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Before the
Federal Communications Commission
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of	)	
	)	
Amendment of Part 90 of the	)	PR Docket No. 93-61
Commission's Rules to Adopt	)	
Regulations for Automatic Vehicle	)	
Monitoring Systems	)	

To: The Commission

COMMENTS OF ITRON, INC.

Itron, Inc. ("Itron") is the worldwide leader in providing RF-based, automatic meter reading ("AMR") systems for use by gas, electric, and water utilities. Since 1986, Itron, through its subsidiary, EnScan, has sold over four million meter transponders, which are unlicensed Part 15 devices, of which over two million already are installed.[1] Itron, like many other entrepreneurial companies, responded to the opportunities that the FCC created when it allowed unlicensed, low-power radio devices to operate in the 902-928 MHz frequency band. Itron used this opportunity to create a highly-valued, spectrum-efficient product used by 32 gas, electric, and water utilities located across the United States.

Now, the Commission's proposal in the Notice of Proposed Rulemaking ("NPRM") in the above-referenced proceeding threatens to negate Itron's effort, the utilities' investments, and the public benefits provided by AMR systems by allowing the expansion of Location and Monitoring Service ("LMS") systems across the entire 902-928 MHz band, which have a greater priority of usage than accorded unlicensed Part 15 devices. The simple fact is that the proposed LMS use of the 902-928 MHz band and the existing unlicensed uses of the band, including the continued use of AMR systems by the nation's gas, electric, and water utilities, are technically

[1] Itron is a member of the Part 15 Coalition, which also is filing comments in this proceeding. Itron supports those comments and is filing these separate comments to bring Itron's special needs to the attention of the Commission and to stress the importance of the issues presented by the Commission's proposal.

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incompatible. Expansion of LMS will cause electromagnetic interference levels to increase dramatically, particularly given the extreme sensitivity of Teletrac's LMS system.

The Commission, therefore, should reject LMS expansion at 902-928 MHz and retain the current sharing status between unlicensed consumer products and "low impact" automatic vehicle monitoring ("AVM") systems.

I. ITRON'S AMR SYSTEM REPRESENTS THE TYPE OF HIGH-VALUE, SPECTRUM EFFICIENT NEW TECHNOLOGY CHARACTERISTIC OF UNLICENSED USE OF THE 902-928 MHz BAND PURSUANT TO PART 15.

Itron's meter transponders are installed behind or under the dial face plate of gas, electric, and water meters. The patented transponders are low power, unlicensed, Part 15 devices using the 902-928 MHz band. The transponders are activated with a licensed Multiple Address System (MAS) outbound channel signal, typically in the 952-956 MHz band, by a vehicle-mounted or handheld unit, which can read up to three thousands meters per hour. In contrast, a traditional meter reader on foot averages 400 meters per day.

The use of the 902-928 MHz band for return channels for a frequency-hopping, spread spectrum transmission is necessary because the bandwidth of a single channel in the MAS band would not be sufficient to acquire readings from such a large mass of meter transponders. Indeed, the wide bandwidth and liberal frequency tolerances allowed by Part 15 are the very features that enabled Itron to develop its AMR system in the first place. Without access to the 902-928 MHz band and the operating environment permitted by Part 15, Itron would not have been able to offer gas, electric, and water utilities the convenience and cost-savings characteristic of AMR systems.

AMR systems bring significant value to the gas, electric, and water utility industries, and their customers, by reducing the cost of meter reading, improving accuracy, increasing personnel safety, and reducing theft. Additional cost savings are realized by reducing the average time-to-read for hard to access meters. By not having to gain access to a building, estimated bills are avoided, improving the accuracy of the meter reading process. Accuracy is further enhanced since a human dial reading is not involved. The result of this increased accuracy is a further reduction in the cost to read a meter and fewer customer complaints.

II. THE COMMISSION DID NOT GIVE SUFFICIENT CONSIDERATION OR WEIGHT TO THE SUBSTANTIAL PUBLIC BENEFIT CONFERRED BY THE USE OF THE 902-928 MHz BAND BY UNLICENSED PART 15 DEVICES.

The most extraordinary aspect of the Commission's NPRM is that it was issued at all, since it represents a dramatic about-face in the FCC's usual encouragement of new technologies on an unlicensed basis.[2] Indeed, the FCC's policy of allowing low-power, unlicensed devices in the 902-928 MHz frequency band has been a significant spectrum management success, as evidenced by the wide variety of products and services sharing these frequencies without mutually destructive interference.

