Daniel Munsch, Esq., 5000 Forbes Avenue, Pittsburgh, PA 15213,

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

EXPERIMENTAL	WK2XIY
(Nature of Service)	(Call Sign)
XD MO	0498-EX-CN-2019
(Class of Station)	(File Number)

NAME Carnegie Mellon University

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) MOBILE: All counties in the state of California

Frequency Information

MOBILE: All counties in the state of California

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
617-652 MHz	MO		2 W (ERP)	0.0001 %
		270KG7W		
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
617-652 MHz	MO		24.27 W (ERP)	0.0001 %
		270KG7W		
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		

This authorization effective August 26, 2019 and will expire 3:00 A.M. EST September 01, 2024

FEDERAL COMMUNICATIONS COMMISSION

Frequency Information

MOBILE: All counties in the state of California

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
617-652 MHz	MO		24.27 W (ERP)	0.0001 %
		3M00W7W		
		1M40W7W		
663-698 MHz	MO		2 W (ERP)	0.0001 %
		270KG7W		
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
663-698 MHz	MO		24.27 W (ERP)	0.0001 %
		270KG7W		
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
880-915 MHz	MO		24.27 W (ERP)	0.0001 %
		270KG7W		
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
		5M00W7W		
880-915 MHz	MO		2 W (ERP)	0.0001 %
		10M0W7W		
		20M0W7W		

Frequency Information

MOBILE: All counties in the state of California

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
880-915 MHz	MO		2 W (ERP)	0.0001 %
		15M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
		270KG7W		
		5M00W7W		
925-960 MHz	MO		24.27 W (ERP)	0.0001 %
		270KG7W		
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
		5M00W7W		
925-960 MHz	MO		2 W (ERP)	0.0001 %
		270KG7W		
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
		5M00W7W		
1880-1920 MHz	MO		2 W (ERP)	0.0001 %
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		

Frequency Information

MOBILE: All counties in the state of California

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1880-1920 MHz	MO	1M40W7W	2 W (ERP)	0.0001 %
1880-1920 MHz	MO	20M0W7W 15M0W7W 10M0W7W 5M00W7W 3M00W7W 1M40W7W	24.27 W (ERP)	0.0001 %
1910-1930 MHz	MO	20M0W7W 15M0W7W 10M0W7W 5M00W7W 3M00W7W 1M40W7W	2 W (ERP)	0.0001 %
1910-1930 MHz	MO	20M0W7W 15M0W7W 10M0W7W 5M00W7W 3M00W7W 1M40W7W	24.27 W (ERP)	0.0001 %
2300-2310 MHz	MO	20M0W7W 15M0W7W 10M0W7W 5M00W7W 3M00W7W 1M40W7W	2 W (ERP)	0.0001 %

Frequency Information

MOBILE: All counties in the state of California

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2300-2310 MHz	MO		24.27 W (ERP)	0.0001 %
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
2501-2690 MHz	MO		2 W (ERP)	0.0001 %
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
2501-2690 MHz	MO		24.27 W (ERP)	0.0001 %
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
2570-2620 MHz	MO		2 W (ERP)	0.0001 %
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
2570-2620 MHz	MO		24.27 W (ERP)	0.0001 %
		20M0W7W		
		15M0W7W		

Frequency Information

MOBILE: All counties in the state of California

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
2570-2620 MHz	MO		24.27 W (ERP)	0.0001 %
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
3650-3700 MHz	MO		2 W (ERP)	0.0001 %
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		
3650-3700 MHz	MO		24.27 W (ERP)	0.0001 %
		20M0W7W		
		15M0W7W		
		10M0W7W		
		5M00W7W		
		3M00W7W		
		1M40W7W		

Special Conditions:

(1) The station identification requirements of Section 5.115 of the Commission's Rules are waived.

(2) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.

(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.

Special Conditions:

(4) Operation is subject to notification of the following within 50 miles of the test area:
Cellular licensees (824-849 MHz/869-894 MHz)
Commercial Air-Ground licensee (849-851 MHz/894-896 MHz)
SMR licensees (896-901 MHz/935-940 MHz)
B/ILT licensees (896-901 MHz/935-940 MHz)
Narrowband PCS licensees (901-902/930-931/940-941 MHz)
Location & Monitoring Service licensees (902-928 MHz)
Paging Service licensees in 929 MHz and 931 MHz
Broadband PCS licensees (1850-1910 MHz/1930-1990 MHz)
WCS (2305-2320 MHz/2345-2360 MHz) licensee (AT&T)

(5) Secure consents from the Advance Wireless Service licensees prior to operation in 1915-1920 MHz band.

(6) Obtain consents from the Educational Broadband Service and the Broadband Radio Service licensees prior to operation in 2500-2690 MHz range.

(7) 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.

(8) 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.

(9) Coordinate with the local Society of Broadcast Engineers frequency coordinator prior to operation in 617-652 MHz, 663-698 MHz, and 925-960 MHz bands.

(10) Coordinate with affected Fixed Microwave Service licensees prior to operation in 925-960 MHz band.

(11) Ensure that the transmitting base station antenna(s) tip down when possible and avoid point towards the horizon in order to protect satellite earth stations nearby.

(12) Licensee must maintain separation from the grandfathered earth stations as defined in Part 90 subpart Z, or notify and obtain an agreement with the grandfathered earth station licensees prior to accessing to 3650-3700 MHz band. Consult MyIBFS database to identify all existing registered earth stations in the 3650-3700 MHz band for each proposed experimental area of operation. The coordinates of these stations are available at http://www.fcc.gov/ib/sd/3650/grandftr.pdf

(13) Licensee shall ensure that the operations will not cause harmful interference to any existing registered stations in 3650-3700 MHz, and notify the registered users in the proposed areas prior to operation in those frequency bands.

(14) All of the experimental devices will be under the control of Carnegie Mellon University.

(15) The stop buzzer contact for this project is:
Bob Iannucci, Email: bob.iannucci@west.cmu.edu
Direct Phone: (650) 714-1200

(16) 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).