

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Comcast of Panama City, Inc
PANAMA CITY, FL
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
June 20, 2018

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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

No great circle interference cases were identified during the interference study of the proposed earth station.

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 06/19/2018.

<u>Company</u>
Comsearch

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: 06/20/2018
Job Number: 180619COMSGE125

Administrative Information

Status ENGINEER PROPOSAL
Call Sign WE71
Licensee Code COMPAN
Licensee Name Comcast of Panama City, Inc

Site Information

PANAMA CITY, FL

Venue Name
Latitude (NAD 83) 30° 13' 49.5" N
Longitude (NAD 83) 85° 38' 46.6" W
Climate Zone B
Rain Zone 1
Ground Elevation (AMSL) 5.3 m / 17.4 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 135° West Longitude
Azimuth Range 150.9° to 246.6°
Corresponding Elevation Angles 50.8° / 26.5°
Antenna Centerline (AGL) 3.96 m / 13.0 ft

Antenna Information

Receive - S40361

Manufacturer SCIENTIFIC-ATLANTA, INC
Model 8006E/8012
Gain / Diameter 40.5 dBi / 3.6 m
3-dB / 15-dB Beamwidth 1.40° / 2.00°

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

Frequency Information

Receive 4.0 GHz

Emission / Frequency Range (MHz) 36M0G7W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 549.7 km / 341.5 mi
Precipitation Scatter Contour Radius 566.1 km / 351.7 mi

COMSEARCH

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Coordination Values

PANAMA CITY, FL

Licensee Name Comcast of Panama City, Inc
Latitude (NAD 83) 30° 13' 49.5" N
Longitude (NAD 83) 85° 38' 46.6" W
Ground Elevation (AMSL) 5.3 m / 17.4 ft
Antenna Centerline (AGL) 3.96 m / 13.0 ft
Antenna Model SCIENTIFIC-ATLANTA, INC 8006E/8012
Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	110.81	-12.66	380.62
5	0.00	115.18	-13.57	370.46
10	0.00	119.36	-15.25	352.66
15	0.00	116.99	-14.29	362.64
20	0.00	114.44	-13.39	372.48
25	0.00	111.75	-12.85	378.48
30	0.00	108.94	-12.08	387.32
35	0.00	106.03	-10.91	401.07
40	0.00	103.03	-9.71	415.77
45	0.00	99.98	-8.50	431.31
50	0.00	96.87	-7.87	439.46
55	0.00	93.73	-7.25	447.86
60	0.00	90.58	-6.62	456.46
65	0.00	87.42	-5.98	464.59
70	0.00	84.28	-5.50	471.43
75	0.00	81.16	-5.50	471.43
80	0.00	78.08	-5.50	471.43
85	0.00	75.06	-5.50	471.43
90	0.00	72.12	-5.50	471.43
95	0.00	69.27	-5.50	471.43
100	0.00	66.53	-5.50	471.43
105	0.00	63.93	-5.50	471.43
110	0.00	61.49	-5.50	471.43
115	0.00	59.23	-5.50	471.43
120	0.00	57.18	-5.50	471.43
125	0.00	55.38	-5.50	471.43
130	0.00	53.84	-5.50	471.43
135	0.00	52.59	-5.50	471.43
140	0.00	51.66	-5.50	471.43
145	0.00	51.07	-5.50	471.43
150	0.00	50.83	-5.50	471.43
155	0.00	50.94	-5.50	471.43
160	0.00	51.41	-5.50	471.43
165	0.00	52.21	-5.50	471.43
170	0.00	53.34	-5.50	471.43
175	0.00	54.40	-5.50	471.43
180	0.00	54.77	-5.50	471.43
185	0.00	54.40	-5.50	471.43

