

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

In the Matter of)
)
Facilitating Opportunities for Flexible,) ET Docket No. 03-108
Efficient and Reliable Spectrum Use)
Employing Cognitive Radio Technologies)
)
Authorization and Use of Software Defined) ET Docket No. 00-47
Radios) (Terminated)

To: The Commission

**COMMENTS OF THE
E-ZPASS INTERAGENCY GROUP**

The E-ZPass Interagency Group (“IAG”), , hereby submits the following comments in response to the Commission’s proposals in its Notice of Proposed Rulemaking and Order, FCC 03-322, released December 30, 2003 (“NPRM”) in the above referenced matter to permit uses of "...higher power by unlicensed devices in rural and other areas of limited spectrum use."¹ in the 902-928 MHz band.

Introduction

IAG is a regional consortium of 22 public transportation agencies spanning eleven eastern states committed to offering a fully interoperable electronic toll collection system, popularly known as E-ZPass. Since its introduction in 1993, the E-ZPass network has grown rapidly and now serves motorists using approximately ten million reader tags. E-ZPass is the largest Electronic Toll Collection (“ETC”) network in the world and is heavily relied on by its customers who in 2003 alone used the system for approximately one billion toll transactions.

¹ NPRM, Paras. 33-47.

There are over 2,500 E-ZPass toll lanes serving thousands of miles of toll roads, bridges and tunnels being operated by the following 22 public transportation agencies:

- Buffalo and Fort Erie Public Bridge Authority
- Burlington County Bridge Commission
- Delaware Department of Transportation
- Delaware River and Bay Authority
- Delaware River Joint Toll Bridge Commission
- Delaware River Port Authority
- Indiana Toll Road
- Maine Turnpike Authority
- Maryland Transportation Authority
- Massachusetts Turnpike Authority
- MassPort
- Metropolitan Transportation Authority Bridges & Tunnels
- New Hampshire DOT Bureau of Turnpikes
- New Jersey Turnpike Authority
- New York State Bridge Authority
- New York State Thruway Authority
- Pennsylvania Turnpike Commission
- Port Authority of New York & New Jersey
- South Jersey Transportation Authority
- Tobin Bridge Commission
- Virginia Department of Transportation
- West Virginia Parkways Economic Development & Tourism Authority

The network of key road, bridge and tunnel facilities operated by these agencies is extensive and the list of agencies operating toll systems is shown on the list attached as Attachment A. E-ZPass has increased the capacity of a toll lane by 250%, improving vehicle flow, reducing congestion and auto emissions, contributing to a safer driving environment, and improving fuel

consumption rates. Open Road Tolling will further increase capacity as this effort is significantly expanding over the next two years. E-ZPass equipment has also been deployed as part of an ITS initiative to improve traffic flow by identifying roadway incidents and rerouting traffic, when necessary, via viable message signs.

The Commission's Proposals for the 902-928 MHz Band

The technology and equipment currently used by E-ZPass operates and relies on licensed spectrum in the 902-928 MHz Band under Subpart M of Part 90 of the Commission's rules authorizing the Intelligent Transportation Systems Radio Service and is deployed in rural as well as other areas as shown on Attachment A hereto. This, unfortunately, is the same spectrum on which the FCC proposes to implement changes in its Part 15 rules for unlicensed devices by adding a new rule section that applies specifically to cognitive radio devices operating in the industrial, scientific and medical (ISM) bands on the frequencies specified in Sections 15.247 and 15.249 of the rules.

These proposed changes would significantly change the permissible power limits of unlicensed devices in the 902-928 MHz band by increasing transmitter power up to 6 times (approximately 8 dB) higher than the current limits which we encounter from co-channel operations in this band. The Commission underscores this point when it describes how its proposed changes would increase the signal range of current Part 15 spread spectrum devices by a factor of up to 2.5 and increase the coverage area by a factor of six as compared to the current limits.

As mentioned above, these higher power levels are proposed to be permitted in rural areas and other areas which will also encompass many of the same areas where IAG operations are already deployed. The fact that the proposed definition of "unused spectrum" for this

purpose is spectrum with a measured aggregate noise plus interference power no greater than 30 dB above the calculated thermal noise floor within a measurement bandwidth of 1.25 MHz suggests that the uses of such higher power devices may not be confined to rural areas. Potentially most if not all of the IAG facilities could have co-channel higher power Part 15 devices operating in their proximity.

The FCC also suggests that it may be possible to relax some of the current requirements in the rules in addition to raising the maximum power for cognitive devices operated in areas with limited spectrum use without causing interference to other users. For example, current requirements in Sections 15.247 and 15.249 such as requirements for spread spectrum systems to use specific channel spacing, channel bandwidths, power spectral density or number of hopping channels might also be relaxed. These changes, in the aggregate, raises serious concerns about the extent to which such changes have the potential to impair current interference protection rights currently owed to IAG's licensed systems and impact millions of E-ZPass customers within the geographic area under review.

Discussion

We describe here our specific recommendations and concerns about the Commission's proposals for uses of "...higher power by unlicensed devices in rural and other areas of limited spectrum use." in the 902-928 MHz band:

1. The Commission should not view the introduction of Cognitive Radio technologies as an opportunity to provide "underlay" users with access to licensed spectrum. Such an approach would create a more uncertain interference environment at the expense of users of licensed services.

