
Corresponding Elevation Angles: 13.5° / 8.5°
Antenna Centerline (AGL): 5.49 m / 18.0 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer: ASC Signal
Model: 9.3 meter
Gain / Diameter: 50.4 dBi / 9.3 m
3-dB / 15-dB Beamwidth: 0.52° / 1.00°

ASC Signal
9.3 meter
53.7 dBi / 9.3 m
0.30° / 0.60°

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

-14.1
9.9

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

39.6
63.6

Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

-154.0 dBW/4 kHz 20%
-131.0 dBW/4 kHz 0.0025%

Frequency Information

Receive 4.0 GHz

Transmit 6.1 GHz

Emission / Frequency Range (MHz) 6M00G7W, 36M0G7W, 52M0G7W / 3700.0 - 4200.0

6M00G7W, 36M0G7W, 52M0G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance: 498.9 km / 310.0 mi
Precipitation Scatter Contour Radius: 558.0 km / 346.7 mi

186.7 km / 116.0 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

HAWLEY, PA

Licensee Name SES Americom, Inc.
Latitude (NAD 83) 41° 27' 49.8" N
Longitude (NAD 83) 75° 7' 51.3" W
Ground Elevation (AMSL) 275.14 m / 902.7 ft
Antenna Centerline (AGL) 5.49 m / 18.0 ft
Antenna Model ASC Signal 9.3 meter
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -14.1 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	6.61	105.79	-10.00	118.59	-10.00	100.00
5	5.53	105.67	-10.00	129.68	-10.00	100.00
10	4.52	100.69	-10.00	140.07	-10.00	100.00
15	3.03	95.73	-10.00	170.80	-10.00	100.00
20	2.36	90.81	-10.00	186.40	-10.00	100.00
25	3.01	85.89	-10.00	171.17	-10.00	100.00
30	2.62	80.99	-10.00	180.19	-10.00	100.00
35	2.68	76.08	-10.00	178.84	-10.00	100.00
40	2.50	71.19	-10.00	183.18	-10.00	100.00
45	1.87	66.35	-10.00	198.09	-10.00	100.00
50	1.96	61.46	-10.00	195.60	-10.00	100.00
55	2.40	56.54	-10.00	185.38	-10.00	100.00
60	2.39	51.69	-10.00	185.60	-10.00	100.00
65	2.29	46.87	-9.77	188.95	-9.77	100.00
70	1.75	42.18	-8.63	205.14	-8.63	100.00
75	1.43	37.53	-7.36	220.46	-7.36	100.00
80	1.15	32.96	-5.95	237.23	-5.95	100.00
85	1.56	28.26	-4.28	233.37	-4.28	100.00
90	2.29	23.51	-2.28	223.65	-2.28	100.00
95	2.41	19.21	-0.09	233.70	-0.09	100.00
100	2.12	15.62	2.16	256.79	2.16	100.00
105	1.97	12.86	4.27	276.86	4.27	101.62
110	2.30	11.18	5.78	278.72	5.78	100.00
115	3.13	11.13	5.84	255.72	5.84	100.00
120	3.33	13.63	3.63	234.84	3.63	100.00
125	4.18	16.37	1.65	205.12	1.65	100.00
130	4.50	19.35	-0.17	192.67	-0.17	100.00
135	4.56	22.37	-1.74	183.14	-1.74	100.00
140	4.95	24.94	-2.92	170.05	-2.92	100.00
145	4.47	28.00	-4.18	171.31	-4.18	100.00
150	3.24	31.47	-5.45	189.22	-5.45	100.00
155	2.69	34.12	-6.32	196.82	-6.32	100.00
160	2.58	36.06	-6.93	196.15	-6.93	100.00
165	2.90	37.25	-7.28	187.55	-7.28	100.00
170	2.84	38.38	-7.60	187.24	-7.60	100.00
175	2.76	39.11	-7.81	187.97	-7.81	100.00
180	2.23	39.86	-8.01	198.58	-8.01	100.00
185	2.13	39.74	-7.98	200.93	-7.98	100.00

