

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

EXPERIMENTAL

(Nature of Service)

WK2XRO

(Call Sign)

XD FX

(Class of Station)

0014-EX-CN-2020

(File Number)

NAME Kymeta 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(j) of the Commission's Rules

Station Locations

(1) US, US

Frequency Information

US, US

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
14-14.5 GHz	FX	100KG7W 50M0G7W	112.74 kW (ERP)	0.001 %

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) 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.
- (3) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (4) All Kymeta Corporation operations shall be on an unprotected, non-interference basis to authorized federal stations.

This authorization effective February 20, 2020 and
will expire 3:00 A.M. EST March 01, 2022

**FEDERAL
COMMUNICATIONS
COMMISSION**



Special Conditions:

- (5) For the band 14.47-14.5 GHz, Kymeta Corporation, shall exercise geographic from radio astronomy sites listed and specified in 47 CFR 25.226(d)(2) Kymeta Corporation may coordinate any operation with the facilities in question. More information may be obtained at esm@nsf.gov
- (6) Operation is not authorized within 125 KM of NASA White Sands Center (WSC), NM or Blossom Point Complex, MD, nor within radio line of sight of these two sites for airborne operation unless specifically approved at least 7 days in advance by NASA GSFC Spectrum Management Office (POC Scott Galbraith at 301-286-5089, VINCENT.S.GALBRAITH@NASA.GOV)
- (7) Operation is not authorized within 160 KM of NASA Glenn Research Center, OH, OR Edwards Air Force Base, CA, Nor Within Radio Line Of Sight Of These Two Sites For Airborne Operation Unless Specifically Approved At Least 7 Days In Advance By NASA GRC Spectrum Management Office (POC Bob Jones at 216-433-3457, REJONES@NASA.GOV).
- (8) The stop buzzer contact for this project is Kymeta Network Operations Center at (855) 525-6638.
- (9) Licensee is authorized to operate up to 25 unites of flat panel Kymeta u8 (82 cm diameter) antenna on mobile platform in the United States (all 50 States) using the 14.0-14.5 GHz frequency band.

Special Conditions:

- (10) POINT OF COMMUNICATION: Geostationary-satellite orbit (GSO) Ku-band satellites:
- Satellite Call Sign Administration
 - NSS-7 at 20 WL S2854 USA
 - SES-4 at 22 WL S2828 Netherlands
 - SES-6 at 40.5 WL S2870 Netherlands
 - NSS-806 at 47.5 WL S2591 Netherlands
 - SES-14 at 47.5 WL S2974 Brazil and Netherlands
 - Intelsat 29e at 50 WL S2913 USA
 - SES-10 at 66.9 WL S2950 Colombia
 - AMC-6 at 83 WL S2347 USA
 - AMC-16 at 85 WL S2181 USA
 - SES-2 at 87 WL S2826 USA
 - Galaxy 28 at 89 WL S2160 USA
(GALAXY 28 (TELSTAR 8, IA-8))
 - Galaxy 17 at 91 WL S2715 USA
 - Galaxy 25 at 93.1 WL S2154 USA
(GALAXY 25 (INTELSAT AMERICAS 5))
 - Galaxy 3C at 95.05 W.L. S2381 USA
 - Galaxy 19 at 97 WL S2647 USA
 - Galaxy 16 at 99 WL S2687 USA
 - SES-1 at 101 WL S2807 USA
 - SES-3 at 103 WL S2892 USA
 - SES-11 at 104.95 WL S2964 USA
 - AMC-15 at 105.05 WL S2180 USA
 - ANIK F-3 at 118.7 WL S2703 Canada
 - EchoStar 9 at 121 WL S2143 USA
 - Galaxy 18 at 123 WL S2733 USA
 - AMC-21 at 124.9 WL S2676 Gibraltar
 - Horizons 1 at 127 WL S2475 Japan
 - SES-15 at 129.15 WL S2951 Gibraltar
 - AMC-4 (GE 3) at 134.9 WL S2135 USA
 - AMC-10 (GE-10) at 135 WL S2432 USA
 - Intelsat 9 at 66.15 E.L. S2380 USA

