

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

EXPERIMENTAL

(Nature of Service)

WM2XEB

(Call Sign)

XD FX MO

(Class of Station)

0818-EX-CN-2021

(File Number)

NAME Raytheon Company

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(j) of the Commission's Rules

Station Locations

- (1) Fullerton (ORANGE), CA - NL 33-52-47; WL 117-57-18; MOBILE: , within 0.3 km, centered around NL 33-52-47; WL 117-57-18

Frequency Information

Fullerton (ORANGE), CA - NL 33-52-47; WL 117-57-18; MOBILE: , within 0.3 km, centered around NL 33-52-47; WL 117-57-1

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
420-449.75 MHz	FX	1M20G2D	2.33 W (ERP)	
420-449.75 MHz	MO	1M20G2D	2.33 W (ERP)	
420-449.75 MHz	FX	1M20G2D	13.74 W (ERP)	
420-449.75 MHz	FX	1M20G2D	2.74 W (ERP)	

This authorization effective December 06, 2021 and
will expire 3:00 A.M. EST November 01, 2023

**FEDERAL
COMMUNICATIONS
COMMISSION**



Frequency Information

Fullerton (ORANGE), CA - NL 33-52-47; WL 117-57-18; MOBILE: , within 0.3 km, centered around NL 33-52-47; WL 117-57-1

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
420-449.75 MHz	MO	1M20G2D	2.74 W (ERP)	
420-449.75 MHz	MO	1M20G2D	13.74 W (ERP)	
1370-1390 MHz	FX	1M20G2D	2.3 W (ERP)	
1370-1390 MHz	MO	1M20G2D	2.3 W (ERP)	
1370-1390 MHz	FX	1M20G2D	2.58 W (ERP)	
1370-1390 MHz	MO	1M20G2D	0.04 W (ERP)	
1370-1390 MHz	FX	1M20G2D	0.04 W (ERP)	
1370-1390 MHz	MO	1M20G2D	2.58 W (ERP)	
1525-1530 MHz	FX	1M20G2D	2.58 W (ERP)	
1525-1530 MHz	MO	1M20G2D	2.58 W (ERP)	

Frequency Information

Fullerton (ORANGE), CA - NL 33-52-47; WL 117-57-18; MOBILE: , within 0.3 km, centered around NL 33-52-47; WL 117-57-1

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1610-1618.725 MHz	FX	1M20G2D	2.58 W (ERP)	
1610-1618.725 MHz	MO	1M20G2D	2.58 W (ERP)	
1626.6-1660.5 MHz	FX	1M20G2D	2.58 W (ERP)	
1626.6-1660.5 MHz	MO	1M20G2D	2.58 W (ERP)	
1668.4-1722 MHz	FX	1M20G2D	2.58 W (ERP)	
1668.4-1722 MHz	MO	1M20G2D	2.58 W (ERP)	
1722-2025 MHz	FX	1M20G2D	2.58 W (ERP)	
1722-2025 MHz	MO	1M20G2D	2.58 W (ERP)	
2110-2310 MHz	FX	1M20G2D	2.58 W (ERP)	
2110-2310 MHz	MO	1M20G2D	2.58 W (ERP)	

Frequency Information

Fullerton (ORANGE), CA - NL 33-52-47; WL 117-57-18; MOBILE: , within 0.3 km, centered around NL 33-52-47; WL 117-57-1

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2395-2500 MHz	FX	1M20G2D	0.02 W (ERP)	
2395-2500 MHz	MO	1M20G2D	0.02 W (ERP)	
2395-2500 MHz	FX	1M20G2D	2.3 W (ERP)	
2395-2500 MHz	FX	1M20G2D	2.58 W (ERP)	
2395-2500 MHz	MO	1M20G2D	2.3 W (ERP)	
2395-2500 MHz	MO	1M20G2D	2.58 W (ERP)	

Special Conditions:

- (1) 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.
- (2) 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.
- (3) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (4) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.
- (5) 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.
- (6) Operation is subject to prior coordination with the local Society of Broadcast Engineers, Inc. (SBE) frequency coordinator. Consult the list at <http://sbe.org/wp-content/uploads/freqcoor.pdf> to find the appropriate coordinator.

Special Conditions:

- (7) Stop buzzer POC is Reuben Kirksey at (714) 446-2947, and David Duran at 714-446-4361.
- (8) Operations in the 1544-1545/1645.5-1646.5 MHz frequency bands ARE LIMITED to distress and safety communications, in accordance with International Footnotes 5.356 and 5.375 of the ITU Radio Regulation.

Special Conditions:

- (9) Prior to commencing any operations at the 1525-1559 MHz and 1626.6-1660.5 MHz (E-S) frequency bands, experimental licensee must notify licensees of earth stations (Mobile Earth Stations (MESSs)). The notice must include the name and contact information of the stop buzzer personnel that will be available to cease operations in the event of reported interference. The notification should include the testing parameters (specific location(s), antenna gain(s), antenna height(s), antenna orientation, EIRP, EIRP density) and day and times of each test. Please notify the following licensees:

MESSs Call Sign: E100192, E030055

Frequency bands: 1525- 1544 MHz, 1545- 1559 MHz, 1626.5 - 1645.5 MHz, 1646.5 - 1660.5 MHz

Licensee: ORBCOMM License Corp.

