

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Reassessment of Federal Communications)	ET Docket No. 13-84
Commission Radiofrequency Exposure Limits and)	
Policies)	
)	
Proposed Changes in the Commission's Rules)	ET Docket No. 03-137
Regarding Human Exposure to Radiofrequency)	
Electromagnetic Fields)	
To: The Commission		

**COMMENTS OF THE CONSUMER
ELECTRONICS ASSOCIATION**

Julie M. Kearney
Vice President, Regulatory Affairs
Brian E. Markwalter
Senior Vice President, Research and
Standards
Bill Belt
Senior Director, Technology and
Standards
Consumer Electronics Association
1919 S. Eads Street
Arlington, VA 22202
(703) 907-7644

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The Consumer Electronics Association (“CEA”)¹ hereby submits these Comments in response to the *Further Notice of Proposed Rulemaking* (“*Further Notice*”) and *Notice of Inquiry* (“*NOI*”) adopted in this proceeding.² The Comments address five issues raised in the *NOI*, and offer support for positions that CEA understands are being taken in comments being submitted today by certain commenters with respect to the testing standards proposed in the *Further Notice*.

¹ CEA is the principal U.S. trade association of the consumer electronics and information technologies industries. CEA’s more than 2,000 member companies lead the consumer electronics industry in the development, manufacturing and distribution of audio, video, mobile electronics, communications, information technology, multimedia and accessory products, as well as related services, that are sold through consumer channels. Ranging from giant multi-national corporations to specialty niche companies, CEA members cumulatively generate more than \$203 billion in annual factory sales and employ tens of thousands of people.

² *Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies; Proposed Changes in the Commission’s Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, First Report and Order, Further Notice of Proposed Rulemaking, and Notice of Inquiry, 28 FCC Rcd 3498 (2013) (cited as “*First Report and Order*,” “*Further Notice*,” and “*NOI*,” as appropriate); 78 Fed. Reg. 33654 (2013).

INTRODUCTION AND SUMMARY

CEA appreciates the Commission's careful and painstaking reevaluation of its radiofrequency ("RF") emission rules since it issued the *NPRM* in 2003.³ The *First Report and Order* addresses a variety of long-recognized issues regarding compliance with the Commission's RF safety rules, measurement of RF emissions, and mitigation procedures, and adopted a limited number of rule changes based on extensive comments on these complex subjects. In the *Further Notice*, the Commission considers additional changes to its rules concerning human exposure to RF energy as the result of issues that have evolved or arisen since the *NPRM*'s issuance. Finally, the Commission's *Notice of Inquiry* seeks to gather and evaluate new scientific information about the effects of exposure to RF emissions, and seeks comment on a wide range of issues related to evaluation of the costs and benefits of RF exposure limit rules.

In these Comments, CEA focuses on five issues raised in the *Notice of Inquiry*:

- *Exposure Limits.* CEA concurs with the Mobile Manufacturers Forum ("MMF") and the Telecommunications Industry Association ("TIA") regarding the importance that FCC move to harmonize its RF exposure guidelines with the work being done globally and adopt the guidelines contained in the updated Institute of Electrical and Electronic Engineers ("IEEE") standard, C95.1-2005.⁴
- *Consumer Information.* The Commission should continue to educate consumers about electromagnetic RF fields and provide meaningful guidance to consumers as to the reliability of certain measurements to accurately reflect the typical RF exposure of specific devices. The Commission should not mandate disclosure of the Specific Absorption Ratio ("SAR") information for approved consumer

³ *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, Notice of Proposed Rulemaking, 18 FCC Rcd 13187 (2003) ("*NPRM*").

⁴ *IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*, IEEE Std C95.1-2005 (cited at NOI ¶ 213 n.376). The updated IEEE standard uses the same RF exposure limits as the International Council on Non-Ionizing Radiation ("ICNIRP") in its standard, *Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (Up to 300 GHz)*, Health Physics 74 (4): 494-522 (1998), (cited at NOI ¶ 213 n.375).

devices since, by definition, the RF exposure from an approved device will be at or below the exposure limit. Requiring such disclosure appears to attribute greater significance to SAR values than is warranted and encourages consumers — incorrectly and inappropriately — to use such values as surrogates for relative safety. In any event, if disclosure is required, the FCC should permit alternative disclosure approaches, including websites and in-device techniques, rather than mandate a particular means of delivering this information.

