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October 31, 2012

**REDACTED VERSION
CONFIDENTIAL TREATMENT REQUESTED**

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th St. S.W.
Washington, D.C. 20554

**Re: Progeny LMS, LLC
Request for Confidential Treatment
Ex Parte Letter on Part 15 Joint Test Reports
WT Docket No. 11-49**

Dear Ms. Dortch:

Progeny LMS, LLC (“Progeny”), by its counsel and pursuant to Sections 0.457 and 0.459 of the Commission’s Rules, 47 C.F.R. §§ 0.457, 0.459, hereby requests that the redacted portions of the attached letter be treated as confidential and be withheld from public inspection.

Pursuant to Section 90.353(d) of the Commission’s rules¹ and paragraph 29 of the Commission’s *Waiver Order*,² Progeny is required to demonstrate that its Multilateration Location and Monitoring Service (“M-LMS”) network does not cause unacceptable levels of interference to Part 15 devices. On January 27, 2012, Progeny filed with the Commission the results of testing that were conducted in 2011 on behalf of Progeny by an independent third party testing firm, Spectrum Management Consulting Inc. (“SMC”).³

¹ See 47 C.F.R. § 90.353(d).

² See Request by Progeny LMS, LLC for Waiver of Certain Multilateration Location and Monitoring Service Rules, *Order*, DA 11-2036, ¶ 29 (Dec. 20, 2011) (“*Waiver Order*”) (granting conditional waivers of Sections 90.155(e) and 90.353(g) of the Commission’s rules).

³ See *Coexistence of M-LMS Network and Part 15 Devices*, Spectrum Management Consulting Inc. (Jan. 27, 2012) (attachment to *Letter from Bruce A. Olcott, Counsel to Progeny LMS, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission*, WT Docket No. 11-49 (Jan. 27, 2012)).

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At the request of the Commission, Progeny subsequently agreed to additional testing on a joint basis with three entities: Itron; Landis+Gyr Company (“Landis+Gyr”); and the Wireless Internet Service Providers Association (“WISPA”). The attached letter provides Progeny’s initial overview of the Part 15 Test Report and, in doing so, discusses test results and technical capabilities of Itron and Landis+Gyr automatic meter reading (“AMR”) devices that are confidential and proprietary to these entities. In support of this request, and in accordance with the requirements of Section 0.459(b) of the Commission’s rules, 47 C.F.R. § 0.459(b), Progeny submits the following:

0.459(b)(1): Progeny seeks confidential treatment for certain portions of the attached letter, primarily the results of certain tests deemed confidential and proprietary by Itron and Landis+Gyr, and the technical capabilities of the AMR devices deemed confidential and proprietary to Itron and Landis+Gyr.

0.459(b)(2): Progeny is filing this letter in WT Docket Number 11-49 at the request of the Commission staff and in furtherance of the requirement that Progeny must demonstrate that its M-LMS network does not cause unacceptable levels of interference to Part 15 devices.

0.459(b)(3): Progeny’s attached letter contains highly sensitive, confidential, and proprietary commercial and technical information, including trade secrets regarding the design and operation of the Itron and Landis+Gyr AMR devices. The letter also contains test results that provide detail regarding the functioning and capabilities of the Itron and Landis+Gyr AMR equipment, including the technical designs and operational methods that Itron and Landis+Gyr employ to enable their AMR devices to operate successfully in the 902-928 MHz band. Itron and Landis+Gyr treat such information as highly confidential and does not disclose it to third parties absent a Nondisclosure Agreement (“NDA”). In fact, both Itron and Landis+Gyr required Progeny to enter into an NDA prior to gaining access to the technology and information. As such, the redacted information in the attached letter qualifies as material that “would customarily be guarded from competitors” within the meaning of Section 0.457(d)(2) of the Commission’s rules. In addition, the redacted portions of the attached letter would be protected from disclosure under the Freedom of Information Act (“FOIA”) as “trade secrets and commercial or financial information obtained from a person and privileged or confidential.” 5 U.S.C.A. § 552(b)(4).

0.459(b)(4): The redacted portions of the attached letter contain trade secrets and confidential information regarding the design and operation of AMR networks and devices manufactured by Itron and Landis+Gyr. The market for AMR equipment is highly competitive and Itron and Landis+Gyr must protect their trade secrets in order to remain competitive with other providers of AMR equipment and services.

