

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

EXPERIMENTAL

(Nature of Service)

XC MO

(Class of Station)

WJ2XAP

(Call Sign)

0614-EX-CN-2017

(File Number)

NAME MIT Lincoln Laboratory

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) MOBILE: Dugway Proving Ground, Dugway UT, 84022, within 100 km, centered around NL 40-12-15; WL 112-50-59
- (2) MOBILE: Dugway Proving Ground, Dugway UT, 84022, within 100 km, centered around NL 40-12-15; WL 112-50-59
- (3) MOBILE: Donaldson Cave, Hedgesville, WV, within 100 km, centered around NL 39-35-01; WL 77-57-28
- (4) MOBILE: Donaldson Cave, Hedgesville, WV, within 100 km, centered around NL 39-35-01; WL 77-57-28
- (5) MOBILE: Ft. Hood, TX, within 100 km, centered around NL 31-11-42; WL 97-44-29
- (6) MOBILE: CPTF White Sands Missile Range, NM, within 100 km, centered around NL 33-14-19; WL 106-20-47
- (7) MOBILE: Ft. Hood, TX, within 100 km, centered around NL 31-11-42; WL 97-44-29
- (8) MOBILE: CPTF White Sands Missile Range, NM, within 100 km, centered around NL 33-14-19; WL 106-20-47
- (9) MOBILE: Ft. Devens, Devens MA, within 100 km, centered around NL 42-29-38; WL 71-40-21
- (10) MOBILE: Clarksville Base, Ft. Campbell KY, within 100 km, centered around NL 36-37-46; WL 87-26-34
- (11) MOBILE: Clarksville Base, Ft. Campbell KY, within 100 km, centered around NL 36-37-46; WL 87-26-34
- (12) MOBILE: White Pine Mine, Carp Lake Township, MI, within 100 km, centered around NL 46-45-43; WL 89-33-49
- (13) MOBILE: White Pine Mine, Carp Lake Township, MI, within 100 km, centered around NL 46-45-43; WL 89-33-49
- (14) MOBILE: Ft. Irwin, CA, within 100 km, centered around NL 35-15-46; WL 116-41-05
- (15) MOBILE: Ft. Irwin, CA, within 100 km, centered around NL 35-15-46; WL 116-41-05

This authorization effective November 29, 2017 and
will expire 3:00 A.M. EST June 01, 2019

**FEDERAL
COMMUNICATIONS
COMMISSION**



Station Locations

- (16) MOBILE: Ft. Irwin, CA, within 100 km, centered around NL 35-15-46; WL 116-41-05
- (17) MOBILE: Ft. Knox, KY, within 100 km, centered around NL 37-54-58; WL 85-57-22
- (18) MOBILE: Ft. Knox, KY, within 100 km, centered around NL 37-54-58; WL 85-57-22
- (19) MOBILE: Ft. Indiantown Gap, PA, within 100 km, centered around NL 40-26-27; WL 76-35-53
- (20) MOBILE: Ft. Indiantown Gap, PA, within 100 km, centered around NL 40-26-27; WL 76-35-53
- (21) MOBILE: Danby Quarries, Danby VT, within 100 km, centered around NL 43-19-26; WL 73-00-22
- (22) MOBILE: Danby Quarries, Danby VT, within 100 km, centered around NL 43-19-26; WL 73-00-22
- (23) MOBILE: CRREL Permafrost Research Tunnel, Fairbanks, AK, within 100 km, centered around NL 64-57-03; WL 147-37-12
- (24) MOBILE: CRREL Permafrost Research Tunnel, Fairbanks, AK, within 100 km, centered around NL 64-57-03; WL 147-37-12
- (25) MOBILE: Fort A.P. Hill, Fort A.P. Hill, VA, within 100 km, centered around NL 38-04-18; WL 77-19-39
- (26) MOBILE: Fort A.P. Hill, Fort A.P. Hill, VA, within 100 km, centered around NL 38-04-18; WL 77-19-39
- (27) MOBILE: Abandoned PA Turnpike, Breezewood, PA, within 100 km, centered around NL 40-00-55; WL 78-12-28
- (28) MOBILE: Abandoned PA Turnpike, Breezewood, PA, within 100 km, centered around NL 40-00-55; WL 78-12-28

Frequency Information

MOBILE: Dugway Proving Ground, Dugway UT, 84022, within 100 km, centered around NL 40-12-15; WL 112-50-59

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
410-417 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: Dugway Proving Ground, Dugway UT, 84022, within 100 km, centered around NL 40-12-15; WL 112-50-59

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

Frequency Information

MOBILE: Dugway Proving Ground, Dugway UT, 84022, within 100 km, centered around NL 40-12-15; WL 112-50-59

