TECHNICAL APPENDIX

RBC Signals LLC
60-Day Special Temporary Authorization (STA)

I. Yagi Antenna Station Radiation Hazard Report

II. 3 Diamonds Orbital Debris and Deorbit Report

III. TT&C Link Budgets

IV. TT&C Contours Map

V. Draft FCC Form 312 Schedule B

VI. Technical Certification

I. Radiation Hazard Study

400 MHz Earth Station

This study analyzes the non-ionizing radiation levels for a 400 MHz Yagi tracking earth station. This report is developed in accordance with the prediction methods contained in OET Bulletin No. 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, Edition 97-01.

Bulletin No. 65 specifies that there are two separate tiers of exposure limits that are depending on the area of exposure and/or the status of the individuals who are subject to the exposure -- the General Population/Uncontrolled Environment and the Controlled Environment, where the general population cannot access.

The maximum level of non-ionizing radiation to which individuals may be exposed is limited to a power density level of 1.33 milliwatts per square centimeter (1.33 mW/cm^2) averaged over any 6 minute period in a controlled environment, and the maximum level of non-ionizing radiation to which the general public is exposed is limited to a power density level of 0.27 milliwatt per square centimeter (0.27 mW/cm^2) averaged over any 30 minute period in a uncontrolled environment.

In the normal range of transmit powers for satellite antennas, the power densities at or around the antenna surface are expected to exceed safe levels. The purpose of this study is to determine the power flux density levels for the earth station under study as compared with the MPE limits. This comparison is done in each of the following regions:

1. Far-field region
2. Near-field region
3. Transition region
4. The region between the antenna edge and the ground

Input Parameters

The following input parameters were used in the calculations:

Parameters:	Value	Unit	Symbol
Antenna Diameter	1.1	m	*D*
Antenna Transmit Gain	17	dBi	*G*
Transmit Frequency	400	MHz	*f*
Power Input to the Antenna	17.4	W	*P*

Calculated Parameters:

The following values were calculated using the above input parameters and the

corresponding formulas:

Parameter	Value	Unit	Symbol	Formula
Antenna Surface Area	2.362	m^2	*A*	$G\lambda 2/(4\pi)/\lambda$
Antenna Efficiency	0.95		η	$G\lambda^2/(\pi^2 D^2)$
Gain Factor	50.1		*g*	$10^{G/10}$
Wavelength	0.75	m	λ	$300/f$

Behavior of EM Fields as a Function of Distance

The behavior of the characteristics of EM fields varies depending on the distance from the radiating antenna. These characteristics are analyzed in three primary regions: the near-field region, the far-field region and the transition region. Of interest also is the region between the antenna and ground.

For yagi antennas with circular cross sections, such as the antenna under study, the near-field, far-field and transition region distances are calculated as follows:

Parameter	Value	Unit	Formula
Near-Field Distance	0.40	m	$R_{nf} = D^2/(4\lambda)$
Distance to Far-Field	0.97	m	$R_{ff} = 0.60D^2/(\lambda)$
Distance of Transition Region	0.40	m	$R_t = R_{nf}$

The distance in the transition region is between the near and far fields. Thus, $R_{nf} \leq R_t \leq R_{ff}$. However, the power density in the transition region will not exceed the power density in the near-field. Therefore, for purposes of the present analysis, the distance of the transition region can equate the distance to the near-field.

Power Flux Density Calculations

The power flux density is considered to be at a maximum through the entire length of the near-field. This region is contained within a cylindrical volume with a diameter, D, equal to the diameter of the antenna. In the transition region and the far-field, the power density decreases inversely with the square of the distance. The following equations are used to calculate power density in these regions.

Parameter	Value	Unit	Symbol	Formula
Power Density in the Near-Field	2.80	mW/cm^2	S_{nf}	$16.0\ \eta\ P/(\pi D^2)$
Power Density in the Far-Field	7.40	mW/cm^2	S_{ff}	$GP/(4\pi\ Rff^2)$
Power Density in the Transition Region	2.80	mW/cm^2	S_t	$S_{nf}\ R_{nf}/(R_t)$

The power density between the antenna and ground, is calculated as follows:

Parameter	Value	Unit	Symbol	Formula
Power Density b/w Reflector and Ground	0.74	mW/cm^2	S_g	*P / A*

The below table summarizes the calculated power flux density values for each region. In a controlled environment, the only regions that exceed FCC limitations are shown below.