Special Conditions:

- (11) The 25 stations are authorized to conduct tests in a mobile mode using the 14.0-14.5 GHz frequency band. The operations are subject to the following conditions:
- a. The authorized stations must be in compliance with the off-axis EIRP power spectral density ("PSD") standards (the "off-axis mask") set forth in 25.218(f) for fixed earth stations.
 - b. Operations must be in compliance with the requirements set forth in Section 25.212(c)(2) of the Commission's Rules: the input power spectral density into the antenna must not exceed -14 dBW/4 kHz.
 - c. Operations must be in compliance with the applicable VMES's requirements set forth in Section 25.226 of the Commission's Rules.
 - d. Operations must comply with the Sections 25.203 (Choice of sites and frequencies) and 25.277 (Temporary fixed earth station operations) of the Commission's Rules.
 - e. In accordance with Article 4.4 of the ITU Radio Regulations, the operations authorized herein shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of the ITU Constitution, the ITU Convention, and the ITU Radio Regulations.
 - f. Prior to commencement of operations with each satellite pursuant to this experimental license, Kymeta shall obtain a certification regarding the notification of all satellite operators with co-frequency operations within 6 degrees longitude of each satellite, generally describing the experimental operations authorized herein, including the term thereof, and providing a point of contact for the purpose of resolving any complaints of interference. Kymeta shall obtain a similar certification if, during the term of this experimental license, any of the satellites move orbit locations, or if a satellite operator commences co-frequency operations within 6 degrees longitude of each of the satellites. If the point of contact receives a complaint of harmful interference, the party receiving the complaint (if not Kymeta) will notify Kymeta, and Kymeta shall immediately cease such operations or adjust such operations to avoid harmful interference. Kymeta will submit a copy of these certification(s) to the Commission for incorporation into the record of this file.
 - g. The stations are authorized, on a non-protected and non-harmful interference basis, to transmit to the geostationary-orbit space stations using the 14.0-14.5 GHz frequency band that are authorized by the Commissions. The stations authorized herein must immediately terminate operations upon notification that such operation is causing harmful interference to any other radio system lawfully operating in the 14.0-14.5 GHz frequency band. The stations authorized herein cannot claim protection from harmful interference from any radio system lawfully operating in the 14.0-14.5 frequency band.
 - h. Operation pursuant to this authorization must be in compliance with the terms of coordination agreements between the authorized GSO Ku-band satellite operators operating in the 14.0-14.5 GHz frequency band and operators of other Ku-band geostationary space stations within six angular degrees of those space stations. In the event that another GSO FSS space station commences operation in the Ku-band at a location within six degrees of any of these space stations, earth stations operating pursuant to this temporary authority shall cease transmitting to that space station unless and until such operation has been coordinated with the new space station's operator or Licensee demonstrates that such operation will not cause harmful interference to the new co-frequency space station.
 - i. Communications between authorized stations and SES-4, SES-6, and NSS-806

Special space stations must comport with all existing and future space station coordination agreements reached between the Netherlands and other administrations. In the absence of a coordination agreement, such communications must comport with applicable provisions of the ITU Radio Regulations.

j. Communications between authorized stations and SES-14 space station must comport with all existing and future space station coordination agreements reached between the Brazil and Netherlands and other administrations. In the absence of a coordination agreement, such communications must comport with applicable provisions of the ITU Radio Regulations.

k. Communications between authorized stations and SES-10 space station must comport with all existing and future space station coordination agreements reached between the Colombia and other administrations. In the absence of a coordination agreement, such communications must comport with applicable provisions of the ITU Radio Regulations.

l. Communications between authorized stations and ANIK F-3 space station must comport with all existing and future space station coordination agreements reached between the Canada and other administrations. In the absence of a coordination agreement, such communications must comport with applicable provisions of the ITU Radio Regulations.