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Earth Station Data Sheet

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

Coordination Values

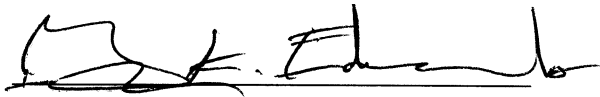
PANAMA CITY, FL

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Longitude (NAD 83) 85° 38' 46.6" W
Ground Elevation (AMSL) 5.3 m / 17.4 ft
Antenna Centerline (AGL) 3.96 m / 13.0 ft
Antenna Model SCIENTIFIC-ATLANTA, INC 8006E/8012
Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	53.34	-5.50	471.43
195	0.00	51.64	-5.50	471.43
200	0.00	49.40	-5.38	473.15
205	0.00	46.70	-4.84	480.91
210	0.00	43.65	-4.50	485.88
215	0.00	40.31	-4.50	485.88
220	0.00	36.84	-4.50	485.88
225	0.00	33.68	-3.97	493.71
230	0.00	30.93	-2.87	510.35
235	0.00	28.74	-1.74	528.04
240	0.00	27.23	-0.84	542.66
245	0.00	26.52	-0.41	549.68
250	0.00	26.67	-0.50	548.16
255	0.00	27.67	-1.10	538.32
260	0.00	29.44	-2.16	521.40
265	0.00	31.84	-3.24	504.78
270	0.00	34.75	-4.40	487.37
275	0.00	38.04	-4.50	485.88
280	0.00	41.62	-4.50	485.88
285	0.00	45.43	-4.59	484.61
290	0.00	49.41	-5.38	473.11
295	0.00	53.52	-5.50	471.43
300	0.00	57.72	-5.50	471.43
305	0.00	62.01	-5.50	471.43
310	0.00	66.35	-5.50	471.43
315	0.00	70.74	-5.50	471.43
320	0.00	75.16	-5.50	471.43
325	0.00	79.61	-5.50	471.43
330	0.00	84.07	-5.50	471.43
335	0.00	88.55	-6.21	462.07
340	0.00	93.02	-7.10	449.78
345	0.00	97.49	-8.00	437.81
350	0.00	101.95	-9.28	421.21
355	0.00	106.39	-11.06	399.31

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: June 20, 2018

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Earth Station Data Sheet

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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

No great circle interference cases were identified during the interference study of the proposed earth station.

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3. SUPPLEMENTAL SHOWING

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Coordination data for this earth station was sent to the below listed carriers with a letter dated 06/19/2018.

Company
Comsearch

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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.

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Earth Station Data Sheet

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

Date: 06/20/2018
Job Number: 180619COMSGE127

Administrative Information

Status ENGINEER PROPOSAL
Call Sign WE71
Licensee Code COMPAN
Licensee Name Comcast of Panama City, Inc

Site Information

PANAMA CITY, FL

Venue Name
Latitude (NAD 83) 30° 13' 49.5" N
Longitude (NAD 83) 85° 38' 46.6" W
Climate Zone B
Rain Zone 1
Ground Elevation (AMSL) 5.3 m / 17.4 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 135° West Longitude
Azimuth Range 150.9° to 246.6°
Corresponding Elevation Angles 50.8° / 26.5°
Antenna Centerline (AGL) 3.96 m / 13.0 ft

Antenna Information

Receive - S40362

Manufacturer SCIENTIFIC-ATLANTA, INC
Model 4 meter
Gain / Diameter 41.8 dBi / 4.0 m
3-dB / 15-dB Beamwidth 1.40° / 3.00°

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

Frequency Information

Receive 4.0 GHz

Emission / Frequency Range (MHz) 36M0G7W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 496.2 km / 308.3 mi
Precipitation Scatter Contour Radius 566.1 km / 351.7 mi

