

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

EXPERIMENTAL

(Nature of Service)

WE2XBP

(Call Sign)

XT FX MO

(Class of Station)

0121-EX-CR-2017

(File Number)

NAME CATERPILLAR, INC.

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(h, i) of the Commission's Rules

Station Locations

- (1) MOBILE: CATERPILLAR, INC., TUCSON PROVING GROUNDS, within 5 km, centered around NL 31-49-38; WL 111-08-38
- (2) MOBILE: CATERPILLAR, INC. PEORIA PROVING GROUNDS, within 5 km, centered around NL 40-44-48; WL 89-28-22
- (3) Washington (TAZEWELL), IL - NL 40-44-49; WL 89-28-23; MOBILE: 5 KM radius of, within 5 km
- (4) MOBILE: 5 KM radius of Peoria Proving Grounds, within 5 km, centered around NL 40-44-49; WL 89-28-23
- (5) Green Valley (PIMA), AZ - NL 31-50-53; WL 111-07-55; MOBILE: 5 km of 6000 West Caterpillar Trail, within 5 km
- (6) MOBILE: 5 KM RADIUS OF 6000 West Caterpillar Trail, within 5 km, centered around NL 31-50-22; WL 111-08-15
- (7) Washington (TAZEWELL), IL - NL 40-44-49; WL 89-28-23; MOBILE: within 5 km, centered around NL 40-44-49; WL 89-28-23
- (8) Green Valley (PIMA), AZ - NL 31-50-53; WL 111-07-55; MOBILE: within 5 km, centered around NL 31-50-53; WL 111-07-55

Frequency Information

MOBILE: CATERPILLAR, INC., TUCSON PROVING GROUNDS, within 5 km, centered around NL 31-49-38; WL 111-08-38

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
21-21.45 MHz	MO	NON	500 W (ERP)	

This authorization effective June 01, 2017 and
will expire 3:00 A.M. EST June 01, 2022

**FEDERAL
COMMUNICATIONS
COMMISSION**



Frequency Information

MOBILE: CATERPILLAR, INC., TUCSON PROVING GROUNDS, within 5 km, centered around NL 31-49-38; WL 111-08-38

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
21-21.45 MHz	MO	2K00A3E	500 W (ERP)	
25.21-25.33 MHz	MO	N0N 2K00A3E	500 W (ERP)	
26.175-26.48 MHz	MO	N0N 2K00A3E	500 W (ERP)	
26.95-27.54 MHz	MO	N0N 2K00A3E	500 W (ERP)	
28-29.89 MHz	MO	N0N 2K00A3E	500 W (ERP)	
29.91-30 MHz	MO	N0N 2K00A3E	500 W (ERP)	
30.56-32 MHz	MO	N0N 2K00A3E	500 W (ERP)	
33-34 MHz	MO	N0N 2K00A3E	500 W (ERP)	
35-36 MHz	MO	N0N	500 W (ERP)	

Frequency Information

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
35-36 MHz	MO	2K00A3E	500 W (ERP)	
37-37.5 MHz	MO	N0N 2K00A3E	500 W (ERP)	
39-40 MHz	MO	N0N 2K00A3E	500 W (ERP)	
42-46.6 MHz	MO	N0N 2K00A3E	500 W (ERP)	
47-49.6 MHz	MO	N0N 2K00A3E	500 W (ERP)	
50-54 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	
60-72 MHz	MO	N0NN0N 2K00A3E	500 W (ERP)	
76-82 MHz	MO	N0N 2K00A3E	500 W (ERP)	
121.9375-123.0875 MHz	MO	N0N	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC., TUCSON PROVING GROUNDS, within 5 km, centered around NL 31-49-38; WL 111-08-38