These regions are only accessible by trained technicians who, as a matter of procedure, turn off transmit power before performing any work in these areas.

Power Density	Value	Unit	Controlled Environment
Far Field Calculation	7.40	mW/cm^2	Exceeds Limits
Near Field Calculation	2.80	mW/cm^2	Exceeds Limits
Transition Region	2.80	mW/cm^2	Exceeds Limits
Region b/w Antenna & Ground	0.74	mW/cm^2	Satisfies FCC MPE

In conclusion, the results show that the antenna, in a controlled environment, may exist in the regions noted above and applicant will take the proper mitigation procedures to ensure it meets the guidelines specified in 47 C.F.R. § 1.1310.

The antenna will be installed at a facility at the University of Alaska, Fairbanks. The facility is located within an enclosed walled courtyard, which restricts any public access. It should be noted that all spaces at least 5.5m away from the antenna satisfy the FCC MPE limits for the general population. The earth station will be marked with the standard radiation hazard warnings, as well as the area in the vicinity of the earth station to inform the general population, who might be working or otherwise present in or near the path of the main beam.

The applicant will ensure that the main beam of the antenna will be pointed at least one diameter away from any building, or other obstacles in those areas that exceed the MPE limits. Since one diameter removed from the center of the main beam the levels are down at least 20 dB, or by a factor of 100, public safety will be ensured.

Finally, the earth station's operational personnel will not have access to areas that exceed the MPE limits while the earth station is in operation. The transmitter will be turned off during periods of maintenance so that the MPE standard of 1.33 mW/cm^2 will be complied with for those regions in close proximity to the antenna, which could be occupied by operating personnel.

II. Compliance with Orbital Debris and Deorbit Related Requirements

Assessment has been made for the Three Diamond Satellites for compliance with the requirements of §25.114(d)(14):

(i) The Three Diamonds satellite deployment planning and operational design was assessed to determine compliance with orbital debris release requirements. The Three Diamonds satellites are deployed from a qualified ISIS Quadpack system. The operational design of the Three Diamonds satellite does not include release of any debris during operations in any mission phase.

An assessment of the probability of the space station becoming a source of debris by collisions with small debris or meteoroids was performed using the NASA Debris Assessment Software (DAS), version 2.0.2. The Three Diamonds satellite was found to be compliant with the requirement (NS 8719.14 Requirement 4.5-2, Probability of Damage from Small Objects). Figure 1 below shows the DAS summary output screen.

(ii) The Three Diamonds satellite design has been assessed and found that the design limits the probability of accidental explosions during and after completion of mission operations. The only energy sources on board the satellite are the Li-Ion battery and the reaction wheel. Both are planned to be passivated at the end of mission. The Three Diamonds satellites have no propulsion systems, and hence have no residual fuel at end of mission.

(iii) The Three Diamonds satellite design has been assessed and found that the probability of the space station becoming a source of debris by collisions with large debris or other operational space stations is compliant with the requirement (NS 8719.14 Requirement 4.5-1, Probability of Collision with Large Objects). Figure 1 below shows the DAS summary output screen.

The anticipated evolution over time of the orbit of the Three Diamonds satellites has been assessed with DAS. The predicted orbital lifetime of the satellites is 5.3 years until re-entry into the atmosphere. The DAS orbital evolution is shown in Figure 2 below.

(iv) For the Three Diamonds satellites, the post-mission disposal plans at end of life are to rely on the natural orbital evolution, as shown in Figure 2 below, to culminate in atmospheric re-entry. As the satellites have no propulsion system, there is no fuel or other active propulsive means employed during deorbit.

For the Three Diamonds Satellites, a casualty risk assessment was performed because the planned post-mission disposal involves atmospheric re-entry. DAS analysis was performed as shows the satellites to be compliant with the requirement (NS 8719.14 Requirement 4.7-1, Casualty Risk from Reentry Debris).

