

**From:** Annette Smith <vce@vce.org>  
**Sent:** Friday, June 19, 2020 9:47 AM  
**To:** Faith Brown <FBrown@leg.state.vt.us>  
**Subject:** [External] Advocates Blast FCC's RF Limits, Notice of Proposed Rulemaking

[External]

Faith, please share this article with the Senate Finance Committee as they consider S.301. This article summarizes comments submitted to the FCC a few days ago in a rule-making proceeding. VCE submitted comments on behalf of our members. Vermonters' concerns are echoed in the filings described below. Annette Smith, VCE

### **Advocates Blast FCC's RF Limits, NPRM**

Paul Kirby, [TR Daily](#), June 18, 2020

Advocates who want the FCC to adopt more stringent radio frequency (RF) exposure standards, including medical and public health officials, have continued to complain about the agency's reluctance to do so. And some have also criticized a notice of proposed rulemaking (NPRM) adopted by the Commission last December proposing targeted changes to its rules. Industry entities were generally more positive about the NPRM, although some suggested changes to proposals.

In the NPRM, the FCC seeks "comment on expanding the range of frequencies for which the RF exposure limits apply ... (noting that exposure limits are already in effect from 100 kHz to 100 GHz); on incorporating into our rules localized exposure limits above 6 GHz in parallel to the localized exposure limits already established below 6 GHz; on specifying the conditions under which and the methods by which the limits are averaged, in both time and area, during evaluation for compliance with the rules; and on addressing new issues raised by WPT [wireless power transfer] devices."

"This NPRM proposes methods and seeks comment on how to best incorporate new RF technologies, new methods and techniques for RF transmission, and new usages for a variety of RF spectrum bands into our preexisting exposure framework," the item added. "In particular, on the topic of body-worn spacing during testing of cell phones, we continue to strive to ensure that such spacing represents realistic values for present-day technology and common usage."

The NPRM was adopted along with a second report and order, a memorandum opinion and order, and an item that resolved a notice of inquiry adopted in 2013 (TR Daily, Dec. 4, 2019). In resolving the NOI, the FCC decided to maintain its existing RF exposure limits, despite arguments that they are unsafe and should be tightened. The proceeding launched in 2013 marked the first time the FCC had considered whether to reexamine its RF standards since they were adopted in 1996.

More than 1,000 non-brief submissions were filed since the FCC's action last December, many from individuals concerned about RF emissions from wireless devices and other sources. In addition to filing comments, a number of parties submitted copies of research findings on adverse health impacts of RF emissions, RF exposure fact sheets, international appeals for tougher RF standards, news stories, and other documents.

Kevin Mottus, outreach director for the California Brain Tumor Association, submitted 439 sets of documents, including research studies, letters, news stories, legislation, FCC documents, and other materials.

While some commenters weighed in on the NPRM, many more broadly criticized the FCC's RF exposure rules and asked the Commission to take action to protect Americans, including by freezing the deployment of 5G services until more research is done on its impact on health.

More than 400 medical and public health professionals signed a letter, organized by Americans for Responsible Technology and submitted in ET docket 19-226, to express their opposition to the NPRM "because of the Commission's failure to adequately consider the established and newly emerging science on RF microwave radiation and its impact on human health, particularly for vulnerable populations."

They added that "the proposed rule completely ignores the documented adverse health effects that can occur at the FCC's current radiofrequency (RF) exposure limits, much less those that may occur at the expanded range of frequencies contemplated in the proposed rule. That the Commission fails to even mention 'health effects', 'toxicity', or 'carcinogenicity' anywhere in this document is astonishing, given the extensive and expanding scientific literature currently available and the Commission's obligation to ensure the 'safety of life' for all Americans as set forth in the Communications Act of 1934."

The filing added that "[t]here are no human or animal studies yet on these much higher frequencies, but an absence of studies does not mean an absence of harm. The Commission's own admission that it is unaware of adverse non-thermal effects demonstrates either a failure to actively investigate the issue and engage with scientists studying the short and long-term biological impacts to the human population and possible interference with systems of the natural world, or a conscious effort to disregard science to facilitate the rapid deployment of new technologies to benefit industry."

They also said that "[a]veraging RF microwave exposures over time may be convenient for manufacturers seeking to comply with FCC limits, but this is not how humans experience these exposures. To our knowledge, there is no scientific basis for the claim that periodic, high-level exposures are not harmful. As one scientist remarked recently, the average wind speed in Tornado Alley is 6 miles per hour. As such, we do not support the proposed change to allow manufacturers to produce wireless devices that govern their own radiation power output by averaging radiated power, especially for notebooks and tablets frequently used by children who, according to the International Agency for Research on Cancer (IARC), are more vulnerable to RF radiation than adults."