0.459(b)(5): Disclosure of the confidential information could compromise the ability of Itron and Landis+Gyr to compete successfully with other providers of AMR equipment and services in this highly competitive industry. As a result, the release of any portion of this

information could compromise the competitive edge of Itron and Landis+Gyr in the AMR equipment industry, resulting in substantial competitive harm to each company.

0.459(b)(6): Itron and Landis+Gyr do not permit the dissemination of their confidential trade secrets and proprietary information regarding their AMR equipment and methodologies to non-employees without the execution of a confidentiality agreement. Furthermore, all such confidentiality agreements require third party recipients of the information to request confidential treatment of the information as a part of any submission of any portion of the information to government agencies, such as the Commission. The NDA that Itron and Landis+Gyr required Progeny to enter into included such a provision.

0.459(b)(7): The information contained in the redacted portions of the attached letter is not available to the public and, to the best of the knowledge of Progeny, Itron, and Landis+Gyr, has not been disseminated to non-Progeny, non-Itron, or non-Landis+Gyr personnel without the execution of a confidentiality agreement.

0.459(b)(8): Progeny requests that the Commission permanently withhold the redacted information contained in the attached letter. Release of this information at any time in the future would cause substantial competitive harm to Itron and Landis+Gyr.

For the foregoing reasons, Progeny respectfully request that the redacted portions of the attached letter be granted confidential status and be withheld from public inspection. If confidential treatment is not granted for the redacted portions of the attached letter, Progeny requests that all copies of the attached letter be returned to Progeny.

Please let us know if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce A. Olcott", written over a horizontal line.

Bruce A. Olcott
Counsel to Progeny LMS, LLC

October 31, 2012

REDACTED VERSION
SUBJECT TO CONFIDENTIAL TREATMENT REQUEST

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Progeny LMS, LLC
Demonstration of Compliance with Section 90.353(d) of the Commission's Rules
WT Docket No. 11-49

Dear Ms. Dortch:

On this date, Progeny LMS, LLC (“Progeny”), in cooperation with Itron, Inc. (“Itron”); Landis+Gyr Company (“Landis+Gyr”); and the Wireless Internet Service Providers Association (“WISPA”), is jointly filing three Part 15 Test Reports, each providing the results of tests that were undertaken and documented jointly between Progeny and each of the three parties. Progeny is preparing a detailed analysis of each of the Part 15 Test Reports. In this letter, Progeny provides its initial overview of the Part 15 test results.

As background, Progeny is the holder of 228 licenses in the Multilateration Location and Monitoring Service (“M-LMS”), which were granted by the Commission through a competitive auction process. Progeny’s commercial use of its M-LMS licenses is conditioned on Progeny’s demonstration that its M-LMS network does not cause unacceptable levels of interference to Part 15 devices in the 902-928 MHz band.¹

On January 27, 2012, Progeny filed with the Commission the results of testing that was conducted in 2011 on behalf of Progeny by an independent third party testing firm, Spectrum

¹ See 47 C.F.R. § 90.353(d); see also Request by Progeny LMS, LLC for Waiver of Certain Multilateration Location and Monitoring Service Rules, *Order*, DA 11-2036, ¶29 (Dec. 20, 2011) (“*Waiver Order*”).

Management Consulting Inc. (“SMC”).² These tests employed a wide range of consumer and commercial Part 15 devices, including automated meter reading (“AMR”) and broadband wireless access (“BWA”) equipment, and Progeny believes the test results demonstrate that Progeny’s M-LMS network does not cause unacceptable levels of interference to Part 15 devices.

At the request of the Commission, Progeny engaged in additional testing on a joint basis with Itron, Landis+Gyr, and WISPA. Itron and Landis+Gyr employed various models of their AMR equipment in the tests, while WISPA employed the two leading models of BWA equipment, the Cambium Canopy and the Ubiquiti Networks systems. The tests were conducted between July 2012 and September 2012 separately for each of the three parties for scheduling purposes and to preserve the confidentiality of their respective products and network designs. Portions of the test results (along with the discussion of them in this letter) are being filed with the Commission pursuant to requests for confidential treatment.