2. The licensed users in the case of the non-multilateration LMS portions of the 902-928 MHz band include the various member agencies comprising the EZ Pass system and the nearly 10 million users who rely on that system daily for essential Public Safety services. These agencies are Governmental entities performing Public Safety responsibilities which benefit the public in numerous ways ... such as improved highway safety, expanded cost-efficiency use of transportation infrastructure, improved pollution control performance, and many other benefits which are already a matter of public record before the Commission. To perform these responsibilities, there is a critical need to access spectrum in the non-multilateration portions of the 902-928 MHz LMS band at the toll gate locations so that these agencies can make immediate, reliable and secure use of this spectrum to record toll ticket transactional information. These public safety activities and their associated communications needs are by their very nature highly time-critical and require the highest possible level of accuracy to justify continued public confidence in the accuracy and credibility of this recorded information. The Commission should proceed with utmost caution to make sure these vital public responsibilities are not compromised or impaired.

3. Allowing such underlay access potentially would introduce myriad new sources of interference into the operating environments of existing E-ZPass licensees, which is antithetical to the Commission's overarching objective of interference avoidance. Because unlicensed underlay users may operate without consultation with incumbent licensees, the operating environment for licensees would become significantly less predictable than it is today, increasing the potential for unanticipated incidences of interference.

4. The need to give licensees like the IAG member agencies greater certainty regarding the interference and operating environment should be paramount before approving any

co-channel underlay access. The state of development of sensory and control equipment that might be able to govern the action of emitters in response to real-time interference temperature data is still speculative. The Commission should not provide underlay users access to licensed spectrum until much more is known about these types of devices and they have been demonstrated conclusively to be able to protect the current operations of licensees. In addition, the IAG member agencies' need for spectrum in a plaza may be variable over time but must always be instantaneously available on demand. Also, higher power devices in adjacent bands may spill over and interfere with E-ZPass.

5. The Commission should also be careful to make sure that the deployment of underlay user systems does not inadvertently burden existing licensees like the IAG member agencies with additional equipment, monitoring, enforcement or administrative costs in order to protect themselves and their millions of E-ZPass customers against new uncertainties in their interference environment.

6. We support the adoption of a more quantitative approach to defining the interference environment, but we also recognize that this is a highly complex problem that requires considerable further study before it can be applied in the real world. The Commission should focus on defining and providing increased certainty regarding the overall environment in which transmitters and receivers must operate. Coupled with the knowledge of operational requirements of the huge embedded base of E-ZPass devices on nearly ten million vehicles, such increased certainty would help to assure the interference protection which IAG member agencies need.

7. The Commission should also avoid adopting any performance specifications for future generations of E-ZPass devices which would require changes in current equipment

parameters and possibly degrade the performance of the currently licensed devices. For example, the Commission should avoid imposing any new implementation constraints, which could adversely affect the size, energy consumption, cost, performance and other factors, of existing licensed equipment.

8. The Commission should not redefine the interference environment for E-ZPass devices in such a way as to limit innovation and to deter licensees and the manufacturers who serve them from making the investments necessary to develop and deploy advanced spectrum efficient technologies. Should the Commission adopt interference temperature limits, they should be set low to encourage the development of spectrum efficient designs for future generations of E-ZPass devices.

9. We are also concerned that if the Commission sets the interference temperature level too high in the non-multilateration portions of 902-928 MHz LMS band, the IAG member agencies and their millions of E-ZPass customers may be required to accept interference up to a specified level which will deter the IAG member agencies from deploying the spectrum efficient technologies operating below that specified level. In other words this could amount to a market distortion whereby the Commission's policies could create economic disincentives for these existing licensed users to improve on current licensed equipment designs if to do so would subject them to secondary status. Ultimately it will be the traveling public who is saddled with unnecessary costs or suboptimal performance of their E-ZPass system if the Commission disadvantages licensees in this way.

Conclusion

We applaud the Commission commencing the important work of studying the uses of cognitive radio technologies. However, we ask that the Commission proceed with utmost

caution however because of the needs of the IAG member agencies to continue to operate its toll collection systems with the continued efficiency, reliability and accuracy without risk of interference from unlicensed Part 15 devices. The public safety functions which these agencies provide must not be compromised or impaired.

Respectively submitted,

E-ZPASS INTERAGENCY GROUP

John Platt
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E-ZPass Interagency Group

ATTACHEMENT A – LIST OF E-ZPASS INTERAGENCY GROUP MEMBERS:

Buffalo and Fort Erie Public Bridge Authority
Burlington County Bridge Commission
Delaware Department of Transportation
Delaware River and Bay Authority
Delaware River Joint Toll Bridge Commission
Delaware River Port Authority
Indiana Toll Road
Maine Turnpike Authority
Maryland Transportation Authority
Massachusetts Turnpike Authority
MassPort
Metropolitan Transportation Authority Bridges & Tunnels
New Hampshire DOT Bureau of Turnpikes
New Jersey Turnpike Authority
New York State Bridge Authority
New York State Thruway Authority
Pennsylvania Turnpike Commission
Port Authority of New York & New Jersey
South Jersey Transportation Authority
Tobin Bridge Commission
Virginia Department of Transportation
West Virginia Parkways Economic Development & Tourism Authority

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