The letter also recommended "that before the Commission considers even tentative approval of Wireless Power Transfer (WPT) devices operating at ranges in excess of 50 cm., that it first require manufacturers to conduct pre-market testing to demonstrate the safety of such devices when used in all possible 'worst case' scenarios, and to develop mitigation techniques that can limit or eliminate inadvertent or collateral damage to the public. Such an analysis must include consideration of non-thermal biological impacts."

Joel Moskowitz, director of the Center for Family and Community Health in the University of California at Berkeley's School of Public Health and creator of the [saferemr.com](http://saferemr.com) website, argued that the FCC "should comply with the recommendations of the scientists who signed the International EMF Scientist Appeal ... which calls for stronger exposure limits for

radiofrequency (RF) radiation to protect the population from low-intensity, so-called 'non-thermal,' effects [TR Daily, May 11, 2015, and July 22, 2019]. Their recommendations are based on the preponderance of the peer-reviewed scientific research on the bioeffects and health effects of EMF exposure. These scientists have published more than 2,000 papers and letters in professional journals on electromagnetic fields (EMF) and biology and health.

"The Commission should ignore the FDA's recent advice which is not based on sound science and ask the NIH to fund the research needed to develop biologically-based exposure limits for RF radiation that ensure public health and safety," Mr. Moskowitz added. "Finally, the FCC should impose an immediate moratorium on the roll-out of 5G technology as called for by the scientists and medical doctors who signed the 5G Appeal (<http://www.5gappeal.eu/>). The moratorium can be lifted after the Commission adopts biologically-based RF exposure limits if the health effects research determines that long-term exposure to 5G radiation is safe."

"It is our professional opinion that the agency should not move forward with the above proposal and needs to develop safety standards that protect against long-term health and environmental effects. Further, the agency should provide revised standards for testing and monitoring that reflect submitted peer-reviewed evidence that protection is required against nonthermal effects from current levels of non-ionizing radiation," said a filing by four scientists from the U.S., Estonia, Portugal, and Israel. "ET 19-226 closes dockets opened since 2013, fails to take seriously the hundreds of peer-reviewed publications and other expert comments submitted as part of this docket, uncritically adopts the minority scientific guidelines developed by ICNIRP [International Council on Non-Ionizing Radiation Protection] for internal fields in the frequency band below 3 GHz and extends them to those up to 3,000 GHz. In adopting ICNIRP positions of a group of 13 scientists many of which have close ties to industry, the agency also fails to take into account the fact that the majority including several hundred experts in the fields of bioelectromagnetics and related matters strongly dissent from the conclusions of ICNIRP, which remains a self-appointed self-governing minority group that has no independent oversight or accounting for its funding."

The scientists added, "We recommend a halt to the roll-out of the fifth generation, 5G, for telecommunication and for the expansion of wireless networks until hazards for human health and the environment of these new frequencies and the densification of networks have been fully investigated by scientists independent from industry. 5G paired with densification of 4G antennas will substantially increase environmental exposure to radiofrequency electromagnetic fields. We also recommend federally developed safety limits based on empirical scientific studies that have thoroughly investigated long term effects to humans, animals, insects, trees and the environment. Federal safety limits should be based on adequate data from animal and human research, not based on assumptions."

The filing was submitted by Paul Ben Ishai of the Department of Physics at Ariel University in Israel; Mikko Ahonen of the Institute of Environmental Health and Safety in Estonia; Hugo Goncalves Silva of the Departamento de Fisica, Universidade de Évora in Portugal; and Devra Davis of the Environmental Health Trust in the U.S.

The Alliance of Nurses for Healthy Environments said the FCC "has failed adequately [to] consider the established and newly emerging science on RF microwave radiation and its impact on human health. Wireless companies are densifying wireless antennas in every neighborhood and building. We are exposed to exponentially more Radio Frequency Radiation RFR every day. The FCC must inform and protect Americans from any potential health risks associated with

exposure to RF microwave radiation. ... You must not allow the public to be part of a long-term experiment to see if human exposures are safe that is your purpose.”

“The Commission is proposing to push through plans for the next generation of wireless despite the fact that scientists are still studying and documenting evidence of cancer and other biological harms from 2G, 3G and 4G exposures,” the group added. “The Commission has asserted that ‘it is unaware of adverse non-thermal effects’ yet the FCC cannot document any investigation of the issue or engagement with highly regarded scientists studying the short and long-term biological impacts to the human population especially children whose bodies are still developing and who are growing up in ‘wireless smog’ due to the densification of wireless technology [throughout] the country.”

