

TEMPORARY FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Harris CapRock Communications
Miami/Port Canaveral
Satellite Earth Station on Vessel (ESV)**

Prepared By:
Skjei Telecom, Inc.
7777 Leesburg Pike, Suite 315N
Falls Church, VA 22043
September 16, 2015

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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. There will be spectrum restrictions and interference mitigation zones where muting or frequency hopping is required 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. The Critical Contour Point method of determining worst case interference from the route and port sites was the interference method used. 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. In those cases where OH losses did not resolve the interference the ESV will mute transmission within an exclusion zone sufficient in size to preclude interference. Also note, that there are no unresolved coordination requests which would result in an exceedance of the maximum 180 megahertz of coordinated spectrum for all ESV operations in the coordination area in the 5925-6425 MHz band.

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-only earth station. The ESV will employ a GPS sensitive ability to cease transmission when traveling in certain exclusion zones. The interference cases and the location of the critical contour point (CCP), around which the exclusion zones exist are detailed in the tables below.

Company

Florida Power and Light Company
HiQ Data Corporation
Miami-Dade County
T-Mobile License LLC
Verizon Wireless (VAW) LLC - S Florida
Verizon Wireless Personal Comm, LP(S FL)

Skjei Telecom, Inc.
Miami/Port Canaveral, FL

Site	Miami/PC													
Desired Frequencies (MHz)		6389.118 - 6402.313	6115.422 - 6123.141	6150 - 6164. 050										
Into 1 Case #	Margin(dB)				Frequencies Affected									
164	31.09697			Y	6093.45	6152.75	0	0	0	0	0	0	0	
145	28.77487	Y			6345.49	6375.14	0	0	0	0	0	0	0	
240	27.38899		Y	Y	5945.2	6123.1	0	0	0	0	0	0	0	
250	22.56051		Y	Y	6123.1	0	0	0	0	0	0	0	0	
442	21.4238		Y	Y	5945.2	5974.85	6004.5	6034.15	6063.8	6093.45	6123.1	6152.75		
475	19.3238		Y	Y	5945.2	5974.85	6004.5	6034.15	6063.8	6093.45	6123.1	6152.75		
480	17.88002		Y	Y	6137.925	0	0	0	0	0	0	0	0	
237	7.462632	Y			6286.19	6315.84	6404.79	0	0	0	0	0	0	
444	5.434147		Y	Y	5945.2	6034.15	6063.8	6093.45	6123.1	6152.75	0	0		
472	5.434147		Y	Y	5945.2	6034.15	6063.8	6093.45	6123.1	6152.75	0	0		
Notes														
Desired Frequencies (MHz)		6389.118 - 6402.313	6115.422 - 6123.141	6150 - 6164.050										
Into 2 Case #	Margin(dB)				Frequencies Affected									
448	38.46429	Y			6404.79	0	0	0	0	0	0	0	0	
450	31.66714		Y	Y	6123.1	0	0	0	0	0	0	0	0	
34	29.67487	Y			6404.79	0	0	0	0	0	0	0	0	
422	29.2035			Y	6152.75	0	0	0	0	0	0	0	0	
480	28.16086	Y			6389.965	0	0	0	0	0	0	0	0	
399	9.076235	Y			6226.89	6286.19	6315.84	6345.49	6375.14	6404.79	0	0	0	

Table 1 – ESV Interference Cases

Skjei Telecom, Inc.
Miami/Port Canaveral, FL

Interference Zones					
Into 1 Case #	CCP Latitude (dec.deg)	CCP Longitude (dec.deg.)	Margin (dB)	Victim Rx Site	Licensee
164	27.47501336	80.06571213	31.1	WALTON SERV	Florida Power and Light Company
145	27.23190062	80.014699	28.8	JUPITER	Verizon Wireless Personal Comm, LP(S FL)
240	26.73522178	79.98860783	27.4	SBA IND TWN	Verizon Wireless Personal Comm, LP(S FL)
250	27.573953	80.11657552	22.6	ADAMS RANCH	Verizon Wireless (VAW) LLC - S Florida
442	26.00132032	79.96947934	21.4	ANDY TOWN S	Verizon Wireless Personal Comm, LP(S FL)
475	26.00132032	79.96947934	19.3	ANDY TOWN S	Verizon Wireless Personal Comm, LP(S FL)
480	25.78443459	80.18286236	17.9	AVENTURAL1	HiQ Data Corporation
237	27.57862185	80.11897821	7.5	CRWN IND TWN	Verizon Wireless Personal Comm, LP(S FL)
444	26.09314538	80.10834805	5.4	KROME TOWER	Verizon Wireless Personal Comm, LP(S FL)
472	26.09314538	80.10834805	5.4	KROME TOWER	Verizon Wireless Personal Comm, LP(S FL)
Into 2 Case #	CCP Latitude (dec.deg)	CCP Longitude (dec.deg.)	Margin (dB)	Victim Rx Site	Licensee
448	25.76840118	80.16827776	38.5	MIA	Miami-Dade County
450	25.7946539	80.02034652	31.7	IC	Miami-Dade County
34	27.23190062	80.014699	29.7	JUPITER	Verizon Wireless Personal Comm, LP(S FL)
422	27.75170169	80.20820841	29.2	A2P0170A	T-Mobile License LLC
480	26.0932938	80.07013753	28.2	MIDTOWN1	HiQ Data Corporation
399	27.46281459	80.05944791	9.1	CYPRESS QTRS	Verizon Wireless Personal Comm, LP(S FL)