- *Time Averaging.* The FCC should afford greater flexibility in the relevant time period used for time averaging in connection with the testing of mobile and portable devices, and should consider appropriate behavior-based time averaging periods. For example, it may be appropriate and conservative to use a time averaging period that is a multiple of typical mobile call duration for a handset.
- *Increased Reliance on the Knowledge Database.* The Commission should maintain its online Knowledge Database (“KDB”) as a flexible, dynamic source of guidance to foster innovation and expedite the introduction of new devices and technologies. The KDB should contain only guidance. The Commission should not reference the KDB in the rules, except for providing citations to examples or illustrations of appropriate approaches. There are no provisions in the KDB or OET Bulletin 65 that CEA believes warrant incorporation into the rules. Further, the delays associated with the requisite rulemaking proceedings to incorporate mandatory KDB procedures into rules (either directly or by reference) would deny innovators the benefits of the most current FCC guidance and policies on compliance with the RF exposure rules.
- *Body-Worn Devices.* The Commission should not change its device testing requirements to assume zero spacing or actual bodily contact. Current SAR limits were established with a large safety factor, and are “well below a threshold for unacceptable rises in temperature” such that exceeding the SAR limit “should not create an unsafe situation.”⁵ Thus, there is no need to change testing requirements to reflect all possible configurations. Testing should be performed in configurations that allow the device to operate properly. Moreover, given the decision by the FCC to remove OET Bulletin 65, Supplement C as guidance for testing and move testing procedures under the KDB process,⁶ the FCC should not inquire about additional rules regarding body-worn testing. Such an approach is inconsistent with the recent *First Report and Order*.⁷

⁵ *NOI* ¶ 251.

⁶ *First Report and Order* at ¶ 37

⁷ *Id.*

DISCUSSION

I. THE COMMISSION SHOULD UPDATE ITS RF EXPOSURE GUIDELINES TO HARMONIZE WITH CURRENT GLOBAL STANDARDS

The Commission's RF exposure guidelines are based on scientific information that is more than twenty years old. During that time, there has been continual research and standards work, both in the United States and globally, that the Commission should take into account. CEA agrees with comments it understands are being filed by MMF, TIA, and potentially other commenters, that urge the Commission to adopt the updated RF exposure guidelines set forth in IEEE Std C95.1-2005.⁸

The IEEE standard is consistent with the 1998 international ICNIRP standard in providing a conservative framework for the protection of those who are exposed to RF fields. In fact, the World Health Organization has specifically endorsed the IEEE and ICNIRP standards⁹ and called for nations to adopt these standards:

International exposure guidelines have been developed to provide protection against established effects from RF fields by the International Commission on Non-Ionizing Radiation Protection (ICNIRP, 1998) and the Institute of Electrical and Electronics Engineers (IEEE, 2005).

National authorities should adopt international standards to protect their citizens against adverse levels of RF fields. They should restrict access to areas where exposure limits may be exceeded.¹⁰

⁸ See Comments of MMF, ET Docket No. 13-84 (Sept. 3, 2013); Comments of TIA, ET Docket No. 13-84 (Sept. 3, 2013).

⁹ World Health Organization, *Electromagnetic Fields and Public Health: Mobile Phones*, Fact Sheet No. 193 (June 2011) ("These guidelines are based on a detailed assessment of the available scientific evidence."), <http://www.who.int/mediacentre/factsheets/fs193/en/index.html>.

¹⁰ World Health Organization, *Electromagnetic Fields and Public Health: Base Stations and Wireless Technologies*, Backgrounder/Fact Sheet No. 304 (May 2006) <http://www.who.int/mediacentre/factsheets/fs304/en>.

As shown in the comments being filed by MMF and TIA, adoption of the new global standards is well supported by the latest science, and maintenance of RF limits based on outdated research does not provide better protection.¹¹ Moreover, harmonization of the Commission's RF exposure standards is consistent with Congressional and Executive Branch policies favoring reliance on standards developed through voluntary consensus-building organizations.¹² Accordingly, CEA agrees with these organizations' comments in support of global harmonization of the Commission's RF exposure limitations and adoption of the IEEE standard.

