


APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:  
KARI COMS-1 Testing

1. Applicant

Name: Universal Space Network, Inc. Phone Number: 215-328-9130  
DBA Name: Fax Number: 215-328-9132  
Street: 417 Caredean Drive E-Mail: jgreet@uspacenet.com  
Suite A  
City: Horsham State: PA  
Country: USA Zipcode: 19044  
Attention: Joanne Greet

File # SES-STA-20180530-01000  
Call Sign            Grant Date 6-18-18  
(or other identifier)  
From: 6-19-18 Term Dates To: 7-19-18  
Approved: [Signature]



The stamp features the FCC seal on the left, which includes the text 'FEDERAL COMMUNICATIONS COMMISSION'. To the right of the seal, the word 'GRANTED' is printed in large, bold, red letters. Below 'GRANTED', the words 'International Bureau' are printed in a smaller font.

<b>2. Contact</b>	
<b>Name:</b>	Universal Space Network, Inc. <b>Phone Number:</b> 215-328-9130
<b>Company:</b>	<b>Fax Number:</b> 215-328-9132
<b>Street:</b> 417 Caredean Drive	<b>E-Mail:</b> jgreet@uspacenet.com
Suite A	
<b>City:</b> Horsham	<b>State:</b> PA
<b>Country:</b> USA	<b>Zipcode:</b> 19044 -
<b>Attention:</b>	<b>Relationship:</b> Same
(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)	
3. Reference File Number or Submission ID	
4a. Is a fee submitted with this application?	
<input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).	
<input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee	
<input type="radio"/> Other (please explain):	
4b. Fee Classification    CGX – Fixed Satellite Transmit/Receive Earth Station	
5. Type Request	
<input checked="" type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input type="radio"/> Other	
6. Requested Use Prior Date	
06/18/2018	
7. City Naalehu	
8. Latitude	
(dd mm ss.s h)    19 0 50.3 N	

9. State HI	10. Longitude (dd mm ss.s h) 155 39 46.6 W
11. Please supply any need attachments. Attachment 1: Support Analysis      Attachment 2: Waiver request      Attachment 3: FCC312	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">Universal Space Network is requesting authority to receive only telemetry and tracking data from the KARI COMS-1 spacecraft for test purposes to qualify for upcoming KARI launches of GK-2A and GK-2B spacecraft in late 2018 and early 2019.</div>	
13. 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 <input checked="" type="radio"/> No <input type="radio"/>	
14. Name of Person Signing Joanne Greet	15. Title of Person Signing Compliance Manager
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).	

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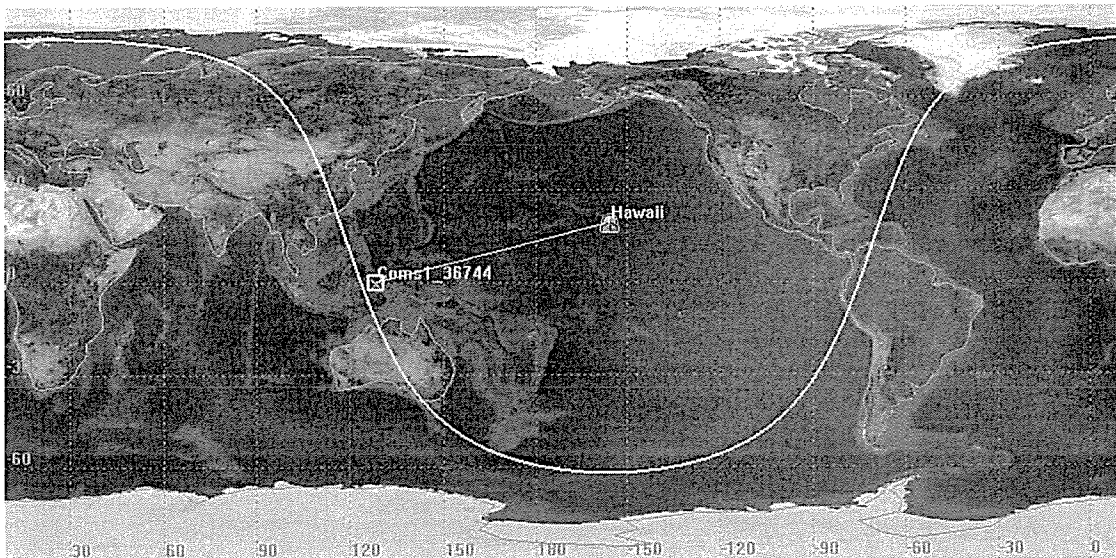
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**THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.**

## Test qualification support for the KARI GK-2A LEOP using the KARI COMS-1 spacecraft from USN's Hawaii ground station

KARI (Korean Aerospace Research Institute) in South Korea will launch 2 geosynchronous spacecraft (GK-2A and GK-2B) in late 2018 and early 2019 for communications and meteorology support. USN will support both launches in the LEOP phase to final orbit parking. KARI desires some tracking qualification testing before the missions launch. KARI has requested that USN conduct a tracking and telemetry campaign using their on orbit COMS-1 spacecraft. This test will consist of a maximum of 2 days the week of June 18th 2018.