Assessment of the Three Diamonds Satellites using DAS has shown the design and operational planning to be compliant with all requirements as shown in Figure 1 below. Note that compliance with Requirement 4.3-2, Mission-Related Debris Passing Near GEO, does not pertain to the Three Diamonds Satellites as they will not approach GEO orbits. Figure 1 also

shows compliance with Requirement 4.4-3, Long Term Risk from Planned Breakups, because there are no planned breakups for these satellites. Compliance with Requirement 4.8-1, Collision Hazards with Space Tethers, does not pertain to the Three Diamonds Satellites as they do not employ tethers.

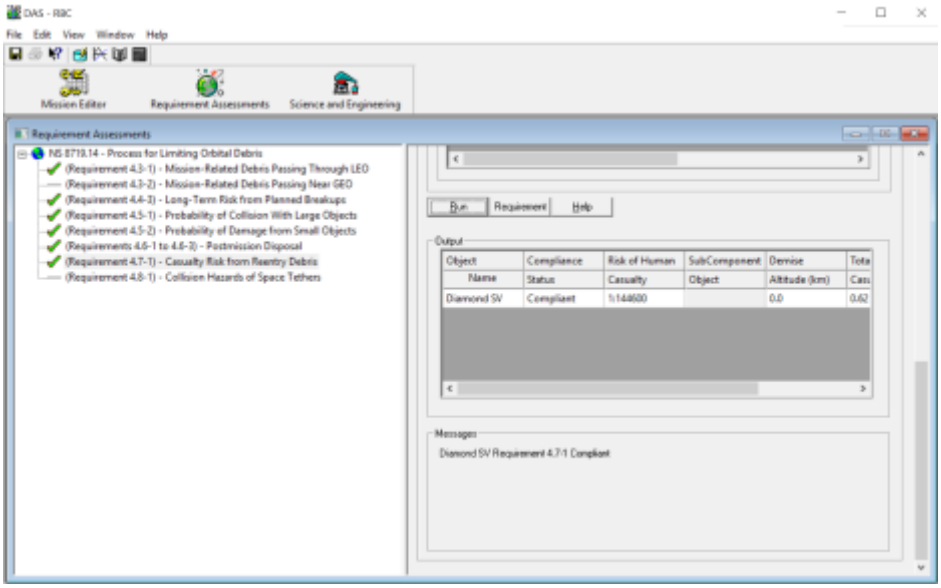


Figure 1 - Debris Assessment Software Requirements Compliance

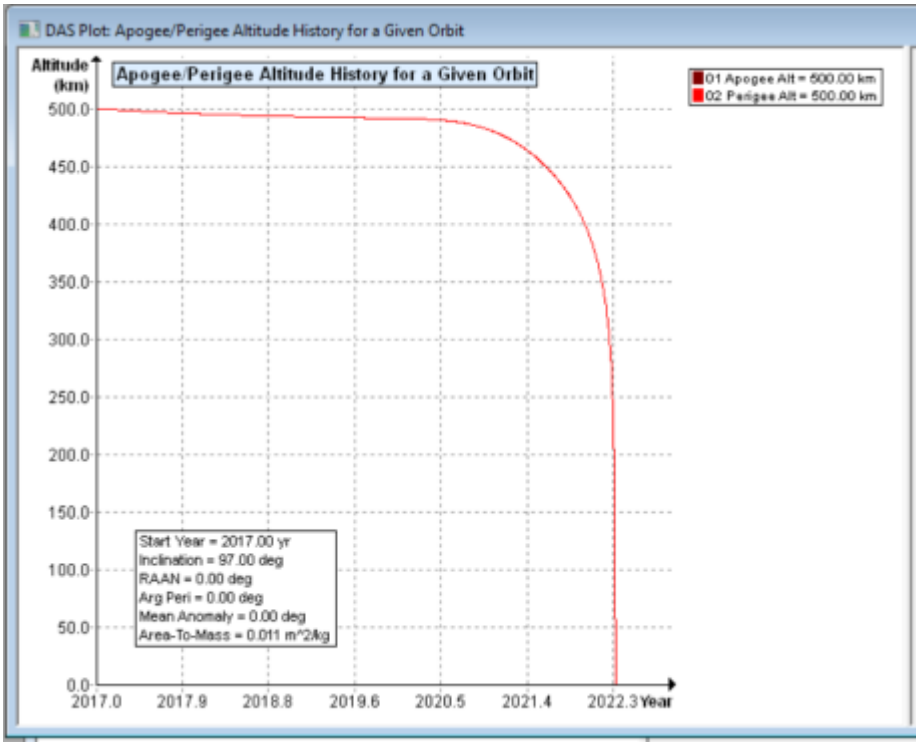


Figure 2 – DAS Orbit Evolution

III. Link Budgets

UHF Link - Uplink

Link parameters		**Unit**	**Notes**
Carrier Frequency	399.938	MHz	
Carrier wavelength	0.75	m	
Boltzmann constant	-228.6	dBW/K/Hz	
BASIC PARAMETERS			
Orbit height	500	km	
Earth radius	6371	km	
