

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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

COMMENTS OF CTIA – THE WIRELESS ASSOCIATION

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September 3, 2013

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COMMENTS OF CTIA – THE WIRELESS ASSOCIATION®

I. INTRODUCTION AND SUMMARY

CTIA – The Wireless Association® (“CTIA”) respectfully submits these comments in response to the Commission’s *Notice of Inquiry* in the above-captioned proceedings.¹

CTIA is an international nonprofit membership organization that represents the wireless communications industry. Since its formation in 1984, it has supported the industry’s voluntary efforts to promote the safe, responsible use of wireless products and services. For example, it has backed efforts to encourage wireless device recycling, to discourage texting while driving, and to increase wireless access for individuals with disabilities. It has also provided millions of dollars in funding for research into the safety of radiofrequency (“RF”) emissions, for example funding recent research conducted by the Food and Drug Administration (“FDA”),² and partnering with the National Academy of Sciences to conduct a symposium on RF safety.³

¹ *Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies*, First Report and Order, Further Notice of Proposed Rulemaking and Notice of Inquiry, ET Docket Nos. 13-84, 03-137 (rel. Mar. 29, 2013) (“*NOI*”).

² *See, e.g., FDA, Radiation-Emitting Products – Cooperative Research and Development Agreement (CRADA)*, <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/Ce>

CTIA commends the Commission for its ongoing oversight of RF issues and its decision to conduct a comprehensive review of developments since it adopted the existing RF emission regulations in 1996. The consensus view of international standard-setting bodies and federal and international health agencies is that the safety standards reflected in those regulations continue to protect public health and safety. Indeed, as the Government Accountability Office (“GAO”) recently explained in its review of the latest research, the consensus view is that those standards are *overly* protective and should be harmonized with more recent international standards.⁴

When the Commission adopted its 1996 regulations, it grounded them in the weight of scientific evidence as then expressed in the work of international standard-setting bodies and federal health and safety agencies. Backed by scientific evidence and set at a level 50 times below the threshold at which biological impacts are observed, the current standards appropriately balance public safety with the need to allow wireless services to address ever-growing marketplace demands.⁵ CTIA urges the Commission to continue its science-based approach to RF emission standards and testing methodologies, and to continue to eschew any requirements that are not supported by the science but are putatively “precautionary” in nature. The Commission should: (1) apply its science-based approach to its review of the exposure standard and confirm that its current RF emission standards adequately protect public health and safety; (2) refrain from requiring RF safety disclosures or warnings or from encouraging methods for

IIPhones/ucm116340.htm (last updated May 5, 2009) (referencing FDA and CTIA’s cooperative research and development agreement regarding wireless devices and potential health effects).

³ *See id.*

⁴ United States Government Accountability Office, Report to Congressional Requesters, *TELECOMMUNICATIONS: Exposure and Testing for Mobile Phones Should Be Reassessed*, GAO-12-771 (July 2012) (“GAO Report”).

⁵ *See NOI*, ¶ 236; *In re Procedures for Reviewing Request for Relief from State and Local Regulations*, Order, 12 FCC Rcd 13494, 13496 (¶ 2) (1997) (“RF Order II”).

limiting exposure to RF emissions or taking other precautionary measures, which would not be supported by science and could cause confusion and alarm; (3) remain open to alternative means of compliance evaluation while continuing to endorse the specific anthropomorphic method of testing and knowledge database bulletins; and (4) continue to rely on existing proximity restrictions for body-worn specific absorption rate (“SAR”) issues.

II. BACKGROUND: STATE OF THE INDUSTRY AND FEDERAL REGULATION

A. The Wireless Revolution Has Been Aided By The FCC’s Nationwide, Uniform, and Careful RF Regulation.

By continuing a pro-competitive, deregulatory environment for wireless service and directing the FCC to promulgate uniform RF emission standards, the 1996 Telecommunications Act codified the policy goals underlying the Commission’s current RF regime.⁶ When adopting the current standards, the Commission noted that it sought to balance public safety with the goal of fostering wireless deployment,⁷ thus reflecting the directives of the 1996 Act. The growth of the wireless industry since 1996 attests to the Commission’s success in striking the right balance.

The Commission’s current RF standards were carefully designed to establish safe, effective, and practical emissions thresholds and testing protocols that are, first and foremost, grounded in science. These national standards were developed with significant input from the federal health and safety agencies⁸ and in collaboration with expert private organizations. The

⁶ Pub. L. No. 104–104, 110 Stat. 56.

⁷ *RF Order II*, ¶ 29.

⁸ See *In re Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, Release No. 96-326, 11 FCC Rcd. 15123, 15124 (¶ 2) (1996) (“*RF Order I*”) (stating standards represent a “consensus view of the federal agencies responsible for matters relating to the public safety and health”; *id.* ¶¶ 15-20 (citing comments from EPA, FDA, NIOSH, and OSHA); *RF Order II*, ¶ 19 (noting “careful consideration” of the views of federal health and safety agencies, “notably the U.S. Environmental Protection Agency (EPA) and the U.S. Food and Drug Administration (FDA)”).

Commission adopted them pursuant to its authority over radio communications under the 1934 Communications Act, Congress's directive in the 1996 Telecommunications Act to promulgate standards, and its obligations under the National Environmental Policy Act ("NEPA").⁹

The Commission's inquiry into the potential biological impact of RF emissions from Commission-licensed devices began in 1979.¹⁰ In 1985, it adopted emission standards based on the recommendations of the American National Standards Institute ("ANSI").¹¹ It subsequently determined that low-powered communications devices (less than 7 W), including wireless telephones, would be exempt from "routine environmental evaluation with respect to RF radiation."¹² In 1993, the Commission initiated a proceeding to revise the 1985 standards following ANSI's 1992 update to its standards.¹³ Three years later, with action pending before the Commission, Congress directed the Commission to "complete action" to "prescribe and make effective rules regarding the environmental effects of radio frequency emissions."¹⁴ This directive was motivated by Congress's recognition that "uniform, consistent requirements, with

⁹ 42 U.S.C. § 4322(2)(C) (obligating all federal agencies to consider and identify the environmental impact of "major" agency action that "significantly impacts the human environment"); Pub. L. No. 104-104, § 704(b), 110 Stat. 56 (directing the Commission "to prescribe and make effective rules regarding the environmental effects of radio frequency emissions."); *In re Responsibility of the FCC to Consider the Biological Effects of RF*, Report and Order, 100 FCC 2d 543 (1985) (citing Sections 4(i), 4(j) and 303(r) of the Communications Act of 1934).

¹⁰ *See id.*

¹¹ *RF Order I*, ¶ 6.

¹² *In re Responsibility of the FCC to Consider Biological Effects of Radiofrequency Radiation When Authorizing the Use of Radiofrequency Devices*, Second Report and Order, 2 FCC Rcd 2064 (¶ 16) (1987).

¹³ *RF Order I*, ¶ 10 (citing *In re Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, Notice of Proposed Rulemaking, 8 FCC Rcd 2849 (1993)).

¹⁴ Pub. L. No. 104-104, § 704(b), 110 Stat. 56 (1996).

adequate safeguards of the public health and safety” were in the national interest.¹⁵ The Commission revised its RF emission standards in 1996, adopting limits based on guidelines from the National Council on Radiation Protection and Measurements (NCRP) and the 1992 ANSI/IEEE C95.1 standard.¹⁶

The standards adopted in 1996 remain in effect today.¹⁷ Those standards were designed to “provide a proper balance between the need to protect the public and workers from exposure to excessive RF electromagnetic fields and the need to allow communications services to readily address growing marketplace demands.”¹⁸ They include two tiers of emission standards, one for the general public (general population/uncontrolled exposure) and a less restrictive tier of limits for workers exposed to RF as a consequence of their employment (occupational/controlled exposure).¹⁹ Though low-power devices such as cell phones had previously been categorically exempt from routine evaluation, the 1996 rulemaking applied the limits to low-power devices.²⁰ Thus, cell phones had to comply with the SAR limit of 1.6 Watts/kg over 1 gram of tissue.²¹

Before a cell phone may be marketed or sold in the United States, it must be tested for compliance with the Commission’s SAR limit.²² The Commission’s approved testing protocols

¹⁵ H.R. Rep. No. 104-204(I), at 94 (1995).

¹⁶ *RF Order I*, ¶ 28.

¹⁷ *NOI*, ¶ 205.

¹⁸ *RF Order II*, ¶ 29.

¹⁹ *In re Proposed Changes in the Communications Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, 18 FCC Rcd 13187, 13201 (¶ 36) (2003). This distinction rested on the premise that individuals exposed to RF as a consequence of their employment “can exercise control over their exposure.” *RF Order I*, ¶ 43.

²⁰ *RF Order I*, ¶ 7.

²¹ 47 C.F.R. § 2.1093(d)(2).

²² 47 C.F.R. § 2.803(a)(1).

are set forth in the rules and technical bulletins.²³ Pre-market testing is carried out by testing laboratories whose work is reviewed by authorized certification bodies²⁴ and is a required element of the authorization process.²⁵ Since 2002, the Commission’s sole pre-approved method for testing has been through the IEEE-recommended specific anthropomorphic mannequin (SAM).²⁶

The surge of wireless services and usage since 1996 attests to the FCC’s success in balancing public safety with fostering wireless deployment when setting its RF emission standards and overseeing compliance testing. Over the past two decades, wireless service has transformed and improved everyday life. Once “voice-centric,” wireless service is now “data-centric.”²⁷ Compared to the first wireless phones offered to the public, today’s devices are smaller, “smarter,” and cheaper.²⁸ Consumers have rapidly adopted data-capable mobile

²³ See, e.g., 47 C.F.R. § 2.1093(d)(3); Supplement C to OET Bulletin 65 (now rescinded); FCC KDB 447498, “General RF Exposure Guidance” (last updated May 28, 2013) (“FCC KDB 447498”).

²⁴ See 47 C.F.R. § 2.960; FCC KDB 447498 at 3.

²⁵ 47 C.F.R. § 2.803 (requiring equipment authorization before marketing of RF devices); *id.* § 2.901 *et seq.* (setting forth equipment authorization procedures); *id.* § 2.960 *et seq.* (setting forth rules applicable to Telecommunication Certification Bodies).

²⁶ See *Office of Engineering and Technology Announces Release of Revised Supplement C to OET Bulletin 65*, Public Notice, DA 02-1438 (Jun. 29, 2001). The Commission’s current testing protocols are published in the Commission’s KDBs, and the SAM phantom remains the sole-approved device for SAR testing of mobile communications devices. See FCC KDB 447498.

²⁷ *In re Implementation of Section 6002(B) of the Omnibus Budget Reconciliation Act of 1993*, Sixteenth Report, 28 FCC Rcd 3700, 3711 (2013) (“*Sixteenth Wireless Competition Report*”).

²⁸ Of course, the “pro-competitive, de-regulatory framework for wireless service prescribed by Congress and implemented by the FCC” has played a large role in the success and innovation of the wireless industry. See Brief of the Federal Communications Commission as Amicus Curiae at 8, *Murray v. Motorola*, C.A. No. 01-8479, 2007 5694816 (D.C. Sup. Aug. 24, 2007); see also FCC National Broadband Plan at 21, available at <http://broadband.gov/download-plan/> (noting that limited regulation has driven progress in broadband technology). But this “hands-

devices, which send emails, instant messages, text messages, pictures and videos; take pictures and videos; play mp3s and stream music and movies through the Internet; and access news and social media.²⁹ As a result, the total number of mobile wireless connections now exceeds the total population,³⁰ and mobile data traffic continues to increase dramatically.³¹

The public's demand for wireless services has spurred significant innovation in both the wireless industry and the broader U.S. economy. Wireless service providers offer a wide variety of service plans: prepaid, postpaid, shared data plans, family plans.³² Fierce competition among device manufacturers has led to an ever-growing array of smartphones and improved features.³³ The "app" economy, which was virtually non-existent five years ago, now offers more than 2.7

off" approach to price and service regulation has been paired with centralized federal regulatory authority over the technical aspects of radio communications, including RF emissions, which has led to nationally uniform technical and operational standards. *See, e.g., FRC v. Nelson Bros. Bond & Mortg. Co.*, 289 U.S. 266, 279 (1933); 47 U.S.C. §§ 301, 303(c)-(e). The importance of these uniform technical rules in creating an efficient nationwide wireless network and a stable environment for investment and innovation has been recognized by both Congress and the FCC. *See* H.R. Rep. No. 104-204(I), at 94 (1995); *Farina v. Nokia*, 625 F.3d 97, 105-06 (3d Cir. 2010) (citing *In re An Inquiry Into the Use of the Bands 825-845 MHz and 870-895 MHz for Cellular Communications Systems*, 86 FCC 2d 469, 504-05 (1981)).

²⁹ *Sixteenth Wireless Competition Report*, ¶ 249.

³⁰ *Id.* ¶ 244.

³¹ CTIA, *Year-End 2012 Top-Line Survey Results*, at 9, available at http://files.ctia.org/pdf/CTIA_Survey_YE_2012_Graphics-FINAL.pdf.

³² *See, e.g.,* Reply Comments of CTIA-The Wireless Association at 17-20, WT Docket No. 13-135 (Jul. 25, 2013) ("CTIA Reply Comments, *Seventeenth Wireless Competition Report*"); Julien Blin, "Shared data plans to Experience Innovation, Price Wars," *Fierce Wireless* (Mar. 19, 2013), <http://www.fiercewireless.com/story/blin-shared-data-plans-experience-innovation-price-wars/2013-03-19>.

³³ *See* CTIA Reply Comments, *Seventeenth Wireless Competition Report* at 11-12; Eric Pfanner, "Chipping Away at the Smartphone Leaders," *N.Y. Times* (Jul. 27, 2010), <http://www.nytimes.com/2013/07/27/business/global/chipping-away-at-the-smartphone-leaders.html?hp> ("For several years, [Apple and Samsung] have dominated the mobile phone-making business, successively one-upping each other with ever sleeker, more technologically sophisticated iPhones and Galaxy handsets that left would-be rivals grasping. But now the competition is stirring, and consumers are giving another look to brands they once ignored.").

million apps³⁴ and is projected to generate as much as \$46 billion in 2016.³⁵ And the growth of mobile cloud computing forecasts continued innovation in retail, education and other sectors of the economy.³⁶ The wireless industry's innovation and growth have been critical to the U.S. economy.³⁷ The industry directly and indirectly employs more than 3.8 million Americans, accounting for approximately 2.6 percent of all U.S. employment.³⁸

The rise of wireless communications has had a profound impact on public safety and healthcare as well. Wireless devices are rightly regarded as “life-saving tool[s],”³⁹ not only because they provide immediate access to 911 dispatchers, but also because they provide immediate information about public safety threats. The Wireless Emergency Alert (“WEA”) system delivers geographically-targeted, text-like messages alerting customers owning certain

³⁴ CTIA, *50 Wireless Quick Facts*, <http://www.ctia.org/advocacy/research/index.cfm/aid/10377> (last updated May 2013) (citing internal CTIA research; Nielsenwire, *State of the Appnation - A Year of Change and Growth in U.S. Smartphones*, May 16, 2012).