The COMS-1 spacecraft is parked at 128.2 degrees east. USN will conduct receive only tracking and telemetry on 2271.6 MHz.



COMS-1 view from Hawaii

The spacecraft is always in view of the USN Hawaii ground station with tracking elevation of 4.6 degrees and azimuth of 265.2 degrees.

## Flux Density impinging on the ground in Hawaii from COMS-1

The Flux density is calculated as:

$$\text{Flux density} = \text{EIRP} \div (4 \pi Rse^2)$$

Where *Rse* is the distance from spacecraft to the ground?

Where *EIRP* is the Effective Isotropic Radiated Power of the spacecraft?

Data from the spacecraft vendor indicates that the nominal EIRP of COMS-1 spacecraft is -4.0 dBW. Being a geosynchronous satellite parked at 128.2 degrees east the slant range to USN Hawaii is = 41,177 Km.

Converting -4.0 dBW to scalar watts = 0.398 watts transmitted at 2271.6 MHz

Therefor:

$$\text{Flux density} = 0.398 \div (4 \pi * 41,117,000 \text{ meters}^2)$$

$$\text{Flux density} = 1.873 \times 10^{-17} \text{ Watts/meter}^2$$

Or

$$\text{Flux density} = 1.873 \times 10^{-18} \text{ mW/cm}^2$$

Applicant: Intelsat License LLC-  
File No.: SES-STA-20180611-01100  
Call Sign: KA391  
Special Temporary Authority (STA)

Intelsat License LLC- is granted a special temporary authority for 30 days, beginning June 19, 2018 to operate its C-band earth station in Fillmore, California to provide telemetry, tracking, and command (TT&C) services to Intelsat 805 (call sign S2404) at its permanent location of 169.0° E.L., using the following center frequencies: 6173.70 MHz and 6176.30 MHz (Earth-to-space), and 3947.50 MHz, 3948 M Hz, 3952 MHz, and 3952.50 MHz (space-to-Earth), under the following conditions:

1. All operators of satellites will be provided with an emergency phone number where the licensee can be reached in the event that harmful interference occurs, currently the 24x7 contact information for the Intelsat 903 is as follows: Phone: (703) 559-7701 - East Coast Operations Center (primary); (310) 525-5591 - West Coast Operations Center (back-up). Request to speak with Harry Burnham or Kevin Bell.
2. All operations under this grant of special temporary authority shall be on an unprotected and non-harmful interference basis. Intelsat 's KA391 shall not cause harmful interference to, and shall not claim protection from interference caused to it by, any other lawfully operating radio communication system.
3. In the event of any harmful interference under this grant of special temporary authority, Intelsat License LLC KA391, must cease operations immediately upon notification of such interference and must inform the Commission, in writing, immediately of such an event.
4. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending or future Intelsat License LLC applications.
5. Any action taken or expense incurred as a result of operations pursuant to this special temporary authority is solely at Intelsat License LLC-s risk.
6. Operations during the period of June 15, 2018 to the date of this grant were authorized pursuant to Section 1.62 of the Commission's rules 47 C.F.R. § 1.62.
7. This grant is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261.

**Exhibit C**  
**PETITION FOR WAIVER OF SECTION 25.137 AND 25.114 AND OF**  
**THE U.S. TABLE OF FREQUENCY ALLOCATIONS**

**I. TO THE EXTENT THEY APPLY, GOOD CAUSE EXISTS FOR A WAIVER OF CERTAIN PORTIONS OF SECTIONS 25.137 AND 25.114**

Universal Space Network (USN) is provided limited legal and technical information for the KARI COMS-1 spacecraft.<sup>1</sup> Pursuant to Section 25.137 of the Federal Communications Commission's ("Commission" or "FCC") rules, the same technical information required by Section 25.114 for U.S.-licensed space station, and certain legal information, must be submitted by earth station applicants "requesting authority to operate with a non-U.S. licensed space station to serve the United States..."<sup>2</sup> USN seeks authority to support this pre-LEOP Telemetry and Tracking for test qualification in preparation for upcoming launches of the KARI GK-2A and GK-2B spacecraft LEOP supports, not commercial service to the United States, and thus believes that Section 25.137 does not apply.