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
410-417 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Donaldson Cave, Hedgesville, WV, within 100 km, centered around NL 39-35-01; WL 77-57-28

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
410-417 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: Donaldson Cave, Hedgesville, WV, within 100 km, centered around NL 39-35-01; WL 77-57-28

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
410-417 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Ft. Hood, TX, within 100 km, centered around NL 31-11-42; WL 97-44-29

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

Frequency Information

MOBILE: Ft. Hood, TX, within 100 km, centered around NL 31-11-42; WL 97-44-29

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
418-435 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: CPTF White Sands Missile Range, NM, within 100 km, centered around NL 33-14-19; WL 106-20-47

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
417-420 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Ft. Hood, TX, within 100 km, centered around NL 31-11-42; WL 97-44-29

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
418-435 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: CPTF White Sands Missile Range, NM, within 100 km, centered around NL 33-14-19; WL 106-20-47

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
417-420 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

Frequency Information

MOBILE: Ft. Devens, Devens MA, within 100 km, centered around NL 42-29-38; WL 71-40-21

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
410-417 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: Clarksville Base, Ft. Campbell KY, within 100 km, centered around NL 36-37-46; WL 87-26-34

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
417-420 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Clarksville Base, Ft. Campbell KY, within 100 km, centered around NL 36-37-46; WL 87-26-34

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
417-420 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

Frequency Information

MOBILE: White Pine Mine, Carp Lake Township, MI, within 100 km, centered around NL 46-45-43; WL 89-33-49

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
415-418 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: White Pine Mine, Carp Lake Township, MI, within 100 km, centered around NL 46-45-43; WL 89-33-49

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
415-418 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Ft. Irwin, CA, within 100 km, centered around NL 35-15-46; WL 116-41-05

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
417-419 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

Frequency Information

MOBILE: Ft. Irwin, CA, within 100 km, centered around NL 35-15-46; WL 116-41-05

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
417-419 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: Ft. Irwin, CA, within 100 km, centered around NL 35-15-46; WL 116-41-05

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
417-419 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: Ft. Knox, KY, within 100 km, centered around NL 37-54-58; WL 85-57-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
421-430 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

Frequency Information

MOBILE: Ft. Knox, KY, within 100 km, centered around NL 37-54-58; WL 85-57-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
421-430 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Ft. Indiantown Gap, PA, within 100 km, centered around NL 40-26-27; WL 76-35-53

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
421-430 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: Ft. Indiantown Gap, PA, within 100 km, centered around NL 40-26-27; WL 76-35-53

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
421-430 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

Frequency Information

MOBILE: Danby Quarries, Danby VT, within 100 km, centered around NL 43-19-26; WL 73-00-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
423-430 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Danby Quarries, Danby VT, within 100 km, centered around NL 43-19-26; WL 73-00-22

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
423-430 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: CRREL Permafrost Research Tunnel, Fairbanks, AK, within 100 km, centered around NL 64-57-03; WL 147-37-12

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
420-429 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

Frequency Information

MOBILE: CRREL Permafrost Research Tunnel, Fairbanks, AK, within 100 km, centered around NL 64-57-03; WL 147-37-12

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
420-429 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Fort A.P. Hill, Fort A.P. Hill, VA, within 100 km, centered around NL 38-04-18; WL 77-19-39

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
424-430 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

MOBILE: Fort A.P. Hill, Fort A.P. Hill, VA, within 100 km, centered around NL 38-04-18; WL 77-19-39

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
424-430 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

Frequency Information

MOBILE: Abandoned PA Turnpike, Breezewood, PA, within 100 km, centered around NL 40-00-55; WL 78-12-28

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %
420-429 kHz	MO	10H0N0N	10 W (ERP)	0.0001 %

MOBILE: Abandoned PA Turnpike, Breezewood, PA, within 100 km, centered around NL 40-00-55; WL 78-12-28

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
100-190 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %
420-429 kHz	MO	10H0N0N	200 W (ERP)	0.0001 %

Special Conditions:

- (1) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.
- (2) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (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) One or more frequency assignments were coordinated prior to authorization with FAA Headquarters, 800 Independence Avenue, S.W., Washington, DC 20591; Telephone: 202-267-8699.
- (5) MIT Lincoln Laboratories acknowledges that testing and evaluation of this system contrary to the aeronautical radionavigation allocation for the 190-535 kHz. Therefore, the FAA will not support renewal of this experimental grant until the DOD sponsor submits for NTIA Spectrum Planning Subcommittee (SPS) Stage 3 certification.

Special Conditions:

- (6) This authorization is issued for the express purpose of conducting experimental operations described in the related application and required by the U.S. Government; contract number FA8702-15-D-0001. 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.
- (7) Operation in 100-190 kHz for White Sands Missile Range is not approved.