

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

In the Matter of)	
)	
Promoting Expanded Opportunities for Radio Experimentation and Market Trials under Part 5 of the Commission’s Rules and Streamlining Other Related Rules)	ET Docket No. 10-236
)	
2006 Biennial Review of Telecommunications Regulations – Part 2 Administered by the Office of Engineering and Technology (OET))	ET Docket No. 06-155
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To the Commission:

**Comments from Nickolaus E. Leggett,
Inventor, Analyst, Licensed Radio Operator**

I am one of the original petitioners for the establishment of the Low Power FM (LPFM) radio broadcasting service (RM-9208 July 7, 1997 subsequently included in MM Docket 99-25). I am also a certified electronics technician (ISCET and iNARTE) and an Extra Class amateur radio operator (call sign N3NL). I hold an FCC General Radiotelephone Operator License with a Ship Radar Endorsement.

I am an inventor holding three U.S. Patents. My latest patent is a wireless bus for digital devices and computers (U.S. Patent # 6,771,935). I invented this invention based on my experience in amateur radio. Refer to Appendix A for details of this invention.

I have a Master of Arts degree in Political Science from the Johns Hopkins University (May 1970).

Aspects of Innovation Zones

The concept of an innovation zone is a very interesting and worthwhile idea.

However, we should consider the potential of urban zones as well as zones that are remote and isolated regions. For example, an innovation zone could be established within the city of Detroit. This zone would attract communications development activity to the city and would encourage the city's redevelopment with a new industrial base.

The innovators could make use of the abandoned buildings and low-rent buildings to facilitate their experimental and innovative work. In addition, these innovators could hire and train local labor in radio and communication technology. The city would cooperate with this activity by waiving zoning restrictions, antenna restrictions, and by lowering relevant taxes.

Detroit would be an especially useful location for an innovation zone because the first branch (satellite) office of the United States Patent and Trademark Office (USPTO) is going to be established in the Detroit area. Refer to Appendix B.

Interference Issues and Appropriate Experiments

Naturally, an urban innovation zone will have more interference issues than innovation zones in remote areas of New Mexico (which are also useful). This may mean that the scope of an urban innovation zone will have to be more limited than one in an isolated geographic area. For example, you may not want the innovators experimenting with microwave power broadcasting to a rectifying antenna (rectenna) in Detroit, while such high power energy broadcasting can easily be accommodated in the Southwestern desert. But you certainly can accommodate low-power shielded microwave bug killers in an experimental operation in an urban innovation zone. This technology would have insects flying into a radio-frequency shielded chamber illuminated by microwaves which would kill the flying insects without blocking the air flow. Thus applications for

experimental licenses in an urban innovation zone would have to include consideration of the compatibility of the experiments with an urban region.

Also, some radio frequencies such as certain bands within the millimeter waves are very short range and so they are basically self-limiting. These frequencies could easily be used in an urban innovation zone.

The Individual Innovator and FCC Regulations

I see in this docket that it is oriented towards established research institutions, corporations, and individual applicants with “advanced technical competence in radio engineering” (Paragraph 41 on Page 17). This approach leaves out individuals such as me who are not credentialed engineers but who have contributed to the state of the art and who can contribute more in the future.

The clear answer to this situation is the Amateur Radio Service which allows individuals to become licensed and experiment with radio technology. However, the amateur radio regulations need to be modified somewhat to increase the opportunities for individual inventors and innovators.

Amateur Radio Regulations and Inventing New Technology

There is reason to believe that the current amateur radio regulations may be inhibiting amateur radio experimentation, innovation, and invention. This is probably occurring because the amateur radio regulations are so specific that they do not readily accommodate truly novel communications modes and technologies.