Horizon height	0	°	
Tx-Rx distance	**2573**	**km**	
Ground Segment			
Antenna Gain	17.0	dBi	*Dual Crossed Yagis*
Tx RF power	25.0	W	
Tx losses	1.6	dB	*Cable and connector*
Tx EIRP	**29.4**	**dBW**	
PROPAGATION			
GS antenna pointing loss	0.5	dB	
Polarization losses	3.0	dB	*Worst-case*
Free space losses	152.7	dB	
Atmospheric Losses	2.1	dB	
Ionospheric losses	0.4	dB	
Total Propagation Losses	**158.7**	**dB**	
Satellite Segment			
Satellite Antenna Pointing Loss	0.0	dB	
Antenna Gain	0.0	dBi	
Spacecraft Tx line losses	0.2	dB	
Antenna Temperature	150	K	*Earth is half of F.o.V.*
Satellite Noise Temperature	500	K	*Estimate*
System Noise Temperature	650.0	K	
System Noise Temperature	28.1	dBK	
Rx G/T	**-28.3**	**dB/K**	
Final C/No	**71.0**	**dBHz**	

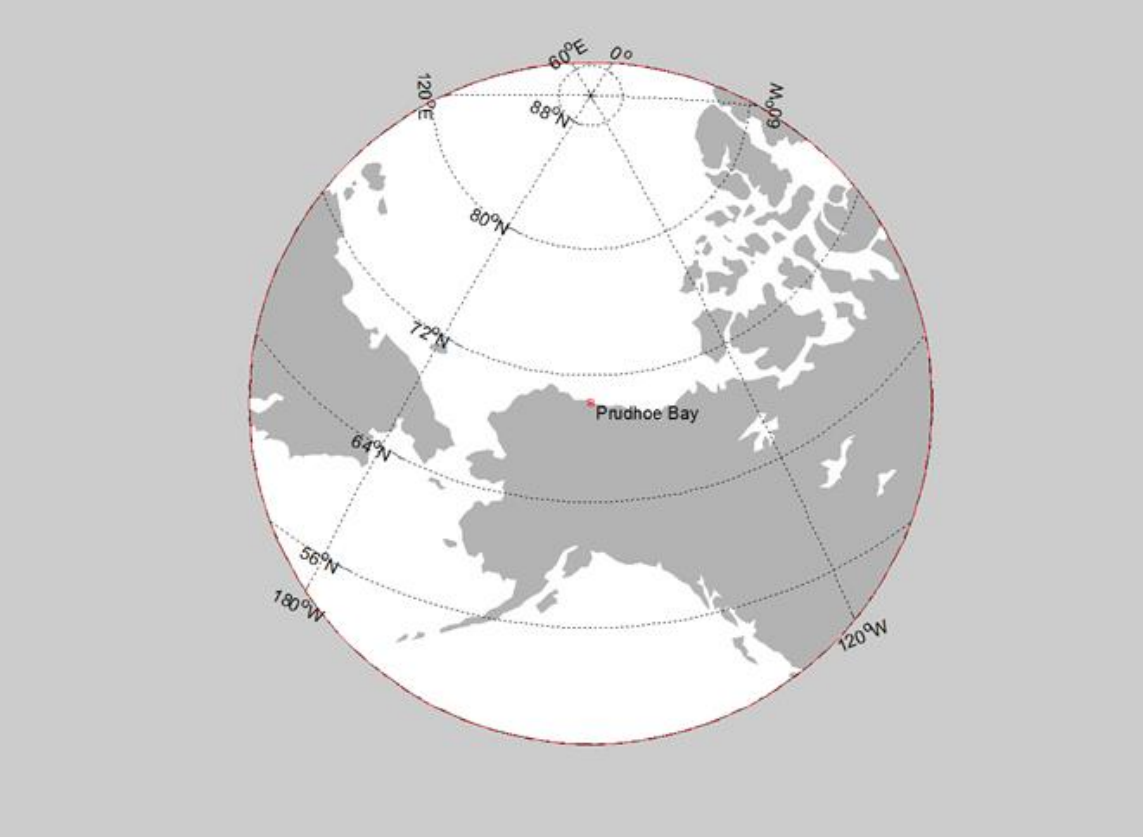
Receive Channel Bandwidth	7.2	kHz	*typically 1.5x bit rate*
Useful bitrate	4.8	kBit	
Required Eb/No	4.8	dB	*GMSK, Conv. R=1/2,K=7 & R.S. (255,223)*
Receiver Implementation Loss	3.0	dB	*Demodulator phase offset*
C/No required	**46.37**	**dBHz**	
MARGIN A --> B	**24.59**	**dB**	

