



**UNITED STATES OF AMERICA  
FEDERAL COMMUNICATIONS COMMISSION  
RADIO STATION AUTHORIZATION**

Name: Shaw Satellite Services Inc.

Call Sign: E960474

Authorization Type: Modification of License

File Number: SES-MOD-20160826-00744

Non Common Carrier

Grant date: 11/01/2016

Expiration Date: 01/03/2022



Nature of Service: Mobile Satellite Service

Class of Station: Mobile Earth Station

**A) Site Location(s)**

#	Site ID	Address	Latitude	Longitude	Elevation (Meters)	Special Provisions NAD (Refer to Section H)
1)	BOATRACS 1	6400 S. FIDDLERS GREEN CIR. #2000 GREENWOOD VILLAGE, CO 80111			83	
Licensee certifies antenna(s) comply with gain patterns specified in Section 25.209						
2)	BOATRACS 1	(100000 units) .08 Meter CONUS AK, HI, PR, CA,			0	UNK
Licensee certifies antenna(s) do not comply with Section 25.209. Please refer to Section E for special conditions placed upon antennas at this site.						

*Subject to the provisions of the Communications Act of 1934, The Communications Satellite Act of 1962, subsequent acts and treaties, and all present and future regulations made by this Commission, and further subject to the conditions and requirements set forth in this license, the grantee is authorized to construct, use and operate the radio facilities described below for radio communications for the term beginning January 3, 2007 (3 AM Eastern Standard Time) and ending January 3, 2022 (3 AM Eastern Standard Time) . The required date of completion of construction and commencement of operation is November 1, 2019 (3 AM Eastern Standard Time) . Grantee must file with the Commission a certification upon completion of construction and commencement of operation.*

**B) Particulars of Operations**

The General Provision 1010 applies to all receiving frequency bands.

The General Provision 1900 applies to all transmitting frequency bands.

For the text of these provisions, refer to Section H.

#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
1)	14200.0000-14450.0000	R	36M0F1D	Tx	20.00	-19.56	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
2)	14200.0000-14450.0000	V	36M0F1D	Tx	20.00	-19.56	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
3)	14200.0000-14450.0000	R	48M0F1D	Tx	20.00	-20.80	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
4)	14200.0000-14450.0000	V	48M0F1D	Tx	20.00	-20.80	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM



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5)	14090.0850-14100.0850	R	36M0F1D	Tx	20.00	-19.56	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
6)	14090.0850-14100.0850	V	36M0F1D	Tx	20.00	-19.56	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
7)	14090.0850-14100.0850	R	48M0F1D	Tx	20.00	-20.80	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
8)	14090.0850-14100.0850	V	48M0F1D	Tx	20.00	-20.80	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
9)	14018.7120-14033.2880	R	36M0F1D	Tx	20.00	-19.56	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
10)	14018.7120-14033.2880	V	36M0F1D	Tx	20.00	-19.56	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
11)	14018.7120-14033.2880	R	48M0F1D	Tx	20.00	-20.80	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
12)	14018.7120-14033.2880	V	48M0F1D	Tx	20.00	-20.80	REMOTE		FREQUENCY HOPPED, DIRECT SEQUENCE SPREAD SPECTRUM
13)	12066.3750-12069.3750	R	2M00G1D	Rx			REMOTE		OMNI-2 FORWARD LINK DATA (QPSK)
14)	12066.3750-12069.3750	R	2M05G7D	Rx			REMOTE		OMNI-2 FORWARD LINK DATA (QPSK)
15)	11957.5000-11960.5000	R	2M00G1D	Rx			REMOTE		OMNI-2 FORWARD LINK DATA (QPSK)
16)	11957.5000-11960.5000	R	2M05G7D	Rx			REMOTE		OMNI-2 FORWARD LINK DATA (QPSK)
17)	11710.5000-11713.5000	R	2M00G1D	Rx			REMOTE		OMNI-2 FORWARD LINK DATA (QPSK)
18)	11710.5000-11713.5000	R	2M05G7D	Rx			REMOTE		OMNI-2 FORWARD LINK DATA (QPSK)
19)	11700.0000-12200.0000	R	2M05G7D	Rx			REMOTE		OMNI-2 FORWARD LINK DATA (QPSK)
20)	11700.0000-12200.0000	R	2M00G1D	Rx			REMOTE		OMNITRACS FORWARD LINK DATA (MODE B)



