Nathan Schneck, P.O. Box 58102, 1810 NDSU Research Circle N, Fargo, ND 58102,

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

EXPERIMENTAL	WK2XXI
(Nature of Service)	(Call Sign)
XC FX	0191-EX-CM-2020
(Class of Station)	(File Number)

NAME Appareo Systems LLC

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) Fargo (CASS), ND - NL 46-54-10; WL 96-48-37
(2) Redondo Beach (LOS ANGELES), CA - NL 33-53-34; WL 118-22-30
(3) Aberdeen (HARFORD), MD - NL 39-27-49; WL 76-07-18
(4) Wharton (MORRIS), NJ - NL 40-54-22; WL 74-34-12

Frequency Information

Fargo (CASS), ND - NL 46-54-10; WL 96-48-37

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
420-450 MHz	FX	1M00F7D	2.43 W (ERP)	1.0E-6 %
903-927 MHz	FX	34K0F1W	102.04 mW (ERP)	1.0E-6 %
1616-1626.5 MHz	FX	41K7V7W	8.12 W (ERP)	1.0E-6 %

This authorization effective October 14, 2020 and
will expire 3:00 A.M. EST April 01, 2021

FEDERAL COMMUNICATIONS COMMISSION

Frequency Information

Fargo (CASS), ND - NL 46-54-10; WL 96-48-37

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1616-1626.5 MHz	FX	41K7V7D	1.85 W (ERP)	1.0E-6 %
2.4-2.483 GHz	FX	1M00G7D	167.88 mW (ERP)	1.0E-6 %
3.244-4.99 GHz	FX	500MM1D	0.37 mW (ERP)	
5.25-5.6 GHz	FX	50M0M1D	0.37 mW (ERP)	
5.65-5.85 GHz	FX	50M0M1D	0.37 mW (ERP)	
5.925-6 GHz	FX	50M0M1D	0.37 mW (ERP)	

Redondo Beach (LOS ANGELES), CA - NL 33-53-34; WL 118-22-30

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
420-450 MHz	FX	1M00F7D	2.43 W (ERP)	
903-927 MHz	FX	34K0F1W	102.04 mW (ERP)	
1616-1626.5 MHz	FX	47K1V7D	8.12 W (ERP)	

Frequency Information

Redondo Beach (LOS ANGELES), CA - NL 33-53-34; WL 118-22-30

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1616-1626.5 MHz	FX	47K1V7D	1.85 W (ERP)	
2.4-2.483 GHz	FX	1M00G7D	167.88 mW (ERP)	
3.244-4.99 GHz	FX	500MM1D	0.37 mW (ERP)	
5.25-5.6 GHz	FX	50M0M1D	0.37 mW (ERP)	
5.65-5.85 GHz	FX	50M0M1D	0.37 mW (ERP)	
5.925-6 GHz	FX	50M0M1D	0.37 mW (ERP)	

Aberdeen (HARFORD), MD - NL 39-27-49; WL 76-07-18

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
420-450 MHz	FX	1M00F7D	2.43 W (ERP)	
903-927 MHz	FX	34K0F1W	102.04 mW (ERP)	
1616-1626.5 MHz	FX	41K7V7D	8.12 W (ERP)	

Frequency Information

Aberdeen (HARFORD), MD - NL 39-27-49; WL 76-07-18

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1616-1626.5 MHz	FX	41K7V7D	1.85 W (ERP)	
2.4-2.483 GHz	FX	1M00G7D	167.88 mW (ERP)	
3.244-4.99 GHz	FX	500MM1D	0.37 mW (ERP)	
5.25-5.6 GHz	FX	50M0M1D	0.37 mW (ERP)	
5.65-5.85 GHz	FX	50M0M1D	0.37 mW (ERP)	
5.925-6 GHz	FX	50M0M1D	0.37 mW (ERP)	

Wharton (MORRIS), NJ - NL 40-54-22; WL 74-34-12

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
420-450 MHz	FX	1M00F7D	2.43 W (ERP)	1.0E-6 %
903-927 MHz	FX	34K0F1W	102 mW (ERP)	1.0E-6 %
1616-1626.5 MHz	FX	41K7V7W	8.12 W (ERP)	1.0E-6 %

Frequency Information

Wharton (MORRIS), NJ - NL 40-54-22; WL 74-34-12

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1616-1626.5 MHz	FX	41K7V7D	1.85 W (ERP)	1.0E-6 %
2.4-2.483 GHz	FX	1M00G7D	167.88 mW (ERP)	1.0E-6 %
3.244-4.99 GHz	FX	500MM1D	0.37 mW (ERP)	
5.25-5.6 GHz	FX	50M0M1D	0.37 mW (ERP)	
5.65-5.85 GHz	FX	50M0M1D	0.37 mW (ERP)	
5.925-6 GHz	FX	50M0M1D	0.37 mW (ERP)	

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.

Special Conditions:

(3) Operations using the 1617.775-1626.5 MHz frequency band are subject to the following conditions:
a. POINT OF COMMUNICATION: Iridium's NGSO (non-geostationary orbit space stations) satellites (call sign S2110).
b. licensee is authorized to operate station(s) in the 1617.775-1618.725 MHz frequency band via Iridium's NGSO satellites for mobile-satellite service on a shared basis with Globalstar system.
c. licensee is authorized to operate station(s) in the 1618.725-1626.5 MHz frequency band via Iridium's NGSO satellites for mobile-satellite service on an exclusive basis.
d. Iridium's use of the 1617.775-1626.5 MHz frequency band is subject to Section 25.213 and footnote 5.372 of the Table of Frequency Allocation, which require protection of stations in the radio astronomy service operating in the band 1610.6-1613.8 MHz band.

(4) Prior to commencing any operations in the frequencies below, Appareo Systems LLC must obtain consent from the following within 25 miles of the contours of the testing area:
> Location & Monitoring Service licensees (902-928 MHz)

(5) Prior to commencing any operations Appareo Systems LLC must:

a. Coordinate with the local Society of Broadcast Engineers frequency coordinator prior to operation in 2.4-2.483 GHz band.
b. Maintain operation separation from the grandfathered earth stations as defined in Part 90, Subpart Z, or coordinate an agreement with the grandfathered earth station licensees prior to operation in 3650-3700 MHz band.
c. Consult the ULS database to ensure that the operation will not cause harmful interference to any existing registered stations in the 3650-3700 MHz band, and notify the registered users in the proposed geographic areas prior to operation in this band.
d. Coordinate with the affected Fixed Microwave Service licensees prior to operation in 2.4-2.483 GHz, 3700-4200 MHz, 5.25-5.6 GHz and 5.65-5.85 GHz bands.

(6) This authorization is issued for the express purpose of conducting experimental operations described in the related application and required by Army Contracting Command Contract Number W15QKN-18-9-1008. 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) Appareo Systems LLC must coordinate with Fixed Microwave Service licensees in each proposed location in accordance with 47 C.F.R, Part 101.103(d) prior to operation in 2.4-2.483 GHz and 5.925-6 GHz bands.