

Date: December 17, 2018
Subject: Market Trial Narrative and Technical Exhibit
File Number: 1014-EX-CN-2018

Exhibit A – Experimental License Market Trial Justification

Pursuant to Section 5.63(c)(1) of the Federal Communications Commission's ("FCC" or "Commission") Rules, Diode Cable Company ("Diode") 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 Nebraska to undertake experiments that will advance the radio art with respect to Citizens Broadband Radio Service ("CBRS") 3550-3700 MHz band. Diode seeks a regular license term of one (1) year from grant for the market trial. Diode respectfully requests that the FCC act on this application as expeditiously as possible.

Diode seeks permission to begin a market trial to 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 Diode market trial area. Diode intends to utilize commercially available LTE equipment from Telrad Networks, currently operating under FCC authority in Commission's Part 90 rules. Customer premise equipment will utilize professionally installed outdoor mounted CPE devices, currently with authorization in FCC Part 90, with the intent to receive authorization in FCC Part 96.

Planned Operations

Diode 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 Nebraska
 - 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:
 - Diode, 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)

Diode will operate only in Nebraska, 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

Diode will take all appropriate steps to ensure interference protection for incumbent services. Diode 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

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

Trial Devices at the Conclusion of the Trial

Diode 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). Diode 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, Diode may be required at any time, without prior notice, to cease operations. Upon expiration of the market trial, Diode 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: Diode

Applicant FRN:0027939503

Legal Contact Details:

Name of Contact	Justin Henrichs
Contact Address	300 Commercial St PO Box 236 Diller, NE 68342

Technical Contact Details:

Name of Contact	Justin Henrichs
Contact Address	300 Commercial St PO Box 236 Diller, NE 68342 (402) 793-5125
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	Telrad Compact 1000 FCC ARA-COMPACT3X
Quantity	7
Area of Operation	Operation not to exceed 12 km from each of the following geographic center point: 40°18'7.07"N, 96°59'12.69"W Operation not to exceed 15 km from each of the following geographic center point: 40°14'42.01"N, 96°29'48.59"W

Amplifier Detail

Antenna	External
Type	Omni
Gain	17 dBi
Beamwidth at Half-Power Point	N/A
Orientation in Horizontal Plane	N/A
Orientation in Vertical Plane	N/A
Lower Frequency	3550 MHz
Upper Frequency	3700 MHz
Power (and Power units)	1 W
ERP (and ERP units)	44.6 W

Mean / Peak (for power)	Peak
Frequency Tolerance	0.0000077500%

CPE General Information

Equipment	Telrad CPE 9000 FCC MXF-WLTMS11043
Quantity	30
Area of Operation	Same as above

Radio	Modulation	Emission Designator	Bandwidth	Maximum Output Power	Maximum EIRP
Telrad Compact 1000 FCC ARA-COMPACT3X	OFDMA	20M0W7D	20 MHz	1 W	47 dBm
Telrad CPE 9000 FCC MXF-WLTMS11043	OFDMA	17M8W7D	20 MHz	0.2 W	38 dBm