Table 2 - ESV CCP Locations
See Interference Analysis for Exclusion Zone Details

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 Skjei Telecom, Inc. using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Temporary Prior Coordination data for this earth station was sent to the below listed carriers with PCN letter dated 09/12/2015

Company

Alltel Communications LLC - S Florida
New Cingular Wireless PCS LLC - S FL
Florida RSA No. 2B (Indian River) LP
Harris Corporation - Orlando, FL
New Cingular Wireless PCS LLC - N FL
T-Mobile License LLC
Embarq Florida, Inc.
Duke Energy Business Services, LLC.
PALM BEACH, COUNTY OF
Florida Power and Light Company
South Florida Water Management District
Palm Beach, County Facilities Dev & Ops
Verizon Wireless Personal Comm, LP(S FL)
Sumter County Board of County Commission
Verizon Wireless (VAW) LLC - S Florida
Central Florida Educational Foundation
Florida Mobile Telecom, Inc.
Florida Rural Broadband Alliance, LLC
North Florida Broadband Authority
Florida High Speed Internet
Charlotte County Board of County Comm
CHESAPEAKE PORTSMOUTH BROADCASTING
CORP
FL Courts 18th Judicial Circuit
Hillsborough County Tax Collector
HiQ Data Corporation
Lake, County of
Miami-Dade County
Pasco, County of
Peace River Electric Cooperative Inc.
Polk, County of

JACKSONVILLE CITY OF
Tampa Electric Company
Hernando County Board of Co Commissioner
Hillsborough County Sheriffs Office
Pinellas, County of
Seminole County Government, BOCC
Sumter Electric Cooperative, Inc.
LEE COUNTY - BOCC
Osceola County Intergovernmental Comm
St. Johns County of
Saint Lucie, County of
City of Melbourne
Sun Broadcasting, Inc.
Daystar Communications
Villages Public Saftey

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. The coordination specifies operation for a six month period from 9/16/2015 to 3/16/2016. The coordination contours include all the area within this route as well as all of the area seaward of this route within 200 km of the baseline of the United States or 200 km from any fixed service offshore installations.

Skjei Telecom, Inc.

7777 Leesburg Pike, Suite 315N, Falls Church, VA 22043
Tel (703)917-4020, Fax (703)917-0098

September 12, 2015

Re: Harris CapRock Communications
Miami, FL Area
Temporary Transmit-Only C-band Earth Station on Vessel (ESV)
Operation Dates: 09/16/2015 - 03/16/2016
Job Number: 091215SKJTEL01

Dear Frequency Coordinator:

This notice is being provided in accordance with Section 25.203(c) of the FCC Rules and Regulations and Order IB Docket 02-10 released 1/6/2005. We are forwarding the attached coordination data on behalf of Harris CapRock Communications for a Temporary C-Band Transmit Only Earth Station on Vessel (ESV) to be located in the area referenced above.

The coordination notice is being circulated to the owners (or their protection agents) of all existing or proposed terrestrial facilities operating in a shared frequency band within the coordination contours of the proposed station(s).

We respectfully request that you examine this data for its interference potential with your system(s). Please do not report cases involving 4 GHz facilities or problems involving non-active paths or frequencies outside the specified range. In the event that your analysis identifies potential interference cases that have not been resolved, please contact us by September 16, 2016.

If there are any questions concerning this coordination notice, please contact Skjei Telecom, Inc.

Sincerely,

Skjei Telecom, Inc.

