

Date: December 19, 2018
Subject: Market Trial Narrative and Technical Exhibit
File Number: 1021-EX-CN-2018

Pursuant to 5 U.S.C. § 552 and Sections 0.457 and 0.459 of the Commission's Rules, Arvig Enterprises, Inc. ("Arvig") hereby requests that certain information contained in the above-referenced application for an Experimental License Market Trial and accompanying exhibits be treated as confidential and not subject to public inspection. The designated information constitutes confidential and proprietary information that, if subject to public disclosure, would cause significant commercial, economic, and competitive harm to Arvig. As described below, Arvig's request satisfies the standards for grant of such requests set forth in Sections 0.457 and 0.459 of the Commission's Rules, 47 C.F.R. §§ 0.457, 0.459.

In accordance with Section 0.459(b), 47 C.F.R. § 0.459(b), and in support of this request, Arvig provides the following information:

1 IDENTIFICATION OF THE INFORMATION FOR WHICH CONFIDENTIAL TREATMENT IS SOUGHT

Arvig's request for confidential treatment is limited to information that has been redacted from the Experimental License application and associated Exhibits. Arvig requests confidential treatment of the information underlined and highlighted below and redacted from the publicly filed version of Exhibits A and B that contains confidential and proprietary information regarding the proposed market trial for which Commission authorization is requested in the instant application.

2 IDENTIFICATION OF THE CIRCUMSTANCE GIVING RISE TO THE SUBMISSION

Arvig is submitting an application for an Experimental Market Trial to test certain aspects of prospective wireless operations in the 3.5 GHz band.

3 EXPLANATION OF THE DEGREE TO WHICH THE INFORMATION IS COMMERCIAL OR FINANCIAL OR CONTAINS A TRADE SECRET OR IS PRIVILEGED:

The information for which confidential treatment is requested has significant commercial and strategic value to Arvig. The exhibits supporting the Experimental Market Trial discuss tests/experiments that include trade secret information. Arvig's tests and experiments and proprietary wireless applications using particular radio frequency equipment and shared spectrum technology represent a "secret commercially valuable plan" within the meaning of a trade secret as recognized by the Commission, and thus justifies withholding such information from public inspection.

4 EXPLANATION OF THE DEGREE TO WHICH THE INFORMATION CONCERNS A SERVICE THAT IS COMPETITIVE:

Arvig is planning to test its shared spectrum solutions, and operation of small cells in the 3.5 GHz band. The services and shared spectrum technologies that are the subject of this application have not

been fully developed, but are expected to be implemented in hardware, software, and service offerings in the 3.5 GHz band. SAS Administrators, equipment manufacturers, and software developers and network operators will compete vigorously on the basis of their products in this band.

5 EXPLANATION OF HOW DISCLOSURE OF THE INFORMATION COULD RESULT IN SUBSTANTIAL COMPETITIVE HARM

The technology under test is very sensitive and confidential in nature. Disclosure of the redacted information could cause substantial competitive harm to Arvig because it would provide competitors insight into confidential development, operational, and strategic information that would not otherwise be available, which would work to Arvig's competitive disadvantage.

6 IDENTIFICATION OF ANY MEASURES TAKEN BY THE REQUESTING PARTY TO PREVENT UNAUTHORIZED DISCLOSURE.

Arvig routinely treats the redacted information as highly confidential and exercises significant care to ensure that such information is not disclosed to its competitors or the public. Arvig has taken steps to keep confidential the information set forth in the confidential exhibits by limiting the number of people involved in the tests/experiments to only those on a "need to know" basis, and by requiring that any third parties involved in the preliminary analysis execute robust nondisclosure agreements.

7 IDENTIFICATION OF WHETHER THE INFORMATION IS AVAILABLE TO THE PUBLIC AND THE EXTENT OF ANY PREVIOUS DISCLOSURES OF THE INFORMATION TO ANY THIRD PARTIES

The information contained in the confidential exhibits is not available to the public, and will only be disclosed to third parties pursuant to the restrictive safeguards described above.