³⁵ Press Release, CTIA, *App Economy Created 519,000 Jobs Across the U.S.* (Oct. 4, 2012) <http://www.ctia.org/media/press/body.cfm/prid/2212>.

³⁶ See, e.g., Lowell McAdam, *How the U.S. Got Broadband Right*, N.Y. Times, (Jun. 20, 2013) (“We are just beginning to see the potential of innovative cloud-based services, smartphones and tablets to transform education and job training.”); Preston A. Cox, *Mobile Cloud Computing*, IBM, Mar. 11, 2011, *available at* <http://www.ibm.com/developerworks/cloud/library/cl-mobilecloudcomputing/> (discussing how mobile cloud computing can disrupt retail operations);

³⁷ See, e.g., President Barack Obama, Presidential Memorandum: Unleashing the Wireless Broadband Revolution, Memorandum for the Heads of Executive Departments and Agencies (Jun. 28, 2010) (“The resurgence of American productivity growth that started in the 1990s largely reflects investments by American companies, the public sector, and citizens in the new communications technologies that are what we know today as the Internet.”).

³⁸ *50 Wireless Quick Facts*, *supra* note 34 (citing Roger Entner, Recon Analytics, *The Wireless Industry: The Essential Engine of US Economic Growth* (2012)).

³⁹ Jane L. Levere, *FEMA Promotes Its Wireless Emergency Alert System*, N.Y. Times (May 28, 2013), <http://www.nytimes.com/2013/05/29/business/media/fema-promotes-its-wireless-emergency-alert-system.html> (quoting W. Craig Fugate, administrator of FEMA).

mobile devices to imminent threats to safety in their area.⁴⁰ The alerts cover those issued by the President, alerts involving imminent threats to safety or life, and AMBER Alerts for missing children.⁴¹ Recent AMBER Alerts deployed through the WEA system have been instrumental in rescuing missing children.⁴² Recent innovations have also improved access to and accuracy of emergency services, through the wireless industry’s voluntary efforts to provide text-to-911 service⁴³ and compliance with the Commission’s E911 location accuracy rules.⁴⁴ Congress’s creation of the First Responder Network Authority, now under the stewardship of NTIA, will further ensure that Americans can take full advantage of the public safety benefits that wireless communications can offer.⁴⁵ Wireless service has also provided “dramatic benefits ... to the healthcare industry, including improving the capacity for telemedicine, and facilitating the exchange of medical data and opinions.”⁴⁶ Indeed, the Commission recently announced its

⁴⁰ FCC, *Wireless Emergency Alerts*, <http://www.fcc.gov/guides/wireless-emergency-alerts-wea>.

⁴¹ *Id.*; see also Comments of CTIA-The Wireless Association at 49, WT Docket No. 13-135 (Jun. 17 2013) (“CTIA Comments, *Seventeenth Wireless Competition Report*”).

⁴² See National Center for Missing & Exploited Children, *AMBER Alert Success Stories*, <http://www.missingkids.com/amber/success> (crediting the rescue of an 8-year old boy in Ohio after individuals received the AMBER alert via the WEA system); *Don’t Turn Off Cell Phone Amber Alerts, California Officials Say*, Sacramento Bee (Aug. 12, 2013), <http://blogs.sacbee.com/capitolalertlatest/2013/08/dont-turn-off-cell-phone-amber-alerts-california-officials-say.html> (crediting rescue of missing California teenager to Amber Alert deployed through the WEA system).

⁴³ CTIA Comments, *Seventeenth Wireless Competition Report* at 49.

⁴⁴ See *In re Wireless E911 Location Accuracy Requirements*, Second Report and Order, 25 FCC Rcd 18909 (2010).

⁴⁵ See Pub. L. No. 112–96, 126 Stat. 156, § 6101 (reallocating spectrum for use by public safety entities); NTIA, *FirstNet*, <http://www.ntia.doc.gov/category/firstnet>.

⁴⁶ *In re Fostering Innovation and Investment in the Wireless Communications Market*, Notice of Inquiry, 24 FCC Rcd 11322, 11324 (¶ 16) (2009).

intention to act on the mHealth Task Force’s report and recommendations on wireless health technology.⁴⁷

While the proliferation of wireless service makes clear that the FCC struck the right balance when setting its RF emission standards, one question that should guide the Commission’s efforts in this proceeding is whether the current standards strike a balance that will continue to promote growth and innovation in the decades to come. As the GAO recognized, using a standard that differs from that used more broadly around the world carries costs⁴⁸ – costs that may hold back competition and innovation. Accordingly, as discussed further below, the Commission may wish to consider harmonizing its emission standards with the most recent recommendations of the Institute for Electrical and Electronics Engineers (“IEEE”) and the International Commission on Non-Ionizing Radiation Protection (“ICNIRP”) to ensure the U.S. wireless industry remains at the forefront of wireless innovation and competition.

B. The Commission’s RF Regime Is Grounded In The Scientific Consensus As Evaluated By International Standard-Setting Bodies And Federal Health And Safety Agencies.

The Commission’s RF standards have consistently been guided by scientific consensus⁴⁹ and grounded in scientific validity.⁵⁰ When adopting the current limits, the Commission took

⁴⁷ See FCC Fact Sheet, *mHealth Task Force Recommendations*, available at <http://www.fcc.gov/document/fact-sheet-mhealth-task-force-recommendations> (last visited August 21, 2013).

⁴⁸ See GAO Report at 27.

⁴⁹ See *In re Responsibility of the FCC to Consider the Biological Effects of RF*, Report and Order, 100 FCC 2d 543, 551 (¶ 23) (1985) (“[W]e believe that the Commission can rely on existing exposure guidelines as long as they are technically sound and scientifically supportable.”).

⁵⁰ See *RF Order I*, ¶ 4; *In re EMR Network Petition for Inquiry To Consider Amendment of Parts 1 and 2 Regarding Environmental Effects of Radiofrequency Radiation*, Order, 18 FCC Rcd 16822, 16825 (¶ 8) (2003) (“[T]his Commission has carefully and assiduously developed

careful account of both the most recent scientific knowledge⁵¹ and the views of federal health and safety agencies.⁵² FDA, EPA, NIOSH and OSHA all urged the Commission to take a more conservative approach to its RF guidelines than that advocated by the 1992 ANSI/IEEE guidelines, based on the data and technical knowledge available at the time.⁵³ The Commission followed their recommendations.⁵⁴ The FDA further recommended that the Commission closely monitor new research concerning long-term use of portable devices.⁵⁵ The Commission agreed,

RF guidelines to protect the public according to the best science available, as interpreted by the agencies most expert in the pertinent fields.”).

⁵¹ See *RF Order I*, ¶ 168 (“We believe that the regulations that we are adopting herein represent the best scientific thought”); *id.* ¶ 169 (“[The guidelines] provide assurance that recent scientific knowledge is taken into account”).

⁵² *Id.* ¶ 2 (basing regulations “substantially” on the recommendations of health and safety agencies); *id.* ¶ 28 (“We continue to believe that we must place special emphasis on the recommendations and comments of Federal health and safety agencies because of their expertise and their responsibilities with regard to health and safety matters.”); see also Brief for Respondents United States and FCC, *Cellular Phone Taskforce v. FCC*, No. 00-393, 2000 WL 33999532 at *16-17 (U.S. Dec. 4, 2000) (“FCC Cellular Phone Br.”) (noting the Commission’s emission standards “were formulated by expert scientific groups that reviewed exhaustive studies and were supported by every federal health and safety agency”).

⁵³ See FDA Comments, ET Docket No. 93-62, at 1 (Nov. 17, 1995) (arguing against the Commission’s adoption of a low-power exclusion clause with respect to cell phones based on “data from technical publications and other sources”); OSHA Comments, ET Docket No. 93-62, at 2 (Jan. 12, 1994) (“The more ‘conservative approach’ . . . is appropriate, particularly with respect to general public exposure); NIOSH Comments, ET Docket No. 93-62, at 1 (Oct. 11, 1993) (urging the Commission to differentiate its limits between exposed workers and the general public as this would be “the conservative public health approach”); EPA Comments, ET Docket No. 93-62, at 4 (Nov. 9, 1993) (supporting the Commission’s proposal to differentiate between workers and the public as this would be “more conservative” and to apply “more restrictive exposure limits to any transmitters and facilities” in unrestricted areas);

⁵⁴ *RF Order II*, ¶ 5 (noting limits “were crafted to address concerns about ANSI/IEEE C95.1-1992 that had been raised by several agencies of the Federal Government with responsibility for health and safety.”); *id.* ¶ 111 (“Our guidelines adopt the most conservative aspects of the ANSI/IEEE and the NCRP recommended exposure criteria and have been recommended by all of the relevant health and safety agencies.”).

⁵⁵ FDA Comments, ET Docket No. 93-62, at 1-2 (Nov. 17, 1995).

and in *RF Order II* committed to monitor the science and potentially adjust its standards should the scientific consensus change.⁵⁶

The Commission incorporated a fifty-fold safety factor for RF emissions to provide further assurance that its standards were sufficiently protective.⁵⁷ The safety factor accounts for a “variety of variables such as different physical characteristics and individual sensitivities – and even the potential for exposures to occur in excess of our limits without posing a health hazard to humans.”⁵⁸ By doing so, it “both protects the public based on scientific consensus and allows for efficient and practical implementation of wireless services.”⁵⁹

The RF standards’ solid scientific grounding has appropriately allowed the Commission to successfully defend its regime against challenges alleging that the standards are not sufficiently protective. Though some petitioners seeking reconsideration of the standards urged the Commission to adopt stricter limits to address controversial and unsubstantiated claims of “non-thermal” effects and groups “sensitive” to RF emissions,⁶⁰ the Commission, like ANSI, IEEE, virtually all of U.S. and international health agencies and the scientific community generally, determined that the scientific literature does not support the existence of such “non-thermal effects.”⁶¹ It concluded that its regime, which imposed very restrictive limits supported

⁵⁶ *RF Order II*, ¶ 32.

⁵⁷ *See NOI*, ¶ 236.

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *See, e.g., RF Order II*, ¶¶ 26-28 (considering comments urging regulation to protect against non-thermal effects, protection for electro-sensitive individuals and different limits for different members of the public).

⁶¹ *Id.* ¶ 31 (“It would be impracticable for us to independently evaluate the significance of studies purporting to show biological effects, determine if such effects constitute a safety hazard, and then adopt stricter standards than those advocated by federal health and safety agencies.

by a conservative evaluation of the science, struck the proper regulatory balance of the dual interests in protecting human health and encouraging investment and innovation.⁶² Two different courts of appeal rejected petitions for review arguing that the adopted standards did not adequately protect the public.⁶³ These challenges were animated by the same arguments that the Commission rejected in the 1996 rulemaking – that the rules allegedly do not account for children, “electro-sensitive” individuals, low frequency modulation effects and scientific uncertainty.⁶⁴ The Second Circuit found that such claims were not justified.⁶⁵ The FCC’s RF standards, which are based on the ANSI/IEEE and NCRP recommendations, account for non-thermal effects. In promulgating their standards, both ANSI and NCRP considered non-thermal

This is especially true for such controversial issues as non-thermal effects and whether certain individuals might be ‘hypersensitive’ or ‘electrosensitive.’”).

⁶² *Id.* ¶ 5 (“We believe that the limits adopted in [*RF Order I*] provide a proper balance between the need to protect the public and workers from exposure to excessive RF electromagnetic fields and the need to allow communications services to readily address growing marketplace demands.”).

⁶³ *EMR Network v. FCC*, 391 F.3d 269 (D.C. Cir. 2004) (upholding Commission’s decision not to regulate on the basis of non-thermal effects); *Cellular Phone Taskforce v. FCC*, 205 F.3d 82 (2d Cir. 2000) (upholding Commission guidelines against claims that they were arbitrary and capricious for failure to account for non-thermal effects and extremely-low frequency waves).

⁶⁴ In other cases challenging the RF standards through tort actions, courts have agreed with the Commission that such claims are not judicially cognizable. *See, e.g., Farina*, 625 F.3d at 122 (preempting claims that marketing of cell phones as safe for use without headsets violated state law because “[i]n order for Farina to succeed, he necessarily must establish that cell phones abiding by the FCC’s SAR guidelines . . . are inadequate – that they are insufficiently protective of public health and safety.”); *Murray v. Motorola*, 982 A.2d 764, 776-77 (D.C. 2009) (“verdicts that would hold defendants liable for damages for bodily injuries caused by cell phones that met the FCC RF radiation limit would necessarily upset [the] balance [the agency struck] and . . . contravene the policy judgments of the FCC”) (quotations omitted); *Bennett v. T-Mobile USA, Inc.*, 597 F. Supp. 2d 1050, 1053 (C.D. Cal. 2008) (finding plaintiffs’ allegations that the RF levels emitted from cell phones are unsafe “are a collateral attack on the FCC regulations themselves. Allowing such claims would be to second-guess the balance reached by the FCC in setting RF emission standards under its delegated authority.”).

⁶⁵ *Cellular Phone Taskforce*, 205 F.3d at 90-91.

effects but determined the scientific data on this point was unreliable.⁶⁶ Both organizations also concluded that the existence of modulation effects was unclear, an assessment shared by the EPA.⁶⁷ Reliance on consensus-driven, science-based standards has thus provided the Commission with a sound policy basis for the current RF standards.

III. DISCUSSION

CTIA applauds the Commission for refreshing the record in support of its RF standards. In response to the issues raised by the *Notice of Inquiry*, CTIA offers the following comments:

First, the overwhelming weight of scientific evidence supports the Commission’s existing RF standards.⁶⁸ Indeed, the GAO’s recent review of the science confirmed that those standards are, if anything, *overly* conservative. Scientific validity has been and should continue to be the touchstone of RF regulation. The Commission has always looked to the weight of scientific evidence as expressed in the work of standard-setting bodies like the IEEE and NCRP, and to the advice of the federal health and safety agencies.⁶⁹ But it has always viewed their recommendations and requirements through the lens of scientific validity,⁷⁰ and by doing so has ensured that its RF regime enjoys broad support and is defensible on appeal if challenged. Setting the standard at an overly conservative level would have the opposite effect, and could also have the perverse effect of increasing public anxiety. Moreover, such an approach would be unlikely to meet the objections of its advocates. Indeed, many of these groups profess that *no*

⁶⁶ *Id.* at 90.

⁶⁷ *Id.* at 91.

⁶⁸ *See infra* Section III.A. CTIA notes that ICNIRP may soon revise its standard, *NOI*, ¶ 213, and reserves the right to comment on its revised standard if it does.

⁶⁹ *NOI*, ¶ 215 (noting reliance on the federal health and safety agencies).