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Antenna Model SCIENTIFIC-ATLANTA 4 meter
Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	110.81	-10.20	409.73
5	0.00	115.18	-10.20	409.73
10	0.00	119.36	-10.20	409.73
15	0.00	116.99	-10.20	409.73
20	0.00	114.44	-10.20	409.73
25	0.00	111.75	-10.20	409.73
30	0.00	108.94	-10.20	409.73
35	0.00	106.03	-10.20	409.73
40	0.00	103.03	-10.20	409.73
45	0.00	99.98	-10.20	409.73
50	0.00	96.87	-10.20	409.73
55	0.00	93.73	-10.20	409.73
60	0.00	90.58	-10.20	409.73
65	0.00	87.42	-10.20	409.73
70	0.00	84.28	-10.20	409.73
75	0.00	81.16	-10.20	409.73
80	0.00	78.08	-10.20	409.73
85	0.00	75.06	-10.20	409.73
90	0.00	72.12	-10.20	409.73
95	0.00	69.27	-10.20	409.73
100	0.00	66.53	-10.20	409.73
105	0.00	63.93	-10.20	409.73
110	0.00	61.49	-10.20	409.73
115	0.00	59.23	-10.20	409.73
120	0.00	57.18	-10.20	409.73
125	0.00	55.38	-10.20	409.73
130	0.00	53.84	-10.20	409.73
135	0.00	52.59	-10.20	409.73
140	0.00	51.66	-10.20	409.73
145	0.00	51.07	-10.20	409.73
150	0.00	50.83	-10.20	409.73
155	0.00	50.94	-10.20	409.73
160	0.00	51.41	-10.20	409.73
165	0.00	52.21	-10.20	409.73
170	0.00	53.34	-10.20	409.73
175	0.00	54.40	-10.20	409.73
180	0.00	54.77	-10.20	409.73
185	0.00	54.40	-10.20	409.73

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Antenna Mode Receive 4.0 GHz
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Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	53.34	-10.20	409.73
195	0.00	51.64	-10.20	409.73
200	0.00	49.40	-10.08	411.22
205	0.00	46.70	-9.54	417.94
210	0.00	43.65	-8.93	425.69
215	0.00	40.31	-8.26	434.36
220	0.00	36.84	-6.94	452.05
225	0.00	33.68	-5.94	465.28
230	0.00	30.93	-5.39	473.05
235	0.00	28.74	-4.70	483.02
240	0.00	27.23	-4.09	491.92
245	0.00	26.52	-3.81	496.17
250	0.00	26.67	-3.87	495.25
255	0.00	27.67	-4.27	489.28
260	0.00	29.44	-4.98	478.95
265	0.00	31.84	-5.57	470.46
270	0.00	34.75	-6.15	462.91
275	0.00	38.04	-7.42	445.59
280	0.00	41.62	-8.52	430.93
285	0.00	45.43	-9.29	421.15
290	0.00	49.41	-10.08	411.18
295	0.00	53.52	-10.20	409.73
300	0.00	57.72	-10.20	409.73
305	0.00	62.01	-10.20	409.73
310	0.00	66.35	-10.20	409.73
315	0.00	70.74	-10.20	409.73
320	0.00	75.16	-10.20	409.73
325	0.00	79.61	-10.20	409.73
330	0.00	84.07	-10.20	409.73
335	0.00	88.55	-10.20	409.73
340	0.00	93.02	-10.20	409.73
345	0.00	97.49	-10.20	409.73
350	0.00	101.95	-10.20	409.73
355	0.00	106.39	-10.20	409.73

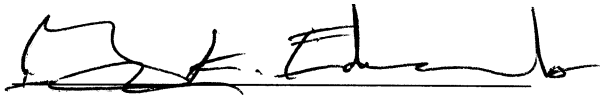
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Gary K. Edwards
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DATED: June 20, 2018

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2. SUMMARY OF RESULTS

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Administrative Information

Status ENGINEER PROPOSAL
Call Sign WE71
Licensee Code COMPAN
Licensee Name Comcast of Panama City, Inc

Site Information

PANAMA CITY, FL

Venue Name
Latitude (NAD 83) 30° 13' 49.5" N
Longitude (NAD 83) 85° 38' 46.6" W
Climate Zone B
Rain Zone 1
Ground Elevation (AMSL) 5.3 m / 17.4 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 135° West Longitude
Azimuth Range 150.9° to 246.6°
Corresponding Elevation Angles 50.8° / 26.5°
Antenna Centerline (AGL) 3.96 m / 13.0 ft

Antenna Information

Receive - S40501

Manufacturer SCIENTIFIC-ATLANTA, INC
Model 8008B (5 METER)
Gain / Diameter 44.5 dBi / 5.0 m
3-dB / 15-dB Beamwidth 0.86° / 2.00°

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

Frequency Information

Receive 4.0 GHz

Emission / Frequency Range (MHz) 36M0G7W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 506.8 km / 314.9 mi
Precipitation Scatter Contour Radius 566.1 km / 351.7 mi