ATTN: Mr. Walter H. Sonnenfeldt,

Phone Number: 585-461-3018, E-Mail: sonnenfeldt.walter@orbcomm.com)

MESSs Call Sign: E090029

Frequency bands: 1530 – 1544 MHz, 1545- 1559 MHz, 1631.5 - 1645.5 MHz, 1646.5 - 1660.5 MHz

Licensee: COMTECH MOBILE DATACOM CORP.

Phone Number: 240-686-3300

Fax Number: 240-686-3301

E-Mail: John.Fossaceca@comtechmobile.com

Attention: John Fossaceca

Name: Joan M. Griffin Phone Number: 202-342-8573

Company: Kelley Drye & Warren LLP

Fax Number: 202-342-8451

E-Mail: jgriffin@kelleydrye.com

Attention: Relationship: Legal Counsel

MESSs Call Sign: E980203

Frequency bands: 1530- 1559 MHz, 1638.5 – 1642 MHz

Licensee: OuterLink Corporation

Phone Number: 877-688-3770

Fax Number: 978-371-9502

E-Mail: E-Mail: sdurante@outerlink.com

Attention: Paul F. Newcomb

MESSs Call Sign: E050249

Frequency bands: 1525- 1559 MHz, 1626.5 - 1660.5 MHz

Licensee: Inmarsat Solutions (US) Inc. Phone Number: 202-572-0686

Fax Number: 202-248-5177

E-Mail: Ethan.Lucarelli@inmarsat.com

Attention: M. Ethan Lucarelli

Name: Phillip R. Marchesiello Phone Number: 202-383-3343

Company: Wilkinson Barker Knauer, LLP Fax Number: 202-783-5851

E-Mail: pmarchesiello@wbklaw.com

Relationship: Legal Counsel

MESSs Call Sign: E980179

Frequency bands: 1525- 1559 MHz, 1626.5 - 1660.5 MHz

Licensee: Ligado Networks Subsidiary LLC

Special Phone Number 703-390-2004 Fax Number 703-390-2778

Contact: Ms. Valerie Green Email: Valerie@Ligado.com

Name: Gerard J. Waldron Phone Number: 202-662-5360

Company: Covington & Burling LLP Fax Number: 202-778-5360

E-Mail: gwaldron@cov.com Relationship: Legal Counsel

MESs Call Sign: E050276

Frequency bands: 1525- 1559 MHz, 1626.5 - 1660.5 MHz

Licensee: Comsat, Inc.

Attention: Michelle Wagner Phone Number: 571-599-3632 E-Mail: MWagner@comsat.com OR

Attention: James G. Lovelace Phone Number: 571-599-3643 E-Mail: j.ctr@comsat.com

MESs Call Sign: E000284

Frequency bands: 1525- 1544 MHz, 1626.5 - 1645.5 MHz

Licensee: Comsat, Inc.

Name: Airbus DS SatCom Government, Inc.

Phone Number: 703-466-5873

Fax Number: 703-466-5901

E-Mail: rob.swanson@airbus.com

Attention: Mr Robert W Swanson

MESs Call Sign: E130033

Frequency bands: 1525 – 1544 MHz, 1545- 1559 MHz, 1625.5 - 1645.5 MHz and 1646.5 - 1660.5 MHz

Licensee: ViaSat, Inc.

Phone Number 760-476-2583 Fax Number 760-929-3941

Contact: Mr Daryl T Hunter Email: E-Mail: daryl.hunter@viasat.com

MESs Call Sign: E000180, E010047, E010048, E010050,

Frequency bands: 1525- 1545 MHz, 1626.5 - 1660.5 MHz

Licensee: Inmarsat Solutions (US) Inc. Phone Number: 202-572-0686

Fax Number: 202-248-5177

E-Mail: Ethan.Lucarelli@inmarsat.com

Attention: M. Ethan Lucarelli

Name: Phillip R. Marchesiello Phone Number: 202-383-3343

Company: Wilkinson Barker Knauer, LLP Fax Number: 202-783-5851

E-Mail: pmarchesiello@wbklaw.com

Relationship: Legal Counsel

MESs Call Sign: E980159

Frequency bands: 1530- 1559 MHz, 1631.5 - 1660.5 MHz, 1646.5 - 1660.5 MHz

Licensee: Satcom Systems, Incorporated Phone Number: 818-775-9740

Fax Number: 818-885-1882

Attention: Mr Tom D Soumas Jr

Name: William K. Coulter Phone Number: 202-835-6136 E-Mail: william.k.coulter

Company: Baker & McKenzie LLP Fax Number: 202-416-7138

Relationship: Legal Counsel

MESs Call Sign: E020074

Frequency bands: 1525- 1544 MHz, 1626.5 - 1645.5 MHz

Licensee: Honeywell International Inc. Phone Number: 2026267719

Fax Number: 2027832331

Specific E-Mail: balaguer@tr.com
Attention: c/o Donna Balaguer

MESs Call Sign: E930367

Frequency bands: 1525- 1559MHz, 1626.5 - 1660.5 MHz

Licensee: Ligado Networks Subsidiary LLC Phone Number: 703-390-2797

Fax Number: 703-390-2778

Attention: Maqbool Aliani

Name: Elizabeth Park Phone Number: 202-637-1056 E-Mail: Elizabeth.Park@lw.com

Company: Latham & Watkins LLP

Relationship: Legal Counsel

MESs Call Sign: E090032

Frequency bands: 1525- 1559MHz, 1626.5 - 1660.5 MHz

Licensee: ISAT US Inc. and Inmarsat Solutions (US) Inc. Phone Number: (202) 696-1400