⁷⁰ *Id.* (seeking comment on the “appropriate consideration of evaluations of research conducted by international organizations or by activities in other countries”).

level of RF emissions would be satisfactory, and that cell phones are unsafe regardless of the SAR level. Adopting a limit untethered to science would simply encourage additional requests that the level be set at ever lower “precautionary” levels.

Second, the Commission should carefully review the current recommendations of the IEEE and ICNIRP.⁷¹ Both organizations now recommend limiting RF emissions to 2.0 watts per kilogram, averaged over 10 grams of tissue, while the Commission’s current rules limit emissions to 1.6 watts per kilogram averaged over 1 gram of tissue.⁷² The available science indicates that the IEEE and ICNIRP standard adopted in Europe and elsewhere presents no known danger to human health and might have certain public interest benefits when compared with the more restrictive standard in the United States.⁷³ The 2.0 W/kg standard makes possible improved network efficiency and coverage, particularly in rural and underserved areas, by allowing phones to operate at a higher power level when needed. Thus, like the current Commission standard, it is entirely consistent with the Commission’s goal of “protect[ing] the public without imposing an undue burden on industry.”⁷⁴

Third, without any scientific evidence that the current rules pose any danger to human health, there is no need for additional regulation in the area of consumer “disclosures” or encouraging consumers to limit their exposure to RF emissions. Ample information is already available from government and industry, and industry is voluntarily working on additional

⁷¹ See *infra* Section III.B.

⁷² See *GAO Report* at 16-17.

⁷³ See *infra* Section III.B.

⁷⁴ *NOI*, ¶ 209 (“In considering whether there is a need for changes to our RF exposure limit rules, our intent is to adequately protect the public without imposing an undue burden on industry.”).

information offerings to consumers.⁷⁵ Neither a mandatory disclosure nor encouragement to take precautionary measures is necessary. In light of the limited utility of SAR as a consumer metric and the current state of science, the Commission has rightly refused to endorse comparative SAR disclosures⁷⁶ or encourage exposure reduction measures.⁷⁷ Such initiatives would not make consumers safer, and could make them *less* safe by discouraging them from using portable devices.⁷⁸ Moreover, without any evidence that the current RF standards pose a danger to human health, mandatory warnings or disclosures would be problematic from a First Amendment standpoint.⁷⁹

Fourth, while CTIA shares the Commission’s interest in identifying compliance evaluation alternatives to the SAM model, it believes that the Commission should continue to embrace SAM as a safe harbor.⁸⁰ In contrast to SAR measurement and modeling methods that are still being developed, the SAM method is a scientifically accepted, time-tested and reliable means of evaluating compliance that has been widely embraced by the scientific community and

⁷⁵ See *infra* Section III.C.1 (discussing RF information available from government agencies, carriers and manufacturers).

⁷⁶ See *infra* Sections III.C.1, III.C.2.

⁷⁷ NOI, ¶ 242 (noting the Commission “does not endorse the need for nor set a target value for exposure reduction”).

⁷⁸ See *infra* Section III.C.1.

⁷⁹ See *infra* Section III.C.1; see, e.g., *CTIA–The Wireless Ass’n v. The City and County of San Francisco*, 494 F. App’x 752, 753 (9th Cir. 2012) (affirming preliminary injunction against fact sheet and ordinance mandating disclosures on RF because such disclosures were misleading and controversial); *Video Software Dealers Ass’n v. Schwarzenegger*, 556 F.3d 950 (9th Cir. 2009) (finding state law restricting sale and requiring age labeling of “violent” video games violated the First Amendment where state failed to demonstrate a scientific basis for psychological or neurological harm to children from the video games at issue).

⁸⁰ See *infra* Section III.D.1; Letter from Austin C. Schlick, General Counsel, FCC to Tony West, Assistant Attorney General, DOJ, at 2-3 (Sept. 13, 2010) (filed in *Dahlgren v. Audiovox Communications Corp.*, No. 2002 CA 007884B) (“*Dahlgren Letter*”) (“[I]t is the FCC’s position that any claims that depend on a judicial finding that the Commission’s compliance procedures fail to ensure that wireless phones are safe are also preempted.”).

industry. CTIA also supports and encourages the continuation of the Commission’s flexible approach to knowledge database bulletins (“KDBs”), which allows for more efficient modification in response to changes in technology or the scientific consensus.⁸¹

Fifth, CTIA agrees that there is no evidence that body-worn usage is a safety issue.⁸²

Because the Commission’s RF standards are premised on the assumption that users have neither knowledge of nor the ability to control RF emissions, the general population emission standards and evaluation criteria have been viewed, and should continue to be viewed, as addressing all reasonable usage scenarios. CTIA supports the existing proximity restriction and does not believe a zero-spacing measurement requirement would accurately mimic real usage or increase safety.

Overall, the Commission must bear in mind that the scientific consensus continues to be that existing RF rules protect public health⁸³ and that consumers have benefitted tremendously from (and are more safe because of) a wireless industry that has flourished over the last two decades. Indeed, the success of the Commission’s regime has led other countries to consider the Commission’s standards when promulgating their own regulations. With respect to balancing

⁸¹ See *infra* Section III.D.2.

⁸² See *infra* Section III.E.

⁸³ See, e.g., *NOI*, ¶ 210 (citing NCRP commentary in support of the existing emissions standards); National Council on Radiation Protection and Measurements (NCRP), *Letter Report on Wireless Telecommunications Radiofrequency Safety Issues for Building Owners and Managers*, Scientific Committee 89-6 (Dec. 20, 2002) (“Available evidence and research to date indicate that adherence to the FCC guidelines will avoid adverse effects of RF exposure . . . the available evidence indicates that exposure to RF fields at levels in compliance with FCC guidelines does not lead to additional risk for cancer or adverse effects on potentially sensitive tissues”); see also WHO, *Electromagnetic fields and public health: Mobile Phones*, (June 2011), <http://www.who.int/mediacentre/factsheets/fs193/en/index.html> (“WHO EMF Fact Sheet”) (“A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use.”)

“the need to protect the public and workers from exposure to excessive RF electromagnetic fields and the need to allow communications services to readily address growing marketplace demands,”⁸⁴ the standards adopted in 1996 have been a success. A very heavy burden indeed should be upon those who seek to alter the Commission’s approach to these issues with controversial science, changes to the testing standard, or opinionated and alarmist messaging premised on familiar but still unsubstantiated theories of harm.

A. The Weight Of Scientific Evidence Compels The Conclusion That The Commission’s Existing Exposure Standards Are More Than Adequate.

CTIA encourages the Commission to continue its science-based approach to regulation and to confirm—as it has in the past—that its existing emission standards are more than adequate to protect the public.⁸⁵ This is because the science continues to support its conclusion that cell phones operating within its guidelines are safe. In short, CTIA encourages the Commission to continue its history of regulating based on facts and science.

1. The Commission’s Emission Standards were Safe When Established and Experts Agree They Remain Safe Today.

In response to the Commission’s request for comment “generally” on whether current emission standards “should be modified in any way,”⁸⁶ CTIA agrees that the consensus in the scientific community continues to be that the Commission’s standards protect human health.⁸⁷

⁸⁴ *RF Order II*, ¶ 29.

⁸⁵ *NOI*, ¶ 210 (“The purpose of this *Inquiry* is to open a science-based examination of the efficacy, currency, and adequacy of the Commission’s exposure limits for RF electromagnetic fields.”).

⁸⁶ *Id.* ¶ 219.

⁸⁷ *Id.* ¶ 210 (“[C]ontinued use of our present exposure limits is currently supported by . . . significant qualified expert organizations and governmental entities”) (citing to the NCRP’s 2003 commentary on the standards); *see also id.* ¶ 216 (“[W]e continue to have confidence in our exposure limits.”).

Although those standards were established in 1996,⁸⁸ the scientific evidence, as evaluated by federal agencies, international standard-setting bodies and other reputable entities, continues to show that they are appropriate.⁸⁹ Indeed, a recent GAO report that reviewed the available science concluded that they may be *overly* conservative, and stated that “research to date has not demonstrated adverse human health effects from RF energy from mobile phone use.”⁹⁰ A 2012 report from the UK Health Protection Agency Advisory Group on Non-ionizing Radiation similarly concluded that “[t]he accumulating evidence on cancer risks [associated with cell phones] is increasingly in the direction of no material effect of exposure.”⁹¹

Both the FDA and the Commission have echoed these same conclusions in recent years. For example, as of the date of this filing, it is the FDA’s opinion that “[t]he scientific evidence does not show a danger to any users of cell phones from RF exposure.”⁹² And, when asked for

⁸⁸ In developing its emission standards, which “represent[ed] the best scientific thought,” the Commission considered submissions from over 100 interested parties including federal agencies with particular expertise in environmental, health, and safety issues. *RF Order I*, ¶¶ 46-61.

⁸⁹ See, e.g., WHO EMF Fact Sheet (“A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use.”); *GAO Report* at 6 (“In 2001, we reported that FDA and others had concluded that research had not shown RF energy emissions from mobile phones to have adverse health effects Following another decade of scientific research and hundreds of studies examining health effects of RF energy exposure from mobile phone use, FDA maintains this conclusion.”).

⁹⁰ *GAO Report* at 6, 16-19.

⁹¹ UK Health Protection Agency Advisory Group on Non-Ionising Radiation, *Health Effects from Radiofrequency Electromagnetic Fields*, (2012), available at http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317133827077 (“UK AGNIR 2012 Report”); see also *id.* at 172 (concluding that “[t]aken together, [recent] studies have produced no compelling evidence that RF fields are genotoxic or cause robust carcinogenic effects with exposures below [the 2.0 w/kg] guideline values.”).

⁹² FDA, Radiation-Emitting Products, Children and Cell Phones (Mar. 10, 2009), available at <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CeIIPhones/ucm116331.htm> (last visited Aug. 3, 2013) (“FDA Children and Cell Phones”).

comment on emission standards for the July 2012 GAO report, the FDA confirmed that “the overall body of research has not demonstrated adverse health effects.”⁹³ As for the Commission, it advises consumers that “[t]here is no scientific evidence that proves that wireless phone usage can lead to cancer.”⁹⁴ It goes on to say that its “RF exposure standard [is] set at a level well below that at which laboratory testing indicates, and medical and biological experts generally agree, adverse health effects could occur.”⁹⁵ CTIA is unaware of any governmental authority in the world that has taken the position that the Commission’s existing emission standards are insufficient to protect the public. On the contrary, those authorities that have commented on them have consistently upheld them as appropriately protective of human health.⁹⁶

A wide range of studies, conducted in a variety of scientific disciplines using data from a number of different countries, have reached the same conclusion: Cell phones are not associated with increased health risks.⁹⁷ For example, as the WHO and the Commission have both noted,

⁹³ GAO Report at 6.

⁹⁴ FCC, *FAQs: Wireless Phones*, available at <http://www.fcc.gov/encyclopedia/faqs-wireless-phones#evidence> (last visited Aug. 6, 2013). See also Brief of the United States and the FCC as Amicus Curiae, *Murray v. Motorola*, Nos. 07-cv-1074-79, 2008 WL 7825518 at *15-16 (D.C. Apr. 8, 2008) (“FCC Murray Br.”) (“The FCC has determined that wireless phones that do comply with its RF standards are safe for use by the general public.”); *Farina*, 625 F.3d at 126 (“[T]he FCC considers all phones in compliance with its standards to be safe.”).

⁹⁵ FCC, *Specific Absorption Rate (SAR) For Cell Phones: What It Means For You*, available at <http://www.fcc.gov/cgb/consumerfacts/sar.html> (last viewed Aug. 6, 2013) (“FCC SAR Factsheet”).

⁹⁶ See, e.g., Institute of Electrical and Electronics Engineers, Inc. (IEEE), *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, at 2 (2006) (“IEEE Std C95.1-2005”) (“A lack of credible scientific and medical reports showing adverse health effects for RF exposures at or below similar exposure limits in past standards [including the 1996 IEEE recommendation of 1.6 watts/kg over 1 gram of tissue] supports the protective nature of the exposure limits.”).

⁹⁷ See WHO, *What Are Electromagnetic Fields?*, <http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html> (“In the area of biological effects and medical applications of non-ionizing radiation approximately 25,000 articles have been published over the past 30 years. . . Based on a recent in-depth review of the scientific literature, the WHO

the 2010 Interphone study, which drew on data from 13 participating countries, found no overall increased risk of glioma, meningioma or acoustic neuroma with mobile phone use of more than 10 years.⁹⁸ The Interphone study is the largest case-control study conducted to date. Similarly, a large cohort study following cell phone users in Denmark from 2001 to 2011 has found no association between cell phone use and glioma, meningioma or acoustic neuroma.⁹⁹ And the most recent cohort study in the peer-reviewed literature to examine this issue, the 2013 UK Million Women Study, confirms these findings. That study found no association between glioma or meningioma and daily use of a cell phone or use of a cell phone for more than ten years.¹⁰⁰

Studies conducted in the United States have reached similar results. In 2000, researchers conducting a hospital-based case-control study in the United States found no evidence of increased risk of brain cancer and cell phone use.¹⁰¹ In 2001, another U.S.-based study also reported no increased risk of brain cancer associated with use of wireless phones.¹⁰² More recently, a 2010 study published by the NIH found no increase in the incidence of brain or other

concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields.”).

⁹⁸ See WHO EMF Fact Sheet; OET RF Safety.

⁹⁹ See Patrizia Frei, et al., *Use of mobile phones and risk of brain tumours: update of Danish Cohort study*, 343 *BMJ* d6387 (2011); Joachim Schuz, et al., *Cellular telephone use and cancer risk: update of a nationwide Danish cohort.*, 98 *J. Nat’l Cancer Inst.* 1707 (2006).

¹⁰⁰ See V.S. Benson, et al., *Mobile phone use and risk of brain neoplasms and other cancers: prospective study*, *Int. J. Epidemiol.* (2013). The Benson publication, which drew on the 2013 UK Million Women Study, was published in June 2013. While the study noted an association for acoustic neuroma in a subset of the 800,000 women studied, the authors noted the finding could be a result of confounding. *Id.* at 8.

¹⁰¹ J.E. Muscat, et al., *Handheld cellular telephone use and risk of brain cancer*, 284 *J. Am. Med. Assoc.* 3001 (2000).