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**C) Frequency Coordination Limits**

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
1)	11700.0000-12200.0000	60.0W	143.0W						REMOTE
2)	14200.0000-14450.0000	60.0W	143.0W					-0.4	REMOTE

**D) Points of Communications**

The following stations located in the Satellite orbits consistent with Sections B and C of this Entry:

- 1) BOATRACS 1 to Permitted Space Station List
- 2) BOATRACS 1 to Permitted Space Station List

**E) Antenna Facilities**

Site ID	Antenna ID	Units	Diameter (meters)	Manufacturer	Model number	Site Elevation (Meters)	Max Antenna Height (Meters)	Special Provisions (Refer to Section H)
BOATRACS 1	REMOTE	100000	0.08	QUALCOMM	10-J5226-1	0	10 AGL/ 5 AMSL	
Max Gains(s):		18.0 dBi @	12.0000 GHz	19.0 dBi @	14.0000 GHz			
Maximum total input power at antenna flange (Watts) =					1.00			
Maximum aggregate output EIRP for all carriers (dBW) =					20.00			

**F) Remote Control Point:**

BOATRACS 1 Joe Guerriero, 6400 S. Fiddlers Green Cir. #2000  
Greenwood Village, CO 80111  
720-891-2524

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**G) Antenna Structure marking and lighting requirements:**

None unless otherwise specified under Special and General Provisions



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## H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

167 --- This authorization is limited to the total number of terminals listed in Section A of this license for this Site ID.

1010 --- Applicable to all receiving frequency bands. Emission designator indicates the maximum bandwidth of received signal at associated station(s). Maximum EIRP and maximum EIRP density are not applicable to receive operations.

1900 --- Applicable to all transmitting frequency bands. Authority is granted to transmit any number of RF carriers with the specified parameters on any discrete frequencies within associated band in accordance with the other terms and conditions of this authorization, subject to any additional limitations that may be required to avoid unacceptable levels of inter-satellite interference.

2010 --- This authorization is issued pursuant to the Commission's Second Report and Order adopted June 16, 1972 (35 FCC 2d 844) and Memorandum, Opinion and Order adopted December 21, 1972 (38 FCC 2d 665) in Docket No. 16495 and is subject to the policies adopted in that proceeding.

2300 --- Authority is granted to operate this station by remote control provided that: (1) the parameters of the transmissions of this station monitored at the remote control point, and the operational functions sufficient to ensure that the operations of this station are in full compliance with the station authorization at all times; (2) upon detection by the grantee, or upon notification from the Commission, of a deviation of the operation of this station, transmissions shall be immediately suspended until the deviation is corrected, except that transmissions concerning the immediate safety of life or property may be conducted for the duration of such emergency; and (3) the grantee shall have available, at all times, the technical personnel necessary to perform the technical servicing and maintenance of this station expeditiously. See also Public Notice "The International Bureau Provides Guidance Concerning the Relocation of Earth Station Remote Control Points", DA 06-978 (rel. May 4, 2006).

2916 --- Transmitter(s) must be turned off during antenna maintenance to ensure compliance with the FCC-specified safety guidelines for human exposure to radiofrequency radiation in the region between the antenna feed and the reflector. Appropriate measures must also be taken to restrict access to other regions in which the earth station's power flux density levels exceed the specified guidelines.

2938 --- Upon completion of construction, each licensee must file with the Commission a certification including the following information: (1) name of the licensee, (2) file number of the application, (3) call sign of the antenna, (4) date of the license, (5) certification that the facility as authorized has been completed, (6) certification that each antenna facility has been tested and is within 2 dB of the pattern specified in Section 25.209, and (7) certification that the station is operational (including the date of commencement of service) and will remain operational during the license period unless the license is submitted for cancellation.

3904 --- Qualcomm, Inc. shall immediately cease operations upon notification of harmful interference into any service that has superior status, either domestically or internationally, in the 11.7-12.2 GHz and 14.0-14.5 GHz frequency bands.

3905 --- Qualcomm, Inc. is [\*\*25] not permitted to operate in Mode A in the forward link.