The Commission's policy has been the answer to the difficult question of how the government can make spectrum available for new technology to entrepreneurs, inventors, and small businesses without triggering the complex, costly, and time-consuming process of FCC spectrum reallocation proceedings. Particularly now with spectrum auctions likely to be authorized by the Congress, entrepreneurs and new entrants could well be precluded from developing new, radio-based technologies. In these circumstances, the Commission should be striving to expand opportunities for those who do not have the "deep pockets" to participate in an auction or an extended spectrum reallocation proceeding, but who might have a product or service of great public benefit, if only they could obtain access to the spectrum for their technologies.

The Commission has recognized the importance of unlicensed uses of the radio spectrum in just this regard. For example, in the FCC's Personal Communications Services ("PCS") proceeding (GEN Docket No. 90-314, ET Docket No. 92-100, 7 FCC Rcd 5676 (1992)), the Commission recognized the value of

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[2] For its part, the Commission might well ask why, if the Teletrac proposal was so antithetical to the interests of Itron and other manufacturers and users of unlicensed Part 15 devices, the Teletrac Petition for Rulemaking was generally unopposed. One reason, of course, is that the unlicensed community is just that – unlicensed, so that there is a fundamental lack of user tracking. The Part 15 Coalition is taking an important first step in cataloging unlicensed products and vendors. Itron's absence earlier is at least partly explainable by the very significant differences between the Petition for Rulemaking and the NPRM. In Itron's case, coexistence appeared possible with the proposed rules in Appendix 1 of the petition. With the proposed rules avoiding the 912-918 MHz band and the high power forward links remaining at the edge of the 902-928 band, it was our opinion that we did not have reason to file comments. With Itron's AMR system using 910-920 MHz, there would have been minor interference from Teletrac in the common spectrum, and we assessed this interference to be manageable. There was no indication that any subsequent NPRM would allocate the entirety of the 902-928 MHz band to LMS systems as primary users.

allocating radio spectrum for unlicensed consumer products. In proposing to allocate 20 MHz for such devices, the Commission stated that permitting the use of unlicensed PCS devices would be in the public interest, since it would:

> "foster the rapid introduction of new PCS technologies by permitting manufacturers to experiment with, and directly market to the general public, products using new designs and technologies, without the delays associated with the licensing of a radio service." (¶42)

occupied by high-power, narrowband LMS systems, which cannot share frequencies with low-power Part 15 devices.

Thus, the entire 902-928 MHz band will be unusable for the wide variety of consumer products and services already there and will be avoided by entrepreneurs, inventors, and manufacturers for future development of new technologies.

A. The Teletrac system is overly sensitive to noise and likely to be interfered with by a great many unlicensed Part 15 devices.

Teletrac's AVM system — the accommodation of which is the principal reason for the Commission's issuing the NPRM — is notoriously susceptible to interference, virtually to the point of its being a design flaw. Yet, to accommodate this system, the Commission is prepared to destroy the usefulness of the 902-928 MHz band for a vast array of valuable consumer products and services.

The Teletrac fixed receivers, which receive a vehicle's transmissions and calculate its position based on time of arrival at multiple receive sites, have an interference threshold of -90 dBm. It would not be unusual for an unlicensed Part 15 device to generate a signal strong enough to exceed the -90 dBm threshold, resulting in a situation in which there will be very few Part 15 devices that Teletrac will not view as an interfering source.[3]

Teletrac has not hesitated in the past to notify unlicensed Part 15 users that they must either change their systems to avoid interference to Teletrac or cease operating. Once the NPRM is adopted, Teletrac will have no hesitation in forcing unlicensed users off the band. With the ability to remove any potentially interfering source, because of its secondary status on the band, Teletrac would have little incentive for improving the noise immunity of its own system.

Acceptance of Teletrac's request will steer the industry toward one flawed locating technique and block usage of a wide variety of unlicensed devices. Denial of the Teletrac request, however, will force the development of LMS systems that

[3] To underscore this point, while installing a meter reading system in a major metropolitan area, Itron became aware of another company's Part 15 device that was interfering with the Teletrac system miles away. As well as showing how easy it is for a Part 15 device to interfere with the Teletrac system, the

are compatible with other users of the 902-928 MHz band, while continuing to foster the rapid development of new unlicensed technologies.