¹⁰² P.D. Inskip, et al., *Cellular-telephone use and brain tumors*, 344 *N. Engl. J. Med.* Vol. 79 (2001).

central nervous system cancers between 1996 and 2006.¹⁰³ And an independent analysis by the National Cancer Institute “has turned up no evidence to support a link between cell phone use and brain cancer in the United States.”¹⁰⁴

Perhaps most tellingly, while cell phone use has increased dramatically all over the world, there has not been any corresponding rise in the incidence of brain cancer. In fact, brain tumor rates have remained flat or even fallen slightly here in the United States.¹⁰⁵ Researchers comparing actual incidence with rates predicted by those who believe RF emissions cause brain cancer have found that actual incidence rates are at least 40 percent lower than such predictions.¹⁰⁶ The same is true in European countries where cell phones were adopted relatively early in comparison to the United States. After studying brain cancer incidence in Sweden, Finland, Denmark and Norway from 1979-2008, IARC researchers and authorities in these countries found incidence rates to be generally stable over the entire period.¹⁰⁷

A small minority may comment here and argue in favor of more stringent standards based on a few stray observations in the Interphone study and a handful of studies by Dr. Lennart Hardell, as support for the proposition that RF emissions may cause adverse health effects.

¹⁰³ See P.D. Inskip, et al., *Brain Cancer Incidence Trends in Relation to Cellular Telephone Use in the United States*, 12 *Neuro-Oncology* 1147 (2010).

¹⁰⁴ National Cancer Institute, *Cancer Research Highlights* (July 2010), available at <http://www.cancer.gov/ncicancerbulletin/072710/page3#d>.

¹⁰⁵ M.P. Little, et al., *Mobile phone use and glioma risk: comparison of epidemiological study results with incidence trends in the United States*, 344 *BMJ* e1147 (2012).

¹⁰⁶ *Id.*

¹⁰⁷ I. Deltour, et al. *Mobile phone use and incidence of glioma in the Nordic countries 1979-2008: consistency check*, 23 *Epidemiology* 301 (2012).

Government agencies and other reputable entities, however, have concluded that it is impossible to draw conclusions from these flawed, outlier findings.¹⁰⁸

In summary, the Commission should continue to be guided by the consensus in the scientific community and should regularly review that consensus through organizations like IEEE and ICNIRP.¹⁰⁹ To date, the vast weight of the scientific evidence supports the conclusion that current standards are appropriate and conservative, and no qualified expert organizations or governmental entities have suggested adopting more restrictive standards.

2. The IARC Monograph Confirms and Does Not Change the State of the Science.

The IARC monograph on RF fields, which was released after the *Notice of Inquiry* was issued, confirms rather than changes the state of the science.¹¹⁰ CTIA respects IARC's conclusions but emphasizes they are limited and easily misinterpreted. Accordingly, the Commission should view IARC's classification of RF energy as a 2B agent in its proper context and should not be unduly swayed by the classification.

The IARC Working Group classifies agents as falling in one of five categories, specifically categories 1 ("carcinogenic to humans"), 2A ("probably carcinogenic to humans"), 2B ("possibly carcinogenic to humans"), 3 ("not classifiable as to its carcinogenicity") and 4 ("probably not carcinogenic to humans"). It assigned RF fields to category 2B, which includes

¹⁰⁸ See, e.g., *GAO Report* at 8-10 (discussing the Interphone study as inconclusive and the limitations associated with epidemiological studies like Interphone); FDA, *No Evidence Linking Cell Phone Use to Risk of Brain Tumors* (Apr. 11, 2013), available at <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm212273.htm>; ICNIRP SCI REVIEW: *Epidemiologic Evidence on Mobile Phones and Tumor Risk: A Review*, 20 *Epidemiology* 639 (2009) (criticizing Hardell's studies).

¹⁰⁹ *NOI*, ¶¶ 211-15.

¹¹⁰ *Id.* ¶ 219 ("We invite parties to comment on th[e IARC] monograph if it is released during the comment period established for this Inquiry.").

“agents for which there *is limited evidence of carcinogenicity* in humans and less than *sufficient evidence of carcinogenicity* in experimental animals.”¹¹¹ In doing so, it concluded that there is limited evidence of carcinogenicity in both humans *and* animals,¹¹² and acknowledged it could not rule out chance, bias, or confounding with reasonable confidence.¹¹³

Under the IARC rubric, the Working Group concluded that there was not enough experimental or epidemiological evidence to label RF fields as even “probably carcinogenic”—let alone “carcinogenic.”¹¹⁴ In so doing, IARC—as many have done before it—rejected the notion that sufficient scientific evidence links cell phones and cancer in either humans or animals. It is true that the majority of the Working Group was unwilling to categorize RF energy as “not classifiable as to its carcinogenicity” (category 3) or “probably not carcinogenic to humans” (category 4).¹¹⁵ But that should not be surprising, as only *one* of the nearly 1,000 (968)

¹¹¹ International Agency for Research on Cancer *Monograph, Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic fields*, Vol. 102 at 30 (2013) (hereinafter “IARC *Monograph*”).

¹¹² *IARC Monograph* at 419. Notably, IARC determined there was *limited*, as opposed to less than *sufficient*, evidence of carcinogenicity in animals, thereby likely placing RF emissions “lower” in the 2B category than many other agents. *See id.* at 27.

¹¹³ *IARC Monograph* at 27, 407, 412.

¹¹⁴ As the District Court for the Northern District of California explained in *CTIA-The Wireless Ass’n v. City & Cnty. of San Francisco*, “the ‘possible’ group is a weaker group than the ‘probably carcinogenic’ group and weaker still than the ‘carcinogenic’ group; it does not take much to list something as ‘possible.’” 827 F. Supp. 2d 1054, 1060 (N.D. Cal. 2011), *aff’d*, 494 F. App’x 752 (9th Cir. 2012). Indeed, IARC uses a very literal definition of the term “possible.” *See IARC Monograph* at 30 (defining “possibly carcinogenic” as having “no quantitative significance” but being used “simply as descriptors of different levels of evidence of human carcinogenicity, with *probably carcinogenic* signifying a higher level of evidence than *possibly carcinogenic*.”) (emphasis in original).

¹¹⁵ A minority opinion found that “current evidence in humans was *inadequate*, therefore permitting no conclusion about a causal association. This minority saw inconsistency between the two case-control studies and a lack of exposure-response relationship in the INTERPHONE study. The minority also pointed to the fact that no increase in rates of glioma or acoustic neuroma was seen in a nationwide Danish cohort study, and that up to now, reported time trends

agents classified by the IARC Working Group has been deemed “probably not carcinogenic.” The 2B category itself includes 285 agents, including RF fields alongside other “possibly carcinogenic” agents like coffee and picked vegetables.¹¹⁶ Moreover, the IARC Monograph “does not specifically or exclusively consider mobile phones” or RF emissions that comply with the RF standards of either the Commission or the international community.¹¹⁷ Rather, it considers RF emissions at any level from any source, including medical devices, aviation radar systems, and whole-body security scanners, among others.¹¹⁸

The 2B classification does not represent a sea change—or indeed any change—in either the state of the science or the international consensus regarding RF emissions and human health. It is simply an acknowledgement that there is no scientific basis on which to conclude that RF emissions from wireless devices pose a risk to human health, but also no scientific basis on which to absolutely rule out any possibility of such a risk.¹¹⁹ In other words, it simply reinforces the input the Commission previously received from the international scientific community.

Notably, the IARC’s naming scheme is particularly vulnerable to distortion by alarmists. The description “possibly carcinogenic” is oftentimes misunderstood, misused and misstated by consumers and advocates alike.¹²⁰ Part of the confusion stems from the meaning of the word “possible.” In the IARC context, the term “possible” means “being something that may or may

in incidence rates of glioma have not shown a trend parallel to time trends in mobile-phone use.” *IARC Monograph* at 419.

¹¹⁶ WHO, *Agents Classified By the IARC Monographs, Volumes 1-108*, <http://monographs.iarc.fr/ENG/Classification/>.

¹¹⁷ *IARC Monograph* at 33.

¹¹⁸ *Id.* at 64-67.

¹¹⁹ See also *CTIA*, 827 F. Supp. at 1060 (stating that a “possible carcinogen” means “no one yet knows if the agent (RF radiation) is actually harmful (or not).”)

¹²⁰ See *infra* notes 194-198 and accompanying text.

not occur or be true.”¹²¹ In other words, “possible” simply means not *impossible*. As the Chief of the National Cancer Institute’s Radiation Epidemiology Branch succinctly explained: possible in the IARC context just means “maybe.”¹²² The American Cancer Society has also recognized the potential for confusion and distortion, explaining that “[i]t is critical that [IARC’s] findings be interpreted with great care [and put] into perspective” given the meaning of the 2B classification and the agents designated therein.¹²³

In summary, the IARC Monograph’s classification does not alter the scientific landscape. On the contrary, it confirms the Commission’s conclusion that there is no scientific basis on which to regulate RF emissions beyond the heat-based limits that were and still are supported by the consensus of the international scientific community.

3. Current Emission Standards and Testing Procedures are Safe and Appropriate for Children.

The Commission has also inquired as to whether its existing emission standards are appropriately protective of children.¹²⁴ The scientific consensus also supports the Commission’s existing emission standards on this point. The Commission, as well as the expert agencies on which it relies for guidance, reached this conclusion when developing those standards. No change in the state of the science warrants reconsidering them.

¹²¹ Merriam Webster Dictionary, “Possible,” <http://www.merriam-webster.com/dictionary/possible>.

¹²² National Cancer Institute, *NCI Cancer Bulletin* (June 28, 2011), available at <http://www.cancer.gov/ncicancerbulletin/062811/page4>.

¹²³ American Cancer Society, *Otis Brawley responds to IARC Classification of Cell Phones as Possibly Carcinogenic*, available at <http://pressroom.cancer.org/index.php?s=43&item=312>.

¹²⁴ *NOI*, ¶ 219 (seeking comment as to whether its existing emission standards are appropriate as they relate to device use by children).

The Commission has previously considered and rejected claims that its RF emission standards do not adequately protect children.¹²⁵ The Commission’s 1996 and 1997 RF Orders, which established the current federal safety standards for RF emissions, determined that its standards “represented the best scientific thought” on the limits necessary to protect all members of the public, including children.¹²⁶ Research into this area has continued and has confirmed that existing standards are safe for children. The UK Health Protection Agency Advisory Group on Non-Ionizing Radiation concluded in a comprehensive 2012 review and evaluation of the science that, “although a substantial amount of research has been conducted in this area, there is no convincing evidence that RF field exposure below guideline levels causes health effects in . . . children.”¹²⁷ Significantly, this report applied the ICNIRP and IEEE’s 2.0 W/kg SAR standard (a more permissive standard than the current U.S. standard) and still found that cell phones were safe.

Since the Commission established its current emission standards, it and other agencies have similarly stated that the existing standards are safe for children. In 2001, EMR Network, a non-profit group that advocates for greater regulation of RF emissions, sought to reopen the RF

¹²⁵ *RF Order II*, ¶ 26 (noting the Cellular Phone Taskforce sought revision of the limits “to allow for different rates of absorption among members of the public,” including children); *see also* Cellular Phone Taskforce Petition for Reconsideration at 1-8, ET Docket No. 93-62 (Sept. 3, 1996); Ad-hoc Association of Parties Concerned About the FCC’s Radiofrequency Health and Safety Rules Petition for Reconsideration, ET Docket No. 93-62 (Sept. 9, 1996).

¹²⁶ *RF Order I*, ¶ 158; *see also id.* ¶ 62. As far back as 1991, when it developed the exposure standard of 1.6 W/kg, IEEE stated that: “The members of Subcommittee 4 believe the recommended exposure levels should be safe for all, and submit as support for this conclusion the observation that no reliable scientific data exist” that, among other things, “certain subgroups (e.g., infants, the aged, the ill and disabled) of the population are more at risk than others.” IEEE, *IEEE Standard for Safety Levels With Respect to Human Exposure to Radiofrequency Electromagnetic Fields, 3 KHz to 300 GHz*, at 23 (1991) (“IEEE C.95.1-1991”).

¹²⁷ UK AGNIR 2012 Report at 4.

rulemaking by alleging, *inter alia*, that the standards did not protect children.¹²⁸ EMR Network maintained that children and the sick “are more susceptible to RF exposures,” and as such, a “multi-tiered standard, applicable only to those populations,” should be considered.¹²⁹ The Office of Engineering and Technology (“OET”) denied EMR Network’s petition, and on appeal the full Commission affirmed OET’s denial.¹³⁰ In addition, in its fact sheet on the issue of wireless devices and health concerns, the Commission states that, with respect to children, “currently no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses.”¹³¹ The FDA has also concluded that “[t]he scientific evidence does not show a danger to any users of cell phones from RF exposure, including children and teenagers.”¹³²

The conservative nature of the Commission’s current emission standards and testing regime ensures that children are appropriately protected. The emission standard’s fifty-fold safety factor “accommodates a variety of variables such as different physical characteristics,”¹³³ thereby accounting for adults and children alike. While a publication two years ago by Dr. Om Gandhi claimed that using SAM for SAR testing understates SAR, particularly in children,¹³⁴

¹²⁸ EMR Network Petition for Inquiry, *In re Environmental Effects of Radiofrequency Radiation: Petition for Inquiry to Consider Amendment of Rules in Parts 1 and 2* (Sept. 25, 2001).

¹²⁹ *Id.* at 12.

¹³⁰ *In re EMR Network Petition for Inquiry To Consider Amendment of Parts 1 and 2 Regarding Environmental Effects of Radiofrequency Radiation*, Order, 18 FCC Rcd 16822, 16825 (2003).

¹³¹ See FCC, *Wireless Devices and Health Concerns*, available at <http://www.fcc.gov/guides/wireless-devices-and-health-concerns> (last visited Aug. 6, 2013) (“FCC Wireless Devices and Health Concerns”).

¹³² See FDA Children and Cell Phones.

¹³³ *NOI*, ¶ 236.

¹³⁴ Gandhi et al., *Exposure Limits: The underestimation of absorbed cell phone radiation, especially in children*, *Electromagnetic Biology and Medicine*, Early Online, 1-18 (2011).

this publication is at odds with the weight of studies that have confirmed that SAR testing results are conservative for the general population, including children.¹³⁵ One study conducted by an international task force of experts lead by Dr. Brian Beard of the FDA compared numerical computation of SAR using SAM- and MRI-based models of normal adults and found that “SAM produced a higher SAR in the head than the anatomically correct head models. Also the larger (adult) head produced a statistically significant higher peak SAR . . . than did the smaller (child) head for all conditions of frequency and position.”¹³⁶ Thus, not only is SAM conservative compared to other models, but SAR values based on SAM may be *more* conservative for children than adults. Thus, there are no science-based reasons to tighten either the emission standards for, or the testing methodology associated with, children.

B. The Best Available Science Indicates that the IEEE and ICNIRP 2.0 W/kg Standard Also Adequately Protects Human Health.

In response to the Commission’s request for comment on the emission standards recently adopted by other national and international standard-setting organizations,¹³⁷ including the IEEE and ICNIRP, CTIA notes that the GAO has concluded that the current RF emission standards “may not reflect the latest evidence on the thermal effects of RF energy exposure.”¹³⁸ The

¹³⁵ See, e.g., A. Hadjem et al., *Analysis of Power Absorbed by Children’s Head as a Result of New Usages of Mobile Phone*, 52 IEEE Trans. Electromagn. Compat., 812-19 (2010); A. Peyman et al., *Dielectric properties of tissues; variation with age and their relevance in exposure of children to electromagnetic fields; stage of knowledge*, Prog Biophys Mol Bio. (2011); Christ et al., *Age-dependent tissue-specific exposure of cell phone users*, 55 Phys Med Biol. 1767 (2010).

