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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter Of	)	
	)	
Amendment Of Part 90 Of The Commission's Rules To Adopt Regulations For Automatic Vehicle Monitoring Systems	)	PR Docket No. 93-61 RM-8013

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To: The Commission

REPLY COMMENTS OF
SAAB-SCANIA COMBITECH AB, COMBITECH TRAFFIC SYSTEMS

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SUMMARY

Saab-Scania Combitech AB, Combitech Traffic Systems ("Saab") replies to the comments in this proceeding and renews its request for a separate, alternative spectrum allocation for operation of Electronic Toll and Traffic Management ("ETTM") systems at 2450-2470 MHz.

Saab contends that adoption of its requested allocation will enable the two major components of IVHS, AVM and AVI, to operate without undue competition in the radio environment to the detriment of both.

The public benefits presently realized and to be realized in the operation of ETTM systems are great and are worthy of the Commission's support to assure the long term viability of the service and technology.

Saab, therefore, joins the many commenters which have requested that ETTM service be protected from destruction arising out of a competitive radio environment which will necessarily destroy the reliability of ETTM systems. Saab also joins other commenters in urging the Commission to create a permanent allocation for operation of licensed ETTM systems, to assure that investment in this technology will continue and that the public will continue to be served by existing and proposed ETTM systems.

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REPLY COMMENTS OF
SAAB-SCANIA COMBITECH AB, COMBITECH TRAFFIC SYSTEMS

Saab-Scania Combitech AB, Combitech Traffic Systems ("Saab") hereby replies to comments filed in this proceeding by various parties and continues its request for a separate allocation for operation of Electronic Toll and Traffic Management ("ETTM") systems at the frequency band 2450-2470 MHz. In support of its position, the following is stated:

A Compromise Position Is Needed

A review of the comments in this proceeding reveal a number of positions which, on first

waste.) It appears, therefore, that the commenting parties stand at a line in the sand, each requesting that the Commission assist them in maintaining their position.

As the Commission and affected industry recognize, such impasses must be settled in a manner which first serves the public interest, convenience and necessity in the provision of services, and which results in the efficient operation of radio devices. Saab has attempted to do just that in offering a logical migration from the 902-928 MHz band which would result in benefits to millions of potential LMS and ETTM users. Saab does not view its position as a retreat for the ETTM industry, but rather as an assignment of stable RF resources in which the industry may invest its ETTM development funds. The ETTM industry, like AVM, would benefit from long term stability in one of its key operating parameters to avoid an increasingly turbulent market.

Providing Necessary Relief

Saab has examined thoroughly the present use of the 902-928 MHz band and the proposed use of the band pursuant to the NPRM. It is Saab's opinion that the 902-928 MHz band poses great problems for ETTM system operators no matter which rules are eventually adopted, even those which would maintain the *status quo*. Accordingly, Saab's comments seek fertile ground for the creation of a vitally necessary technology without thwarting the plans of LMS operators and investors.

As noted in the comments presented by California Transportation Ventures, Inc., the Commission should employ this opportunity to make necessary allocation of spectrum for the further operation and development of ETTM systems. CTV, like Saab, suggests that such allocation should be made in the 2.45 - 2.84 GHz band and that certainty should be provided to the ETTM industry by establishing a licensed frequency band. To do less would be to ignore the great public benefit created by operation of ETTM systems.

That these two industries, wide-band LMS operations and ETTM operations, are not compatible is supported by the comments.[1] Although the commenters may not agree regarding the source of the non-compatibility, each contesting party blaming the other to some degree, the fact is now well established that wide-band, high powered LMS systems will cause tremendous problems for operation of ETTM systems and vice versa for Teletrac-type LMS operations. Accordingly, the Commission is left to solve the problem in a manner which will not destroy or unfairly impede either industry or technology.

Some of the commenters which fear destruction of ETTM operations have suggested a separate allocation for ETTM operations within the 902-928 MHz band.[2] Although Saab

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[1] See, *e.g.* comments of Oklahoma Turnpike Authority, Texas Turnpike Authority, the Interagency Group, Harris County Toll Road Authority, and Greater New Orleans Expressway Commission.