B. The high power LMS forward links will make it virtually impossible to operate unlicensed system receivers.

The forward links of the LMS systems are likely to interfere significantly with unlicensed device receivers. Under the NPRM, these signals would be allowed anywhere in the 902-928 band. Further, EIRPs of hundreds of watts would be permitted and present in every metropolitan area, which is where most Part 15 devices are used. Since these signals might be anywhere in the band, it would be difficult to filter them out adequately, resulting in de-sensing and intermodulation problems. As product costs increase to implement protection, new entrants with innovative technologies will be unwilling to use this band.

It should be noted that the interfering signals that Teletrac is asking others to live with would, if used by unlicensed devices, make the Teletrac system inoperable. The only way that the Teletrac system can be accommodated in the 902-928 MHz band is by having all the unlicensed Part 15 users vacate the band.

C. The Itron meter reading system and LMS systems could not coexist.

What is true generally about the incompatibility of LMS and unlicensed Part 15 devices, is also true of LMS and the Itron AMR system. The NPRM would allow for narrowband LMS systems that may occupy anywhere from two to six MHz between 912 and 918 MHz. While the radiated energy would be spread in some fashion, it is likely that significant disruption of the Itron system would occur.

Itron's present very low-power (>25,000 uV/m at three meters) AMR system is unlikely to cause interference to Teletrac. In response to utility customer requirements, however, the Itron AMR system will most likely include meter transponders with power levels of 50,000 uV/m or even one watt. In this case Itron's AMR system could well interfere with the Teletrac system.

In addition, the Teletrac and other LMS systems will most likely interfere with Itron's present very low-power AMR system. The existence of high power LMS forward links in the 910-920 region is of particular concern to Itron. First, a notch filter in Itron's receiver could render two MHz of the receiver useless for each

LMS forward link present. Without a filter, intermodulation problems could be severe, making it difficult for any system to operate effectively. The mix of high power LMS signals and low power signals from Itron's meter transponders means that diversity techniques will be insufficient to extract the signal of interest from the interference. Second, there is no guarantee in any urban area as to how many signals might be present and exactly where they will be.

It is no answer to say that Itron can overcome this problem by increasing the signal strength of the meter transponder. It would be virtually impossible to increase the power of gas and water transponder emissions, because they are battery powered. While it is technically feasible to increase the power of Itron's transponders for electric utility meters, which are powered by AC current, they then could interfere with the super-sensitive Teletrac receivers.

IV. THERE ARE ADEQUATE OTHER METHODS TO ACCOMPLISH VEHICLE LOCATION.

The Commission need not risk the unprecedented and unwarranted exclusion of unlicensed Part 15 devices from the 902-928 MHz band, because there are a number of alternatives for vehicle and object location in other portions of the spectrum. For example, GPS receivers are widely available, and without too much effort, system architectures could be envisioned that would provide LMS capability. The eight MHz of bandwidth now used by Teletrac to obtain sufficient coordinate accuracy could well be satisfied by the ability of the GPS receiver to provide similar or better accuracy.

Moreover, in 1989, the Commission allocated 20 kHz of spectrum, at 173.075 MHz, for the use of stolen vehicle recovery systems in the police radio service. 47 C.F.R. 90.19(f)(7). This service is now operational in eight states, with a recovery rate of over 90%. Finally, with the upcoming expansion of digital cellular systems and with the development of PCS networks, for which both people and vehicles will carry radios, opportunities to provide locating services abound.

The comments filed by the Part 15 Coalition discuss alternatives in more detail,[4] but the point remains, as long as other highly accurate position fixing

[4]Additionally, Electronic Tracking Systems has been striving for a number of years to find a frequency on which to operate its technology for tracking stolen goods, which is currently licensed experimentally at 219 MHz. See ProNet PP-23 in RM-7784.

methods already are in existence at much less bandwidth than requested by Teletrac and without jeopardizing the interests of millions of consumers who rely on the benefits provided by unlicensed products and services, why should the Commission adopt the NPRM?

V. CONCLUSION

During its seven years of field experience, with a current installed base of over two million transponders, Itron has operated as a low power "good neighbor." The