II. THE COMMISSION SHOULD CONTINUE TO EDUCATE CONSUMERS, SHOULD PROVIDE GUIDANCE ON THE RELIABILITY OF SAR DATA, AND SHOULD NOT MANDATE DISCLOSURE OF SAR DATA OF DEVICES WHERE EMISSIONS ARE BELOW THE GENERAL POPULATION RF EXPOSURE LIMIT

The Commission has long performed an educational role, ensuring that consumers and the general public are provided important information about electromagnetic RF fields, including the potential hazards of RF emissions under a variety of circumstances. The Commission provides a wide range of information in a variety of sources,¹³ from OET Bulletin 56, a non-technical guide to the effects of RF fields and the Commission's regulations¹⁴ and a series of

¹¹ See Comments of MMF; Comments of TIA.

¹² See National Technology Transfer and Advancement Act, 15 U.S.C. § 3701 *et seq.*; Office of Management and Budget, *Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*, Circular A-119 (Feb. 10, 1998), http://www.whitehouse.gov/omb/circulars_a119.

¹³ NOI ¶ 231.

¹⁴ FCC OET Bulletin 56, *Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields*, Fourth Edition (Aug. 1999).

consumer guides,¹⁵ all the way to the highly technical OET Bulletin 65,¹⁶ and it also publishes a guide tailored to the needs of local officials.¹⁷

The Commission is performing a valuable service by presenting the public with continually updated information in a balanced manner. The Commission should continue its educational efforts, and should work to ensure that its consumer information concerning RF emissions is meaningful and provides the tools that consumers need to assess device purchases and use. For example, the *NOI* observes that consumers continue to seek additional information about wireless device safety, and that consumer organizations have placed emphasis on consistent provision of SAR information for wireless phones. The Commission correctly points out, however, that the maximum SAR value associated with a device is “not necessarily a reliable indicator” of typical RF exposure, and “may not be useful for comparing different devices,” due to the fact that the power emitted by devices varies continually based on network and usage conditions.¹⁸

Given that (1) any approved mobile or portable device necessarily has a SAR that meets or is below the exposure limit that the Commission has found to be appropriate for the protection of the general population, and (2) comparison of SAR values below the established limit is not useful, the Commission should not require disclosure of maximum SAR information for approved devices. Requiring SAR disclosure would give greater significance to SAR values

¹⁵ FCC Encyclopedia, Consumer Publications Library, <http://www.fcc.gov/encyclopedia/consumer-publications-library> (visited Aug. 22, 2013).

¹⁶ FCC OET Bulletin 65, *Evaluating Compliance With FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields*, Edition 97-01 (Aug. 1997).

¹⁷ FCC Local and State Government Advisory Committee, *A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance* (June 2, 2000).

¹⁸ *NOI* ¶ 234.

than is appropriate in the context of devices that fall within the permissible limit. As a result, such disclosure can encourage consumers to compare SAR values of devices as a way of evaluating their relative safety, which is neither correct nor appropriate. Since maximum SAR data is not a reliable measure of typical RF exposure, its mandatory disclosure is likely to cause unnecessary consumer confusion.

In any event, while such disclosure of SAR values is unnecessary, the SAR information for particular devices is already available on the Commission's website if consumers wish to verify a device's SAR compliance.¹⁹ In light of the foregoing, mandatory disclosure of SAR data for devices operating within RF exposure limits²⁰ does not appear to provide any meaningful benefit, and in fact may actually cause consumer confusion.

If the Commission nonetheless does require disclosure of maximum SAR information, it should not prescribe a particular manner of disclosure, and instead should permit any appropriate means of disclosure, such as in-device displays²¹ or disclosure on websites, which can be updated with greater frequency than printed materials, and can therefore provide the most current information to consumers. Such forms of disclosure are a more convenient reference source for

¹⁹ *NOI* ¶ 235; *see also* Comments of MMF.

²⁰ CEA notes that in the *Further Notice* the Commission uses the term “information” to describe *optional* disclosures in situations where RF exposure is below the limit for exposure to the general population, while mandatory “warnings” are prescribed in situations where highly dangerous levels of RF exposure are involved. *See Further Notice* ¶¶ 190-96. This terminology is consistent with CEA's proposal above, where disclosure of maximum SAR data would be optional — not mandated — as long as a device's SAR level is within the prescribed general population limit.