To the extent the Commission determines, however, that USN's request for authority to provide pre-LEOP testing on a special temporary basis is a request to serve the United States with a non-U.S.-licensed satellite, USN respectfully requests a waiver of Sections 25.137 and 25.114 of the Commission's rules, to the extent that USN has not herein provided the information required by these rules.<sup>3</sup> The Commission may grant a waiver for good cause shown.<sup>4</sup> A waiver is therefore appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.

In this case, good cause for a waiver of portions of Section 25.114 exists. USN seeks authority only to conduct pre-LEOP test support using KARI COMS-1. Thus, any information sought by Section 25.114 that is not relevant to the pre-LEOP – e.g., antenna patterns, energy and propulsion and orbital debris - USN does not have. In addition, USN would not easily be able to obtain such information because USN is not the operator of the COMS-1 satellite, nor is USN in contractual privity with that operator. Rather, USN has contracted with Swedish Space Corporation, Solna Sweden (SSC) to support the testing (pre-LEOP) portion in S-Band of the satellite prior to launch of follow on satellites.

No uplink transmission will be conducted from Hawaii to COMS-1 and as such no Comsearch report will be provided. Moreover, as with any STA, USN will conduct the pre-LEOP on an unprotected, non-interference basis to government operations.

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<sup>1</sup> FCC Form 312 Section B

<sup>2</sup> 47 C.F.R. § 25.137(a)

<sup>3</sup> 47 C.F.R. §§25.137 and 25.114

<sup>4</sup> 47 C.F.R. §1.3



Because it is not relevant to the service for which USN seeks authorization, and because obtaining the information would be a hardship, USN seeks a waiver of all the technical and legal information required by Section 25.114, to the extent it is not provided herein. As noted above, USN has provided the required information to the extent that it is relevant to the pre-LEOP service for which USN seeks authorization.

Good cause also exists to waive portions of Section 25.137, to the extent the information required is not herein provided. Section 25.137 is designed to ensure that “U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services” in other countries. Here, there is no service being provided by the satellite; USN is providing Telemetry and Tracking to qualify for the future launches. Thus, the purpose of the information required by Section 25.137 is not implicated here. For example, Section 25.137(d) requires earth station applicants requesting authority to operate with a non-U.S.-licensed space station that is not in orbit and operating to post a bond.<sup>5</sup> The underlying purpose in having to post a bond – i.e., to prevent warehousing of orbital locations by operators seeking to serve the United States – would not be served by requiring USN to post a bond in order to conduct 2 days of pre-LEOP testing with the COMS-1 satellite.

It is USN’s understanding that COMS-1 is licensed by the Republic of South Korea (Korean Aerospace Research Institute). COMS-1 is a communication and meteorological spacecraft. The spacecraft is primarily meant to serve the South Korean peninsula. Thus, the purpose of Section 25.137 – to ensure that U.S. satellite operators enjoy “effective competitive opportunities” to serve foreign markets and to prevent warehousing of orbital locations service the United States – will not be undermined by grant of this waiver request.

Finally, USN notes that it expects to communicate with the COMS-1 satellite using its U.S. earth station for a period of two (2) days. Requiring USN to obtain technical and legal information from an unrelated party, where there is no risk of interference and the operation will cease within 2 days would pose undue hardship without serving underlying policy objectives. Given these particular facts, the waiver sought herein is appropriate.

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<sup>5</sup> 47 C.F.R. §25.137(d)(4)

## **II. GOOD CAUSE EXISTS FOR A WAIVER OF THE UNITED STATES TABLE OF FREQUENCY ALLOCATIONS**

USN further requests a waiver of the United States Table of Frequency Allocations ("U.S. Table") as described in section 2.106 of the rules for the frequency bands 2025 – 2110 MHz (Earth-to-Space) and 2200 – 2290 MHz (Space-to-Earth).<sup>6</sup> Section footnotes allow for non-federal Government use of these bands in the United States on a case-by-case non-interference basis. Such use by USN necessitates a waiver of the U.S. Table.

Good cause exists to grant USN a limited waiver of the U.S. Table to allow pre-LEOP testing of the COMS-1 satellite. In considering request for case-by-case spectrum uses, the Commission has indicated that it would generally grant such waivers "where there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the case-by-case operator accepts any interference from authorized services."<sup>7</sup> USN will coordinate with other parties operating communication systems in compliance with the Table of Frequency Allocations to ensure that no harmful interference is caused. USN seeks to operate only pursuant to special temporary authorization and thus agrees to accept any interference from authorized services. In summary, USN's operation on a non-interference, non-protected basis support waiver of the U.S. Table.