8 JUSTIFICATION OF THE REQUESTED PERIOD OF CONFIDENTIALITY

Arvig requests that the redacted information be treated as confidential on an indefinite basis as it cannot identify a date certain on which this information could be disclosed without causing competitive harm to Arvig. Shared spectrum is a new technology that is being developed. As such, Arvig expects that confidential treatment will be necessary for the length of the proposed experiment and thereafter in order to protect its evolving business and technology strategies.

Consistent with 47 C.F.R. § 0.459(d)(I), Arvig requests notification if release of the information subject to this request is requested pursuant to the FOIA or otherwise, so that it may have an opportunity to oppose grant of any such request.

Exhibit A – Experimental License Market Trial Justification

Pursuant to Section 5.63(c)(1) of the Federal Communications Commission's ("FCC" or "Commission") Rules, Arvig is providing this narrative statement in support of its license application to conduct a market trial, as defined under Sections 5.5 and 5.602, in Minnesota to undertake experiments that will advance the radio art with respect to Citizens Broadband Radio Service ("CBRS") 3550-3700 MHz band. Arvig seeks a regular license term of one (1) year from grant for the market trial. Arvig respectfully requests that the FCC act on this application as expeditiously as possible.

Arvig seeks permission to begin a market trial to evaluate in areas underserved by broadband internet coverage, utilizing the CBRS 3550-3700 MHz spectrum, in compliance with the Commission's Part 96 CBRS rules as they are applied to the Arvig market trial area. Arvig desires to evaluate the customer reaction to and benefits of using CBRS technology to upgrade the existing wireless fixed broadband technology that Arvig is currently serving subscribers in Minnesota

Planned Operations

Arvig anticipates performing the following tests as part of the Market Trial:

- Citizens Broadband Service Device ("CBSD") outdoor coverage and performance:
 - The coverage and performance of small cell base stations in dense industrial and port environments.
 - The frequency of operation will be 3550-3700 MHz.
 - The market trial will be limited to areas in Minnesota
 - The base stations will be installed on existing towers.
 - The performance and operation of a CBSD when instructed by a SAS to switch frequency.
 - The impact on an end user when a CBSD has switched its frequency.
- SAS Management of Shared Spectrum:
 - Arvig, in collaboration with its SAS Administrator and radio partners, will test spectrum sharing, including General Authorized Access (GAA) registration, CBSD spectrum grant request and SAS response, spectrum grant revocation, and simulated protection scenarios in an operational environment.

Non-Interference Analysis

Operation under the Experimental license will not adversely impact any authorized user of RF Spectrum.

Radar Protection (Shoreline)

Arvig will operate only in Minnesota, far from any coastal Exclusion Zone or Dynamic Protection Area implemented to protect naval radars operating at 3.55-3.65 GHz.

Federal Government Radiolocation Facilities

The trial location is outside of the 80 km restricted area for the Federal radiolocation facilities located in St. Inigoes, Maryland, Pensacola, FL, and Pascaguoula, MS.

Incumbent Services Protection

Arvig will take all appropriate steps to ensure interference protection for incumbent services. Arvig will coordinate with Fixed Satellite Service earth station operators and Wireless Broadband Services (WBS) operated under Subpart Z of the Commission's Part 90 rules, as applicable and as required under the Commission's Part 96 rules.

No Sale of Equipment

Arvig will retain ownership of all transmitting and/or receiving equipment used in the trial.

Trial Devices at the Conclusion of the Trial

Arvig will notify all end users in the market trial that devices will be rendered inoperable or retrieved at the conclusion of the market trial as required by Section 5.602(e) of the Commission's rules, 47 C.F.R. § 5.602(e). Arvig also will notify all end users in the market trial that the service they will be receiving is being provided in part or in whole under experimental authority, and as a condition of the experimental license, Arvig may be required at any time, without prior notice, to cease operations. Upon expiration of the market trial, Arvig will cease operations, or will transition such operations to continue pursuant to the Initial Commercial Deployment (ICD)¹ contemplated for the CBRS band in the event ICD proposals are approved prior to expiration of the requested market trial experimental license.