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
121.9375-123.0875 MHz	MO	2K00A3E	500 W (ERP)	
128.8125-132.0125 MHz	MO	N0N 2K00A3E	500 W (ERP)	
137-138 MHz	MO	N0N 2K00A3E	500 W (ERP)	
144-148 MHz	MO	N0N 2K00A3E	500 W (ERP)	
150.8-157.0375 MHz	MO	N0N 2K00A3E	500 W (ERP)	
157.1875-162.0125 MHz	MO	N0N 2K00A3E	500 W (ERP)	
173.2-173.4 MHz	MO	N0N 2K00A3E	500 W (ERP)	
180-186 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	
192-198 MHz	MO	0H00N0N	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC., TUCSON PROVING GROUNDS, within 5 km, centered around NL 31-49-38; WL 111-08-38

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
192-198 MHz	MO	2K00A3E	500 W (ERP)	
400 MHz	MO	N0N 2K00A3E	500 W (ERP)	
450-460 MHz	MO	N0N 2K00A3E	500 W (ERP)	
470-548 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	
554-560 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	
566-578 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	
584-608 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	
614-626 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	

Frequency Information

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Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
644-662 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	
668-680 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	
686-902 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	
928-932 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	
935-941 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	
944-960 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	
1750 MHz	MO	N0N 2K00A3E	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC., TUCSON PROVING GROUNDS, within 5 km, centered around NL 31-49-38; WL 111-08-38

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1750 MHz	MO	20K0P0N	500 W (ERP)	
1800 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	

MOBILE: CATERPILLAR, INC. PEORIA PROVING GROUNDS, within 5 km, centered around NL 40-44-48; WL 89-28-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
21-21.45 MHz	MO	N0N 2K00A3E	500 W (ERP)	
25.21-25.33 MHz	MO	N0N 2K00A3E	500 W (ERP)	
26.175-26.48 MHz	MO	N0N 2K00A3E	500 W (ERP)	
26.95-27.54 MHz	MO	N0N 2K00A3E	500 W (ERP)	
28-29.89 MHz	MO	N0N 2K00A3E	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC. PEORIA PROVING GROUNDS, within 5 km, centered around NL 40-44-48; WL 89-28-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
29.91-30 MHz	MO	N0N 2K00A3E	500 W (ERP)	
30.56-32 MHz	MO	N0N 2K00A3E	500 W (ERP)	
33-34 MHz	MO	N0N 2K00A3E	500 W (ERP)	
35-36 MHz	MO	N0N 2K00A3E	500 W (ERP)	
37-37.5 MHz	MO	N0N 2K00A3E	500 W (ERP)	
39-40 MHz	MO	N0N 2K00A3E	500 W (ERP)	
42-46.6 MHz	MO	N0N 2K00A3E	500 W (ERP)	
47-49.6 MHz	MO	N0N 2K00A3E	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC. PEORIA PROVING GROUNDS, within 5 km, centered around NL 40-44-48; WL 89-28-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
50-73 MHz	MO	N0N 2K00A3E	500 W (ERP)	
75.4-88 MHz	MO	N0N 2K00A3E	500 W (ERP)	
93.7 MHz	MO	N0N 2K00A3E	500 W (ERP)	
98.9 MHz	MO	N0N 2K00A3E	500 W (ERP)	
101.5 MHz	MO	N0N 2K00A3E	500 W (ERP)	
103.1 MHz	MO	N0N 2K00A3E	500 W (ERP)	
104.1 MHz	MO	N0N 2K00A3E	500 W (ERP)	
107.5 MHz	MO	N0N 2K00A3E	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC. PEORIA PROVING GROUNDS, within 5 km, centered around NL 40-44-48; WL 89-28-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
121.9375-123.0875 MHz	MO	N0N 2K00A3E	500 W (ERP)	
128.8125-132.0125 MHz	MO	N0N 2K00A3E	500 W (ERP)	
137-138 MHz	MO	N0N 2K00A3E	500 W (ERP)	
144-148 MHz	MO	N0N 2K00A3E	500 W (ERP)	
150.8-157.0375 MHz	MO	N0N 2K00A3E	500 W (ERP)	
157.1875-162.0125 MHz	MO	N0N 2K00A3E	500 W (ERP)	
173.2-173.4 MHz	MO	N0N 2K00A3E	500 W (ERP)	
174-192 MHz	MO	N0N 2K00A3E	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC. PEORIA PROVING GROUNDS, within 5 km, centered around NL 40-44-48; WL 89-28-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
198-216 MHz	MO	N0N 2K00A3E	500 W (ERP)	
400 MHz	MO	N0N 2K00A3E	500 W (ERP)	
450-460 MHz	MO	N0N 2K00A3E	500 W (ERP)	
470-500 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	
506-536 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	
542-554 MHz	MO	N0N 2K00A3E	500 W (ERP)	
560-572 MHz	MO	N0N 2K00A3E	500 W (ERP)	
578-584 MHz	MO	2K00A3E 0H00N0N	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC. PEORIA PROVING GROUNDS, within 5 km, centered around NL 40-44-48; WL 89-28-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
626-632 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	
656-668 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	
674-680 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	
698-722 MHz	MO	2K00A3E 0H00N0N 20K0P0N	500 W (ERP)	
728-740 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	
746-788 MHz	MO	0H00N0N 2K00A3E 20K0P0N	500 W (ERP)	
794-902 MHz	MO	0H00N0N 2K00A3E	500 W (ERP)	

