



Society of Exploration Geophysicists

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Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of

Revision of Part 15 Rules of the Commission's
Rules Regarding Ultra-Wideband
Transmission Systems

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ET Docket No. 98-153

Comments by the Society of Exploration Geophysicists

The Society of Exploration Geophysicists submits these comments in response to the Notice of Proposed Rule Making (NPRM), FCC 00-163, in the proceeding referenced above, and a more recent request for comments on testing by NTIA and others, and in response to recommendations and conclusions of others concerning proposed changes to Part 15 rules. The Society of Exploration Geophysicists (SEG) is the preeminent association representing applied geophysicists from the United States and around the world. The SEG has over 18,000 members employed who are active in the oil and gas, mineral, engineering, environmental, academic and government sectors. Many of our members could be adversely affected by FCC rulings on UWB uses of the electromagnetic spectrum and we wish our concerns to be noted.

Electromagnetic field methods form a key part of the geophysical approach to subsurface mapping and imaging in earth and earth related materials. For many decades this branch of science has used the fundamental characteristics of electromagnetic fields to probe the electrical properties of materials beneath the surface. Making such electrical property observations demands the use of electromagnetic fields; there is no other solution. In general, geophysicists

use the electromagnetic spectrum from on the order of 10^{-4} Hz through to 10^{10} Hz with most measurement systems actively energizing the ground and being ultra wide bandwidth according to the FCC's NPRM on UWB. No one device covers the whole spectrum; most devices and methodologies span one to three decades of spectrum.

In the past, the geophysical needs have been mostly ignored in spectrum management although there has been input to the NTIA from the United States Geological Survey through the Department of Interior. In addition to our needs to measure electromagnetic fields in a scientific manner and use them in scientific analysis, geophysicists also need to use electromagnetic fields for communication and navigation. Many of our field survey methods need to acquire spatial positioning (e.g. GPS usage is now critical to our membership) and also to electronically transfer data from remote locations. As a result, we recognize the need to balance electromagnetic spectrum usage for communications and navigation against the need for fundamental scientific measurements of subsurface properties.

To date, geophysical electromagnetic systems have been non-intrusive in their usage of the electromagnetic spectrum. Although geophysical systems may create quite strong local fields, the transmission of such signals into the air is undesirable and minimized by the nature of coupling into the ground. Geophysical UWB sources are designed to energize the ground and are not communications devices.

In the course of rulemaking, we urge the Commission to recognize the following key issues.

1. Electromagnetic geophysical measurements are of a fundamental scientific nature and they play an essential role in everyday practical subsurface investigations. There is no alternate way of measuring these fundamental electrical properties.
2. Geophysical UWB sources are uniquely designed to energize the ground and must not be classified or treated in the same manner as communications devices.
3. Rules which are extremely onerous and require substantial paperwork, licensing and administration will have a huge adverse impact on our membership which is generally made up of individual practitioners, small groups of scientists, small manufacturers and service providers.
4. The unique manner of deploying transducers, which are closely coupled to the ground, makes representative measurement standards difficult and costly to replicate in a standard test facility. Standardized test procedures must be kept as simple and as low cost as is practical.
5. Impediments to novel geophysical applications will be minimized by using the unlicensed regulation approach as provided for unintentional radiators in Part 15. Sensible source power limits should be combined with the promotion of awareness of potential interference within our professional associations, vendor warning labels on devices and dissemination of "good practice" guides in user manuals to achieve regulation objectives.

We trust that the above information provides insight into our professional and industrial needs. As applied scientists, we recognize the need to be cognizant of spectrum usage and encourage our members to provide technical input to the Commission. Many of our members have provided constructive comment to the Commission individually and have cited the vast range of applications where our technologies are used with great benefit to society.

Respectfully Submitted on behalf of
SEG Executive Committee and the Society's Membership,



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May 3, 2001