¹ *Wireless Telecommunications Bureau and Office of Engineering and Technology Establish Procedure and Deadline for Filing Spectrum Access System Initial Commercial Deployment Proposals*, GN Docket No. 15-319, Public Notice, DA 18-783 (WTB July 27, 2018).

Exhibit B – Technical Information:

Applicant Name: Arvig Enterprises, Inc.

Applicant FRN: 0008393118

Legal Contact Details:

Name of Contact	Mark Birkholz
Contact Address	224 E Main St, Melrose, MN. 56352

Technical Contact Details:

Name of Contact	Albert Kangas
Contact Address	224 E Main St, Melrose, MN. 56352 (320) 469-9502
Should any interference be reported, the proposed market trial operations will cease immediately unless and until the interference incident has been resolved. The technical point of contact above is the “stop buzzer” contact for all devices involved in the proposed market trial.	

Base Station General Information

Equipment	
Quantity	81
Area of Operation	Operation not to exceed 5 km from each of the following geographic center points: 45° 14' 20.4" N, 93° 41' 13.2" W 45° 38' 34.9" N, 94° 28' 26.4" W 45° 23' 50.6" N, 93° 52' 33.6" W 45° 25' 44" N, 93° 50' 20.4" W 45° 19' 52" N, 93° 43' 44.4" W 45° 30' 16.3" N, 94° 4' 4.8" W 45° 24' 25.2" N, 94° 2' 38.4" W 45° 25' 48" N, 94° 23' 6" W 45° 34' 31.4" N, 93° 55' 22.8" W 45° 30' 35.7" N, 93° 56' 45.6" W 45° 30' 29.4" N, 94° 16' 37.2" W 45° 35' 48" N, 94° 9' 25.2" W 45° 32' 20.5" N, 94° 10' 8.4" W 45° 33' 3.9" N, 94° 12' 39.6" W 45° 33' 59" N, 94° 15' 54" W 45° 27' 25.2" N, 94° 10' 44.4" W 45° 33' 39.6" N, 94° 9' 36" W 45° 42' 7.9" N, 94° 15' 36" W 45° 32' 34.8" N, 94° 15' 43.2" W

	44° 31' 37.2" N, 94° 42' 28.8" W
	44° 14' 2.4" N, 95° 15' 57.6" W
	44° 24' 39.6" N, 95° 24' 28.8" W
	44° 24' 54" N, 94° 55' 37.2" W
	44° 46' 37.2" N, 94° 59' 16.8" W
	44° 32' 27.6" N, 95° 10' 58.8" W
	44° 47' 31.2" N, 95° 12' 21.6" W
	44° 24' 46.8" N, 94° 42' 25.2" W

Arvig's market trial will use three (3) base stations per site, each of which will use a directional antenna to provide coverage to a 120-degree sector, and as such each site will provide "omnidirectional" 360-degree coverage to its 5 km radius. At the direction of staff, Arvig has indicated "No" to the question "Is a directional antenna (other than radar) used?" and below provides additional detail on the performance of its antennas.

Amplifier Detail

Antenna	External
Type	Omni
Gain	17 dBi
Beamwidth at Half-Power Point	65
Orientation in Horizontal Plane	0, 120, 240
Orientation in Vertical Plane	-1
Lower Frequency	3550 MHz
Upper Frequency	3700 MHz
Power (and Power units)	10 W
ERP (and ERP units)	50 W
Mean / Peak (for power)	Peak
Frequency Tolerance	0.0005%

Radio	Modulation	Emission Designator	Bandwidth	Maximum Output Power	Maximum EIRP
██████████ ██████████ ██████████	Digital	10M0W7W	10 MHz	10 W	50 W
██████████ ██████████ ██████████	Digital	20M0W7W	20 MHz	10 W	50 W