[2] The comments of the Interagency Group, *i.e.* the New Jersey Turnpike Authority, the New York State Thruway Authority, the Pennsylvania Turnpike Commission, the Port Authority of New York and New Jersey, the South Jersey Transportation Authority and the Triborough Bridge and Tunnel Authority, specifically request co-primary, licensed status.

strongly supports licensed operation of ETTM systems, Saab respectfully points out that licensing of ETTM operations within the 902-928 MHz band is unwise.[3] Saab bases its conclusion on the obvious dynamics of the marketplace and the nature of ETTM equipment. That is, if the Commission were to designate some portion of the 902-928 MHz band as ETTM spectrum, while concurrently setting aside the remainder of the band for LMS operation, it is obvious to where all or most Part 15 manufacturers would tune their devices to operate -- the ETTM spectrum. This is not mere speculation. It is a certainty.

Part 15 manufacturers necessarily design to frequency bands which exhibit the least amount of activity from other users, particularly high powered users. In that manner, the reliability of low power devices is improved and a competitive situation is less likely to develop. Assuming that the Commission were to allocate a portion of the 902-928 MHz band for exclusive use by ETTM operators, such allocation would be an invitation to Part 15 manufacturers to force sharing of any ETTM band at 902-928 MHz. Although Saab believes that initial sharing would be feasible, over the longer term sharing would become impossible.

The impossibility would arise over time due to the disproportionate level of Part 15 devices which would enter the ETTM spectrum. It follows that if Part 15 manufacturers are

[3] Saab respectfully cautions the Commission against interpreting the comments of ETTM operators as an endorsement of the 902-928 MHz band for future operation. It is Saab's belief, based on numerous interviews with existing and prospective operators and the tenor of the comments received, that ETTM operators are attempting to create certainty within the industry and safety for their present and future investments in ETTM technology. The band upon which ETTM devices will operate is, therefore, only relevant insofar as it produces reliable, long-term operations.

presented with a design choice, frequencies occupied by ETTM systems or frequencies occupied by high powered LMS systems, the logical Part 15 device manufacturer would choose the ETTM band. Accordingly, the manufacturers of unlicensed devices, operating at present in the 902-928 MHz band, would migrate into any ETTM allocation at 902-928 MHz, raising the noise floor

ETTM systems in the band, absent some exclusive allocation, would not provide a solution. Rather, such an allocation would merely delay the erosion of ETTM service in the subject band.

One AVM provider, Mark IV Industries LTD., IVHS Division, claims that it has tested its units as against cellular radios, pagers, etc. and has never recorded an incident where its system has caused harmful interference. Although such thorough testing is laudable, it is also irrelevant to the instant proceeding, except as a basis for requested sharing of the 902-928 MHz band. Mark IV Industries LTD's comments do not include results from tests where a high powered, competing, co-channel system is present. Saab suspects that the reliability of the Mark IV system would be impaired as the noise floor grew to exceed 200 uV/m at 3 meters.

The comments received by the Commission's NPRM demonstrate the great public benefit in the operation of ETTM systems. These systems provide service to thousands of users, performing millions of tasks, daily. ETTM systems promote efficiency, safety and reduce pollution in the environment. In sum, ETTM systems are a proven RF application which is and will continue to serve a growing public demand, providing however, that the Commission's actions within this rule making do not forever damage the enormous potential of this industry.

The Future Of ETTM

As stated in Metricom, Inc.'s comments, an examination of frequency bands for the operation of particular equipment is necessary to assure that the Commission's allocation process

results in logical service to the public.[5] The public is not served by allocations which are ill suited to the operational characteristics of systems which might employ the allocation. Saab contends that manufacturers of ETTM systems which operate within the 902-928 MHz band have erred in their original designs.[6] Were the Commission to affirm this design error, ETTM systems would eventually suffer failures arising out of their competition with cochannel users in a radio environment which is characterized by a rapidly rising noise floor.[7]

Accordingly, Saab's request for a separate, alternative spectrum allocation for operation of ETTM systems, away from the furor of the 902-928 MHz band, is logical. The public interest is served by the Commission's assistance in relieving the present controversy regarding the 902-928 MHz band and allowing ETTM operators and manufacturers to peacefully migrate to the higher band, with the necessary protection of an exclusive allocation. Only in this way can the Commission assure the safe future of ETTM systems. ETTM systems must be designed and operate to perform literally millions of financial transactions daily while communicating with

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[5] Metricom, Inc.'s comments suggest that allocations be guided by public demand for the offered service. Employing that standard, ETTM systems exhibit one of the highest and fastest growing demand curves of any industry represented within this proceeding. Accordingly, Metricom, Inc.'s method of determining priority is fully met by ETTM manufacturers and operators.

