

**United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
RADIO STATION CONSTRUCTION PERMIT
AND LICENSE**

EXPERIMENTAL
(Nature of Service)

WE2XRO
(Call Sign)

XC FX
(Class of Station)

0048-EX-CR-2016
(File Number)

NAME Northrop Grumman Systems Corporation

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the licensee hereof is hereby authorized to use and operate the radio transmitting facilities hereinafter described for radio communications in accordance with the program of experimentation described by the licensee in its application for license.

Operation: In accordance with Sec. 5.3(c) of the Commission's Rules

Station Locations

(1) Sacramento (SACRAMENTO), CA - NL 38-40-04; WL 121-24-02

Frequency Information

Sacramento (SACRAMENTO), CA - NL 38-40-04; WL 121-24-02

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
20-20.75 MHz	FX	N0N 42K0W7W	263 W (ERP)	
21.05 MHz	FX	N0N	263 W (ERP)	
21.35 MHz	FX	N0N	263 W (ERP)	
21.65-24.7 MHz	FX	N0N 42K0W7W	263 W (ERP)	

This authorization effective November 01, 2016 and
will expire 3:00 A.M. EST November 01, 2021

**FEDERAL
COMMUNICATIONS
COMMISSION**



Frequency Information

Sacramento (SACRAMENTO), CA - NL 38-40-04; WL 121-24-02

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
21.65-24.7 MHz	FX	15K0F3E	263 W (ERP)	
21.85-24.7 MHz	FX	N0N 15K0F3E 42K0W7W	263 W (ERP)	
25.05 MHz	FX	N0N	263 W (ERP)	
25.4-26.1 MHz	FX	N0N 42K0W7W	263 W (ERP)	
26.45 MHz	FX	N0N	263 W (ERP)	
26.63-26.8 MHz	FX	N0N 42K0W7W	263 W (ERP)	
27.15 MHz	FX	N0N	263 W (ERP)	
27.48 MHz	FX	42K0W7W	263 W (ERP)	
27.5 MHz	FX	N0N	263 W (ERP)	

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
27.85 MHz	FX	N0N	263 W (ERP)	
28.2 MHz	FX	N0N	263 W (ERP)	
28.6 MHz	FX	N0N	263 W (ERP)	
29 MHz	FX	N0N	263 W (ERP)	
29.4 MHz	FX	N0N	263 W (ERP)	
29.8 MHz	FX	N0N	263 W (ERP)	
30.2 MHz	FX	N0N	263 W (ERP)	
30.6 MHz	FX	N0N	263 W (ERP)	
30.75 MHz	FX	42K0W7W	263 W (ERP)	
31 MHz	FX	N0N	263 W (ERP)	

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
31.4 MHz	FX	N0N	263 W (ERP)	
31.8 MHz	FX	N0N	263 W (ERP)	
32.167-32.7 MHz	FX	N0N 15K0F3E	263 W (ERP)	
33.15 MHz	FX	N0N	263 W (ERP)	
33.6 MHz	FX	N0N	263 W (ERP)	
34.05-34.95 MHz	FX	N0N	263 W (ERP)	
35.4 MHz	FX	N0N	263 W (ERP)	
35.81 MHz	FX	42K0W7W	263 W (ERP)	
35.85 MHz	FX	N0N	263 W (ERP)	
36.85-38.85 MHz	FX	N0N 42K0W7W	263 W (ERP)	

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
39.35 MHz	FX	N0N	263 W (ERP)	
40.01-41.55 MHz	FX	N0N 42K0W7W	263 W (ERP)	
42.1 MHz	FX	N0N	263 W (ERP)	
42.65 MHz	FX	N0N	263 W (ERP)	
43.2 MHz	FX	N0N	263 W (ERP)	
43.8 MHz	FX	N0N	263 W (ERP)	
44.4 MHz	FX	N0N	263 W (ERP)	
45 MHz	FX	N0N	263 W (ERP)	
45.06 MHz	FX	42K0W7W	263 W (ERP)	
45.6 MHz	FX	N0N	263 W (ERP)	

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
46.2 MHz	FX	N0N	263 W (ERP)	
46.8 MHz	FX	N0N	263 W (ERP)	
47.45 MHz	FX	N0N	263 W (ERP)	
48.1 MHz	FX	N0N	263 W (ERP)	
48.75 MHz	FX	N0N	263 W (ERP)	
49.4 MHz	FX	N0N	263 W (ERP)	
49.51 MHz	FX	42K0W7W	263 W (ERP)	
50.05 MHz	FX	N0N	263 W (ERP)	
50.7 MHz	FX	N0N	263 W (ERP)	
51.4 MHz	FX	N0N	263 W (ERP)	

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
52.8 MHz	FX	N0N	263 W (ERP)	
52.92 MHz	FX	42K0W7W	263 W (ERP)	
53.5 MHz	FX	N0N	263 W (ERP)	
122.1 MHz	FX	N0N	263 W (ERP)	
122.94 MHz	FX	42K0W7W	263 W (ERP)	
123.2 MHz	FX	15K0F3E	263 W (ERP)	
130.55 MHz	FX	N0N	263 W (ERP)	
139.5-143.435 MHz	FX	N0N	263 W (ERP)	
145.15 MHz	FX	N0N	263 W (ERP)	
147.1 MHz	FX	N0N	263 W (ERP)	