UHF Link - Downlink

Link parameters		**Unit**	**Notes**
Carrier Frequency	401.50	MHz	*401 - 402 MHz*
Carrier wavelength	0.75	m	
Boltzmann constant	-228.6	dBW/K/Hz	
BASIC PARAMETERS			
Orbit height	500	km	
Earth radius	6371	km	
Horizon height	0	°	
Tx-Rx distance	**2573**	**km**	
Satellite Segment			
Tx antenna gain	0.0	dBi	
Tx RF power	1.0	W	
Tx losses	0.5	dB	*Cable and connector*
Tx EIRP	**-0.5**	**dBW**	
PROPAGATION			
Satellite Antenna Pointing Loss	0.0	dB	
Polarization Loss	3.0	dB	*Worst-case*
Free space losses	152.7	dB	
Atmospheric Loss	2.1	dB	
Ionospheric Loss	0.4	dB	
Total Propagation Losses	**158.2**	**dB**	
Ground Segment			
GS Antenna Pointing Loss	0.5	dB	
Antenna Gain	17.0	dBi	*Dual Crossed Yagis*
GS Transmission Line Losses	0.5	dB	
Antenna Temperature	170	K	*Worst-case at 0° elevation*
Ground Noise Temperature	300	K	*Estimate*
System Noise Temperature	470.0	K	
System Noise Temperature	26.7	dBK	
Rx G/T	**-10.7**	**dB/K**	
Final C/No	**59.2**	**dBHz**	

Receive Channel Bandwidth	28.8	kHz	*typically 1.5x bit rate*
Useful bitrate	19.2	kBit	
Required Eb/No	4.80	dB	*GMSK, Conv. R=1/2,K=7 & R.S. (255,223)*
Receiver Implementation Loss	3.00	dB	*Demodulator phase offset*
C/No required	**52.39**	**dBHz**	
MARGIN A --> B	**6.76**	**dB**	

IV. TT&C Contours Map



Note that the contours at 2 dB below peak fall entirely beyond the edge of the visible Earth.

V. Draft FCC Form 312 Schedule B

Approved by OMB
3060-0678

Date & Time Filed:
File Number: ---
Callsign/Satellite ID:

APPLICATION FOR EARTH STATION AUTHORIZATIONS FCC 312 MAIN FORM FOR OFFICIAL USE ONLY	FCC Use Only

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
DRAFT APPLICATION (60-Day STA for TT&C)

1-8. Legal Name of Applicant

Name:	RBC Signals, LLC	Phone Number:	404-803-7734
DBA Name:		Fax Number:	
Street:	2205 152nd Ave NE	E-Mail:	crichins@rbcsignals.com
City:	Redmond	State:	WA
Country:	USA	Zipcode:	98052 -
Attention:	Mr. Christopher Richins		

