

**United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
SPECIAL TEMPORARY AUTHORIZATION**

EXPERIMENTAL

(Nature of Service)

WJ9XLQ

(Call Sign)

XT FX MO

(Class of Station)

0833-EX-ST-2016

(File Number)

NAME FCL Tech, Inc.

This Special Temporary Authorization is granted upon the express condition that it may be terminated by the Commission at any time without advance notice or hearing if in its discretion the need for such action arises. Nothing contained herein shall be construed as a finding by the Commission that the authority herein granted is or will be in the public interest beyond the express terms hereof.

This Special Temporary Authorization shall not vest in the grantee any right to operate the station nor any right in the use of the frequencies designated in the authorization beyond the term hereof, nor in any other manner than authorized herein. Neither the authorization nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This authorization is subject to the right of use of control the Government of the United States conferred by Section 706 of the Communications Act of 1934.

Special Temporary Authority is hereby granted to operate the apparatus described below:

Purpose Of Operation:

The purpose of this operation is to test potential new communication applications, including use of the E-band.

Station Locations

- (1) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (2) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (3) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (4) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (5) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (6) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (7) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (8) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (9) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (10) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (11) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (12) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (13) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (14) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (15) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (16) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (17) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (18) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (19) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (20) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

This authorization effective June 28, 2016 and
will expire 3:00 A.M. EST September 08, 2016

**FEDERAL
COMMUNICATIONS
COMMISSION**



Station Locations

- (21) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (22) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (23) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (24) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (25) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (26) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (27) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (28) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (29) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (30) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (31) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (32) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (33) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42
- (34) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (35) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (36) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (37) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (38) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (39) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (40) Camarillo, CA - NL 34-12-31; WL 119-04-42
- (41) MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
71-76 GHz	FX	750MG1D	6309.6 W (ERP)	0.0001 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.745-5.815 GHz	FX	N0N	1.585 W (ERP)	0.0001 %

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.745-5.815 GHz	FX	N0N	1.584 W (ERP)	0.0001 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
81-86 GHz	FX	750MG1D	1.588 W (ERP)	0.0001 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
10.7-11.2 GHz	FX	500MW7D	316227.77 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
10.7-11.2 GHz	FX	500MW7D	316227.77 W (ERP)	

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
11.5-12 GHz	FX	500MW7D	316227.77 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
11.5-12 GHz	FX	500MW7D	316227.77 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
11.5-12 GHz	FX	500MW7D	316227.77 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
11.5-12 GHz	FX	500MW7D	316227.77 W (ERP)	

Frequency Information

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
12.2-12.75 GHz	MO	50M0W7D	10000 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
12.2-12.75 GHz	FX	50M0W7D	10000 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
13.25-13.75 GHz	FX	500MW7D	31.6 W (ERP)	

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
13.25-13.75 GHz	MO	500MW7D	31.6 W (ERP)	

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
13.25-13.75 GHz	FX	500MW7D	25.1 W (ERP)	

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
13.25-13.75 GHz	MO	500MW7D	25.1 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
13.75-14.25 GHz	FX	500MW7D	25.1 W (ERP)	

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
13.75-14.25 GHz	MO	500MW7D	25.1 W (ERP)	

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
13.75-14.25 GHz	FX	500MW7D	25.1 W (ERP)	

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
13.75-14.25 GHz	MO	500MW7D	25.1 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
14.25-14.75 GHz	FX	500MW7D	12.5 W (ERP)	

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
14.25-14.75 GHz	MO	500MW7D	12.5 W (ERP)	

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.49-5.825 GHz	FX	80M0K2W	630.9 W (ERP)	

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.49-5.825 GHz	MO	80M0K2W	630.9 W (ERP)	

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.47-5.825 GHz	MO	80M0K2W	10 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.47-5.825 GHz	FX	80M0K2W	10 W (ERP)	

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
902.4-927.6 GHz	FX	280KF1D	39.8 W (ERP)	0.00025 %