Ken Ryan
ken@skjeitelecom.com
Mobile; (704) 919-0361

Enclosure(s)

Date: 09/12/2015
Job Number: 150912SKJTEL01

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code SPACLK
Licensee Name Harris CapRock Communications

Site Information

MIAMI, FL
Venue Name MIAMI/PORT CANAVERAL
Latitude (NAD 83) 25° 46' 34.5" N
Longitude (NAD 83) 80° 10' 40.8" W
Climate Zone B
Rain Zone 1
Ground Elevation (AMSL) 0.0 m / 0.0 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Digital
Satellite Arc 30° W to 89° West Longitude
Azimuth Range 109.9° to 199.6°
Corresponding Elevation Angles 27.5° / 58.3°
Antenna Centerline (AGL) 15.24 m / 50.0 ft

Antenna Information

Transmit - FCC32
Manufacturer FCC REFERENCE
Model 32-25LOG(THETA)
Gain / Diameter 42.6 dBi / 2.4 m
3-dB / 15-dB Beamwidth 1.00° / 2.00°

Max Available RF Power (dBW/4 kHz) -18.0
(dBW/MHz) 6.0

Maximum EIRP (dBW/4 kHz) 24.6
(dBW/MHz) 48.6
(dBW) 55.0

Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%

Frequency Information

Transmit 6.1 GHz
Emission / Frequency Range (MHz) 2M14G7D - 5M44G7D / 6389.118 - 6402.313
2M14G7D - 5M44G7D / 6115.422 - 6123.141
2M14G7D - 5M44G7D / 6150.448 - 6164.05

Max Great Circle Coordination Distance 154.1 km / 95.8 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

Coordination Values**MIAMI, FL**

Licensee Name Harris CapRock Communications
Latitude (NAD 83) 25° 46' 34.5" N
Longitude (NAD 83) 80° 10' 40.8" W
Ground Elevation (AMSL) 0.0 m / 0.0 ft
Antenna Centerline (AGL) 15.24 m / 50.0 ft
Antenna Model FCC Reference 32-25LOG(THETA)
Antenna Mode Transmit 6.1 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -18.0 (dBW/4 kHz)

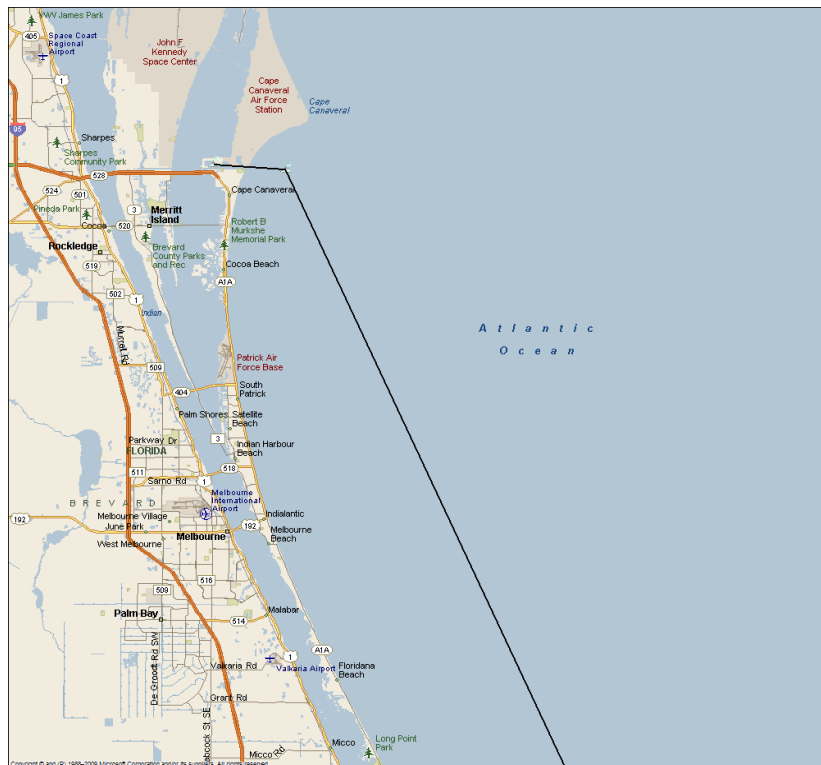
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	107.60	-10.00	131.57
5	0.00	103.21	-10.00	131.57
10	0.00	98.80	-10.00	131.57
15	0.00	94.37	-10.00	131.57
20	0.00	89.94	-10.00	131.57
25	0.00	85.51	-10.00	131.57
30	0.00	81.08	-10.00	131.57
35	0.00	76.67	-10.00	131.57
40	0.00	72.28	-10.00	131.57
45	0.00	67.93	-10.00	131.57
50	0.00	63.62	-10.00	131.57
55	0.00	59.36	-10.00	131.57
60	0.00	55.19	-10.00	131.57
65	0.00	51.10	-10.00	131.57
70	0.00	47.15	-9.84	132.12
75	0.00	43.35	-8.93	135.23
80	0.00	39.77	-7.99	138.56
85	0.00	36.46	-7.05	142.04
90	0.00	33.51	-6.13	145.55
95	0.00	31.02	-5.29	148.75
100	0.00	29.12	-4.60	151.56
105	0.00	27.91	-4.15	153.47
110	0.00	27.51	-3.99	154.14
115	0.00	27.94	-4.15	153.44
120	0.00	29.16	-4.62	151.50
125	0.00	31.08	-5.31	148.67
130	0.00	33.58	-6.15	145.46
135	0.00	36.54	-7.07	141.95
140	0.00	39.86	-8.01	138.46
145	0.00	43.45	-8.95	135.14
150	0.00	47.12	-9.83	132.14
155	0.00	50.53	-10.00	131.57
160	0.00	53.58	-10.00	131.57
165	0.00	56.17	-10.00	131.57
170	0.00	58.17	-10.00	131.57
175	0.00	59.44	-10.00	131.57
180	0.00	59.87	-10.00	131.57
185	0.00	59.44	-10.00	131.57