Frequency Information

MOBILE: CATERPILLAR, INC. PEORIA PROVING GROUNDS, within 5 km, centered around NL 40-44-48; WL 89-28-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
794-902 MHz	MO	20K0P0N	500 W (ERP)	
928-932 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	
935-941 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	
944-960 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	
1750 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	
1800 MHz	MO	N0N 2K00A3E 20K0P0N	500 W (ERP)	

Frequency Information

Washington (TAZEWELL), IL - NL 40-44-49; WL 89-28-23; MOBILE: 5 KM radius of, within 5 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2-2.31 GHz	FX	100KN0N 100KA3E 100KP0N	8 W (ERP)	
2.355-2.7 GHz	FX	100KA3E 100KN0N 100KP0N	8 W (ERP)	

MOBILE: 5 KM radius of Peoria Proving Grounds, within 5 km, centered around NL 40-44-49; WL 89-28-23

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2-2.31 GHz	MO	100KA3E 100KN0N 100KP0N	8 W (ERP)	
2.355-2.7 GHz	MO	100KN0N 100KA3E 100KP0N	8 W (ERP)	

Green Valley (PIMA), AZ - NL 31-50-53; WL 111-07-55; MOBILE: 5 km of 6000 West Caterpillar Trail, within 5 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2-2.31 GHz	FX	100KA3E 100KN0N	8 W (ERP)	

Frequency Information

Green Valley (PIMA), AZ - NL 31-50-53; WL 111-07-55; MOBILE: 5 km of 6000 West Caterpillar Trail, within 5 km

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2-2.31 GHz	FX	100KP0N	8 W (ERP)	
2.355-2.7 GHz	FX	100KA3E 100KN0N 100KP0N	8 W (ERP)	

MOBILE: 5 KM RADIUS OF 6000 West Caterpillar Trail, within 5 km, centered around NL 31-50-22; WL 111-08-15

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2-2.31 GHz	MO	100KA3E 100KN0N 100KP0N	8 W (ERP)	
2.355-2.7 GHz	MO	100KA3E 100KN0N 100KP0N	8 W (ERP)	

Washington (TAZEWELL), IL - NL 40-44-49; WL 89-28-23; MOBILE: within 5 km, centered around NL 40-44-49; WL 89-28-23

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1000-2000 MHz	FX	100KP0N	75 W (ERP)	
1000-2000 MHz	MO	100KP0N	75 W (ERP)	

Frequency Information

Green Valley (PIMA), AZ - NL 31-50-53; WL 111-07-55; MOBILE:within 5 km, centered around NL 31-50-53; WL 111-07-55