Technical Freedom Sub-Bands

Perhaps there should be “technical freedom” sub-bands within some of the larger amateur radio allocations where any type of emission is legal as long as the radiated

waves are constrained within the amateur radio frequency allocations. This would allow amateur radio experimenters to have the freedom to try everything in the basically playful task of inventing outside of the box of conventional thought. For example, I would like to work with a modernized spark-source technology for the generation and modulation of radio waves. This technology would be highly resistant to the damaging effects of intense solar storms or electromagnetic pulse (EMP) attacks. This technology is currently illegal even though it may prove to be quite useful for communications and supportive of national security.

Commission supervision of such novel emissions would be carried out by having the stations emitting such experimental emissions also transmit their call signs and a brief description of the experiment using a conventional transmission mode such as Morse Code, RTTY, or PSK. This identification would be transmitted every 10 minutes during the test period or communications contact (QSO). An example of this is: N3NL
BROADBAND SPARK EMISSION EXPERIMENT.

Suggested Actions

The Commission should consider expanding the innovation zone concept to include urban innovation zones as well as innovation zones in remote geographic areas. Also, the Commission should consider a broad Notice of Inquiry (NOI) on the impact of the Commission's rules on amateur radio experimentation and invention. This NOI could also consider possible regulatory steps such as technical freedom sub bands to increase the opportunities for amateur radio innovation and invention.

Respectfully submitted,

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Appendix A – Summary of U.S. Patent 6,771,935 – Wireless Bus

Abstract: In order to avoid mechanical assembly problems and transmission of undesired electrical currents among circuit cards or boards in a telecommunications switch or similar digital device, a conventional hard-wired midplane bus is replaced by a wireless bus. The wireless bus includes a radio frequency or light wave transceiver on each card. Antennas on respective cards can either be oriented within direct line-of-sight of each other, or can project into a waveguide which directs the transmitted signals past all the other antennas. For example, the waveguide may be a metal enclosure which surrounds all the cards. Alternatively, respective aligned apertures in the cards can define a continuous transmission path. A data rate exceeding 1 megabit per second and a transmission power on the order of 1 milliWatt are preferred, since the bus is intended for use within a single switch housing. Radio frequencies in the middle to high microwave range or light frequencies in the visible range are preferred for providing sufficient bandwidth and to facilitate servicing.

Appendix B – USPTO Announcement - Satellite Office in Detroit, MI

USPTO to Open First Ever Satellite Office in Detroit

New Detroit Office Hiring Update

Patent examiner hiring for the USPTO's new Detroit satellite office is slated to begin in the spring of 2011 with more than 100 new positions expected to be filled in the year. If you are interested in working in the Detroit office, look for official job vacancy announcements to be released in the spring. All details on the vacancies, job requirements, experience needed, and how to apply will be included in the vacancy announcements.

While the vacancy announcements will be posted on the usptocareers.gov website, the USPTO is making it easier for interested people to receive news about the hiring by email. If you wish to be alerted to any important announcements about hiring for the new office or have questions, send

an email to DetroitHiring@uspto.gov. Your email address will be added to our database and we will send news and updates about the hiring process for the Detroit satellite office to you. This email box has been created as a means to answer questions specific to our Detroit hiring and to send news about it to the public. You do not have to submit your email to us to be eligible for a position.

Plans for the Detroit office were initially announced in December 2010 by U.S. Commerce Secretary Gary Locke and Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office David Kappos.

The office represents the first phase of the USPTO's Nationwide Workforce Program, an effort to hire more patent examiners and seek out additional resources and technical expertise in locations across the country. A specific location and anticipated opening date for the new Detroit office will be announced in the coming months. The USPTO is working closely with the Commerce Department's CommerceConnect facility in Pontiac, Mich.

The USPTO considered a broad range of factors in its decision to locate the new satellite office in Detroit. The city fulfilled a number of critical criteria, including having a high percentage of scientists and engineers in the workforce; providing access to major research institutions, particularly leading universities; and supporting a high volume of patenting activity and significant numbers of patent agents and attorneys in the area.

As the USPTO explores expansion into other areas of the country, the agency will continue to engage with employees and stakeholders to determine the most effective use of satellite offices as centers of applicant and public engagement, as well as the most efficient distribution of human resources.