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(703)726-5500 <http://www.comsearch.com>

Coordination Values

HAWLEY, PA

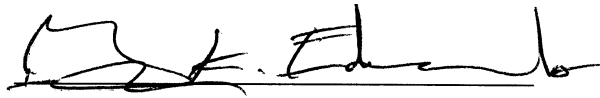
Licensee Name	SES Americom, Inc.				
Latitude (NAD 83)	41° 27' 49.8" N				
Longitude (NAD 83)	75° 7' 51.3" W				
Ground Elevation (AMSL)	275.14 m / 902.7 ft				
Antenna Centerline (AGL)	5.49 m / 18.0 ft				
Antenna Model	ASC Signal 9.3 meter				
Antenna Mode	Receive 4.0 GHz				
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	Transmit 6.1 GHz	-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%		-131.0 dBW/4 kHz	0.0025%
Max Available RF Power	-14.1 (dBW/4 kHz)				

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	3.43	37.80	-7.44	174.73	-7.44	100.00
195	4.50	35.72	-6.82	154.95	-6.82	100.00
200	5.00	33.83	-6.23	150.01	-6.23	100.00
205	4.89	32.16	-5.68	154.51	-5.68	100.00
210	4.38	30.49	-5.10	166.00	-5.10	100.00
215	4.48	27.99	-4.17	171.15	-4.17	100.00
220	4.62	25.21	-3.04	175.04	-3.04	100.00
225	4.68	22.28	-1.70	181.36	-1.70	100.00
230	5.01	18.97	0.05	185.84	0.05	100.00
235	5.78	15.18	2.47	190.50	2.47	100.00
240	6.55	11.29	5.68	199.45	5.68	100.00
245	7.13	7.47	10.17	216.44	10.17	100.00
250	7.55	3.67	17.87	266.96	17.87	100.00
255	8.12	0.89	33.25	498.91	33.25	186.66
260	8.68	5.80	12.92	214.76	12.92	100.00
265	9.18	10.82	6.15	170.83	6.15	100.00
270	10.19	15.88	1.98	135.24	1.98	100.00
275	10.90	20.93	-1.02	117.73	-1.02	100.00
280	11.37	25.94	-3.35	104.37	-3.35	100.00
285	11.86	30.96	-5.27	100.00	-5.27	100.00
290	12.31	35.97	-6.90	100.00	-6.90	100.00
295	12.81	40.98	-8.31	100.00	-8.31	100.00
300	13.25	45.99	-9.57	100.00	-9.57	100.00
305	13.30	50.96	-10.00	100.00	-10.00	100.00
310	13.21	55.93	-10.00	100.00	-10.00	100.00
315	12.80	60.89	-10.00	100.00	-10.00	100.00
320	12.78	65.87	-10.00	100.00	-10.00	100.00
325	12.11	70.84	-10.00	100.00	-10.00	100.00
330	12.22	75.83	-10.00	100.00	-10.00	100.00
335	11.77	80.81	-10.00	100.00	-10.00	100.00
340	11.38	85.80	-10.00	100.00	-10.00	100.00
345	10.06	90.80	-10.00	100.00	-10.00	100.00
350	9.33	95.80	-10.00	100.00	-10.00	100.00
355	8.07	100.80	-10.00	103.14	-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: March 02, 2017

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Cellco Partnership - (W-NY)
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Commonwealth of Pennsylvania-Radio Proj.
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ECW Wireless, LLC
EMS OF NORTHEAST PENNSYLVANIA
Eastern MLG LLC
Eastern Pennsylvania EMS Council
Electric Railroad, LLC
Essex County Sheriff's Office (NJ)
FELHC, INC
Goosetown Network Services, LLC
High Voltage Communications LLC (CFN)
Highway Networks, LLC
Jefferson Microwave, LLC
Kryptick Technologies
Lackawanna, County of
Luzerne County 9-1-1
Mifflin Mobilecom