9-16. Name of Contact Representative

Name:	Carlos Nalda	Phone Number:	5713325626
Company:	LMI Advisors	Fax Number:	
Street:	2550 M Street NW Suite 345	E-Mail:	cnalda@lmiadvisors.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20037-
Attention:	Mr. Carlos Nalda	Relationship:	Other

CLASSIFICATION OF FILING

17. Choose the button next to the classification that applies to this filing for both questions a. and b. Choose only one for 17a and only one for 17b.

a.
(●) a1. Earth Station
(N/A) a2. Space Station

b.
(●) b1. Application for License of New Station
( ) b2. Application for Registration of New Domestic Receive-Only Station
(N/A) b3. Amendment to a Pending Application
(N/A) b4. Modification of License or Registration
(N/A) b5. Assignment of License or Registration
(N/A) b6. Transfer of Control of License or Registration
(N/A) b7. Notification of Minor Modification
(N/A) b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite
(N/A) b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States
( ) b10. Other (Please specify)
( ) b11. Application for Earth Station to Access a Non-U.S.satellite Not Currently Authorized to Provide the Proposed Service in the Proposed Frequencies in the United States.

17c. Is a fee submitted with this application?
(●) If Yes, complete and attach FCC Form 159.

If No, indicate reason for fee exemption (see 47 C.F.R.Section 1.1114).
( ) Governmental Entity ( ) Noncommercial educational licensee
( ) Other(please explain):

17d.
Fee Classification BAX - Fixed Satellite Transmit/Receive Earth Station

18. If this filing is in reference to an	19. If this filing is an amendment to a pending application enter:

existing station, enter:	(a) Date pending application was filed:	(b) File number of pending application:
(a) Call sign of station: Not Applicable	Not Applicable	Not Applicable

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Select all that apply:

- ☐ a. Fixed Satellite
- ☒ b. Mobile Satellite
- ☐ c. Radiodetermination Satellite
- ☐ d. Earth Exploration Satellite
- ☐ e. Direct to Home Fixed Satellite
- ☐ f. Digital Audio Radio Service
- ☒ g. Other (please specify)

Space Operations

21. STATUS: Choose the button next to the applicable status. Choose only one.
○ Common Carrier ◉ Non-Common Carrier

22. If earth station applicant, check all that apply.
☐ Using U.S. licensed satellites
☒ Using Non-U.S. licensed satellites

23. If applicant is providng INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one.
Are these facilities:
○ Connected to a Public Switched Network ○ Not connected to a Public Switched Network ◉ N/A

24. FREQUENCY BAND(S): Place an "X" in the box(es) next to all applicable frequency band(s).
☐ a. C-Band (4/6 GHz) ☐ b. Ku-Band (12/14 GHz)
☒ c.Other (Please specify upper and lower frequencies in MHz.)
Frequency Lower: 399.926 Frequency Upper: 401.25

TYPE OF STATION

25. CLASS OF STATION: Choose the button next to the class of station that applies. Choose only one.
◉ a. Fixed Earth Station
○ b. Temporary-Fixed Earth Station
○ c. 12/14 GHz VSAT Network
○ d. Mobile Earth Station
(N/A) e. Geostationary Space Station
(N/A) f. Non-Geostationary Space Station
○ g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY: Choose only one.
◉ Transmit/Receive ○ Transmit-Only ○ Receive-Only ○ N/A

PURPOSE OF MODIFICATION

27. The purpose of this proposed modification is to: (Place an 'X' in the box(es) next to all that apply.)
Not Applicable

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. §§ 1.1308 and 1.1311, as an exhibit to this application.A Radiation Hazard Study must accompany all applications for new transmitting facilities, major modifications, or major amendments. ○ **Yes** ◉ **No**

ALIEN OWNERSHIP Earth station applicants not proposing to provide broadcast, common carrier, aeronautical en route or aeronautical fixed radio station services are not required to respond to Items 30-34.