¹³⁶ Beard et al., *Comparisons of computed mobile phone induced SAR in the SAM phantom to that in anatomically correct models of the human head*, 48 IEEE Trans. Electromagn. Compat. 397 (May 2006).

¹³⁷ NOI, ¶ 219 (“[W]e solicit comment from national and international standards organizations (specifically including NCRP and IEEE) on the currency of their exposure limits and supporting documents in light of recent research....”).

¹³⁸ GAO Report at 27.

Commission developed those regulations and standards in 1996 based on input from federal health and safety agencies as well as the recommendations of IEEE, which at that time proposed a 1.6 W/kg SAR standard.¹³⁹ In 2006, however, IEEE published an updated recommendation that emissions be limited to 2.0 W/kg. According to IEEE, “improved RF energy research and a better understanding of the thermal effects of RF energy exposure on animals and humans, as well as a review of the available scientific research, led to the change in recommended RF energy exposure limit.”¹⁴⁰ IEEE’s new recommended limit brought it into harmony with ICNIRP’s 1998 recommendations, which have been adopted by more than 115 countries and territories in the European Union and elsewhere.¹⁴¹ Both of these recommendations call for a limit of 2.0 W/kg averaged over 10 grams of tissue, which according to IEEE “represents a scientific consensus on RF energy exposure limits.”¹⁴² While the updated IEEE and ICNIRP recommendations are somewhat less restrictive than the Commission’s current standards,¹⁴³ the organizations that have “expertise in the health field” have not suggested that there is a science-

¹³⁹ See *RF Order I*, ¶ 28; see also Section II.B, *supra*.

¹⁴⁰ *GAO Report* at 17.

¹⁴¹ J. Rowley at al., *Radiofrequency exposure policies relevant to mobile communication devices and antenna sites.*, BioEM (June 10-14, 2013), Thessaloniki, Greece. Countries following the ICNIRP standard include Australia, Austria, Brazil, Czech Republic, Croatia, Denmark, Estonia, France, Greece, Hungary, Ireland, Latvia, Luxemburg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, South Africa, South Korea, Spain, Sweden, Taiwan, United Kingdom, and Venezuela. See Power Point: Shaiela Kandel, ELF Policies Worldwide – Protection of General Public, at the WHO Workshop, “Developing and Implementing Protective Measures for ELF EMF” (Jun. 20-21, 2007) available at http://www.who.int/peh-emf/meetings/elf_emf_workshop_2007/en/index1.html.

¹⁴² *GAO Report* at 17. See also IEEE Std C95.1-2005 at 86 (“[T]he widespread adoption of the ICNIRP guidelines as recommended by the World Health Organization demonstrates scientific consensus on RF safety limits. In summary, the scientific judgment of this committee [is] in agreement with the views of other independent expert groups.”).

¹⁴³ See *id.* at 79 (“This revision of IEEE Std C95.1 maintains many of the characteristics of the previous standard but also contains a number of differences from earlier editions that address new dosimetry findings and that simplify the use and application of the standard.”).

based reason for changing the IEEE and ICNIRP standards.¹⁴⁴ Accordingly, the Commission has solicited comments on “the scientific basis for such changes as well as the advantages and disadvantages . . . of doing so,”¹⁴⁵ including the “potential for international harmonization.”¹⁴⁶

Harmonizing the existing emission standards would be advantageous for a number of reasons. To begin, harmonization would be consistent with the longstanding federal mandate that agencies apply “voluntary consensus standards in lieu of government-unique standards except where inconsistent with law or otherwise impractical.”¹⁴⁷ The Office of Management and Budget has determined that harmonizing domestic standards with foreign standards generally tends to “decrease the cost of goods,”¹⁴⁸ “decrease . . . the burden of complying with agency regulation,”¹⁴⁹ “encourage long-term growth for U.S. enterprises,”¹⁵⁰ and “promote efficiency

¹⁴⁴ *NOI*, ¶ 219 (“[O]rganizations with expertise in the health field such as the FDA have not suggested that there is a basis for changing our standards or similar standards applied in other parts of the world.”).

¹⁴⁵ *Id.* ¶ 219; *see also id.* ¶ 213 (“We seek to examine the bases for these determinations by other qualified and responsible expert bodies and ensure that there is a justification for our differing conclusions or adjust those conclusions accordingly.”).

¹⁴⁶ *Id.* ¶ 214 (“In the event that the Commission may propose to adopt new exposure limits in this proceeding, we seek comment on the preference, costs, and benefits of adopting any of the present or future standards being developed by IEEE, ICNIRP, or possibly by NCRP, keeping in mind the potential for international harmonization, the adequacy of supporting documentation, the differences in process and openness in development, and the technical completeness of each standard.”).

¹⁴⁷ United States Office of Management and Budget, *Circular A-119 Revised* § 1 (Feb. 10, 1998), available at http://www.whitehouse.gov/omb/circulars_a119 (last visited Aug. 3, 2013); *see also id.* § 6 (“All federal agencies must use voluntary consensus standards in lieu of government-unique standards in their procurement and regulatory activities, except where inconsistent with law or otherwise impractical. . . . ‘Impractical’ includes circumstances in which such use would fail to serve the agency’s program needs; would be infeasible; would be inadequate, ineffectual, inefficient, or inconsistent with agency mission; or would impose more burdens, or would be less useful, than the use of another standard.”).

¹⁴⁸ *Id.* § 2(a).

¹⁴⁹ *Id.*

¹⁵⁰ *Id.* § 2(c).

and economic competition.”¹⁵¹ Moreover, applying voluntary consensus standards “can increase productivity and efficiency in Government and industry, expand opportunities for international trade, conserve resources, improve health and safety, and protect the environment.”¹⁵²

These benefits of harmonization are particularly apt in the current context. For example, the GAO has noted that maintaining separate emission standards may “result in additional costs” and “affect phone design in a way that could limit performance and functionality.”¹⁵³ And, because many manufacturers’ phones are sold in multiple countries, “manufacturers have to develop and test phones based on different exposure limits, which can require additional resources and slow the time it takes to get new phones into the market.”¹⁵⁴ Moreover, bringing Commission limits into line with those of the majority of the world would reduce unwarranted fears and “controversy connected with RF fields.”¹⁵⁵ Indeed, the WHO’s International EMF Project advocates “harmonization of . . . standards worldwide” because it is in large part the “disparities in EMF standards” themselves that have caused “increasing public anxiety....”¹⁵⁶

¹⁵¹ *Id.*

¹⁵² *Id.* § 6(e).

¹⁵³ *GAO Report* at 19; *see also id.* at 27 (noting that more restrictive RF emission standards in the United States imposes “additional costs on manufacturers and limitations on mobile phone design”).

¹⁵⁴ *Id.*; *see also* WHO, *Framework for Developing Health-Based EMF Standards*, at 7, available at http://www.who.int/peh-emf/standards/EMF_standards_framework%5b1%5d.pdf (last visited Aug. 6, 2013) (“WHO Framework for EMF Standards”) (“[D]isparities between national limits and international guidelines can . . . provide a challenge to manufacturers and operators of communications systems who need to tailor their products to each market.”).

¹⁵⁵ Kenneth R. Foster, *Exposure Limits for Radiofrequency Energy: Three Models*, available at http://www.who.int/peh-emf/meetings/day2Varna_Foster.pdf (also noting that harmonization would “provide a consistent level of health protection to different people around the world [and] also minimize some practical problems [associated with implementation].”).

¹⁵⁶ WHO International EMF Project, *Electromagnetic Fields – Standards & Guidelines*, available at <http://www.who.int/peh-emf/standards/en/> (last visited Aug. 3, 2013) (“Because disparities in EMF standards around the world has caused increasing public anxiety about EMF

“[L]arge disparities between national limits and international guidelines” not only “increase public anxiety,” but also “foster confusion for regulators and policy makers.”¹⁵⁷ What is more, harmonization would facilitate global research efforts¹⁵⁸ and cooperation in the field.¹⁵⁹ The International EMF Project’s model legislation and regulations recommend adoption of the currently-applicable ICNIRP standards, which includes the 2.0 watts/kg over 10 g of tissue standard for the general population exposure to RF emitted from mobile phones.¹⁶⁰

Harmonizing existing science-based RF emission standards would not be “impractical,” let alone “inconsistent with law.”¹⁶¹ To the contrary, there is a clear consensus in the scientific community that “exposures below the limits recommended in the ICNIRP international

exposures from the introduction of new technologies, WHO commenced a process of harmonization of [EMF] standards worldwide. With 54 participating countries and 8 international organizations involved . . . , it provides a unique opportunity to bring countries together to develop a framework for harmonization of EMF standards and to encourage the development of exposure limits and other control measures that provide the same level of health protection to all people.”).

¹⁵⁷ WHO Framework for EMF Standards at 7.

¹⁵⁸ As the WHO has acknowledged, “[i]f a common EMF exposure were found to cause a disease, it would likely be a rare one. Demonstrating such a relationship would require complex population studies” from across the globe. WHO, *EMF Project Strategy for Dealing with EMF Risk Brochure*, available at, http://www.who.int/peh-emf/about/emf_brochure_webversion.pdf.

¹⁵⁹ “Some of the disparities in EMF standards around the world have arisen from the use of only national databases, different criteria for accepting or assessing individual studies, varying interpretations of the scientific data or different philosophies for public health standards development. Such differences in EMF exposure guidelines might reflect, in part, deficiencies in communications among scientists between different regions as well as certain social difference. . . . These factors [among others] have motivated the World Health Organization (“WHO”) to build a Framework for developing health-based EMF exposure standards using a rational scientifically-driven process.” WHO Framework for EMF Standards at 7

¹⁶⁰ WHO, *Model Legislation for Electromagnetic Protection*, http://www.who.int/peh-emf/standards/EMF_model_legislation_2007.pdf

¹⁶¹ United States Office of Management and Budget, *Circular A-119 Revised* § 6 (Feb. 10, 1998), available at http://www.whitehouse.gov/omb/circulars_a119 (last visited Aug. 3, 2013).

guidelines do not appear to have any known consequence on health.”¹⁶² Like the current Commission standard, the ICNIRP-recommended emission standard for the general population is set at 50 times below the level at which biological impacts are observed, thus providing a significant safety margin.¹⁶³

C. Requiring Mandatory Disclosures Or Warnings Regarding RF Safety Or Encouraging Consumers To Limit Exposure To RF Emissions Would Be Unnecessary.

Given the lack of scientific evidence establishing a causal link between cell phone use and harm to human health, and the information already available to consumers,¹⁶⁴ there is no basis for requiring disclosures or warnings on RF safety, or encouraging consumers to limit their exposure to RF emissions. As the Commission considers whether to do so,¹⁶⁵ it should consider the potential for misleading consumers into believing that mobile devices are unsafe, which would contradict its position that they are safe, and the experiences of the state and local governments that have tried to do so, which forecasts the scientific, public policy and legal issues that the Commission would face.

1. Information Already Available to Consumers Is Accurate and Adequate.

A wide variety of information on the issue of RF safety is already available to consumers. As the *Notice of Inquiry* itself notes, the Commission has “continually provided information to the public regarding radiofrequency electromagnetic fields, including OET Bulletins, CGB

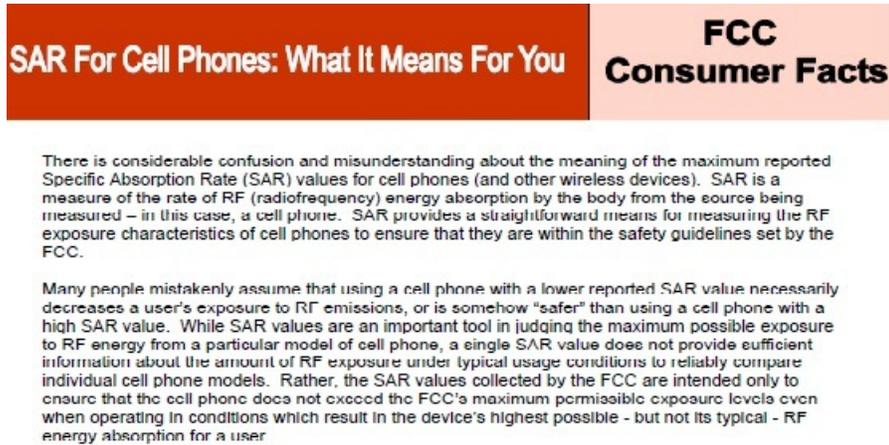
¹⁶² WHO International EMF Project, *Electromagnetic Fields – Standards & Guidelines*, available at <http://www.who.int/peh-emf/standards/en/> (last visited Aug. 6, 2013).

¹⁶³ See WHO, *What Are Electromagnetic Fields?*, <http://www.who.int/peh-emf/about/WhatisEMF/en/index4.html> (“ICNIRP applies a safety factor of 10 to derive occupational exposure limits, and a factor of 50 to obtain the guideline value for the general public.”)

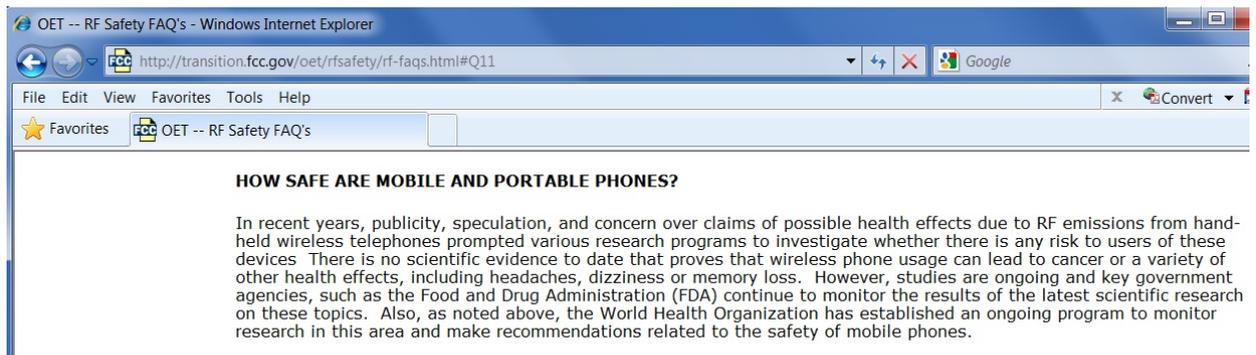
¹⁶⁴ *NOI*, ¶ 216.

¹⁶⁵ *Id.* ¶¶ 234, 238.

