



GE
Digital Energy

March 13, 2013

BY ELECTRONIC DELIVERY

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington DC 20554

Re: Ex Parte Presentation
*Request by Progeny LMS, LLC for Waiver of Certain Multilateration Location
and Monitoring Service Rules*
WT Docket No. 11-49

Dear Ms. Dortch:

On March 12, 2013, the following representatives from the General Electric Corporation ("GE") met with Julius Knapp, Chief of the Office of Engineering and Technology ("OET"), as well as Geraldine Maise, Hugh Van Tuyl and Karen Ansari from the OET and Paul Murray from the Wireless Telecommunications Bureau: Michael Fitzpatrick, John Geiger, David Malkin and Richard Place. The purpose of the meeting was to discuss GE's concerns regarding the likelihood of interference with industrial supervisory control and data acquisition networks from Progeny's proposed system. GE reviewed the attached slides with FCC staff.

GE representatives recommended that the FCC consider several options to resolve the concerns of Part 15 device manufacturers, including the initiation of a notice-and-comment rulemaking to define "unacceptable interference" to Part 15 devices. GE noted that the FCC has previously defined this term for certain services in the 800 MHz and 900 MHz Business/ Industrial Land Transportation Pool¹. Therefore, one could reasonably expect the FCC to be able to reach a similarly quantifiable and objective definition for unlicensed devices in the 902-928 MHz band. Such a definition would allow the FCC, Progeny and other interested parties to design and conduct tests that conclusively determine whether Progeny's system satisfies the requirements established in Part 90 rules and the Progeny Waiver.²

Please direct any questions to the undersigned.

¹ 47 C.F.R. § 90.672(a).

² Progeny Waiver at ¶ 35; see also 47 C.F.R. § 90.353(d).

Respectfully submitted,

/s/

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Progeny and the 902-928 MHz Band Technical Briefing to FCC Staff



March 12, 2013



imagination at work

Agenda

- 1 Business overview
- 2 Industrial applications
- 3 Technical concerns
- 4 Case study... utility SCADA system
- 5 Recommendations

GE Digital Energy

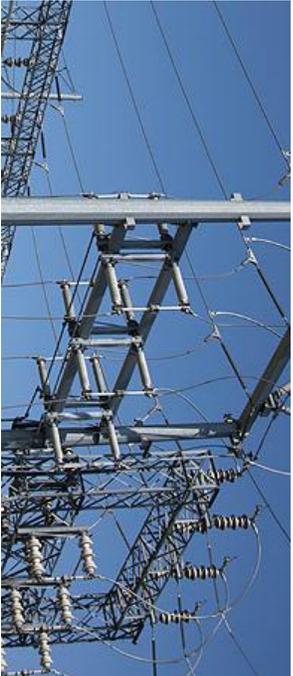
Industrial Communications

- Industry leader in mission critical communications
 - ✓ Industrial strength wireless (MDS)
 - ✓ Fiber optic multiplexers (Lentronics)
 - ✓ Ethernet switches and converters
- 20+ years of experience with hundreds of customers worldwide
- Global installed base of over 2 MM devices
 - ✓ 1 MM+ devices in unlicensed band
- Service portfolio includes:
 - ✓ Data acquisition
 - ✓ Wireless wide area networks
 - ✓ Backhaul networks
 - ✓ Consulting & engineering services
 - ✓ Accessories



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Mission critical unlicensed applications 902-928 MHz band



Utilities

Secure, private networks for SCADA¹ systems, distribution automation, and advanced metering infrastructure



Oil & Gas

Wireless communications to automate wellhead monitoring, protection and control; remote status monitoring and control of pipeline field instruments



Water

Communications solutions to secure reservoirs and pumping stations, monitor vital water flows, and send control signals to pipes, valves & pumps



Transportation

Networking solutions for security & video systems, remote locomotive control, condition monitoring, dispatch systems and SCADA applications

¹Supervisory Control and Data Acquisition

Progeny operations in 902-928 MHz

Top technical concerns

- Transmitter beacon height
 - ✓ Placed “at the highest available points in and around the communities where location services will be provided”¹
 - ✓ Beacons will likely be line-of-sight to outdoor SCADA systems
- Transmitter beacon density
 - ✓ Multiple opportunities for interference with industrial SCADA systems in portion of spectrum occupied by Progeny
 - ✓ Interference could render 4 MHz unusable for Part 15 SCADA systems within 10+ miles of Progeny’s system
- Available licensed spectrum
 - ✓ Progeny would operate in only 4 MHz of 902-928 MHz band
 - ✓ But the precedent would be set – under Part 90 rules, licensed LMS operations could consume over half of the band

¹Progeny LMS, LLC, Permitted Written Ex Parte Presentation, WT Docket No. 11-49, filed February 19, 2013

Interference case study

Utility SCADA system using GE iNET radio

SCADA system design considerations



- Target received signal strength of -85 dBm
- Carrier-to-Interference ratio of 10 dB needed to avoid co-channel signal interference
 - ✓ Interference-free operations require other on-channel signals to be -95dBm or weaker

Expected performance near Progeny system



- Free-space path loss versus distance (Friis Equation)
 - ✓ Radio must be 316 miles from 30W beacon to receive -95 dBm
 - ✓ Assumes 6 dBi antenna gain
- Earth's curvature reduces impact distance... but not enough to mitigate potential impact to utility long-range (10-20 mile) SCADA systems
- 10-20% Progeny duty cycle not a solution, as multiple LOS beacons will be heard on same frequency
- Only strongest remote signals would be received by base station
 - Signal strength would be -45 dBm one mile from Progeny beacon (Friis)
 - Remote signals must be -35 dBm
 - SCADA range effectively reduced to 0.11 miles if using same channel as Progeny compared to a typical 10 mile range.

Recommendations to FCC

Procedural pathways

- Develop criteria to define “unacceptable interference” in 4 MHz band occupied by Progeny
- Design and order field testing with utility long-range SCADA systems to test in 4MHz band for “unacceptable interference” under two scenarios:
 - ✓ Digital Transmission System (DTS) -- CFR47 part 15.247 (a)(2)
 - ✓ Frequency hopping -- CFR47 part 15.247 (a)(1)
- Delay Progeny decision until additional field tests are concluded to ensure spectrum is not effectively repurposed for only M-LMS use

Operational pathways

- Direct Progeny to reduce transmit power to 4W EIRP – compensate with additional towers as need
- Grant TV channel 37, 608-614 MHz, for M-LMS operations – consistent with current plans to repurpose this spectrum
- Relocate Progeny to upper 700 MHz D-Block – consistent with public safety applications

End