The tests that were conducted with the three parties employed numerous test locations in Santa Clara County with a variety of test configurations, including operating Part 15 receivers on tall poles at different heights and at varying distances between the Part 15 transmitter and receiver. Some of the tests also employed Part 15 repeaters, resulting in two tested links between the Part 15 transmitter, the repeater, and receiver.

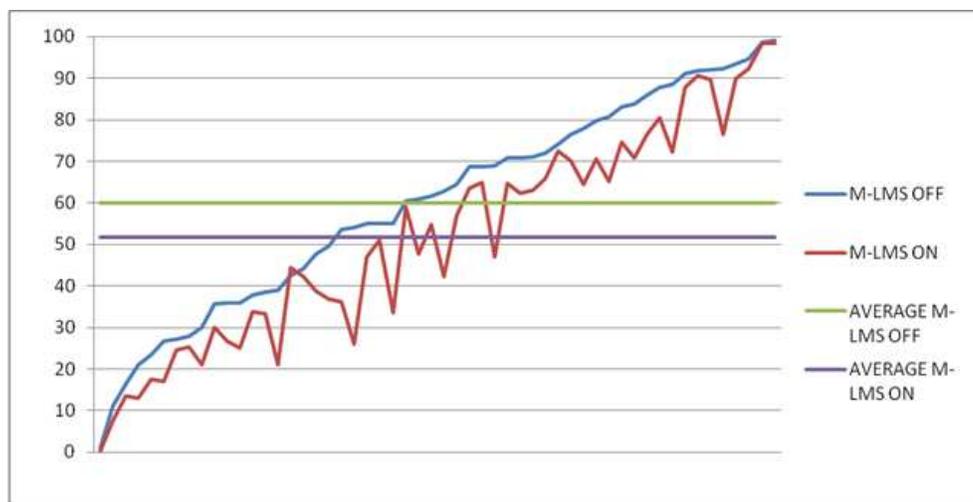
The exposure to Progeny’s M-LMS beacon signals also varied in an effort to model a range of possible operating environments. More severe test environments involved collocation or close proximity to M-LMS transmitters. Less severe test environments involved Part 15 operations that were not in close proximity to M-LMS transmitters. At every test location, however, Progeny was able to detect the signals of about one dozen of its M-LMS beacon transmitters.

As with Progeny’s 2011 tests of its network, the Part 15 tests conducted jointly with Itron, Landis+Gyr and WISPA clearly demonstrate that Progeny’s M-LMS network does not cause unacceptable levels of interference to Part 15 devices. In fact, in nearly every test conducted, degradation in the signal throughput of the Part 15 device under test attributable to Progeny’s M-LMS network was only a fraction (often a small fraction) of the overall degradation the tested Part 15 device experienced from other sources and natural conditions in the 902-928 MHz band.

For example, in the tests of Itron’s equipment, which were the most exhaustive tests conducted, the average data throughput success rate of Itron’s equipment with Progeny’s

² See *Coexistence of M-LMS Network and Part 15 Devices*, Spectrum Management Consulting Inc. (Jan. 27, 2012) (included as an attachment to *Letter from Bruce A. Olcott, Counsel to Progeny LMS, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission*, WT Docket No. 11-49 (Jan. 27, 2012)).

network *turned off* was 59.9%. Once Progeny's network was turned on, the average throughput success rate dropped by 8.1%, to 51.8%. This is depicted in the figure below, which shows the throughput success rates for the tests of Itron equipment sorted with the configurations that produced the lowest throughput success rates with the Progeny network off to the left side of the graph and the configurations that produced the highest throughput success rates with Progeny's network off to the right side of the graph.



Aggregate Results of Joint Tests with Itron Equipment

All of the tested Itron AMR devices were capable of operating co-frequency with the Progeny beacon signals and were tested in this manner. In contrast, only one of the two classes of Landis+Gyr equipment that was tested is capable of operating in Progeny's licensed spectrum. A legacy class of Landis+Gyr AMR devices was tested that operates below the Progeny spectrum at around 917 MHz using DSSS modulation. This legacy equipment was tested to determine whether the operation of Progeny's M-LMS network in adjacent spectrum would result in interference. The tests showed no impact on the Landis+Gyr's legacy equipment, likely because the narrow signal structure and tight roll off of Progeny's M-LMS beacons does not result in appreciable emissions into adjacent frequencies.

