

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)
)
Intelligent Transportation System) WT Dkt. 01-90
Applications Using Dedicated Short)
Range Communications)

COMMENTS OF MARK IV INDUSTRIES, LIMITED, I.V.H.S. DIVISION

Mark IV Industries, Limited, I.V.H.S. Division ("Mark IV") herewith, by its attorneys, files its comments in response to the Commission's Public Notice (DA 01-1047) released April 24, 2001 seeking comment on a report entitled "Status Report on Licensing and Service Issues and Deployment Strategies for DSRC-based Intelligent Transportation Services in the 5.850-5.925 GHz Band" ("Status Report") released by ITS America in October 2000.

Procedural Background

Before addressing specific comments in response to the Commission's Public Notice, we note that the Commission's ET Dkt No. 98-95 remains open pending action on petitions for reconsideration and clarification filed by Panamsat Corporation and Mark IV in December of 1999. Mark IV's Petition requests clarification of the Commission's basic approach to power limits and emission mask requirements adopted in Amendment of Parts 2 and 90 of the Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Service for Dedicated Short Range Communications of Intelligent Transportation Services, Report and Order

(FCC 99-305), released October 22, 1999 in ET Dkt. No. 98-95. A copy of Mark IV's Petition is attached for the Commission's convenience.

ITS filed comments in ET Dkt. No. 98-95 generally supporting Mark IV's proposals and suggesting that they be considered by the Commission in a successor proceeding covering DSRC service and licensing rules.¹ Mark IV has previously stated that it has no objection to this approach as reconfirmed.

Discussion

In response to the Commission's Public Notice, we comment regarding development of 5.9 GHz DSRC standards, the need for maximum technical flexibility so that market forces can optimize development of new and innovative ITS technologies, and the need for licensing eligibility to include an assured mix of public safety, private and commercial ITS uses.

1. Development of 5.9 GHz DSRC Standards.

Mark IV supports current efforts to develop DSRC standards to encompass many Public Safety applications as well as possible mixtures of Private/Public and Commercial applications. These DSRC standards are being developed to permit concurrent use of the band for all of these, with appropriate access control limits and emission restrictions to safeguard the Public Safety applications.

Mark IV's activities supporting development of 5.9 GHz DSRC standards include participation in the ASTM E-17.51 Standards Writing Group for 5.9 GHz DSRC. Over the past year, our employees have regularly participated in this

¹ Comments of ITS America in ET Dkt. No. 98-95 filed March 2, 2000, p.2.

group's meetings. On occasion, Mark IV has contributed as many as three of its engineers per meeting, in addition to executive representation.

Mark IV is also a founding and active member of the DSRC Industry Consortium, which was formed in response to a challenge raised by USDOT at a DSRC Stakeholders workshop in 1999. The DSRC Industry Consortium has focused its initial year's efforts on developing and communicating vendor consensus on architecture for 5.9 GHz DSRC standards. This effort has been met with a good measure of success. The Industry Consortium has made presentations to the ASTM E17-51 writing group and the USDOT ITS Joint Programs Office, indicating where vendor consensus has developed on key technical issues necessary for successful 5.9 GHz DSRC standards.

Mark IV has also contributed during the past year to other forums where U.S. standards for 5.9 GHz DSRC are discussed and opinions are formed. These include the NAFTA DSRC Harmonization Committee and the North America-Japan DSRC standards Harmonization Committee.

2. Need for Maximum Technical Flexibility.

Mark IV continues to support the Commission's proposals to offer DSRC licensees maximum technical flexibility "so that market forces can optimize development."² Section 7 of the Communications Act of 1934, as amended (the Communications Act or the Act), states that it is "the policy of the United States to

² Amendment of Parts 2 and 90 of the Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Service for Dedicated Short Range Communications of Intelligent Transportation Services, Notice of Proposed Rulemaking (FCC 98-119), released April 9, 1993, Para. 28.

encourage the provision of new technologies and services to the public."³ More recently, Congress reinforced section 7 by adding section 706 of the Telecommunications Act of 1996.⁴ Section 706(a) encourages the deployment of advanced telecommunications services by directing the Commission to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans."⁵ These congressional directives make clear that the flexibility proposed by the Commission which we support here is sound administrative policy and directly responsive to national technology development initiatives.