29. Is the applicant a foreign government or the representative of any foreign government?	○ **Yes** ◉ **No**
30. Is the applicant an alien or the representative of an alien?	○ **Yes** ○ **No** ◉ **N/A**
31. Is the applicant a corporation organized under the laws of any foreign government?	○ **Yes** ○ **No** ◉ **N/A**
32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	○ **Yes** ○ **No** ◉ **N/A**
33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a	○ **Yes** ○ **No** ◉ **N/A**

foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.	

BASIC QUALIFICATIONS

35. Does the Applicant request any waivers or exemptions from any of the Commission's Rules? If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.	(●) **Yes** ( ) **No**
36. Has the applicant or any party to this application or amendment had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explination of circumstances.	( ) **Yes** (●) **No**
37. Has the applicant, or any party to this application or amendment, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? If Yes, attach as an exhibit, an explination of circumstances.	( ) **Yes** (●) **No**
38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attemptiing unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition?If Yes, attach as an exhibit, an explanation of circumstances	( ) **Yes** (●) **No**
39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If yes, attach as an exhinit, an explanation of the circumstances.	( ) **Yes** (●) **No**
40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, address, and citizenship of those stockholders owning a record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer.	
41. By checking Yes, the undersigned certifies, that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. *See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes*.	(●) **Yes** ( ) **No**
42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If Yes, answer 42b and attach an exhibit providing the information specified in *47 C.F.R. 25.137, as appropriate*. If No, proceed to question 43.	(●) **Yes** ( ) **No**
42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station?U.K.	
43. Description. (Summarize the nature of the application and the services to be provided). RBC Signals seeks 60-day special temporary authorization. See Narrative.	
43a. Geographic Service Rule Certification By selecting A, the undersigned certifies that the applicant is not subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25.	(●) **A**
By selecting B, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will comply with such requirements.	( ) **B**
By selecting C, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will not comply with such requirements because it is not feasible as a technical matter to do so, or that, while technically feasible, such services would require so many compromises in satellite design and operation as to make it economically unreasonable. A narrative description and technical analysis demonstrating this claim are attached.	( ) **C**

CERTIFICATION

The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. The applicant certifies that grant of this application would not cause the applicant to be in violation of the spectrum aggregation limit in 47 CFR Part 20. All statements made in exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The undersigned, individually and for the applicant, hereby certifies that all statements made in this application and in all attached exhibits are true, complete and correct to the best of his or her knowledge and belief, and are made in good faith.
44. Applicant is a (an): (Choose the button next to applicable response.)

- ○ Individual
- ○ Unincorporated Association
- ○ Partnership
- ○ Corporation
- ○ Governmental Entity
- ◉ Other (please specify)

LLC

45. Name of Person Signing	46. Title of Person Signing
Christopher Richins	CEO

47. Please supply any need attachments.

Attachment 1:	Attachment 2:	Attachment 3:

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

SATELLITE EARTH STATION AUTHORIZATIONS
FCC Form 312 - Schedule B:(Technical and Operational Description)

FOR OFFICIAL USE ONLY

Location of Earth Station Site

E1: Site Identifier:	RBC-FB	E5. Call Sign:		
E2: Contact Name	Christopher Richins	E6. Phone Number:	650-746-8744	
E3. Street:		E7. City:	Fairbanks	
		E8. County:		
E4. State	AK	E9. Zip Code	99734	
E10. Area of Operation:		Fairbanks, Alaska		
E11. Latitude:	64 ° 51 ' 31.0 " N			
E12. Longitude:	147 ° 50 ' 7.0 " W			
E13. Lat/Lon Coordinates are:		○ NAD-27	◉ NAD-83	○ N/A
E14. Site Elevation (AMSL):		15.0 meters		

E15. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a) and (b) as demonstrated by the manufacturer's qualification measurement? If NO, provide asa technical analysis showing compliance with two-degree spacing policy.	○ Yes ○ No ◉ N/A
E16. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with non-geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurements?	◉ Yes ○ No ○ N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	◉ Yes ○ No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	○ Yes ◉ No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	○ Yes ◉ No
E20. FAA Notification - (See 47 CFR Part 17 and 47 CFR part 25.113(c)) Where FAA notification is required, have you attached a copy of a completed FCC Form 854 and or the FAA's study regarding the potential hazard of the structure to aviation? **FAILURE TO COMPLY WITH 47 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.**	○ Yes ◉ No