Fax Number: (202) 248-5177

Attention: M. Ethan Lucarelli. E-Mail: Ethan.Lucarelli@inmarsat.com

- (10) Prior to commencing any operations in the 1559-1591 MHz and 1575.42 MHz frequency bands, experimental licensee must notify licensee of Spire Global, Inc. (POC/Satellite: S2946, S3045. Name: Michelle A. McClure Phone Number: 202-734-6883, E-Mail: michelle.mcclure@spire.com). The notice must include the name and contact information of the stop buzzer personnel that will be available to cease operations in the event of reported interference. The notification should include the testing parameters (specific location(s), antenna gain(s), antenna height(s), antenna orientation, EIRP, EIRP density) and day and times of each test.
- (11) Prior to commencing any operations in the 1610 - 1618.725 MHz and 2483.5 – 2500 MHz frequency bands, experimental licensee must notify licensee of GUSA Licensee LLC. (Call sign E970381, S2115. Name: Mr. L. Barbee Ponder IV Phone Number: 985-335-1503 E-Mail: Barbee.Ponder@Globalstar.com). The notice must include the name and contact information of the stop buzzer personnel that will be available to cease operations in the event of reported interference. The notification should include the testing parameters (specific location(s), antenna gain(s), antenna height(s), antenna orientation, EIRP, EIRP density) and day and times of each test.
- (12) Prior to commencing any operations in the 1626- 1626.5 MHz frequency band, experimental licensee must notify licensee of Iridium Satellite LLC (Call sign E960132, E960622, POC/Satellite: S2110. Name: Ms Maureen C. McLaughlin, Phone Number: 703-287-7518, E-Mail: maureen.mclaughlin@iridium.co). The notice must include the name and contact information of the stop buzzer personnel that will be available to cease operations in the event of reported interference. The notification should include the testing parameters (specific location(s), antenna gain(s), antenna height(s), antenna orientation, EIRP, EIRP density) and day and times of each test.

Special Conditions:

- (13) Prior to commencing any operations in the 2000-2010 MHz and 2180-2190 MHz frequency bands, experimental licensee must notify licensee of GAMMA ACQUISITION L.L.C. (Call sign E060430, POC/Satellite: S2633. Name: Ms. Allison Minea, Phone Number: 202-293-1216, E-Mail: alison.minea@dish.com). The notice must include the name and contact information of the stop buzzer personnel that will be available to cease operations in the event of reported interference. The notification should include the testing parameters (specific location(s), antenna gain(s), antenna height(s), antenna orientation, EIRP, EIRP density) and day and times of each test.
- (14) Prior to commencing any operations in the 2010-2020 MHz and 2190-2200 MHz frequency bands, experimental licensee must notify licensee of DBSD Services Limited. (Call sign E070272, POC/Satellite: S2651. Name: Ms. Allison Minea, Phone Number: 202-293-1216, E-Mail: alison.minea@dish.com). The notice must include the name and contact information of the stop buzzer personnel that will be available to cease operations in the event of reported interference. The notification should include the testing parameters (specific location(s), antenna gain(s), antenna height(s), antenna orientation, EIRP, EIRP density) and day and times of each test.
- (15) Operations in the WCS bands (2305-2310 MHz) must comply with the emission limits applicable to those bands. See 47 C.F.R. § 27.53(a).
- (16) Licensee must obtain consent from the following within 50 miles of the contours of the testing area:
- 1390-92 MHz Band Licensees
 - 1392-1395 MHz/1432-1435 MHz Band licensees
 - 1670-1675 MHz Band licensee (Crown Castle International), and the lessee
 - Broadband PCS licensees (1850-1910 MHz/1930-1990 MHz)
 - 1910-1915 MHz/1990-1995 MHz Bands licensee
 - WCS (2305-2320 MHz/2345-2360 MHz) licensee (AT&T)
- (17) Licensee must secure consents from the Broadband Radio Service licensees in the proposed area prior to accessing to the frequency range from 2496 MHz to 2500 MHz.
- (18) Licensee must coordinate with the Fixed Microwave Service licensees in the proposed venue in accordance with 47 C.F.R, Part 101.103(d) prior to operation in the frequency range from 2450 MHz to 2500 MHz.
- (19) Operation are prohibited on the following frequency bands:
- 1390-1435 MHz
 - 1530 -1610 MHz
 - 1618.725 -1626.6 MHz
 - 1660.5 -1668.4 MHz
 - 2025-2110 MHz