As the Commission stated in its Secondary Markets Policy Statement released December 1, 2000:

"Also, in adopting rules for new services we have attempted to provide flexibility for licensees in both the services that may be provided and the technologies that are used for operations...In general, we expect that this flexibility and the economic need to make the most effective use of investments will lead wireless licensees to maximize the use of their spectrum consistent with their particular business and operating plans."⁶

³ 47 U.S.C. § 157.

⁴ Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, *codified at* 47 U.S.C. §§ 151 *et seq.* Section 706 of the 1996 Act, however, was not codified in the Communications Act. 1996 Act, § 706 Advanced Telecommunications Incentives.

⁵ 1996 Act, § 706(a).

⁶ Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets (FCC 00-401), Policy Statement, released December 1, 2000, Para. 9.

DSRC technologies at 5.9 GHz and corresponding ITS systems that will rely upon 5.9 GHz band DSRC wireless links, do not yet exist for the more advanced ITS services and applications envisioned by ITS America. However, 5.9GHz DSRC products will emerge rapidly in months following FCC and USDOT rulemakings in this matter. Products will need to evolve over coming years and possibly for decades more into the future. Therefore the FCC should pay particular attention to the development of service and licensing rules which do not have the effect of inhibiting introduction of innovative technologies or of indirectly mandating obsolete technology/approaches.

3. Eligibility to Include a Mix of Public Safety, Private and Commercial ITS Uses.

The FCC licensing rules should be developed to include guaranteed spectrum access for Public applications as well as concurrent Private and Commercial applications. In developing these rules, it remains important for the FCC to coordinate with NAFTA members to ensure contiguous service rules can be applied in Canada and Mexico as well as the U.S.

Mark IV supports adoption of service and licensing rules which would assure that public safety licensees, including toll authorities, among many other such licensees, will have access to the ITS spectrum they need to deploy tag reader and other systems. Setasides of spectrum for this purpose are consistent with current

Commission practice in other proceedings⁷ and the Commission's Principles for Spectrum Reallocation Policy Statement.⁸

There is a concurrent need for private and commercial users to have access to ITS spectrum at 5.9 GHz which also should be a priority here. This occurs because it is not unreasonable to assume that the market for such private and commercial uses will emerge more quickly and potentially could be larger than the requirements of public safety users. While the technical needs of public safety entities are essential to the successful completion of these proceedings, the needs of other private and commercial users also must be met because these users will account for such a large share of the anticipated public demand for ITS devices and will drive product development for those devices. The Commission's technical rules for 5.9 GHz spectrum should make appropriate provision for the needs of these non-public safety users.

Conclusion

Mark IV continues to support adoption of service and licensing rules for 5.9 GHz spectrum which provide maximum flexibility for the rapid development of new and innovative technologies for public safety, private and commercial ITS uses. Secured access to 5.9 GHz spectrum for public safety entities as described above should be an essential objective in these proceedings. In addition, the Commission

⁷ Reallocation of Television Channels 60-69, 746-806 Band (FCC 97-421), Report and Order, 12 FCC Rcd 22953 (1998).

has consistently held that it should not use its rulemakings to anticipate or guide the details of technology development. Another essential objective should be the adoption of technologically neutral and flexible rules for the use of 5.9 GHz spectrum.

Respectfully submitted,

MARK IV INDUSTRIES, LIMITED, I.V.H.S.
DIVISION

May 16, 2001

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⁸ Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium, 14 FCC Rcd 19868 (1999), Para.11.

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Washington, DC 20554

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In the Matter of)
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Amendment of Parts 2 and 90 of the) ET Docket No. 98-95
Commission's Rules to Allocate the) RM-9096
5.850-5.925 GHZ Band to the)
Mobile Service for Dedicated Short)
Range Communications ("DSRC") of)
Intelligent Transportation Services)

To: The Commission

PETITION FOR CLARIFICATION OF
MARK IV INDUSTRIES, LIMITED, I.V.H.S. DIVISION

Mark IV Industries, Limited, I.V.H.S. Division ("Mark IV") herewith, by its attorneys, files its petition for clarification of the Commission's Report and Order (FCC 99-305) released October 22, 1999 ("Report and Order") in the above-captioned proceeding. Specifically, Mark IV addresses the Commission's power output limits (Section 90.205) and its emission mask requirements (Section 90.210).

In its Report and Order, the Commission acknowledges "...that the rules we adopt here may need to be reviewed at such times as we develop licensing and service rules for DSRC systems. (§ 20)." Mark IV strongly supports this flexible regulatory approach in view of the significant unfinished work still needed to complete development of industry-approved DSRC applications and standards.