Consumer Guides and *The Local Official's Guide*.”¹⁶⁶ For example, the Commission’s SAR Consumer Guide explains what SAR means and how it can be misinterpreted; how SAR testing is conducted and how results are reported; and what SAR does not show.¹⁶⁷



OET’s RF Safety FAQs further explain that “[t]here is no scientific evidence to date that proves that wireless phone usage can lead to cancer or a variety of other health effects, including headaches, dizziness or memory loss.”¹⁶⁸

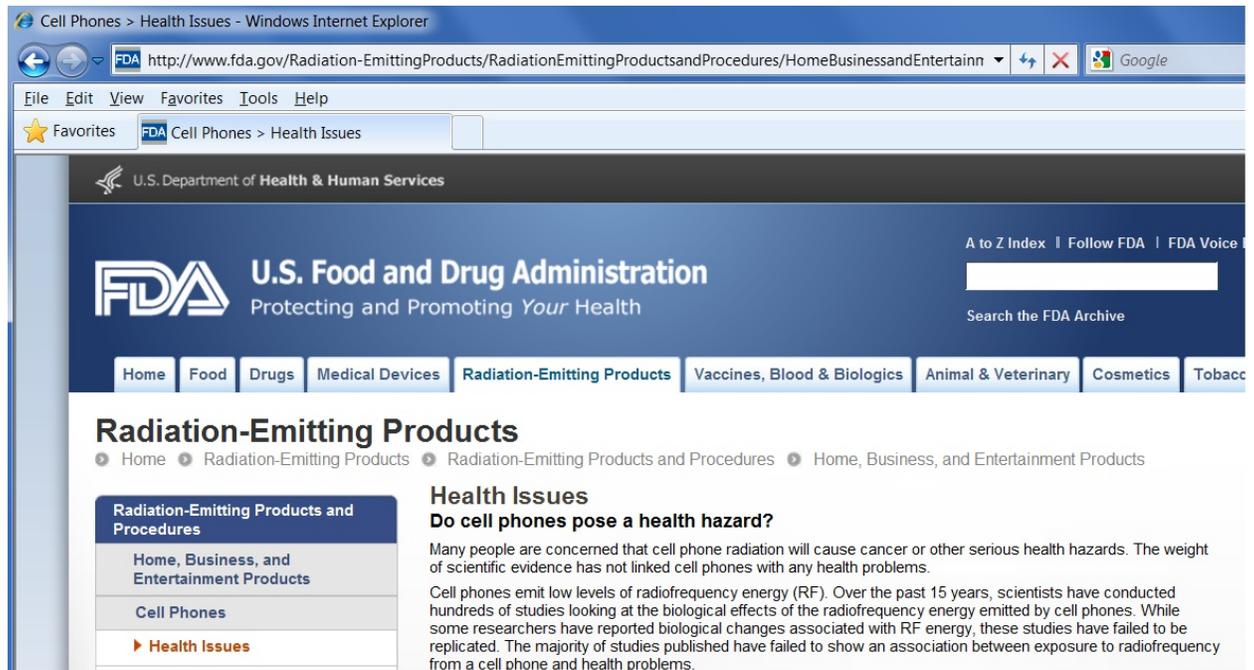


¹⁶⁶ *Id.* ¶ 231.

¹⁶⁷ See FCC SAR Factsheet.

¹⁶⁸ FCC OET, *Radio Frequency Safety*, <http://transition.fcc.gov/oet/rfsafety/rf-faqs.html#Q11> (last viewed July 22, 2013) (“OET RF Safety”).

The FDA also provides resources explaining that “the weight of scientific evidence has not linked cell phones with any health problems,”¹⁶⁹ and that “scientific evidence does not show a danger to any users of cell phones from RF exposure, including children and teenagers.”¹⁷⁰



¹⁶⁹ FDA, *Radiation-Emitting Products, Health Issues: Do Cell Phones Pose a Health Hazard?*, <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CeIIPhones/ucm116282.htm> (last viewed July 22, 2013).

¹⁷⁰ FDA Children and Cell Phones.



Consistent with the free marketplace of ideas and the competition that characterizes the wireless market, carriers and manufacturers voluntarily offer information in their own voices.¹⁷¹ The four major wireless carriers all provide RF information on their websites and elsewhere. Verizon Wireless provides information on what experts say about cell phone safety and RF emissions, summarizing and linking to resources from the FDA, the Commission, the National Cancer Institute, and the WHO.¹⁷² AT&T also cites the FDA and the Commission, provides information from the Commission on practices that limit consumer exposure to RF emissions, notes that the Commission does not encourage such practices, and provides links to a few groups

¹⁷¹ See GAO Report at 26 (noting that such information is voluntarily provided, “as there are no federal requirements that manufacturers provide any specific information to consumers about the health effects of mobile phone use.”).

¹⁷² Verizon Wireless, *RF Emissions FAQs*, http://aboutus.verizonwireless.com/commitment/safety_security/RF_Emissions_FAQs.html (last viewed July 21, 2013).

who state the opposing viewpoint that cell phones pose a health risk.¹⁷³ Sprint directs consumers to the Commission’s website on RF Safety.¹⁷⁴ T-Mobile also quotes from Commission and FDA resources and includes information on how consumers may limit exposure to RF emissions.¹⁷⁵

Manufacturers’ offerings are varied and evolving, reaching consumers through websites, instruction manuals and even device software. For example, Motorola’s website notes that “expert panels and government organizations around the world . . . have consistently concluded that RF products that meet internationally recognized safety standards for exposure to radio waves pose no established health risk.”¹⁷⁶ The iPhone’s software contains RF information that consumers may access on the device.¹⁷⁷ And the instruction manual accompanying Samsung’s Galaxy S4 discusses recent studies on RF energy, including the 2010 Interphone study, and states that “[t]he scientific community at large therefore believes that the weight of scientific evidence does not show an association between exposure to Radio Frequency (RF) from cell phones and

¹⁷³ AT&T, *Information on Wireless Telephones and Health*, <http://www.att.com/shop/wireless/telephonehealth.html#fbid=FwplyrXMFeG> (last viewed July 21, 2013).

¹⁷⁴ Sprint, *RF Emissions from Wireless Telecommunications Facilities*, http://www.sprint.com/responsibility/ourcustomers/health_concerns/rf-emissions-from-wireless-telecommunications-facilities.html (last viewed July 21, 2013).

¹⁷⁵ T-Mobile, *Radio Frequency Safety*, http://www.t-mobile.com/Company/CompanyInfo.aspx?tp=Abt_Tab_CompanySafety&tsp=Abt_Sub_Radio_Frequency_Safety (last viewed July 21, 2013).

¹⁷⁶ Motorola, *Wireless Communications and Health*, <http://responsibility.motorola.com/index.php/consumers/wirelesscommhealth/> (last viewed July 21, 2013).

¹⁷⁷ Apple, *iPhone User Guide*, at 147, http://manuals.info.apple.com/en_US/iphone_user_guide.pdf (last viewed July, 21, 2013) (directing consumers seeking information about radio signals and steps they may take to reduce exposure to access information through their iPhone).

adverse health outcomes.”¹⁷⁸ Furthermore, the Mobile Manufacturers Forum has voluntarily set up “SAR Tick,” a website providing additional information and necessary context on SAR and a voluntary uniform disclosure on SAR compliance.¹⁷⁹ This voluntary industry effort explains what SAR does and does not mean, links to RF reviews conducted by other governments and international organizations, and provides information from the Commission, FDA and the WHO on ways to limit exposure to RF emissions.¹⁸⁰

Though the *Notice of Inquiry* characterizes these offerings as “inconsisten[t],”¹⁸¹ the underlying message to consumers is in fact both consistent and accurate: that federal authorities tasked with responsibility for RF issues believe that the scientific evidence does not demonstrate that wireless phone use causes cancer or other health problems.¹⁸² While carriers and manufacturers may present information in different ways or in different terms, their fundamental message is correct. Given the general message that federal authorities believe RF standards are sufficiently protective—which is true—there is no need for a government-mandated disclosure or warning.

¹⁷⁸ Samsung, *Galaxy S4 User Manual*, at 362, available at <http://support.t-mobile.com/docs/DOC-5889> (last viewed July 21, 2013).

¹⁷⁹ *SAR Tick*, <http://www.sartick.com/sar-tick.cfm>.

¹⁸⁰ *See id.*

¹⁸¹ *NOI*, ¶ 234 (“We agree that there is inconsistency in the supplemental information voluntarily provided in the manuals provided with portable and mobile devices.”).

¹⁸² *See GAO Report* at 25 (noting federal agency information offerings on RF differ because of their differing missions, but the overall message is “broadly consistent”); *id.* at 27 (noting manufacturer instruction manuals “are consistent with how the devices were tested and certified by the FCC”).

The conservative nature of the Commission’s RF regime also obviates the need for consumer advisories.¹⁸³ The Commission’s bifurcated approach to RF standards sets a higher standard for “occupational exposure,” and a more restrictive standard for “general population exposure,” which is the relevant standard that applies to consumers.¹⁸⁴ The present standards incorporate a safety factor “50 times below the level at which adverse biological effects have been observed in laboratory animals as a result of tissue heating from RF exposure.”¹⁸⁵ The Commission’s testing protocol is also designed to be conservative.¹⁸⁶ And, as it stands, the Commission’s RF emission standards are more conservative than those currently recommended

¹⁸³ If the Commission were to harmonize exposure limits with the latest recommendations of ICNIRP and the IEEE, CTIA’s position on consumer advisories would not change. ICNIRP’s recommended general population standard of 2.0 Watts/kg over 10 grams of tissue is also designed to be conservative and also incorporates a fifty-fold safety factor. *See* WHO, *What Are Electromagnetic Fields?*, <http://www.who.int/peh-emf/about/WhatisEMF/en/index4.html> (“ICNIRP applies a safety factor of 10 to derive occupational exposure limits, and a factor of 50 to obtain the guideline value for the general public.”).

¹⁸⁴ *RF Order II*, ¶ 111 (noting guidelines adopt “the most conservative aspects of the ANSI/IEEE and NCRP recommended [standards]”).

¹⁸⁵ *NOI*, ¶ 236; *see also* FCC OET, *Questions and Answers About Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields*, OET Bulletin 65, 4th ed. at 13 n.10 (Aug. 1999), available at http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf (noting the SAR limits incorporate “appropriate safety factors”); Declaration of Ronald C. Petersen, Exhibit 1 at 9, *CTIA-The Wireless Association v. The City and County of San Francisco*, 827 F. Supp. 2d 1054 (N.D. Cal. 2011) (3:10-cv-03224) (noting the emission standards incorporate a safety factor of 50); IEEE Standards Coordinating Committee 28 on Non-Ionizing Radiation Hazards, *IEEE Standard for Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 400 GHz*, at 28 (Sept. 26, 1991) (recommending the RF emission standard includes an additional safety factor above the then-current ten-fold safety factor).

¹⁸⁶ *NOI*, ¶ 245 (“The SAM does not model children, tissue layers, or a hand holding the device but SAM was designed to be conservative relative to these factors.”).

by international standard-setting bodies.¹⁸⁷ Taken together, these features ensure that the current limits are sufficiently protective of the public and render a mandatory warning unnecessary.¹⁸⁸

Besides the fact that a warning would be unnecessary, a mandatory RF disclosure would be unwise as a matter of law and policy. Federal agencies must remain sensitive to the adverse consequences that unnecessary warnings can create, as “warnings about dangers with less basis in science or fewer hazards could take attention away from those that present confirmed, higher risks.”¹⁸⁹ The FDA has also recognized the dangers of “over-warning.”¹⁹⁰ Consumer advisories and warnings thus should be reserved for known dangers and situations where concrete steps can be taken to avert a known threat. Otherwise, mandatory disclosures or advisories could confuse

¹⁸⁷ GAO Report at 17-18.

¹⁸⁸ CTIA’s position on mandatory consumer disclosure extends to the Commission’s proposal to give consumers an “informed choice to behave in such a manner that may result in somewhat exceeding the exposure limits,” *NOI*, ¶ 223, as well as the proposal to “better enable consumers to correlate the make and model number of their device to an FCC ID,” *id.* ¶ 235. There is no need for consumers to evaluate and weigh such information as the current limits adequately protect the public.

¹⁸⁹ *Brooks v. Howmedica, Inc.*, 273 F.3d 785, 796 (8th Cir. 2001) (finding plaintiff’s failure to warn claim against pharmaceutical manufacturer preempted by the Medical Device Amendments to the Food, Drug and Cosmetics Act); *see also Doe v. Miles Laboratories, Inc., Cutter Laboratories Div.*, 927 F.2d 187, 194 (4th Cir. 1991) (“If pharmaceutical companies were required to warn of every suspected risk that could possibly attend the use of a drug, the consuming public would be so barraged with warnings that it would undermine the effectiveness of these warnings.”).

¹⁹⁰ *See Supplemental Applications Proposing Labeling Changes for Approved Drugs, Biologics, and Medical Devices*, 73 Fed. Reg. 49603, 49605-06 (Aug. 22, 2008) (noting overwarning “may deter appropriate use of . . . products, or overshadow more important warnings”); FDA, *Write it Right: Recommendations for Developing User Instruction Manuals for Medical Devices Used in Home Health Care*, at 7, available at <http://www.fda.gov/downloads/MedicalDevices/.../ucm070771.pdf> (“Note: Overwarning has the effect of not warning at all. The reader stops paying attention to excess warnings.”); FDA, Draft Guidance, *Brief Summary: Disclosing Risk Information in Consumer Directed Print Advertisements*, at 4 (Jan. 2004), available at <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/ucm069984.pdf> (“[O]mitting less serious, infrequent risks from patient labeling may actually increase the usefulness of this labeling for its audience by making the more important risks stand out more clearly.”)

or alarm consumers about risks that do not exist, or worse yet numb them to warnings about risks that do exist.¹⁹¹

Introducing a mandatory RF disclosure would bring these problems into stark relief. Given federal authorities' repeated pronouncements that the Commission's current emission standards adequately protect the public, a mandatory RF advisory would, at the very least, confuse consumers because the very existence of such an advisory would be perceived as a warning, and would contradict the federal government's message that wireless phones are safe. Even if worded carefully to avoid specifying any health risks associated with cell phone use, a mandatory disclosure would needlessly undermine consumer confidence in cell phones.¹⁹² As studies have found, consumers are likely to latch on to worst-case scenarios when presented with a diverse amount of information on the perceived risk.¹⁹³ Thus, providing "more" information to consumers through the form of a mandatory RF advisory may cause them to mistakenly view cell phone RF emissions as a health risk, despite the wide availability of information to the contrary.

Accordingly, even an attempt to promote "information" like the WHO's classification of RF as in group 2B would be perilous. The public is particularly sensitive to warnings about

¹⁹¹ See Lars Noah, *The Imperative to Warn: Disentangling the "Right to Know" From the "Need to Know" about Consumer Product Hazards*, 11 Yale J. on Reg. 293, 296 (1994) (noting substantial costs are associated with "the overuse of warnings, particularly the twin dangers of diluting the impact of more serious warnings and prompting counterproductive consumer behavior in response to overly alarming warnings about relatively insignificant risks.").