POINTS OF COMMUNICATION

Satellite Name:OTHER | OTHER | If you selected OTHER, please enter the following:	
E21. Common Name: 3 Diamonds	E22. ITU Name:
E23. Orbit Location: NGSO MSS	E24. Country: United Kingdom

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier: RBC-FB	
E26. Common Name:	E27. Country:USA

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna GainTransmint and/or Recieve(____dBi at _____GHz)
RBC-FB	RBC-FB1	1	GomSpace	AS100	1.1	17.0 dBi at 0.400

E28. Antenna Id	E33/34. Diameter Minor/Major(meters)	E35. Above Ground Level (meters)	E36. Above Sea Level (meters)	E37. Building Height Above Ground Level (meters)	E38. Total Input Power at antenna flange (Watts)	E39. Maximum Antenna Height Above Rooftop (meters)	E40. Total EIRP for al carriers (dBW)
RBC-FB1	0.0/0.0	25.0	15.0	0.0	12.53	0.0	28.0

FREQUENCY

E28. Antenna Id	E43/44. Frequency Bands(MHz)	E45. T/R Mode	E46. Antenna Polarization(H,V,L,R)	E47. Emission Designator	E48. Maximum EIRP per Carrier(dBW)	E49. Maximum ERIP Density per Carrier(dBW/4kHz)
RBC-FB1	401.05 401.25	R	Right Hand Circular	16K5G1D	0.0	0.0
E50. Modulation and Services TT&C						
RBC-FB1	401.05 401.25	R	Right Hand Circular	1K03G1D	0.0	0.0
E50. Modulation and Services TT&C						
RBC-FB1	401.05 401.25	R	Right Hand Circular	4K13G1D	0.0	0.0
E50. Modulation and Services TT&C						
RBC-FB1	401.05 401.25	R	Right Hand Circular	8K26G1D	0.0	0.0
E50. Modulation and Services TT&C						
RBC-FB1	399.926 399.950	T	Right Hand Circular	16K5G1D	28.0	21.83
E50. Modulation and Services TT&C						
RBC-FB1	399.926 399.950	T	Right Hand Circular	1K03G1D	28.0	28.0
E50. Modulation and Services TT&C						
RBC-FB1	399.926 399.950	T	Right Hand Circular	4K13G1D	28.0	27.84
E50. Modulation and Services TT&C						
RBC-FB1	399.926 399.950	T	Right Hand Circular	8K26G1D	28.0	24.83
E50. Modulation and Services TT&C						

FREQUENCY COORDINATION

E28. Antenna	E51. Satellite Orbit Type	E52/53. Frequency	E54/55. Range	E56. Earth	E57. Antenna	E58. Earth	E59. Antenna	E60. Maximum EIRP Density

Id		Limits(MHz)	of Satellite Arc E/W Limit	Station Azimuth Angle Eastern Limit	Elevation Angle Eastern Limit	Station Azimuth Angle Western Limit	Elevation Angle Western Limit	toward the Horizon(dBW/4kHz)
RBC-FB1	Non-Geostationary	401.05 401.25	0.0/ 0.0	0.0	5.0	360.0	5.0	0.0
	Non-Geostationary	399.926 399.950	0.0/ 0.0	0.0	5.0	360.0	5.0	28.0

REMOTE CONTROL POINT LOCATION
REMOTE CONTROL POINT LOCATION

E61. Call Sign NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed.			E65. Phone Number 650-746-8744
E62. Street Address 2205 152nd Street NE			
E63. City Redmond	E67. County King	E64/68. State/Country WA/ USA	E66. Zip Code 98052

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VI. Technical Certification

I, David Morse, hereby certify that I am the technically qualified person responsible for the preparation of the technical information contained in the RBC Signals 180-Day STA application for TT&C operating authority and the accompanying Technical Appendix, that I am familiar with Part 25 of the Commission's Rules (47 C.F.R. Part 25), and that I have either prepared or reviewed the technical information submitted in this application and found it to be complete and accurate to the best of my knowledge and belief.

By: /s/David Morse

Title: VP, Communication Systems
Avaliant, LLC

Date: Oct. 15, 2017