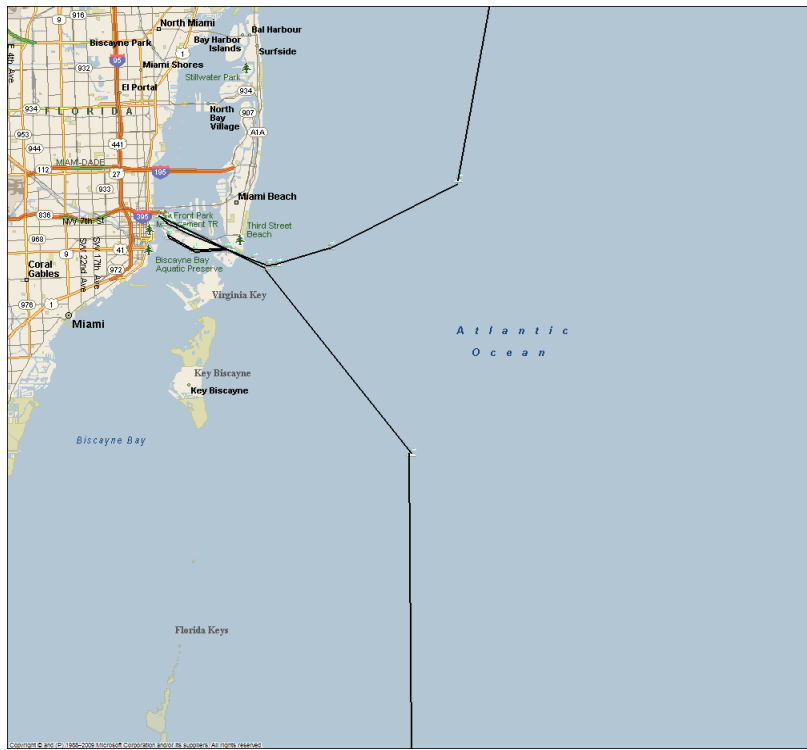
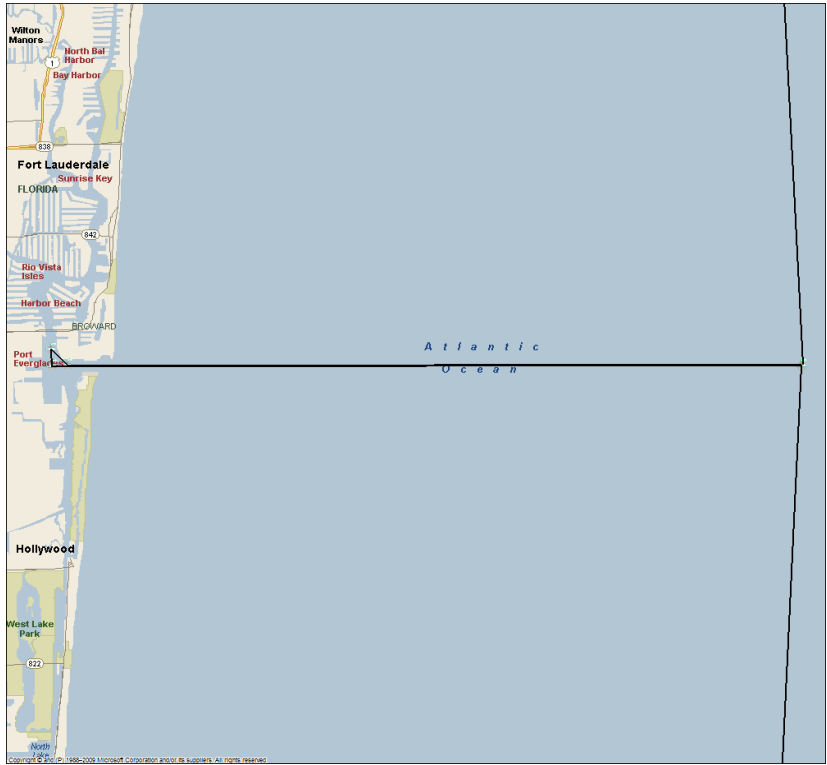
Coordination Values		MIAMI, FL	
Licensee Name		Harris CapRock Communications	
Latitude (NAD 83)		25° 46' 34.5" N	
Longitude (NAD 83)		80° 10' 40.8" W	
Ground Elevation (AMSL)		0.0 m / 0.0 ft	
Antenna Centerline (AGL)		15.24 m / 50.0 ft	
Antenna Model		FCC Reference 32-25LOG(THETA)	
Antenna Mode		Transmit 6.1 GHz	
Interference Objectives:	Long Term	-154.0 dBW/4 kHz	20%
	Short Term	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power		-18.0 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	58.80	-10.00	131.57
195	0.00	58.41	-10.00	131.57
200	0.00	58.30	-10.00	131.57
205	0.00	58.45	-10.00	131.57
210	0.00	58.87	-10.00	131.57
215	0.00	59.55	-10.00	131.57
220	0.00	60.48	-10.00	131.57
225	0.00	61.65	-10.00	131.57
230	0.00	63.03	-10.00	131.57
235	0.00	64.62	-10.00	131.57
240	0.00	66.39	-10.00	131.57
245	0.00	68.33	-10.00	131.57
250	0.00	70.41	-10.00	131.57
255	0.00	72.62	-10.00	131.57
260	0.00	74.94	-10.00	131.57
265	0.00	77.34	-10.00	131.57
270	0.00	79.83	-10.00	131.57
275	0.00	82.37	-10.00	131.57
280	0.00	84.95	-10.00	131.57
285	0.00	87.56	-10.00	131.57
290	0.00	90.19	-10.00	131.57
295	0.00	92.81	-10.00	131.57