The second class of Landis+Gyr equipment that was tested was frequency hopping AMR devices that skip between channels throughout the 902-928 MHz band, including the frequencies employed by Progeny's M-LMS beacons. These Landis+Gyr AMR devices experienced an average reduction in data throughput of less than one percent (0.12%) when the Progeny network was turned on. This was in part because [REDACTED]

Part 15 AMR equipment used by Itron, Landis+Gyr and others employ multiple techniques that enable them to effectively withstand or avoid interference from other Part 15

devices and from Progeny's M-LMS network. For example, both the Itron and Landis+Gyr AMR devices use frequency hopping technologies that ensure that the devices do not transmit on any one frequency for more than a brief period. Further, [REDACTED]

Even when Itron AMR devices are programmed to operate co-frequency with Progeny's network (as was the case in the tests), the tight roll off of Progeny's beacon signals ensures that only those frequency hopping channels that directly overlapped with Progeny's signals are affected by the transmissions, and only then when they transmit during the same time slots as nearby Progeny beacons. Further, [REDACTED]

[REDACTED] The combination of these various factors contributes to the fact that Itron and Landis+Gyr AMR devices can withstand or avoid harmful interference from other Part 15 devices and do not experience unacceptable levels of interference from Progeny's M-LMS network.

The BWA devices that were tested also employ interference mitigation techniques to enable coexistence with other Part 15 devices and Progeny's M-LMS network. One primary interference mitigation technique is the manual selection of optimal spectrum segments in the 902-928 MHz band, including segments that are well below Progeny's licensed M-LMS spectrum. The joint tests of BWA equipment that used portions of the 902-928 MHz band that are outside Progeny's licensed frequencies demonstrated no impact on BWA data throughput or link distance capabilities when Progeny's M-LMS network was turned on.

A second interference mitigation technique employed by BWA devices is the capability to automatically or manually adjust their data throughput rates to compensate for the underlying noise in the 902-928 MHz band. Such adjustments were evident in the joint tests conducted both with Progeny's M-LMS network turned on and with Progeny's network turned off. For example, the Canopy system is capable of transmitting at up to 3.3 Mbps and/or at distances of up to 40 miles, while the Ubiquiti Networks system is capable of transmitting at 40 Mbps using the channelization setting employed in the joint tests. In the relatively noisy suburban/urban test environment where the joint tests were conducted, however, the combined efforts of WISPA and Progeny engineers were unable to establish reliable BWA links that exceeded 2.3 miles for the Canopy equipment and 1.5 miles for the Ubiquiti equipment with the Progeny network *turned off*. Further, the average data rates for these systems could not be reliably maintained in excess

of 2 Mbps for the Canopy equipment and 3 Mbps for the Ubiquity equipment with the Progeny network off.

When Progeny's network was turned on, the Canopy and Ubiquiti BWA systems continued to operate using the same link distances without any interruption to the data session or link stability. The BWA systems instead evidenced further reductions in data throughput, averaging a 24.4% reduction across all of the co-frequency tests (and no throughput reduction averaged across the non-co-frequency tests). The amount of the throughput reduction, however, varied substantially (from a low of 2.5% to a high of 49%) depending on the physical placement of the BWA receiver, the directionality of the BWA antenna, and the exact center frequency employed by the BWA device.

What the joint tests demonstrate is that spectrum sharing between BWA systems and Progeny's M-LMS network will be very similar to sharing between BWA systems and other Part 15 devices, particularly with other BWA systems – highly dependent on local conditions, geography, antenna placement, and the noise floor from other Part 15 spectrum uses. These factors already play a defining role in the use of 900 MHz BWA equipment today. The WISPA website lists coverage maps of their service members and it is dominated by coverage in rural areas less susceptible to suburban/urban noise impacts. As a result, Progeny's largely urban-suburban M-LMS network will coexist well with WISPA's largely rural deployments and resolution of any site specific conflicts that might arise will not be difficult.