Monroe County Control Center (PA)
Morris, County of
NYNEX Mobile of New York LP
National Tower Company LLC
New Cingular Wireless PCS, LLC - PA
New Jersey State Police
New Jersey, State of -NJ Transit
New Line Networks, LLC
New York Communications Co., Inc
Northeast Pennsylvania SMSA LTD Prtnrsh
Northumberland County DPS/911
Orange County Dept of Emergency Services
Orange Poughkeepsie SMSA LTD Partnership
Orange and Rockland Utilities, Inc.
Pennsylvania Turnpike Commission
Pitt Power
Rendezvous Communications LLC
SCS Networks
SW Networks
State of New York, Div of State Police
Sullivan County DPW
Texas Eastern Communications, LLC
Transwave Communication Systems, Inc.
ULSTER COUNTY OF
Uniti Fiber PEG, LLC
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xWave Engineering LLC

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COMSEARCH

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

Date: 03/02/2017
Job Number: 170216COMSGE02

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign:
Licensee Code: P3210
Licensee Name: SES Americom, Inc.

Site Information

HAWLEY, PA

Venue Name:
Latitude (NAD 83): 41° 27' 49.8" N
Longitude (NAD 83): 75° 7' 51.3" W
Climate Zone: A
Rain Zone: 2
Ground Elevation (AMSL): 275.14 m / 902.7 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 15° W to 142° West Longitude
Azimuth Range: 110.8° to 254.2°
Corresponding Elevation Angles: 13.5° / 8.5°
Antenna Centerline (AGL): 3.05 m / 10.0 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer: GD Satcom
Model: 9.3 meter
Gain / Diameter: 50.7 dBi / 9.3 m
3-dB / 15-dB Beamwidth: 0.52° / 1.00°

GD Satcom
9.3 meter
54.1 dBi / 9.3 m
0.30° / 0.60°

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

-14.1
9.9

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

40.0
64.0

Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

-154.0 dBW/4 kHz 20%
-131.0 dBW/4 kHz 0.0025%

Frequency Information

Receive 4.0 GHz

Transmit 6.1 GHz

Emission / Frequency Range (MHz) 6M00G7W, 36M0G7W, 52M0G7W / 3700.0 - 4200.0

6M00G7W, 36M0G7W, 52M0G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance: 504.5 km / 313.4 mi
Precipitation Scatter Contour Radius: 558.0 km / 346.7 mi

189.2 km / 117.6 mi
100.0 km / 62.1 mi

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HAWLEY, PA

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Ground Elevation (AMSL) 275.14 m / 902.7 ft
Antenna Centerline (AGL) 3.05 m / 10.0 ft
Antenna Model GD Satcom 9.3 meter
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -14.1 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	7.09	105.79	-10.00	113.34	-10.00	100.00
5	6.02	105.69	-10.00	124.96	-10.00	100.00
10	5.02	100.70	-10.00	134.70	-10.00	100.00
15	3.52	95.74	-10.00	157.82	-10.00	100.00
20	2.67	90.81	-10.00	179.12	-10.00	100.00
25	3.08	85.89	-10.00	169.63	-10.00	100.00
30	2.68	80.99	-10.00	178.85	-10.00	100.00
35	2.74	76.08	-10.00	177.49	-10.00	100.00
40	2.56	71.18	-10.00	181.75	-10.00	100.00
45	1.93	66.34	-10.00	196.52	-10.00	100.00
50	2.04	61.45	-10.00	193.49	-10.00	100.00
55	2.49	56.53	-10.00	183.31	-10.00	100.00
60	2.48	51.67	-10.00	183.54	-10.00	100.00
65	2.38	46.85	-9.77	186.91	-9.77	100.00
70	1.85	42.16	-8.62	204.94	-8.62	100.00
75	1.53	37.50	-7.35	217.51	-7.35	100.00
80	1.21	32.94	-5.94	235.26	-5.94	100.00
85	1.61	28.24	-4.27	231.63	-4.27	100.00
90	2.35	23.48	-2.27	222.38	-2.27	100.00
95	2.47	19.18	-0.07	232.33	-0.07	100.00
100	2.18	15.58	2.19	255.25	2.19	100.00
105	2.04	12.80	4.32	275.20	4.32	100.41
110	2.37	11.12	5.85	277.27	5.85	100.00
115	3.20	11.07	5.90	254.41	5.90	100.00
120	3.41	13.58	3.68	233.29	3.68	100.00
125	4.26	16.31	1.69	206.46	1.69	100.00
130	4.59	19.28	-0.13	191.45	-0.13	100.00
135	4.65	22.30	-1.71	181.84	-1.71	100.00
140	5.05	24.86	-2.89	168.77	-2.89	100.00
145	4.57	27.91	-4.15	169.77	-4.15	100.00
150	3.31	31.41	-5.43	187.82	-5.43	100.00
155	2.74	34.07	-6.31	195.77	-6.31	100.00
160	2.63	36.02	-6.91	195.09	-6.91	100.00
165	2.95	37.20	-7.26	186.47	-7.26	100.00
170	2.89	38.33	-7.59	186.16	-7.59	100.00
175	2.81	39.07	-7.79	186.93	-7.79	100.00
180	2.28	39.81	-8.00	197.56	-8.00	100.00
185	2.16	39.71	-7.97	200.40	-7.97	100.00