m. Communications between authorized stations and AMC-21 and SES-15 space stations must comport with all existing and future space station coordination agreements reached between the Gibraltar and other administrations. In the absence of a coordination agreement, such communications must comport with applicable provisions of the ITU Radio Regulations.

n. Communications between authorized stations and Horizons 1 space station must comport with all existing and future space station coordination agreements reached between the Japan and other administrations. In the absence of a coordination agreement, such communications must comport with applicable provisions of the ITU Radio Regulations.

o. Communications between authorized station(s) and the Ku-band geostationary space stations must be in compliance with all existing and future space station coordination agreements reached 1) between the United states and other administrations, 2) between the Ku-band GSO operators, and 3) between the Ku-band GSO operators and Ku-band NGSO (non-geostationary space stations) operators.

p. In the 14.47-14.5 GHz band, operations are subject to footnote US342 to the U.S. Table of Frequency Allocations, 47 CFR § 2.106, and all practicable steps must be taken to protect the radio astronomy service from harmful interference.

q. The licensee shall not operate in the band 14.0-14.2 GHz within 125 km of the NASA TDRSS facilities on: Guam(latitude 13°36'55" N, longitude 144°51'22" E); White Sands, New Mexico (latitude 32°20'59" N, longitude106°36'31" W and latitude 32°32'40" N, longitude 106°36'48" W); Blossom Point, Maryland (latitude 38° 25' 44" N.L. longitude 77° 05' 02" W.L.) unless and until it enters into an agreement with NASA that NTIA has approved. The licensee must conform its operations to the terms of any coordination agreement with NASA.

r. The licensee shall not operate in the band 14.47-14.50 GHz within (a) 45 km of the radio observatory on St. Croix, Virgin Islands (located at latitude 17°46' N, longitude 64°35' W); (b) 125 km of the radio observatory on Mauna Kea, Hawaii (located at latitude 19°48' N, longitude 155°28' W); and (c) 90 km of the Arecibo Observatory on Puerto Rico(located at latitude 18°20'46" N, longitude 66°45'11" W) unless and until the licensee enters into an agreement with the National Science Foundation that has been approved by NTIA. The licensee must conform its operations to the terms of any coordination agreement with the National Science Foundation.

- Specific S. The licensee shall not operate in the vicinity of radio observatories of Radio Astronomy Service (RAS) in the band 14.47-14.50 GHz unless and until the licensee enters into an agreement with the National Science Foundation that has been approved by NTIA. The licensee must conform its operations to the terms of any coordination agreement with the National Science Foundation. The appropriate NSF contact point to initiate coordination is Electromagnetic Spectrum Manager, NSF, 4201 Wilson Blvd., Suite 1045, Arlington, VA 22203, fax 703-292-9034, e-mail esm@nsf.gov. See also a list of each applicable RAS site, its location, and the applicable coordination zone on Table-1: Applicable RAS Facilities and Associated Coordination Distances, 47 C.F.R. 25.226(d) (2).
- t. Licensee's ESAAs must employ a tracking algorithm that is resistant to capturing and tracking adjacent satellite signals, and each station must be capable of inhibiting its own transmission in the event it detects unintended satellite tracking.
- u. Licensee's ESAAs must be monitored and controlled by a ground-based network control and monitoring center. Such stations must be able to receive "enable transmission" and "disable transmission" commands from the network control center and must cease transmission immediately after receiving a "parameter change" command until receiving an "enable transmission" command from the network control center. The network control center must monitor operation of each earth station to determine if it is malfunctioning, and each earth station must self-monitor and automatically cease transmission on detecting an operational fault that could cause harmful interference to a fixed satellite service network.
- v. Licensee must maintain a point of contact available 24 hours per day, seven days per week, with the authority and ability to terminate operations authorized herein, for discussing interference concerns with other licensees, and must submit a letter to be included in its license file with the name and telephone number of the point of contact prior to commencing operation.
- (12) The authorized stations must be in compliance with environmental requirement set forth in Section 1.1307 of the Commission's Rules.