

DESCRIPTION OF RESEARCH PROJECT

Pursuant to Sections 5.3(j) and Section 5.61 of the Federal Communications Commission's rules, 47 C.F.R. §§ 5.3(j) and 5.61, CCO Fiberlink, LLC ("Charter"), a limited liability company and subsidiary of Charter Communications, Inc., seeks Special Temporary Authority ("STA") for 180 days, beginning September 30, 2019, or immediately upon grant, to test and evaluate 5G using mid-band spectrum. As part of its efforts to lead the industry in broadband innovation, Charter intends to conduct fixed wireless experiments in the 3.7 GHz and 2.5 GHz bands. The proposed operations will advance Charter's understanding of 5G technology and network potential in mid-band spectrum and will advance the potential deployment of 5G fixed and mobile services.

Location and Description of Testing

Charter will conduct the proposed test within 10 kilometers of three fixed locations in the Keystone, Iowa area (at 42° 1' 10.833" N, -92° 8' 36.9456" W; 42° 1' 20.208" N, -92° 11' 45.8124" W; and 42° 2' 11.4036" N, -92° 7' 45.015" W).

These experiments will evaluate the 5G frequencies and technologies for their use in point-to-multipoint access network capacity (*e.g.*, rate versus range) and data throughput. The ultimate goal of these tests is to research the techniques and efficacy of fixed wireless rural broadband and mobile solutions in the mid-band 5G frequencies. The tests will utilize fixed transmitters with a 10 km or smaller effective radius. Due to limited use of the requested band in the proposed location, Charter does not anticipate that these experiments will cause harmful interference, and Charter will work closely with the equipment vendor to ensure no interference occurs.

Radio Equipment Description

For the testing, Charter will use multiple models of fixed equipment. The technical information below provides the greatest bandwidth and power levels intended to be used for each type of prototype equipment.

Equipment	Tx Power	EIRP (dBm)	ERP (kW)	Mean or Peak	Emission Designator	Frequency Tolerance	Modulation
Prototype 1	53dBm/200 W	76	24.3	Peak	100MD7D	0.001%	256 QAM, 64 QAM, 16QAM, QPSK
Prototype 2	53dBm/200 W	76	24.3	Peak	100MD7D	0.001%	256 QAM, 64 QAM, 16QAM, QPSK

Protection Against Interference

Charter understands it must accept RF interference from any federal and non-federal incumbent users of this band and that all Charter operations will be on a secondary basis. With regard to existing users, Charter identifies a portion of the band being used for the proposed testing 3.7 GHz is used by Fixed Satellite Service (“FSS”) earth stations and a portion of the 2.5 GHz (B block) is owned by the FCC. With regard to existing users, Charter has confirmed there are no protected FSS earth stations operating within 20 miles of the areas in which Charter seeks to conduct testing. Charter will conduct its tests between the hours of 7 a.m. and 7 p.m., and Charter personnel will be present at all times during the testing.

Contact Information

Point of contact for FCC licensing issues:

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Point of contact for questions about testing operations:

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The following individual will be available 24/7 during all testing and has authority and ability to immediately cease all operations:

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