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<sup>6</sup> 47 C.F.R. §2.106

<sup>7</sup> Previously approved STA's for Universal Space Network SES-STA-20020725-01174; SES-STA-20021112-02008; SES-STA-20040315-00475









**FEDERAL COMMUNICATIONS COMMISSION  
APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS  
FCC Form 312 - Schedule B: (Technical and Operational Description)**

If VSAT Network, provide the SITE-ID (Item B1b) of the station that B8-B13 are in response to (HUB, REMOTE1, etc.): \_\_\_\_\_

<p>B8. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with <b>geostationary</b> 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 measurements? If NO, provide as an exhibit, a technical analysis showing compliance with two-degree spacing policy.</p> <p align="right"> <input type="checkbox"/> YES      <input type="checkbox"/> NO      <input type="checkbox"/> N/A         </p>													
<p>B9. 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 <b>non-geostationary</b> 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 measurement?</p> <p align="right"> <input checked="" type="checkbox"/> YES      <input type="checkbox"/> NO         </p>													
<p>B10. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.</p> <p align="right"> <input checked="" type="checkbox"/> YES      <input type="checkbox"/> NO         </p>													
<p><b>Remote Control Point Location:</b></p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 40%; padding: 2px;">B10a. Street Address 417 Caredean Drive Suite A</td> <td style="width: 20%; padding: 2px;">B10c. County Montgomery</td> <td style="width: 40%; padding: 2px;">B10d. State/Country PA</td> </tr> <tr> <td style="padding: 2px;">B10b. City Horsham</td> <td colspan="2" style="padding: 2px;">B10e. Zip Code 19044</td> </tr> <tr> <td colspan="3" style="padding: 2px;">B10f. Telephone Number 215-328-9130</td> </tr> <tr> <td colspan="3" style="padding: 2px;">B10g. Call Sign of Control Station (if appropriate)</td> </tr> </table>		B10a. Street Address 417 Caredean Drive Suite A	B10c. County Montgomery	B10d. State/Country PA	B10b. City Horsham	B10e. Zip Code 19044		B10f. Telephone Number 215-328-9130			B10g. Call Sign of Control Station (if appropriate)		
B10a. Street Address 417 Caredean Drive Suite A	B10c. County Montgomery	B10d. State/Country PA											
B10b. City Horsham	B10e. Zip Code 19044												
B10f. Telephone Number 215-328-9130													
B10g. Call Sign of Control Station (if appropriate)													
<p>B11. Is frequency coordination required? If YES, attach a frequency coordination report as an exhibit.</p> <p align="right"> <input checked="" type="checkbox"/> YES      <input type="checkbox"/> NO         </p>													
<p>B12. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as an exhibit.</p> <p align="right"> <input type="checkbox"/> YES      <input checked="" type="checkbox"/> NO         </p>													
<p>B13. FAA Notification - (See 47 CFT Part 17 and 47 CFT 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? <b>FAILURE TO COMPLY WITH 47 CFT PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION</b></p> <p align="right"> <input type="checkbox"/> YES      <input checked="" type="checkbox"/> NO         </p>													

Applicant: Universal Space Network, Inc.  
No Call Sign  
File No.: SES-STA-20180530-01000  
Special Temporary Authority (STA)

Universal Space Network Inc. ("USN") is granted a 30-day STA beginning June 19, 2018 to operate its fixed earth station at 19° 0' 50.3" N, 155° 39' 46.6" W in Naalehu, Hawaii to conduct tracking qualification testing of USN's antenna with the KARI COMS-1 spacecraft at 128.2° E on center frequency 2271.60 MHz (space-to-Earth) under the following conditions:

1. All operations shall be on an unprotected basis to both government and non-government operations.
2. This action does not constitute market access for the KARI COMS-1 spacecraft at 128.2° E.
3. All operations are limited to satellite beacon tracking.
4. Future request for authorizations must be requested 30 days prior to commencement of operations to allow for coordination with government users.
5. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at USN's own risk.
6. Grant of this STA is without prejudice to any determination that the Commission may make regarding pending or future USN's applications.

This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. §0.261, and is effective upon release.



File # SES-STA-20180530-01000  
Call Sign \_\_\_\_\_ Grant Date 6-18-18  
(or other identifier)  
Term Dates  
From: 6-19-18 To: 7-19-18  
Approved: Paul E. Flack