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			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	110.81	-9.50	418.45
5	0.00	115.18	-9.61	417.09
10	0.00	119.36	-12.12	386.83
15	0.00	116.99	-10.69	403.72
20	0.00	114.44	-9.50	418.45
25	0.00	111.75	-9.50	418.45
30	0.00	108.94	-9.50	418.45
35	0.00	106.03	-9.50	418.45
40	0.00	103.03	-9.50	418.45
45	0.00	99.98	-9.50	418.45
50	0.00	96.87	-9.50	418.45
55	0.00	93.73	-9.50	418.45
60	0.00	90.58	-9.50	418.45
65	0.00	87.42	-9.50	418.45
70	0.00	84.28	-9.50	418.45
75	0.00	81.16	-9.50	418.45
80	0.00	78.08	-9.50	418.45
85	0.00	75.06	-9.50	418.45
90	0.00	72.12	-9.50	418.45
95	0.00	69.27	-9.50	418.45
100	0.00	66.53	-9.50	418.45
105	0.00	63.93	-9.50	418.45
110	0.00	61.49	-9.50	418.45
115	0.00	59.23	-9.50	418.45
120	0.00	57.18	-9.50	418.45
125	0.00	55.38	-9.50	418.45
130	0.00	53.84	-9.50	418.45
135	0.00	52.59	-9.50	418.45
140	0.00	51.66	-9.50	418.45
145	0.00	51.07	-9.50	418.45
150	0.00	50.83	-9.50	418.45
155	0.00	50.94	-9.50	418.45
160	0.00	51.41	-9.50	418.45
165	0.00	52.21	-9.50	418.45
170	0.00	53.34	-9.50	418.45
175	0.00	54.40	-9.50	418.45
180	0.00	54.77	-9.50	418.45
185	0.00	54.40	-9.50	418.45

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

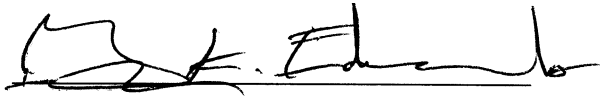
PANAMA CITY, FL

Licensee Name Comcast of Panama City, Inc
Latitude (NAD 83) 30° 13' 49.5" N
Longitude (NAD 83) 85° 38' 46.6" W
Ground Elevation (AMSL) 5.3 m / 17.4 ft
Antenna Centerline (AGL) 3.96 m / 13.0 ft
Antenna Model SCIENTIFIC-ATLANTA, INC 8008B (5 METER)
Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	53.34	-9.50	418.45
195	0.00	51.64	-9.50	418.45
200	0.00	49.40	-9.50	418.45
205	0.00	46.70	-9.50	418.45
210	0.00	43.65	-9.23	421.86
215	0.00	40.31	-8.56	430.44
220	0.00	36.84	-7.24	447.98
225	0.00	33.68	-5.97	464.79
230	0.00	30.93	-4.87	480.43
235	0.00	28.74	-4.00	493.34
240	0.00	27.23	-3.39	502.43
245	0.00	26.52	-3.11	506.77
250	0.00	26.67	-3.17	505.83
255	0.00	27.67	-3.57	499.74
260	0.00	29.44	-4.28	489.19
265	0.00	31.84	-5.24	475.20
270	0.00	34.75	-6.40	459.45
275	0.00	38.04	-7.72	441.57
280	0.00	41.62	-8.82	427.05
285	0.00	45.43	-9.50	418.45
290	0.00	49.41	-9.50	418.45
295	0.00	53.52	-9.50	418.45
300	0.00	57.72	-9.50	418.45
305	0.00	62.01	-9.50	418.45
310	0.00	66.35	-9.50	418.45
315	0.00	70.74	-9.50	418.45
320	0.00	75.16	-9.50	418.45
325	0.00	79.61	-9.50	418.45
330	0.00	84.07	-9.50	418.45
335	0.00	88.55	-9.50	418.45
340	0.00	93.02	-9.50	418.45
345	0.00	97.49	-9.50	418.45
350	0.00	101.95	-9.50	418.45
355	0.00	106.39	-9.50	418.45

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: June 20, 2018