²¹ CEA has previously supported the option of electronic labeling, or “e-labeling” of wireless devices, instead of mandating physical labeling because of the high cost and logistical challenges of the latter. *See* Comments of CEA, RM-11673, at 1-5 (Oct. 5, 2012) (regarding TIA e-labeling request). CEA continues to urge the Commission to move forward with the issuance of a Notice of Proposed Rulemaking in that proceeding. However, if the Commission requires SAR disclosure in this proceeding before general e-labeling rules have been adopted, it should specifically allow e-labeling for SAR disclosure.

consumers than printed materials.²² Any disclosure of SAR values should be in a standardized format and in accordance with technical guidance concerning how the maximum SAR value is to be computed.

III. THE COMMISSION SHOULD MAXIMIZE FLEXIBILITY REGARDING THE TIME AVERAGING PERIOD FOR MEASURING SAR AND MPE WITH REGARD TO MOBILE AND PORTABLE DEVICES

The Commission should allow more flexible time averaging standards for testing mobile and portable devices. The Commission rules currently provide that for mobile and portable devices used by consumers, a fixed time averaging period is not generally appropriate for measuring RF exposure limits, but “source-based” time averaging, which is based on inherent properties of the device, is permitted.²³ Thus, the emissions from a handset are not time-averaged, except when factors such as the characteristics of a TDMA transmission make source-based averaging appropriate.²⁴ The *NOI* also briefly discusses the alternative of “behavior-based” time averaging, which would measure average exposure over a period that is representative of actual use.²⁵

The time averaging period for testing mobile and portable devices should be behavior-based. If a given device, such as a handset, is characteristically used for a particular range of times,²⁶ testing the device by averaging over a representative usage period (or some multiple

²² The Commission should not require disclosure in device manuals. SAR testing may be finalized very shortly before a device’s release date. Manuals typically are produced well in advance of this testing. Requiring disclosure in device manuals could therefore delay the release of new devices and impose additional production costs.

²³ *NOI* ¶ 223.

²⁴ *Id.*; see 47 C.F.R. §§ 2.1091(d)(2), 2.109(d)(5).

²⁵ *NOI* ¶ 223

²⁶ For example, MMF has compiled data on average mobile phone call duration both globally and domestically. See Comments of MMF at Annex A.

thereof) would provide a more realistic assessment of the RF exposure levels that would be encountered in actual use than is the case if an unaveraged signal level is used. As MMF observes, either a 6 minute or 30 minute behavior-based averaging time for mobile and portable phone use provides a highly conservative exposure standard, given that both of these periods considerably exceed mean call duration.²⁷

IV. THE FCC SHOULD MAINTAIN THE KNOWLEDGE DATABASE AS A FLEXIBLE, DYNAMIC SOURCE OF GUIDANCE TO FOSTER INNOVATION AND EXPEDITE THE INTRODUCTION OF NEW DEVICES AND TECHNOLOGIES

OET's online KDB should be the primary source for guidance concerning RF exposure compliance, as contemplated in the *First Report and Order*.²⁸ In order for the KDB to serve as a flexible, frequently-updated source of guidance, its provisions should not be incorporated into the FCC's rules either directly or by reference. To the extent the Commission's rules contain cross-references to the KDB, such references should be for the purpose of providing guidance or illustration only, not as a way of giving KDB requirements the force of rules. There are no provisions in the KDB that warrant insertion into the Commission's rules at this time.²⁹

As the Commission noted, the advantage of relying on the KDB for providing guidance is that it can be updated frequently to reflect the Commission's "most recent guidance and policies on evaluating compliance with our RF exposure limits."³⁰

By maintaining the KDB as a source of guidance without the need for cumbersome notice-and-comment rulemaking procedures, the Commission will provide a mechanism to

²⁷ *See id.*

²⁸ *First Report and Order* ¶ 28.

²⁹ *NOI* ¶ 247.

³⁰ *First Report and Order* ¶ 28.

address the need for endorsement and approval of non-standard technologies. This will promote innovation and benefit consumers — in particular early adopters of new technologies.

The KDB provides a vehicle to convey information on the Commission’s RF exposure and safety policies relating to new devices and technologies on an evolving basis, much more rapidly than technical standards bodies can develop standardized practices and procedures. This assists innovators seeking equipment authorizations in rapidly changing and competitive markets, while allowing the Commission to incorporate standards-based guidance over time. These benefits far outweigh any costs of maintaining such a dynamic resource, or uncertainties that may be associated with following the rapidly-changing guidance that is provided.