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
902.4-927.6 GHz	FX	480KF1D	39.8 W (ERP)	0.00025 %

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
902.4-927.6 GHz	MO	280KF1D 480KF1D	39.8 W (ERP)	0.00025 %

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
902.4-927.6 MHz	MO	280KF1D 480KF1D	3.2 W (ERP)	0.00025 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
902.4-927.6 MHz	FX	280KF1D 480KF1D	3.2 W (ERP)	0.00025 %

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2400-2484 MHz	FX	5M00D7W 10M0D7W 20M0D7W	31.6 W (ERP)	0.0005 %

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2400-2484 MHz	MO	5M00D7W 10M0D7W 20M0D7W	31.6 W (ERP)	0.0005 %

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2375-2395 MHz	MO	5M00D7W 10M0D7W 20M0D7W	63.1 W (ERP)	0.0005 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2375-2395 MHz	FX	5M00D7W 10M0D7W	63.1 W (ERP)	0.0005 %

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2375-2395 MHz	FX	20M0D7W	63.1 W (ERP)	0.0005 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
81-86 GHz	FX	2G00K7D	125892.5 W (ERP)	0.001 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
81-86 GHz	FX	2G00K7D	125892.5 W (ERP)	0.001 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
71-76 GHz	FX	2G00K7D	2511.9 W (ERP)	0.001 %

Frequency Information

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
71-76 GHz	FX	2G00K7D	2511.9 W (ERP)	0.001 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.725-5.85 GHz	FX	20M0K7D	2.5 W (ERP)	0.002 %

Camarillo, CA - NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.725-5.85 GHz	FX	20M0K7D	2.5 W (ERP)	0.002 %

MOBILE: Camarillo, CA, within 20 km, centered around NL 34-12-31; WL 119-04-42

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
5.725-5.85 GHz	MO	20M0K7D	2.5 W (ERP)	0.002 %

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) Prior to operation, the licensee of this authorization must successfully coordinate with the existing and future 71-76 GHz and 81-86 GHz users.

Special Conditions:

- (4) The licensee must successfully coordinate with the Fixed Microwave Service licensees in accordance with 47 CFR, Part 101.103(d) prior to operation in 10.7-11.2 GHz, 11.5-12 GHz, 12.7-12.75 GHz bands.
- (5) Operation is subject to prior coordinate with the local Society of Broadcast Engineer frequency coordinator and the Fixed Microwave Service licensees prior to operation in 2400-2484 MHz band and 12.7-12.75 MHz bands.
- (6) Prior to the start of operations, FCL Tech must coordinate with WAFC and NAFC prior to operations:

DOD Western Area Frequency Coordinator (WAFC) Mr. Jamie Heaton
130 Easy Rd STOP 3008 Bldg 31454, Room 230
China Lake, CA. 93555-6109
NIPR: jamie.heaton@navy.mil
SIPR: jamie.heaton@navy.smil.mil
COM: 760-939-6832
FAX: 760-939-0384 DSN-437
STE: 760-939-0384 DSN-437

Mr. Andrew Foltz
China Lake, CA 93555-6109
NIPR: andrew.foltz@navy.mil
SIPR: andrew.p.foltz@navy.smil.mil
DSN: 437-6948
COM: 760-939-6948
CELL: 760-608-3586
FAX: 760-939-0384 DSN-437
STE: 760-939-0384 DSN-437