300	0.00	95.42	-10.00	131.57
305	0.00	98.00	-10.00	131.57
310	0.00	100.54	-10.00	131.57
315	0.00	103.01	-10.00	131.57
320	0.00	105.40	-10.00	131.57
325	0.00	107.71	-10.00	131.57
330	0.00	109.90	-10.00	131.57
335	0.00	111.96	-10.00	131.57
340	0.00	113.87	-10.00	131.57
345	0.00	115.62	-10.00	131.57
350	0.00	116.27	-10.00	131.57
355	0.00	111.96	-10.00	131.57

ESV Break Point List

Name	Latitude	Longitude
2 Port Canaveral	28.41148	-80.62096
3	28.40676	-80.5488
4	27.3924	-80.0232
5	26.0937	-79.9552
6	26.0937	-80.1147
7 Pt Everglades	26.0969	-80.11831
8	26.0936	-80.1182
9	26.0936	-79.9552
10	25.805	-80
11	25.7667	-80.0783
12	25.7572	-80.1108
13	25.7573	-80.1167
14	25.7603	-80.1253
15	25.7657	-80.1387
16	25.7848	-80.1828
17	25.7827	-80.1798
18	25.7805	-80.178
19	25.7795	-80.1755
20	25.7773	-80.1707
21 Miami	25.77626	-80.16672
22	25.775	-80.1648
23	25.7661	-80.1423
24	25.7656	-80.1609
25	25.7727	-80.1763
26	25.7738	-80.1773
27	25.7647	-80.1608
28	25.7659	-80.1411
29	25.7555	-80.1174
30	25.65	-80.0283
31	25.3667	-80.0283





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: 

Ken Ryan, P.E.
Principal Engineer
Skjei Telecom, Inc.
7777 Leesburg Pike, Suite 315N
Falls Church, VA 22043

DATED: September 16, 2015