“We oppose the proposed change allowing manufacturers to produce wireless devices that govern their own radiation power output by averaging radiated power,” the filing continued. “Wireless Power Transfer (WPT) devices operating at [ranges] in excess of 50cm, must undergo pre-market testing that proves the safety of these devices.”

Ellen Marks, founder and director of the California Brain Tumor Association, said, “I do not support the proposed change to allow manufacturers to produce wireless devices that govern their own radiation power output, especially for notebooks and tablets frequently used by children who, according to the International Agency for Research on Cancer (IARC), are more vulnerable to RF radiation than adults.”

“I object to the practice of allowing exposures to be averaged over time to comply with FCC exposure limits,” she added. “There is no scientific basis to support the notion that short, periodic bursts of RF radiation are not biologically harmful, or that only cumulative effects over time may have an impact. The FCC should establish temporal limits for both Specific Absorption Rate (SAR) and power density.”

Ms. Marks also recommended “that before the agency considers even tentative approval of WPT devices operating at ranges in excess of 50 cm, it requires manufacturers to conduct pre-market testing to demonstrate the safety of such devices when used in all possible ‘worst case’ scenarios, including mitigation techniques to avoid inadvertent or collateral damage to the public. Such an analysis must include consideration of biological impacts.”

Julie McCredden, president of the Oceania Radiofrequency Scientific Advisory Association, complained that the Commission “is implementing an RF exposure guideline on which they hold no expertise. Instead, the FCC is relying on expert advice from the Institute of Electrical and Electronics Engineers (IEEE) and the Food and Drug Administration (FDA).”

“The IEEE is an association that is top heavy in electrical engineers and physicists, many having close connections with industry and the military, with both sectors being beneficiaries of maintaining the status quo with respect to radiofrequency (RF) exposure limits,” Ms. McCredden complained. “The public would be right to ask whether the FDA is truly independent and trustworthy because the FDA is a government body that is vulnerable to influences from government policy makers and industry lobbyists. Governments around the world see 5G as being critical for their technology programs and the economy.”

Regarding the adoption of rules for WPT, Elizabeth Barris of [ThePeoplesInitiative.org](http://ThePeoplesInitiative.org) said, “Just irresponsibly spewing electricity and radiation into the atmosphere in order that a battery be

charged, thereby literally charging all cells in the vicinity, be it human, animal, plant or battery at the same time is as any 7th grader who studies biology will tell you, a bad idea.”

The city of Boston called “on the Commission to understand the concerns of residents who live in close proximity to carrier and neutral host small cell wireless facilities (SWF) as regards to the RF emissions of the sites. Boston is one of the country’s most densely populated cities with an abundance of streetscapes with narrow sidewalks and little or no dwelling setbacks. This results in SWFs often sited within 20 feet or less of living space. Additionally, research has revealed that there may be concerns with the possible health effects of low-level multiple source exposure arising from the huge diffusion of communication technologies such as mobile communications, wireless data transfer such as Wi-Fi, Wi-Max, Bluetooth, and ZigBee and the wireless networks to which those devices connect.

“Therefore, Boston requests that the Commission also examine the potential impact on health of low-level multiple exposures,” the city added. “Boston believes that the concerns of the public are real and that the Commission has done a disservice to itself, local government, consumers, and even the wireless industry in failing to understand and respond to the broadly shared mistrust of the safety of RF emissions. The public does not believe that the FCC’s RF exposure standards are safe nor based on science. They cite that the standards were first established by the Commission more than twenty-four year ago.”

But the Telecommunications Industry Association praised the FCC “for taking steps to modernize its RF exposure rules with the Resolution of Notice of Inquiry, Second Report and Order, and Memorandum Opinion and Order in this docket. The Commission now has the opportunity to further modernize its rules and, importantly, harmonize its rules with updated international standards. These standards are based on current scientific knowledge, and ensuring the global harmonization of standards will yield widespread economic benefits – allowing companies worldwide to share the latest devices with U.S. consumers, and U.S. companies to design devices that meet the Commission’s rules that can then be sold globally. In particular, the Commission should adopt RF exposure limits, area averaging, and time averaging that are consistent with recent standards from the Institute of Electrical and Electronics Engineers, Inc. (‘IEEE’) and International Council on Non-Ionizing Radiation Protection (‘ICNIRP’).”

“If the Commission nonetheless decides to adopt the approach to device-based time averaging that is proposed in the NPRM – which, as noted by the IEEE International Committee on Electromagnetic Safety, has been refined by the parties that originally proposed the approach – the agency should allow for a 24-month transition period during which it accepts for compliance purposes either the current guidance or the new approach,” TIA added. “The Commission adopted a similar transition period for the rules adopted in the Second Report and Order section of December’s RF item.”