The three Part 15 Test Reports also resolve other questions regarding the spectrum sharing capabilities of Progeny's M-LMS network. For example, the test reports put to rest arguments that Progeny's M-LMS transmissions might overload the receivers of Part 15 devices within 250 meters of a Progeny transmitter.³ No evidence of receiver overload was detected. The test results also discredit arguments that Progeny's beacon transmissions could cause a failure of the physical layer of operation of Part 15 receivers.⁴ No indications of receiver failure were detected either from carrier to interference (C/I) or carrier to noise (C/N) based interference.

Considered together, the three Part 15 Test Reports, combined with the independent test report that Progeny filed with the Commission in January, conclusively demonstrate that

³ See *Comments of Itron, Inc. on Progeny Test Report*, WT Docket No. 11-49, at 11 (March 15, 2012) (citing *Analysis of Progeny Part 15 Test Report*, RKF Engineering, WT Docket No. 11-49, at 11 (March 15, 2012) (included as an attachment to *Itron Comments*)).

⁴ See *Review of the "WAPS" and "Part 15 Test Report,"* Nishith D. Tripathi, WT Docket No. 11-49, at 9 (included as attachment to *Comments of the Progeny Test Report and Request to Extend the deadline for Replies to Comments*, Skybridge Spectrum Foundation, et al., WT Docket No. 11-49 (March 15, 2012)).

Progeny's M-LMS network will not cause unacceptable levels of interference to Part 15 devices. In fact, a fair question exists regarding whether Progeny's M-LMS network will even cause *harmful interference* to Part 15 devices. Pursuant to the Commission's rules, harmful interference is defined as interference "which seriously degrades, obstructs or repeatedly interrupts" the functioning of a device.⁵ The Part 15 test results do not show serious degradation to Part 15 devices (particularly when compared with the impact of preexisting noise and other users in the 902-928 MHz band). The Part 15 Test Reports also demonstrate that Progeny's beacons do not obstruct or interrupt Part 15 device operations even in severe test environments involving equipment collocation with M-LMS beacons.

In any event, secondary Part 15 devices are required to accept harmful interference from primary licensed services. The spectrum sharing standard for Progeny's M-LMS network is to avoid causing unacceptable levels of interference to Part 15 devices. The Commission has explained that this requires Progeny to avoid operating in such a manner "as to degrade, obstruct or interrupt Part 15 devices *to such an extent* that Part 15 operations will be negatively affected."⁶ In other words, the amount of harmful interference that Progeny's M-LMS network is permitted to cause to Part 15 devices cannot reach such a level that Part 15 devices are incapable of withstanding or avoiding the interference using the various interference mitigation techniques that are already employed by Part 15 devices to withstand or avoid harmful interference from other users of the 902-928 MHz band.

Therefore, the presence of Progeny's M-LMS network in the upper portion of the 902-928 MHz band does not change the spectrum sharing conditions or requirements for Part 15 devices that operate in the spectrum. Such devices are fully capable of withstanding or avoiding transmissions from Progeny's position location service in the same manner, and with the same effectiveness, as they employ today to avoid harmful interference from other Part 15 devices.

Further, Progeny's M-LMS network can provide critically important position location services, including highly accurate indoor and z-axis location capabilities that are increasingly needed by first responders in meeting the emergency needs of wireless callers to E911 public safety services. As the Commission has recognized, Progeny's M-LMS service offers the potential to provide "highly accurate location determinations, including more precise location information that can improve delivery of E911 emergency services."⁷ Given the compelling public interest benefits of Progeny's position location service, and the thoroughly documented

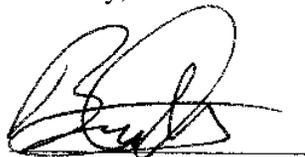
⁵ 47 C.F.R. § 15.3(m); *see also* 47 C.F.R. § 2.1(c).

⁶ *See Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems*, Order on Reconsideration, 11 FCC Rcd 16905, 16912 (1996) (*emphasis added*).

⁷ *Waiver Order*, ¶ 1.

Part 15 Test Reports demonstrating that Progeny's M-LMS network will not cause unacceptable levels of interference to Part 15 devices, the Commission should promptly grant approval to Progeny to commence commercial operations.⁸

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce A. Olcott", written over a horizontal line.

Bruce A. Olcott
Counsel to Progeny LMS, LLC

⁸ See *id.*, ¶ 29.