The clarifications of the Commission's technical requirements requested here are intended to promote a basic approach to power limits and emission mask requirements which will be beneficial to the development of DSRC operational standards by industry. Mark IV proposes that the Commission address them separately from the development of related DSRC licensing and

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service rules but would have no objection if the Commission chooses to defer consideration of these issues to the licensing and service rule portions of this proceeding.

Power Limits (Section 90.205)

Mark IV concurs with the Commission's EIRP power limit of 30 watts, however, Mark IV considers the maximum antenna input power specification to be overly restrictive because it will limit DSRC applications requiring wide area service (i.e. applications using a low gain antenna but requiring long distance coverage). Examples of this type of application would be traveler information systems (where wide coverage is required to provide service in a large geographic area) and emergency beacons (where a wide, long distance beam may be required to cover possible bends in the roadway). Mark IV proposes that the antenna input power be limited to 4 watts or 36 dBm with no change to the EIRP limit of 30 watts. The following is proposed to replace the language of Section 90.205(m):

"The peak antenna input power shall not exceed 4 watts or 36 dBm with up to 8 dBi of antenna gain. If transmitting antennas of directional gain greater than 8 dBi are used, the peak antenna input power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 8 dBi, i.e. the device's maximum EIRP shall not exceed 30 watts EIRP."

Emission Mask Requirements (Section 90.210)

Mark IV also requests that the Commission's emission mask requirements in Section 90.210 of its rules be clarified to provide that compliance measurements may be conducted at the transmission line output/antenna input to take account of the relatively long transmission lines anticipated in certain types of DSRC operations. If the mask is only permitted to be measured at the RF output of the radio equipment, then the required attenuation of out-of-band components will increase with increasing line losses because a system with high line losses will have a higher peak

emission power (measured at the output of the radio equipment). Because line losses are significant at 5.9 GHz, providing the additional attenuation for out-of-band emissions becomes both a significant cost and technical challenge.

Section 90.205 requires that the emission power be limited at the transmission line output/antenna input. Mark IV recommends that the out-of-band emission attenuation limits also be referenced to this point but only for the highest permitted power of operation. Revisions to the wording of Section 90.210(k)(3) to reflect this approach, also incorporating Mark IV's related revision to Section 90.205(m), are proposed as follows:

"... with the following schedule:

On any frequency within the authorized bandwidth: Zero dB

On any frequency outside the licensee's sub-band edges: *the lesser of $(55 + 10 \log(P))$ or 61 dB*; where (P) is the highest emission (watts) of the transmitter in the licensee's sub-band."¹

The foregoing revisions will have no effect until the emission power (measured at the equipment) reaches 4 watts at which point the out-of-band attenuation will be limited to 61dB for that level or any power level above the transmission line output/antenna input power limit.² Because the peak power is limited at the antenna by Section 90.205, out-of-band emissions measured at transmission line output/antenna input will not exceed those permitted by the rules as currently

1 In the event the Commission does not adopt Mark IV's proposed revision to Section 90.205(m), the 61 dB figure shown here would be 53 dB based on the current 750 mW limit.

2 Ibid.

defined.³

Also because the K mask designation in the current document is shared with the 902-928 band, a new designation may be required for the 5.9 GHz band to accommodate the change recommended above.

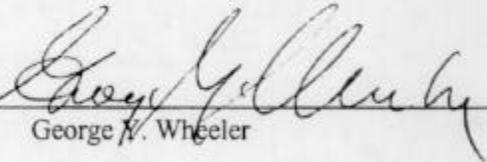
Conclusion

Mark IV supports the Commission's continuing efforts to develop the basic regulatory framework for DSRC operations on the aggressive schedule imposed by Congress. Grant of the clarification requested here will provide useful guidance to manufacturers like Mark IV and others who are active participants in the development of DSRC applications and standards and thus promote the Commission's objectives for emerging DSRC operations.

Respectfully submitted,

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By


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December 27, 1999

³ A possible example would be an implementation where the antenna and RF transmitter are integrated and line loss is eliminated.

CERTIFICATE OF SERVICE

I, Judy Norris, a legal secretary in the firm of Koteen & Naftalin, L.L.P., hereby certify that on the 27th day of December, 1999, copies of the foregoing "Petition for Clarification" were deposited in the U.S. mail, first-class, postage prepaid, addressed to:

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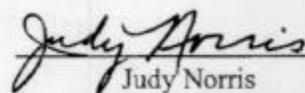
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