3906 --- Qualcomm, Inc. is permitted to operate in Mode B in the forward link only upon the agreement of all affected domestic and international fixed-satellite operators.



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A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

- 3907 --- In the event Qualcomm, Inc. cannot obtain an operational agreement with other satellite operators for Mode B operations, it will be required to restrict these transmissions to the center 2 MHz of the transponder or to the frequencies normally assigned to video carriers and to a maximum satellite carrier EIRP density of not more than +6.0 dBW/4 KHz within the service area.
- 3908 --- Individual mobile units are not permitted to transmit unless commanded to do so from the hub terminal via the satellite forward link, and each mobile antenna pattern, during transmission, [\*\*26] shall be properly aligned with the geostationary-satellite orbit so that the mobile antenna's 3-dB beamwidth along the orbital arc is not more than 7 degrees for any orientation of the mobile unit.
- 3909 --- Qualcomm, Inc. shall maintain a point of contact for any interference problems who can arrange to remedy the problem immediately or to terminate operations if necessary.
- 3910 --- Qualcomm, Inc. shall maintain records of the locations of terminals being used in a transportable mode and records of the ownership of vehicles on which the mobile units have been installed.
- 3911 --- Qualcomm, Inc. shall annually file with the Commission the number of each antennas constructed within the year, specifying the number being used in transportable and mobile modes.
- 3912 --- Qualcomm, Inc. shall maintain a log recording all incidents where it is accused of causing harmful interference. The log shall record the nature of each incident, the parties involved, and the outcome. The log shall be maintained for a five year period for each incident. Qualcomm, Inc. shall notify the Commission of any complaints of interference within 14 days of its receiving a complaint. Qualcomm, Inc. shall also inform the Commission [\*\*27] of the outcome of the incident with 14 days of its resolution.
- 5208 --- The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Compliance can be accomplished in most cases by appropriate restrictions, such as fencing. Requirements for restrictions can be determined by predictions based on calculations, modeling, or by field measurements. The FCC's OET Bulletin 65 (available on-line at [www.fcc.gov/oet/rfsafety](http://www.fcc.gov/oet/rfsafety)) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers.



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B) This RADIO STATION AUTHORIZATION is granted subject to the additional conditions specified below:

This authorization is issued on the grantee's representation that the statements contained in the application are true and that the undertakings described will be carried out in good faith.

This authorization shall not be construed in any manner as a finding by the Commission on the question of marking or lighting of the antenna system should future conditions require. The grantee expressly agrees to install such marking or lighting as the Commission may require under the provisions of Section 303(q) of the Communications Act. 47 U.S.C. § 303(q).

Neither this authorization nor the right granted by this authorization shall be assigned or otherwise transferred to any person, firm, company or corporation without the written consent of the Commission. This authorization is subject to the right of use or control by the government of the United States conferred by Section 706 of the Communications Act. 47 U.S.C. § 706. Operation of this station is governed by Part 25 of the Commission's Rules. 47 C.F.R. Part 25.

This authorization shall not vest in the licensee any right to operate this station nor any right in the use of the designated frequencies beyond the term of this license, nor in any other manner than authorized herein.

This authorization is issued on the grantee's representation that the station is in compliance with environmental requirements set forth in Section 1.1307 of the Commission's Rules. 47 C.F.R. § 1.1307.

This authorization is issued on the grantee's representation that the station is in compliance with the Federal Aviation Administration (FAA) requirements as set forth in Section 17.4 of the Commission's Rules. 47 C.F.R. § 17.4.

The following condition applies when this authorization permits construction of or modifies the construction permit of a radio station.

This authorization shall be automatically forfeited if the station does not meet each required construction deadline by the required date of completion unless, before such date(s), a specific application is timely filed to request an extension of the construction deadline(s), supported with good cause why that failure to construct by the required date was due to factors not under control of the grantee.

Licensees are required to pay annual regulatory fees related to this authorization. The requirement to collect annual regulatory fees from regulatees is contained in Public Law 103-66, "The Omnibus Budget Reconciliation Act of 1993." These regulatory fees, which are likely to change each fiscal year, are used to offset costs associated with the Commission's enforcement, public service, international and policy and rulemaking activities. The Commission issues a Report and Order each year, setting the new regulatory fee rates. Receive only earth stations are exempt from payment of regulatory fees.