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Coordination Values

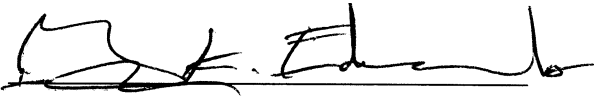
HAWLEY, PA

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Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -14.1 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	3.54	37.69	-7.41	172.42	-7.41	100.00
195	4.61	35.62	-6.79	153.35	-6.79	100.00
200	5.11	33.73	-6.20	148.92	-6.20	100.00
205	5.00	32.06	-5.65	152.95	-5.65	100.00
210	4.47	30.41	-5.08	164.59	-5.08	100.00
215	4.57	27.92	-4.15	169.75	-4.15	100.00
220	4.72	25.13	-3.00	173.56	-3.00	100.00
225	4.78	22.20	-1.66	179.94	-1.66	100.00
230	5.20	18.82	0.14	183.95	0.14	100.00
235	6.09	14.95	2.64	187.74	2.64	100.00
240	6.88	11.05	5.91	196.73	5.91	100.00
245	7.38	7.29	10.43	214.84	10.43	100.00
250	7.79	3.52	18.34	267.05	18.34	100.00
255	8.44	0.80	34.43	504.49	34.43	189.25
260	9.00	5.82	12.88	211.15	12.88	100.00
265	9.50	10.84	6.12	165.34	6.12	100.00
270	10.51	15.92	1.95	134.16	1.95	100.00
275	11.22	20.96	-1.04	115.47	-1.04	100.00
280	11.68	25.98	-3.36	102.16	-3.36	100.00
285	12.33	31.01	-5.29	100.00	-5.29	100.00
290	12.78	36.01	-6.91	100.00	-6.91	100.00
295	13.28	41.02	-8.33	100.00	-8.33	100.00
300	13.72	46.03	-9.57	100.00	-9.57	100.00
305	13.77	50.99	-10.00	100.00	-10.00	100.00
310	13.68	55.95	-10.00	100.00	-10.00	100.00
315	13.27	60.91	-10.00	100.00	-10.00	100.00
320	13.25	65.88	-10.00	100.00	-10.00	100.00
325	12.58	70.85	-10.00	100.00	-10.00	100.00
330	12.69	75.83	-10.00	100.00	-10.00	100.00
335	12.24	80.82	-10.00	100.00	-10.00	100.00
340	11.85	85.80	-10.00	100.00	-10.00	100.00
345	10.54	90.80	-10.00	100.00	-10.00	100.00
350	9.81	95.79	-10.00	100.00	-10.00	100.00
355	8.56	100.80	-10.00	100.00	-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: March 02, 2017