V. THE COMMISSION SHOULD NOT CHANGE DEVICE TESTING REQUIREMENTS TO ASSUME ZERO SPACING OR BODILY CONTACT; SAR LIMITS ALREADY INCORPORATE LARGE SAFETY FACTORS

The Commission should not require device testing on the basis of zero spacing or actual bodily contact. First, while the evolution of some wireless devices have resulted in reduced separation of devices from the body from the 2.5 cm distance contemplated for testing, there is no apparent need for testing to be conducted at reduced separation distances. As the Commission itself noted, there is no evidence that body-worn devices without enforced separation from the body “pose[] any significant health risk.”³¹ The Commission also observed that “exceeding the SAR limit does not necessarily imply unsafe operation, nor do lower SAR quantities imply ‘safer’ operation,” because the limits were established “with a large safety factor, to be well below a threshold for unacceptable rises in tissue temperature,” and even

³¹ *NOI* ¶ 251.

substantially exceeding the SAR limit in the case of body-worn devices “should not create an unsafe situation.”³²

In addition, the Commission has recognized that SAR measurements are taken at maximum power, while devices are likely to be below maximum power much of the time, and thus their actual SAR is likely to be much lower than the measured maximum SAR even if the device is closer to the body than in the test configuration.³³

From a practical perspective, no testing regime can account for the infinite number of variations that consumers will employ in how and where to place their wireless devices, both in use and when in standby mode. And, neither the Commission nor manufacturers can force consumers to use their devices in only a limited number of positions or locations.³⁴ That is why the Commission built a large safety factor into its SAR limit testing criteria, to provide a margin that will make it likely that even noncompliant device usage will be safe.

The extremely conservative nature of the SAR limits is characteristic not only of today’s RF exposure guidelines; it is also the case with respect to the SAR limits in the updated IEEE and ICNIRP standards that CEA urges the Commission to adopt. MMF states in its comments, which examine these standards in detail, “given that both the 1.6 W/kg averaged over 1 g tissue and the 2.0 W/kg averaged over 10 g tissue limits — as well as the MPE values — are *well below the threshold for adverse health effects with large safety margins*, both limit values must

³²

Id.

³³

See id.

³⁴

The Commission should, of course, continue to provide guidance to the public regarding how to minimize RF exposure from body-worn devices, such as by using approved holsters or mounts and minimizing calling time.

be regarded as being equally safe for consumers.”³⁵ Indeed, TIA notes that the 2.0 W/kg over 10g SAR standard in both the ICNIRP and IEEE standards is only *one fiftieth* of the 100 W/kg threshold for adverse health effects.³⁶

Furthermore, operation of devices much closer to, or in actual contact with, the body may degrade performance. Therefore, testing devices that are operating too close to the body may result in antenna performance being negatively affected. Testing should be performed in configurations that allow the device to operate properly. The fact that consumers may occasionally use their devices in suboptimal physical configurations — of which there an infinite variety — should not require testing that would mimic every conceivable configuration.

In light of the foregoing, CEA agrees with the Commission’s conclusion that “a use that possibly results in non-compliance with the SAR limit should not be viewed with significantly greater concern than compliant use,”³⁷ and urges the Commission not to revise its body-worn device testing separation distance requirements.

CONCLUSION

CEA applauds the Commission’s careful reexamination of its RF emissions guidelines to ensure they are in accord with the scientific evidence that has developed since the Commission last addressed the issue. CEA is pleased to join with other commenters to support the Commission’s adoption of the updated IEEE standard. This will put the Commission’s RF emissions guidelines on a sound and current scientific footing. Consistent with the advice of the

³⁵ See Comments of MMF (emphasis added).

³⁶ See Comments of TIA.

³⁷ *Id.*

World Health Organization, the adoption of this standard will protect the public from adverse effects from RF emissions.

Respectfully submitted,

CONSUMER ELECTRONICS
ASSOCIATION

By: /s/ Julie M. Kearney

Julie M. Kearney
Vice President, Regulatory Affairs
Brian E. Markwalter
Senior Vice President, Research and
Standards
Bill Belt
Senior Director, Technology and
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