¹⁹² See Noah, *supra* note 191 at 365 (noting that "references to completely unspecified health risks" in certain federally-mandated warnings are ambiguous and "will undermine consumer confidence").

¹⁹³ See, e.g., Viscusi, K., *Alarmist Decisions with Divergent Risk Information*, 107 *Economic Journal* 1657 (1997).

cancer,¹⁹⁴ and is likely to misunderstand IARC’s 2B classification of RF energy without the proper context.¹⁹⁵ As San Francisco discovered when defending its Cell Phone “Right-to-Know” ordinance, using the words “radiation” or “cancer” or quoting the IARC’s “possibly carcinogenic” classification without further clarification or context can be misleading and alarmist.¹⁹⁶ Even “a truthful warning of an uncertain or remote danger may mislead the consumer into misjudging the dangers.”¹⁹⁷ Given the Commission’s conservative safety standards and the scientific consensus concerning the sufficiency of these standards, any consumer concern induced by a mandatory RF warning would be unjustified. As a result, the value of such a warning is dubious at best.¹⁹⁸

Moreover, creating an appropriate, useful, non-misleading, uniform RF disclosure or advisory would be difficult, if not impossible. Any SAR-based disclosure requirement would be

¹⁹⁴ See Noah, *supra* note 191 at 385 (1994). This may be because consumers are particularly susceptible to believe worst case scenarios with respect to risk and more apt to weigh negative information more heavily. See, e.g., Ito, et al., *Negative Information Weighs More Heavily on the Brain: The Negativity Bias in Evaluative Categorizations*, 75 *Journal of Personality and Social Psychology* 887 (1998); Viscusi, *supra* note 193.

¹⁹⁵ See Noah, *supra* note 191 (noting overreaction “is especially likely in the case of warnings about statistically remote risks of dreaded diseases such as cancer”); Liz Szabo & Mary Brophy, *WHO: Cellphone Possibly Carcinogenic*, USA Today (June 1, 2011), available at http://usatoday30.usatoday.com/news/world/2011-05-31-Cellphones-cancer_n.htm (“When we as consumers hear ‘possibly carcinogenic,’ we freak,” says Otis Brawley, chief medical officer at the American Cancer Society. “But the data is not at all certain and needs further study.”).

¹⁹⁶ See *CTIA*, 827 F. Supp. 2d at 1063 (“A second misleading omission is the failure to explain the limited significance of the WHO ‘possible carcinogen’ classification. The uninitiated will tend to misunderstand this as more dangerous than it really is because they will go uninformed that RF energy falls short of the ‘carcinogenic to humans’ category and even short of the ‘probably carcinogenic to humans’ category.”).

¹⁹⁷ *Dowhal v. SmithKline Beecham Consumer Healthcare*, 88 P.3d 1, 14 (Cal. 2004).

¹⁹⁸ See Noah, *supra* note 191 at n.440 (“[W]e must question the value of labels warning about substances whose toxicity is far from certain (e.g., saccharin). If not ignored, such labels are likely to confuse people or raise their anxiety level, without providing much information relevant to decision making.”) (citations omitted).

problematic. The Commission itself has recognized this, noting that SAR is not a useful consumer education metric¹⁹⁹ and is highly misleading when used out of context.²⁰⁰ Given SAR’s limitations, a disclosure premised on SAR can only mislead the public and incite alarm – a fact that San Francisco effectively conceded when it amended its original cell phone “right to know” ordinance to remove references to maximum SAR.²⁰¹ Likewise, any efforts to enable consumers to correlate their devices to an FCC ID for the sole purpose of accessing SAR information would also be likely to mislead or confuse consumers.²⁰² The benefits of such an exercise would be illusory because the minor differences in SAR among variations of handsets are not meaningful in terms of possible harm. Indeed, the *Notice of Inquiry* itself recognizes the potential for consumer confusion by pointing consumers to only the SAR information on the Commission’s website.²⁰³

Finally, government-mandated advisories or warnings connected with approved phones confront a First Amendment minefield. Courts have repeatedly found that governments may not

¹⁹⁹ *NOI*, ¶ 234 (“[T]he maximum SAR value that is normally supplied is not necessarily a reliable indicator of typical exposure and may not be useful for comparing different devices.”).

²⁰⁰ SAR measurements are properly used to demonstrate compliance; overemphasizing them encourages their misuse as a comparative safety measure, which renders them highly misleading. *See* FCC SAR Factsheet (“Many people mistakenly assume that using a cell phone with a lower reported SAR value necessarily decreases a user’s exposure to RF emissions While SAR values are an important tool . . . , a single SAR value does not provide sufficient information about the amount of RF exposure under typical usage conditions to reliably compare individual cell phone models”); FCC Wireless Devices and Health Concerns (“Some parties recommend that you consider the reported SAR value of wireless devices. However, comparing the SAR of different devices may be misleading.”).

²⁰¹ *See* Second Amended Complaint of CTIA–The Wireless Association ¶¶ 5-6, *CTIA*, 827 F. Supp. 2d at 1054.

²⁰² *NOI*, ¶ 235.

²⁰³ *Id.* (“ We recognize that it is not always easy for some to access the SAR information, because the FCC ID is not tied to the model number or marketing name of the device, and there may be multiple records for each FCC ID, *potentially creating confusion*) (emphasis added).

compel warnings—or “advisories” that will be perceived as warnings—in the absence of evidence establishing an actual harm.²⁰⁴ Thus, in order to mandate specific statements and cautions on RF safety by wireless service providers and cell phone retailers, the Commission would have to “demonstrate that the harms it recites are real and that its restriction will in fact alleviate them to a material degree.”²⁰⁵ But given the existing scientific evidence, such a demonstration simply cannot be made. The agency’s existing RF rules were intended to protect public health and were intentionally set at a level that obviated the need for consumer information about exposure. As discussed above, the overwhelming scientific consensus is that they are effective in meeting those goals, which means any alleged “harms” that parties may urge the Commission to address through warnings are simply illusory.²⁰⁶ Thus, were the Commission to craft mandatory advisory in spite of the scientific consensus on RF emissions, its advisory would run the risk of being an empty piece of useless information,²⁰⁷ or opinion, rather than

²⁰⁴ See, e.g., *CTIA-The Wireless Ass'n*, 494 F. App'x 752 (9th Cir. 2012) (enjoining fact sheet on health effects of cell phones where city conceded “there is no evidence of cancer caused by cell phones); *Video Software Dealers Ass'n*, 556 F.3d at 964 (finding restriction on speech was not justified where research submitted by the State did not establish or suggest a causal link between minors playing violent video games and actual psychological or neurological harm); *Int'l Dairy Foods Ass'n v. Amestoy*, 92 F.3d 67, 73 (2d Cir. 1996) (noting that in the absence of “real harms,” Vermont could not justify “requiring a product’s manufacturer to publish the functional equivalent of a warning” simply to satisfy perceived curiosity);

²⁰⁵ *Edenfield v. Fane*, 507 U.S. 761, 770-71 (1993); see also *Ibanez v. Fla. Dept. of Bus. and Prof'l Regulation*, 512 U.S. 136, 146 (1994) (requiring Board to “demonstrate that the harms it recites are real” to justify the restriction on speech) (citing *Edenfield*, 507 U.S. at 771).

²⁰⁶ *CTIA-The Wireless Ass'n*, 494 F. App'x 752.

²⁰⁷ See *Int'l Dairy Foods Ass'n v. Amestoy*, 92 F.3d 67, 73 (2d Cir. 1996) (“We are aware of no case in which consumer interest alone was sufficient to justify requiring a product’s manufacturers to publish the functional equivalent of a warning about a production method that has no discernible impact on a final product.”).

fact.²⁰⁸ Without a foundation of scientific validity justifying its adoption, any mandatory RF disclosure or advisory would be hard to justify and easy to attack.

2. There Is No Basis For Encouraging Consumers To Reduce Their Exposure To RF Emissions When Using Approved Devices.

CTIA believes that the Commission’s current position on exposure reduction is appropriate given the current state of the science and the conservative nature of its standards.²⁰⁹ As the Commission notes, consumers already have access to an abundance of information about proven exposure reduction methods—time and distance—that address thermal effects from RF exposure.²¹⁰ While the Commission provides this information, it “does not endorse the need for nor set a target value for exposure reduction[.]”²¹¹ This approach is consistent with that of federal health and safety agencies as well as the WHO.²¹² Furthermore, it is consistent with the overarching goal of the Commission’s RF regulations, which is to set the emission standards at

²⁰⁸ *CTIA*, 827 F. Supp. 2d at 1060 (“Whether or not cell phones cause cancer is a debatable question and, at this point in history, is a matter of opinion, not fact. San Francisco has its opinion. The industry has the opposite opinion.”); *Video Software Dealers Ass’n*, 556 F.3d at 953 (finding video game labeling requirement unconstitutionally compelled speech “because it does not require the disclosure of purely factual information; but compels the carrying of the State’s controversial opinion.”).

²⁰⁹ *NOI*, ¶ 242 (seeking comment on the Commission’s current position regarding exposure reduction measures).

²¹⁰ *Id.* ¶ 233.

²¹¹ *Id.* ¶ 242.

²¹² *Id.* (“We significantly note that extra precautionary efforts by national authorities to reduce exposure below recognized scientifically-based limits is considered by the WHO to be unnecessary”); see also FDA, *Radiation Emitting Products: Reducing Exposure: Hands-free Kits and Other Accessories*, <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/Ce llPhones/ucm116293.htm> (last viewed Jul. 23, 2013) (“If there is a risk from being exposed to radiofrequency energy (RF) from cell phones--and at this point we do not know that there is--it is probably very small. But if you are concerned about avoiding even potential risks, you can take a few simple steps to minimize your RF exposure.”).

levels that are so conservative that precautionary measures by consumers are unnecessary.²¹³

Having incorporated a fifty-fold safety factor to prevent thermal effects—the only scientifically-established mechanism of harm from RF emissions—the Commission has met that goal.²¹⁴

Encouraging consumers to take precautionary measures against unproven harms would be unwarranted and unwise.²¹⁵ As the Commission acknowledges, no scientific evidence supports exposure reduction based on non-thermal effects,²¹⁶ extremely low frequency fields (“ELF fields”), or modulation effects.²¹⁷ Even if such precautionary measures were shown to have “little or no impact on performance,”²¹⁸ there would be no grounds for taking them because they are not backed by scientific evidence. The Commission has rejected calls to regulate based on non-thermal effects, modulation effects and ELF fields,²¹⁹ and the science has not changed.²²⁰

²¹³ *NOI*, ¶ 236 (“The present Commission exposure limit is a ‘bright-line rule.’ That is, so long as exposure levels are below a specified limit value, there is no requirement to further reduce exposure.”).

²¹⁴ *Id.*

²¹⁵ *Id.* ¶¶ 240-41.

²¹⁶ *Id.* ¶ 237.

²¹⁷ *Id.* ¶ 241 (seeking comment on precautionary measures based on modulation effects).

²¹⁸ *Id.*

²¹⁹ *RF Order I*, ¶ 32; *RF Order II*, ¶ 33. See also *EMR Network v. FCC*, 391 F.3d 269, 271 (D.C. Cir. 2004) (noting Commission declined to regulate on the basis of non-thermal effects due to “scientific uncertainty about such effects”); *Cellular Phone Taskforce v. FCC*, 205 F.3d 82, 90-92 (2d Cir. 2000) (upholding the Commission’s decision not to regulate on the basis of non-thermal effects and ELF due to a lack of scientific evidence supporting the idea that non-thermal exposure poses an adverse risk human health).

²²⁰ See *IARC Monograph* at 97 (noting a number of studies have “concluded that it is theoretically implausible” to observe physiological effects from RF without tissue heating ; International Agency for Research on Cancer, *Monograph, Non-Ionizing Radiation, Part 1: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields*, Vol. 80 at 328 (2002) (finding insufficient evidence supporting an association between ELF and any other type of cancer); see also WHO, *What Are Electromagnetic Fields?*, <http://www.who.int/phe-emf/about/WhatisEMF/en/index1.html> (“There is little scientific evidence to support the idea of electromagnetic hypersensitivity.”)

Indeed, without scientific evidence establishing a health risk from non-thermal effects, modulation effects or ELF fields, how would one even formulate such a regulation?²²¹

Without a scientific basis to endorse further exposure reduction measures, any such endorsement would necessarily be premised on the “precautionary principle,” a policy choice that prioritizes the avoidance of potential harm, even in the absence of evidence of harm.²²²

Under the precautionary principle, “the fact that authorities do not have full scientific certainty shall not be used as a reason for not taking prompt cost-effective measures to prevent” the threatened harm.²²³ Indeed, because the precautionary principle concedes the absence of evidence of harm, its very nature is political rather than scientific.²²⁴ While some governments have relied on this principle to justify regulation, the fundamental nature of the “precautionary principle” means that those decisions are untethered from the existing body of scientific research. Imposing prophylactic measures until such time as a product can be “proven” safe means that

²²¹ *NOI*, ¶ 241; *see also id.* ¶ 238 (acknowledging the absence of a “specific quantitative goal for improvement” with respect to RF emission reduction).

²²² *See* Brief of the U.S. Chamber of Commerce et al. as Amici Curiae In Support of Plaintiff-Appellant at 6-7, *CTIA-The Wireless Association v. City and County of San Francisco*, 494 F. App’x 752 (9th Cir. 2012) (No. 11-17707); Jonathan Adler, *The Problems With Precaution: A Principle Without Principle*, *The American* (May 25, 2011), available at <http://www.american.com/archive/2011/may/the-problems-with-precaution-a-principle-without-principle>.

²²³ Laurent A. Ruessmann, *Putting the Precautionary Principle in Its Place: Parameters for the Proper Application of A Precautionary Approach and the Implications for Developing Countries in Light of the Doha WTO Ministerial*, 17 *Am. U. Int’l L. Rev.* 905, 909 (2002) (citing United Nations Conference on Environment and Development: Rio Declaration on Environment and Development, U.N. Doc. A/Conf.151/5/Rev.1 (June 13, 1992)).

²²⁴ Professor Adler notes that the precautionary principle is often invoked to justify “essentially political decisions,” making it “difficult to maintain that the precautionary principle provides the foundation for safety or health-enhancing policies.” Adler, *supra* note 222. Professor Bratspies notes that critics of the precautionary principle maintain that it allows “political concerns rather than science to drive regulatory decisions.” *See* Rebecca M. Bratspies, *Rethinking Decisionmaking in International Environmental Law: A Process-Oriented Inquiry into Sustainable Development*, 32 *Yale J. Int’l L.* 363, 383 (2007).

new products and innovations must be frozen in amber pending the impossible proof of a negative. The nature of scientific inquiry means that there can never be absolute proof of the negative, i.e., proof of safety; the most science can do is just to accumulate more and more data showing a lack of harm. This is a policy choice wholly inconsistent with the Commission’s mandate to balance public safety and efficient deployment of wireless communications,²²⁵ and would represent a radical departure from the Commission’s emphasis on a science-based RF regime.²²⁶

Thus, not only would further precautionary measures be unnecessary and inappropriate, they would be arbitrary and capricious.²²⁷ Because the Commission lacks a scientific basis to justify additional precautionary measures, CTIA does not believe it should pursue such efforts.