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
149.05-150.04 MHz	FX	N0N	263 W (ERP)	
151.05 MHz	FX	N0N	263 W (ERP)	
152 MHz	FX	42K0W7W	263 W (ERP)	
153.05 MHz	FX	N0N	263 W (ERP)	
155.1 MHz	FX	N0N	263 W (ERP)	
157.2 MHz	FX	N0N	263 W (ERP)	
159.3 MHz	FX	N0N	263 W (ERP)	
161.45 MHz	FX	N0N	263 W (ERP)	
161.779 MHz	FX	42K0W7W	263 W (ERP)	
163.6-221.7 MHz	FX	N0N	263 W (ERP)	

Frequency Information

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
409.25-449.25 MHz	FX	N0N	263 W (ERP)	
455.25 MHz	FX	N0N	263 W (ERP)	
459.889 MHz	FX	42K0W7W	263 W (ERP)	
461.35-467.55 MHz	FX	N0N	263 W (ERP)	
810.7 MHz	FX	N0N	224 W (ERP)	
821.55 MHz	FX	N0N	224 W (ERP)	
832.55 MHz	FX	N0N	224 W (ERP)	
843.7 MHz	FX	N0N	224 W (ERP)	
855 MHz	FX	N0N	224 W (ERP)	
866.45 MHz	FX	N0N	224 W (ERP)	

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
878.05 MHz	FX	N0N	224 W (ERP)	
889.8 MHz	FX	N0N	224 W (ERP)	
901.7 MHz	FX	N0N	224 W (ERP)	
913.8-926.05 MHz	FX	N0N	224 W (ERP)	
938.45 MHz	FX	N0N	224 W (ERP)	
951.05 MHz	FX	N0N	224 W (ERP)	
1619.7 MHz	FX	N0N	224 W (ERP)	
1685.7 MHz	FX	N0N	224 W (ERP)	
1708.3 MHz	FX	N0N	224 W (ERP)	
1731.2 MHz	FX	N0N	224 W (ERP)	

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1754.4 MHz	FX	N0N	224 W (ERP)	
1777.9-1825.85 MHz	FX	N0N	224 W (ERP)	
1850.3 MHz	FX	N0N	224 W (ERP)	
1875.1 MHz	FX	N0N	224 W (ERP)	
1900.25 MHz	FX	N0N	224 W (ERP)	
1925.7 MHz	FX	N0N	224 W (ERP)	
1951.8 MHz	FX	N0N	224 W (ERP)	
1977.65 MHz	FX	N0N	224 W (ERP)	
2004.15 MHz	FX	N0N	224 W (ERP)	
2031-2085.8 MHz	FX	N0N	224 W (ERP)	

Frequency Information

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2113.75 MHz	FX	N0N	224 W (ERP)	
2142.05 MHz	FX	N0N	224 W (ERP)	
2170.75 MHz	FX	N0N	224 W (ERP)	
2199.85 MHz	FX	N0N	224 W (ERP)	
2414.7 MHz	FX	N0N	224 W (ERP)	
2447.05 MHz	FX	N0N	224 W (ERP)	
2479.85 MHz	FX	N0N	224 W (ERP)	

Special Conditions:

- (1) Operation in the 1850-1910 or 1930-1990 MHz band requires prior frequency coordination with 2 GHz microwave users and consent of PCS licensees to avoid interference.
- (2) Operation is subject to prior coordination with the Society of Broadcast Engineers, Inc. (SBE); ATTN: Executive Director; 9102 North Meridian Street, Suite 305; Indianapolis, IN 46260; telephone, (866) 632-4222; FAX, (317) 846-9120; e-mail, executivedir@sbe.org; information, www.sbe.org.
- (3) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.
- (4) Operation in the 824-849 or 869-894 MHz band requires consent of local cellular licensee(s) to avoid interference.
- (5) The station identification requirements of Section 5.115 of the Commission's Rules are waived.

Special Conditions:

- (6) Licensee should be aware that other stations may be licensed on these frequencies and if any interference occurs, the licensee of this authorization will be subject to immediate shut down.
- (7) Operation in the 1695-1780 MHz, 1915-1920 MHz, 1995-2020 MHz or 2110-2200 MHz band requires consent of local Advanced Wireless Service (AWS) licensee(s) to avoid interference.
- (8) Stop Buzzer: Gary Infantino, 916-570-4365 (Cell).
- (9) Operation is subject to prior coordination with affected Fixed Microwave Service licensees in accordance with 47 CFR, Part 101.103(d).
- (10) This authorization is issued for the express purpose of conducting experimental operations described in the related application and required by US Army contract W15P7T-07-D-W202. The use of this radio station in any other manner or for any other purpose will constitute a violation of the privileges herein authorized. Except as subsequently authorized by the Commission, this radio station shall not be operated after the expiration date of the contract designated in the related application and enumerated above.
- (11) Upon notification from the FCC, operation in 34.05-34.95 MHz is subject to immediate cessation, if it causes harmful interference to Coast Guard ops assignments.
- (12) Upon notification from the FCC, operation in 409.25-449.25 MHz is subject to immediate cessation, if it causes harmful interference to FAA ops on 413.6 MHz.