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1-2 GHz	FX	100KP0N	75 W (ERP)	
1-2 GHz	MO	100KP0N	75 W (ERP)	

Special Conditions:

- (1) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (2) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.
- (3) 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.
- (4) Licensee is required to coordinate operations with existing microwave users in the area to avoid interference.
- (5) Operation in the 824-849 or 869-894 MHz band requires consent of local cellular licensee(s) to avoid interference.
- (6) The designated point-of-contact to terminate transmissions if interference occurs is Mr. Nate Schenkel at (309) 698-5201 or (309) 370-1497.
- (7) Total operation time on any one frequency is expected to be less than 1 hour per month.
- (8) Operation is subject to prior coordination with affected existing and future Advanced Wireless Services (AWS) licensees.
- (9) Operation in the 910-960 MHz band requires consent of local cellular licensee(s) to avoid interference.
- (10) CATERPILLAR, INC. is subject to prior coordination with Fixed Point-to-point Microwave and Broadcast Auxiliary licensees within 150 km from the test sites for the frequency bands listed below:
 1. NL 31-49-38; WL 111-8-38: The following frequency bands need coordination. 157.1875 - 162.0125 MHz, 450 - 460 MHz, 470 - 608 MHz, 928 - 932 MHz, and 944 - 960 MHz.
 2. NL 40-44-48; WL 89-28-22: Coordination is necessary for the following bands: 150.8 - 157.0375 MHz, 157.1875 - 162.0125 MHz, 450 - 460 MHz, 928 - 932 MHz, and 944 - 960 MHz.
- (11) The radiation center of the intended experimental antenna(s) shall not be more than 2 meters from the above ground level.

Special Conditions:

- (12) Operation is subject to prior coordination at least every 12 months from the date of grant or, if necessary, more frequently to ensure compatibility with existing uses with the Society of Broadcast Engineers, Inc. (SBE); ATTN: Executive Director; 9247 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.
- (13) Operation is subject to prior coordination every 12 months from the date of grant with the Associated Public Safety Communications Officers, Inc. (APCO); ATTN: Ronald Haraseth; 351 North Williamson Blvd.; Daytona Beach, FL 32114-1112; Telephone: (386) 322-2500.
- (14) Licensee shall notch out operations in 2310-2320 MHz, 2345-2390 MHz and 2680-2700 MHz
- (15) Licensee must exclude the following frequencies at the Washington, IL location:
 - 1018 to 1042 MHz
 - 1080 to 1100 MHz
 - 1304 to 1360 MHz
 - 1559 to 1610 MHz
- (16) TESTING AT WASHINGTON, IL IS SUBJ TO FURTHER COORDINATION WITH THE FAA GREAT LAKES COORDINATOR, DES PLAINES, ILLINOIS AS NECESSARY TO ENSURE COMPATIBILITY WITH EXISTING USES (C047);
- (17) TESTING AT WASHINGTON, IL IS SUBJECT TO FURTHER COORDINATION WITH AFMO CONUS, FT. SAM HOUSTON, TEXAS, AS NECESSARY TO ENSURE COMPATIBILITY WITH EXISTING USES (C024).;
- (18) Licensee must exclude the following frequencies at Green Valley, AZ:
 - 1018 to 1042 MHz
 - 1103 to 1105 MHz
 - 1125 to 1127 MHz
 - 1228 to 1259 MHz
 - 1559 to 1610 MHz
- (19) TESTING AT GREEN VALLEY, AZ IS SUBJECT TO FURTHER COORDINATION WITH THE FAA WESTERN COORDINATOR, LOS ANGELES, CALIFORNIA , AS NECESSARY TO ENSURE COMPATIBILITY WITH EXISTING USES (C043).;
- (20) TESTING AT GREEN VALLEY, AZ ASSIGN IS SUBJ TO FURTHER COORDINATION WITH THE AFC, FT. HUACHUCA, ARIZONA, AS NECESSARY TO ENSURE COMPATIBILITY WITH THE EXISTING USES (C009);