

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

In the Matter of)	
)	
International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act)	GN Docket No. 09-47
)	
A National Broadband Plan for Our Future)	GN Docket No. 09-51
)	
Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act.)	GN Docket No. 09-137
)	

To the Commission:

Comments – NBP Public Notice #8

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 have a Master of Arts degree in Political Science from the Johns Hopkins University. I am also one of the petitioners in the docket to establish a low power radio service on the AM broadcast band (RM-11287).

My comments are directed at the potential requirement for “hardening of cell sites

and other network facilities” for mobile broadband services (Public Safety Mobile Wireless Broadband Networks Part b viii on Page 2)

Electromagnetic Threats to Mobile Network Operations

Modern mobile networks can be disabled by an electromagnetic pulse (EMP) attack. An EMP attack consists of the detonation of a strategic nuclear weapon at an altitude of a couple of hundred miles above the United States. This weapon can be enclosed in an orbiting satellite or delivered by a suborbital rocket. The radiation from the nuclear explosion interacts with the Earth’s atmosphere to generate an intense pulse of radio waves that can disable and destroy electronic communications and other electronic equipment over a wide area of the Nation. Communications equipment can be protected against EMP by enclosing the equipment in conductive shielding and by using very high-speed bypassing components to deflect the incoming EMP pulse to the ground.

A related, but not identical situation can occur due to the stream of charged particles radiated by an intense solar flare. This natural event can induce damaging currents into communications and electric power grids. Also, such an event can disable communications satellites through the phenomenon of System Generated Electromagnetic Pulse (SGEMP). The impact of the intense solar flare phenomenon is discussed by a National Academy of Sciences panel (Note 1).

The field strengths involved in such events can be strong. In the case of EMP, the electric field strength can be on the order of 50,000 Volts per meter.

Previous Commission Actions

In the past, Donald Schellhardt and I petitioned the FCC to obtain a docket on EMP threats and protections (Dockets RM-5528 and RM-10330. Refer to Note 2). The

Commission did not act favorably on these petitions.

Changed Circumstances

The situation in communications is changing rapidly from when we filed these two petitions. More and more of our nation's economy is dependent on the reliable and uninterrupted operation of the Internet and its broadband communications.

Public safety mobile communications are sufficiently important that these networks should be shielded from the impacts of EMP attacks and intense solar radiation storms.

For this reason, the Commission should conduct a public proceeding where various parties, EMP experts, and physical scientists can provide testimony on what steps should be taken to protect against these threats.

Ask for Assistance

In addition, the FCC should informally ask engineering organizations and amateur radio groups to examine the EMP and solar flare phenomena and to design communications equipment that is resistant to the expected effects of these phenomena.

Requested Regulatory Action

Since the topics of EMP attacks and intense solar flare events are too large for this Docket (GN Docket 09-51), the Commission should commit publicly to holding a Notice of Inquiry (NOI) or Notice of Proposed Rule Making (NPRM) to examine these situations and to develop reasonable protections for civilian communications equipment used by first responders and by other civilian communications networks.

Respectfully submitted,

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September 30, 2009

Note 1

**Severe Space Weather Events – Understanding Societal and Economic Impacts
A Workshop Report
National Academy of Sciences
Publication Year 2008
PAPERBACK
ISBN-10:0-309-12769-6
ISBN-13:978-0-309-12769-1**

Note 2

Petitions to the Commission by Donald J. Schellhardt and Nickolaus E. Leggett

**Docket RM-5528, Request to Consider Requirements for Shielding and Bypassing
Civilian Communications Systems from Electromagnetic Pulse (EMP) Effects.**

**Docket RM-10330, Amendment of the Commission's Rules to Shield Electronics
Equipment Against Acts of War Or Terrorism Involving Hostile Use of
Electromagnetic Pulse (EMP).**

Note 3

The text of the Congressional **Commission to Assess the Threat to the United States
from Electromagnetic Pulse (EMP) Attack** is available at the web site:

www.empcommission.org

This document confirms the serious impact of an EMP attack on the infrastructure of the
United States.