- (7) While the FAA acknowledges that no UAV will be used in this testing, the proponent must know that the unlicensed spectrum being used for future UAV development (902-928 MHz, 2400-2484 MHz, UNI-I bands) are not considered viable for operation above 400 feet.
- (8) Transportation concurs but requests the user be aware that out of band emissions (OOBE) into the band 5850-5925 MHz may prove problematic in the future due to use for safety services in Transportation.
- (9) Prior to operation, licensee must notify the potentially-affected earth station operators that are located within a 30 mile radius of the experimental transmitter and obtain their written consent to the proposed operations.
- (10) Ensure that the transmitting antenna(s) main beam do not point above the horizon in order to protect satellite space stations operating in overlapping frequency bands.
- (11) For operations in the 12.2-12.75 GHz band, the ground station transmitting antenna minimum elevation angle is 25 degrees, and any transmission (including antenna side lobes) in a direction less than 25 degrees above the horizontal plane is limited to an EIRP density not to exceed 14 dBm per 24 MHz (-16 dBW/24 MHz).
- (12) FCL Tech shall use the minimum power level necessary to close the communications link to minimize potential interference to licensed users.
- (13) Prior to the start of operations in any frequency band, FCL Tech must provide a stop buzzer point of contact in order to notify the test equipment operator(s) to shut down in case of interference.

Special Conditions:

- (14) If the aircraft flight path where test transmissions will be conducted is changed from the one provided to the FCC, FCL Tech must notify and provide the FCC with the new or modified flight path for approval before beginning testing in a new flight path.
- (15) FCL Tech is hereby notified that successful proof of concept testing in these frequency bands does not guarantee that FCL will gain permanent licenses in these frequencies.
- (16) Prior to the start of operations in the 12.2-12.75 GHz band, FCL Tech must notify DirecTV and Dish Network by e-mail. This notice must include the name and contact information of the stop buzzer personnel. It must also include the testing parameters to include the day and times of the testing.

Direct TV/AT&T

Contact: Mr. Jack Wengryniuk

Email: JWengryniuk@DIRECTV.com

Dish Network, LLC.

Mr. Jaime Londono

Email: Jaime.Londono@echostar.com

- (17) Prior to the start of operations in the 10.9-11.7 GHz band, FCL Tech must notify the following FSS Earth Station license operators by e-mail. This notice must include the name and contact information of the stop buzzer personnel. It must also include the testing parameters to include the day and times of the testing.

SES Americom, Inc. (Callsign: E000324, KA288)

Contact: Joseph Massey

SES Americom, Inc.

Email: joseph.massey@ses.com

Airbus DS SatCom Government, Inc. (Callsign: E890649)

Contact: Mark Brennan

Hogan Lovells US LLP

Email: mark.brennan@hoganlovells.com

FiberSat Global Services, Inc. (Callsign: E990120)

Contact: David S. Keir

LERMAN SENTER PLLC

Email: dkeir@lermansenter.com

Special Conditions:

- (18) Prior to the start of operations in the 11.7-12.2 GHz band, FCL Tech must notify the following FSS Earth Station license operators by e-mail. This notice must include the name and contact information of the stop buzzer personnel. It must also include the testing parameters to include the day and times of the testing.

Lazer Licenses, LLC (Callsign: E060180)
Contact: Harry C. Martin, Esq.
Flecher, Heald & Hildreth, P.L.C.
Email: martin@fhhlaw.com

L3 Communications IEC (Callsign: E060244)
Contact: Michelle A. McClure
Fletcher, Heald & Hildreth
mcclure@fhhlaw.com

SES Americom, Inc. (Callsign: E930436)
Contact: David Barton
SES Engineering, Inc.
Email: David.Barton@ses-engineering.com

SES Americom, Inc. (Callsign: KA288)
Contact: Joseph Massey
SES Americom, Inc.
Email: joseph.massey@ses.com

Airbus DS SatCom Government, Inc. (Callsign: E890649)
Contact: Mark Brennan
Hogan Lovells US LLP
Email: mark.brennan@hoganlovells.com

FiberSat Global Services, Inc. (Callsign: E990120)
Contact: David S. Keir
LERMAN SENTER PLLC
Email: dkeir@lermansenter.com

Pathfire, Inc. (Callsign: E980336)
Contact: Elizabeth R. Park
Latham & Watkins LLP
Email: elizabeth.park@lw.com

- (19) This license SUPERSEDES the previous issued license with the same callsign and file number: amends the special conditions.