In joint comments, the Mobile & Wireless Forum and the Information Technology Industry Council said they “support and advocate the adoption of limits and provisions from the newly released IEEE C95.1-2019 Exposure Standard (IEEE 2019) and the 2020 ICNIRP EMF Exposure Guidelines (ICNIRP 2020). These recently updated standards, which are substantially aligned on all major issues concerning radiofrequency (RF) energy exposure, reflect the work of the world’s leading experts on RF energy and constitute the current science-based consensus about RF exposure safety. MWF and ITI therefore believe that it is in the best interest of consumers, professional users, and the wireless industry for the U.S. to align the relevant provisions in the FCC’s regulations with these international standards. Such alignment is especially called for

given that RF experts and consumers both have recognized that the current FCC regulations are based on an almost thirty-year old IEEE standard, which has been twice superseded (in 2005 and in 2019), and need to be updated.”

The IEEE ICES noted that the Commission “has proposed to adopt limits similar to the ICNIRP 2010 guidelines at frequencies between 3 kHz and 10 MHz. ICES believes that such a proposal lacks clear and compelling scientific justification, and recommends that the Commission adopts an alternative such as IEEE Std C95.1-2019. Unlike the ICNIRP guidelines, the IEEE standard provides correspondence between external exposure limits and internal dose limits, such that compliance can be conducted accurately with a straightforward environmental measurement. The Commission’s proposed approach, lacking this correspondence, may likely impose restrictions that could unnecessarily burden operators in this spectrum.”

ICES also recommended “that the FCC adopt a more conservative curve for localized exposure limits above 6 GHz” and suggested that the FCC’s averaging times in the NPRM “may be overly conservative, inefficient, and inconsistent.”

Garmin International, Inc., a manufacturer of GPS equipment, said it “supports adoption of an RF exemption approach based on localized exposure conditions for devices operating above 6 GHz having a transmitter that emits energy with power that is less than 4 mW; such equipment poses no threat to exceeding the RF exposure limits. In addition, as further explained below, the Commission should allow same-device transmitters, with antennas separated by more than 2 cm, to be considered separate devices for exemption purposes. Finally, devices that utilize dual transmitters with antennas that are separated by less than 2 cm (and operate above and below 6 GHz) should be exempted from routine evaluation based on a summation of the percentages of the threshold that each transmitter contributes respectively to the exemption threshold.”

GuRu Wireless, Inc., which is developing a system to perform wireless power transfer at a distance, said the FCC “should act promptly to establish sound and sensible rules that allow for the operation of meaningful wireless power transfer under Part 18. These rules should provide for radiative power transfer at unlimited power levels and distances so long as power is confined and leakage is limited, as detailed above. Finally, the Commission should grant GuRu’s waiver request without further delay.” The company said FCC action should be taken “separately from its actions on RF safety, which historically have required multiple years to resolve.”

MetaPower LLC, a wholly-owned subsidiary of The Invention Science Fund II LLC, proposed “a framework, and several proposals, for the regulation of WPT AAD [at-a-distance] devices. Most importantly, MetaPower emphasizes that any such regulatory regime must (1) recognize the significant difference in use cases between consumer and industrial devices, and (2) provide sufficient flexibility for the development of new and innovative devices in this rapidly emerging new technology.”

Sensormatic Electronics LLC urged the FCC “to reconsider its pending decision to further regulate now frequencies below 100 kHz. There is simply no public health justification for such regulation, and certainly no need for immediate action. If the Commission ultimately does decide to regulate in that frequency range, however, we recommend that it adopt the consensus-based IEEE Std C95.1-2019 as its standard for human exposure to electromagnetic fields. The science clearly supports use of this new standard, rather than the seriously flawed ICNIRP 2010 guidelines.”

The American Radio Relay League said that its "principal concern in this proceeding is to ensure that Radio Amateur compliance with the Commission's RF safety requirements can reasonably be achieved under the Commission's rules. Consistent with the Commission's proposals and the ARRL's earlier Petition, we therefore request that (1) MPE [maximum permissible exposure] limits be included in Table 1 down to 100 kHz based on the guideline or standard used as a basis for the Commission's regulation and be included in amendments to the associated rule, as set forth above; and (2) that the Commission clarify that any new requirements intended to address electrostimulation apply only insofar as the intended very short pulse modulation schemes are employed."

*Copyright © 2020 CCH Incorporated, All Rights Reserved.*

Annette Smith  
Executive Director  
Vermonters for a Clean Environment  
789 Baker Brook Road  
Danby, VT 05739  
(802)446-2094  
[www.vce.org](http://www.vce.org)