[6] A review of the history of the ETTM industry would demonstrate that manufacturers were pressured by interested operators to bring a product to market. Speed to market caused manufacturers to design equipment to operate in the 902-928 MHz band, rather than other, more suitable bands. Although operators were served in the short run, it is now apparent that the frequency selection, *i.e.* the 902-928 MHz frequency band, is not suitable for continued operation of ETTM systems.

[7] Although the transceivers to be used by licensed ETTM systems would not suffer initially by the rising noise floor, the operation of the associated, low power tags would quickly become unreliable.

rapidly moving vehicles. This task cannot be accomplished with any degree of reliability in an RF competitive environment.

The future of ETTM is at 2.450 - 2.470 GHz, where the systems must be allowed to operate unimpeded to serve millions of end users. This vital part of bringing IVHS technology to the marketplace requires the Commission's assistance and prudence now. The ETTM industry is struggling to find long term solutions and Saab's requested allocation is a ready and perfect answer. It merely requires the Commission's cooperation in recognition of the great public benefit to be reaped by the making of the allocation in accord with the rules suggested by Saab.

ETTM and IVHS

As the Commission has been made aware in this proceeding, the Intelligent Vehicle-Highway Systems Act of 1991, 23 U.S.C. §307, has charged the Commission to assist in the development of technologies which will improve the use of the Nation's highways to increase capacity, efficiency and safety. Although Teletrac and other wide-band system operators and their proponents have suggested that implementation of LMS systems is either the best or only method of serving the mandates contained in this Act, the fact is that LMS is only one small portion of the entire range of services which will be required to meet the objectives stated by Congress. In fact, it appears that ETTM more closely meets such objectives and does so with greater efficiency, availability, and consumer acceptance, while employing less spectrum resources.

As expressed in the comments of IVHS America, AVI systems, such as ETTM systems, provide a vital portion of the overall IVHS strategy to improve the use of United States highways. It would be, therefore, inconsistent for the Commission to support LMS services to the detriment of ETTM systems, while stating that the objectives of IVHS are being forwarded. IVHS America does not set such priorities in its comments and Saab does not believe that such favoritism can be supported by any measure.

Saab envisions that ETTM systems will be operated in association with a myriad of other AVI functions in cooperation between numerous agencies throughout the Country. Starting first with ETTM as its backbone system, operators may employ the tag capacity on equipped vehicles to assist further in the transmission and collection of relevant data to expedite the movement of vehicles over the highways. This is a natural and expected growth of ETTM/AVI systems.

Saab and IVHS America are in agreement when IVHS America states in its comments at page 14 that this proceeding "provides the opportunity to craft the more certain business environment that both AVM and AVI interests need to promote the development and deployment of their products and services."

In its comments, Saab recommended a logical migration for ETTM systems from those bands which might be used by LMS systems. IVHS America has suggested that these services share the 902-928 MHz band, employing separate allocations. As stated *supra*, IVHS America's suggestion, albeit offered with good intentions, will not provide the best environment for

continued development of ETTM and AVI technology. Ergo, IVHS America's comments regarding dislocation of either LMS or AVI technology appear to be of greater relevance. IVHS America stated at pages 18-19 of its comments that the public should not be made to bear the cost of dislocation and that any such dislocation should be a cooperative effort between LMS and AVI systems. Saab agrees.

Saab has suggested a compromise between the incompatible services, AVI and LMS, of a fully integrated IVHS, to enable both to operate peacefully and to develop to each's full potential in serving in the public interest. IVHS America has continued to focus only on the opportunities which exist in division of the 902-928 MHz frequency band. Saab believes that IVHS America's view is too restrictive and that the Commission is well positioned, both legally and based on the comments received, to expand the nature of this proceeding to include allocation of the 2450-2470 MHz frequency band for ETTM systems and related AVI operations.

Conclusion

Saab has carefully reviewed the comments filed in this proceeding and has determined that there exists consensus on all relevant issues: (1) that operation of ETTM systems and related services is definitely in the public interest; (2) that operation of ETTM systems is incompatible with operation of LMS systems on shared spectrum; (3) that additional spectrum is available for operation of ETTM systems at the 2450-2470 MHz frequency band; and (4) that absent the establishment of a reasonable accommodation by the Commission in this proceeding for the continued viability of ETTM systems, economic waste will occur.

Saab has proposed a reasonable method for accommodating LMS systems and ETTM systems and has recommended new rules to assist in this accommodation. Saab hereby urges the Commission to adopt those proposed rules in support of the continued growth of both vital industries.

Respectfully submitted,

SAAB-SCANIA COMBITECH AB,
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Dated: 7/25/93

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