The Commission notes that other countries have taken measures in the name of “prudent avoidance,”²²⁸ but these policies do not sway the calculus in favor of additional hortatory efforts. First, the exposure reduction measures cited in the *Notice of Inquiry* relate to fixed transmitters,

²²⁵ See H.R. Rep. No. 104-204-(I) at 94 (1995).

²²⁶ A number of academics have articulated more nuanced formulations of the “precautionary principle,” which attempt to more closely align the idea of precautionary regulation with science-based inquiry. See, e.g., Cass R. Sunstein, *Beyond the Precautionary Principle*, 151 U. Pa. L. Rev. 1003, 1004 (2003) (identifying four different types of the precautionary principle) (citing Richard B. Stewart, *Environmental Regulatory Decision Making Under Uncertainty*, in 20 *Research in Law and Economics* 71, 76 (Timothy Swanson ed., 2002)). One such formulation is the “margin of safety,” which limits activities to below the level at which adverse activities have been found or predicted. *Id.* In this sense, the FCC’s fifty-fold safety factor is already sufficiently “precautionary,” as it sets the limit for general population exposure fifty times below the threshold at which thermal effects are observed. See *NOI*, ¶ 236.

²²⁷ See *Indus. Union Dep’t., AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607, 609 (1980) (rejecting standard based on precautionary principle and holding that agency should first find that long-term exposure to benzene presented a “significant risk of material health impairment”); see generally Sunstein, *supra* note 226 at 1004 (challenging the precautionary principle “not because it leads in bad directions, but because, read for all that it is worth, it leads in no direction at all.”).

²²⁸ *NOI*, ¶ 237.

not portable devices.²²⁹ Second, the Commission itself acknowledges the activities of other countries or agencies are instructive only if the Commission has “*confidence in the research, analysis and principles upon which they are based, as well as the tangible benefits they would provide.*”²³⁰ As the WHO, IARC and the IEEE have found, there is a lack of credible scientific evidence establishing health risks caused by non-thermal effects, ELF fields or modulation effects,²³¹ and thus the Commission is without a basis for confidence in such a conclusion.

The current regime adequately protects the public, and promoting precautionary measures would impose undue burdens on industry and be inconsistent with the Commission’s mandate.²³² For example, were the Commission to advocate that consumers turn their wireless phones off, as San Francisco tried to do, its advice would contradict its goal of promoting an advanced and efficient wireless network²³³ and be at cross-purposes with its own public safety initiatives.²³⁴

²²⁹ *Id.* Indeed, the *NOI* itself notes that these exposure reduction policies in other countries do not apply to portable devices.

²³⁰ *Id.* ¶ 238 (emphasis added).

²³¹ See *IARC Monograph* at 97; WHO, What Are Electromagnetic Fields?, <http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html>; IEEE Std C95.1-2005 at 35 (“Further examination of the RF literature reveals no reproducible low level (non-thermal) effect that would occur even under extreme environmental exposures. The scientific consensus is that there are no accepted theoretical mechanisms that would suggest the existence of such effects.”).

²³² *NOI*, ¶ 209 (noting Commission’s mandate “to adequately protect the public without imposing an undue burden on industry”).

²³³ Network optimization relies on the transmission of information from devices that are “on” but not “in use.” See Plaintiffs’ Motion for Preliminary Injunction at 20-21, *CTIA-The Wireless Association v. The City and County of San Francisco*, 827 F. Supp. 2d 1054 (N.D. Cal. 2011) (3:10-cv-03224).

²³⁴ For example, the Commission and the Federal Emergency Management Agency (FEMA) have worked to deploy Wireless Emergency Alerts (WEA, formerly known as the Commercial Mobile Alert System). See FCC, *Wireless Emergency Alerts*, <http://www.fcc.gov/guides/wireless-emergency-alerts-wea> (last viewed Jul. 26, 2013). This public safety system allows customers who own certain wireless devices to receive geographically-targeted text messages alerting them to “imminent threats to safety in their area.”

CTIA also agrees that encouraging further precautionary measures could also result in increased infrastructure costs.²³⁵ Moreover, any measures that would further restrict network operations, design or deployment would be burdensome if applied in anything other than a prospective manner.²³⁶ These undue burdens would not be justified, given the adequate protection that the current RF regime already affords.

As with general mandatory disclosures or warnings, advocating precautionary measures or endorsing exposure reduction measures would needlessly cause concern and confusion.²³⁷ Consumer confusion and alarm would also open the door to fraudulent and unnecessary devices, services or applications that purport to control, limit or shield RF. Such devices are already being marketed even though the FTC, Commission and FDA all agree they are ineffective and may actually be counterproductive.²³⁸ The FTC has already pursued actions against companies

Id. If consumers were to turn their phones off when not “in use,” they would not receive alerts about tornado warnings, flash floods, or missing children (Amber Alerts).

²³⁵ *NOI*, ¶ 237.

²³⁶ *Id.* ¶ 240 (seeking comment as to whether any precautionary measures adopted should be applied prospectively or also to existing situations).

²³⁷ *Id.* ¶ 242 (“We seek information on . . . the utility and propriety of such messaging as part of this Commission’s regulatory regime.”).

²³⁸ FTC, *Cell Phone Radiation Scams*, <http://www.consumer.ftc.gov/articles/0109-cell-phone-radiation-scams> (last viewed Jul. 25, 2013) (“[A]ccording to the FTC, there is no scientific proof that so-called shields significantly reduce exposure from these electromagnetic emissions.”); OET RF Safety (“Studies have shown that these devices generally do not work as advertised. In fact, they may actually increase RF absorption in the head due to their potential to interfere with proper operation of the phone, thus forcing it to increase power to compensate.”); FDA, *Radiation-Emitting Products: Reducing Exposure: Hands-free Kits and Other Accessories*, <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CeIIPhones/ucm116293.htm> (“Studies have shown that [RF shields] generally do not work as advertised.”).

promoting RF shields, noting that such devices may also interfere with a phone's signal.²³⁹

Were the Commission to urge precautionary measures based on unproven theories of harm, the market for such dubious devices would blossom.

Thus, the Commission should not encourage exposure reduction beyond scientifically-established limits. Such efforts would offer no known benefit and would carry significant costs.

D. The Commission Should Remain Open To Alternative Means Of Compliance Evaluation While Continuing Its Longstanding Endorsement Of SAM And The KDB Structure.

The Commission has encouraged investment, innovation and improvement by employing testing methodologies that are both sensible and flexible. Its longstanding approach has been to provide timely guidance on acceptable methodologies for evaluation based on sound scientific principles and engineering practices in connection with the equipment authorization process. This approach has the benefit of providing the necessary flexibility to address rapidly evolving technology as well as assuring reliability by incorporating evolving best practices. Accordingly, while CTIA encourages the Commission to remain open to alternative means of compliance and device evaluation, it should continue to endorse the SAM method and KDB structure.

1. The Commission Should Continue to Embrace SAM as an Approved Safe Harbor and Await Conclusions of the Scientific Community as to the Efficacy and Accuracy of Other Evaluation Methods.

In response to the Commission's request for comment on "the pros and cons of measurement versus computation, as well as standardization of human models,"²⁴⁰ CTIA states that it supports continued use of the SAM, and at the same time encourages research into reliable and verifiable computational evaluation methods. CTIA agrees that SAR evaluation has been a

²³⁹ CBS News, *FTC: Cell Phone Shields Don't Work*, (Feb. 11, 2009) <http://www.cbsnews.com/stories/2002/02/20/tech/main330039.shtml>.

²⁴⁰ *NOI*, ¶ 245.

significant undertaking and that standards development in this area will be a continuous process. For that reason, the Commission should continue to embrace SAM while supporting efforts to identify other science-based evaluation methods.

As the Commission notes, most compliance evaluations submitted to the Commission are based on measurements using SAM. For years, SAM has been *the* preferred method and the industry standard for compliance.²⁴¹ Indeed, it is the only specifically approved method for demonstrating compliance with RF standards.²⁴² It is the only scientifically defensible and time-tested evaluation method, and it is prevalently—if not exclusively—used by those CTIA members whose devices undergo compliance evaluations.

Through its KDBs and other pronouncements, the Commission has established SAM as a safe harbor for compliance. Simply put, if a device satisfies the Commission’s existing emission standards via use of the SAM model, it is compliant. This has been so for more than a decade. Indeed, the Commission has taken the position that the SAM model cannot be attacked, either through state or local regulation or in litigation,²⁴³ and the industry has relied on Commission pronouncements that SAM is an approved evaluation method. Accordingly, the Commission should continue to embrace SAM as a safe harbor for compliance.

²⁴¹ See *Office of Engineering and Technology Announces a Transition Period for the Phantom Requirements of Supplement C to OET Bulletin 65*, Public Notice, DA-02-1438 (June 19, 2002) (stating that the Commission will “require that the new standard IEEE SC 34 head phantom (the ‘SAM’ phantom) be used for all SAR testing in any FCC certification application submitted on or after September 15, 2002.”); *Office of Engineering and Technology Announces Release of Revised Supplement C to OET Bulletin 65*, Public Notice, DA 01-1557 (June 29, 2001) (stating that “[a]fter the transition period, the new standard head phantom should be used for all SAR testing”).

²⁴² See, e.g., FCC KDB 447498.

²⁴³ See *Dahlgren Letter* at 2-3 (“[I]t is the FCC’s position that any claims that depend on a judicial finding that the Commission’s compliance procedures fail to ensure that wireless phones are safe are . . . preempted.”).

At the same time, CTIA shares the Commission's interest in identifying other reliable evaluation methods. SAR measurement and modeling methods continue to evolve to achieve greater accuracy, and not all proposed techniques prove to be precise.²⁴⁴ Certain computational modeling techniques are prone to error or have other shortcomings, and computational modeling lacks standards and uniformity.²⁴⁵ Moreover, there is a lack of consensus among international standard-setting bodies about how computational modeling could be successfully performed. The Commission should not stifle innovation by requiring the use of one reliable methodology to the exclusion of others. On the contrary, it should continue to encourage innovation and exploration by remaining open to any methodology that is shown to be reliable and consistent with good engineering practices. If the science coalesces in support of computational modeling or some other testing methodology, CTIA would support the Commission's establishment, after review and comment, of appropriate standards and approval processes for it, just as it has done with SAM.

2. The Commission Should Continue to Encourage Innovation And Improvement By Issuing Compliance Directives in KDB Publications.

CTIA supports and encourages continuation of the Commission's current approach to device evaluation in the equipment authorization process. Under the current regulatory structure, devices achieve evaluation compliance by satisfying the directives found primarily in OET

²⁴⁴ *NOI*, ¶ 245.

²⁴⁵ *See, e.g.*, OET Bulletin 65, Supplement C at 15 (June 2001), *available at* http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65c.pdf (“[C]omputational uncertainties are usually the results of errors due to numerical algorithm implementation, benchmark validation, methods used to compute SAR from the field components and procedures used to determine the one-gram averaged SAR.”); FCC KDB 447498 (With respect to computational modeling, “there could be difficulties in applying numerical simulation to complex devices and exposure configurations. It may be necessary to discuss with the FCC to determine the appropriate parameters and modeling approaches required to simulate specific devices and anatomical models.”)

Bulletin 65 Supplement C and KDB publications. By requiring compliance evaluation based on sound scientific principles and engineering practices as confirmed by OET first in Supplement C and later in KDB publications, the Commission ensures compliance without stifling innovation in testing methodologies or device design. This approach is consistent with Congress’s directive to protect public health while also promoting innovation and growth in addressing growing marketplace demands for improved communications services and technologies.²⁴⁶

The Commission has correctly concluded that it should not stifle the development of alternative testing and compliance protocols. Evaluation is a “rapidly evolving area, keeping pace with technological changes, that is most effectively guided by good engineering practice rather than specific regulations.”²⁴⁷ The plasticity of the KDB publications accomplishes that. KDB publications have successfully served as living documents that can be (and have been) easily modified to reflect changes in technology or scientific consensus.²⁴⁸ By requiring adherence to OET-approved evaluation methodologies as part of the equipment authorization process, and by constantly updating OET guidance based on state of the art information, the Commission best serves Congress’s direction to protect the public while ensuring that regulatory burdens do not stifle innovation and growth.

²⁴⁶ See FCC Murray Br. at *15-16.

²⁴⁷ *NOI*, ¶ 244.

²⁴⁸ As the Commission notes, the evaluation techniques referenced and reflected in KDB publications were developed through international standard setting bodies such as IEEE and IEC and sometimes require modification and “self-correct[ion] as information and analysis becomes more readily available.” *NOI*, ¶ 244. See also LS Research Wireless RF Design Blog, *FCC Certification: OET KDB Updates*, Dec. 7, 2012, <http://info.lsr.com/LSR-Wireless-RF-Design-blog/bid/256853/FCC-Certification-OET-KDB-Updates> (summarizing recent updates to various KDB publications).

E. Current Body-Worn Emission Standards Adequately Protect Public Health, Account For Variations Of Usage, And More Accurately Mimic Real-World Conditions Than A Zero-Spacing Protocol.

Given that the current RF regime, including body-worn exposure standards, is adequately protective of the public health, CTIA submits that adopting a “zero-spacing” testing protocol is not appropriate at this time.²⁴⁹ CTIA agrees that no scientific evidence suggests that failing to maintain a specified separation poses a health risk.²⁵⁰ Nor does any evidence suggest that SAR values that exceed Commission limits necessarily imply unsafe operation, or that lower SAR values imply “safer” operation.²⁵¹ In this context, CTIA agrees that exceeding the SAR limit “should not be viewed with significantly greater concern than compliant use,” in part due to the fifty-fold safety factor incorporated into the existing RF emission standards.²⁵² CTIA considers Supplement C’s body-worn device separation requirement an issue of proper use and operation, as opposed to one of health and safety.²⁵³

²⁴⁹ *NOI*, ¶ 252 (seeking comment on “what steps, if any, the Commission should take relative to [its] policies for testing of devices on the basis of an expectation of some separation from the body, including whether it is appropriate to consider ‘zero’ spacing, or actual contact with the body when testing.”).

²⁵⁰ *See id.* ¶ 251.

²⁵¹ *Id.*

²⁵² *Id.* As a result of this “large safety factor,” the Commission and experts in the scientific community have concluded that “exposure well above the specified SAR limit should not create an unsafe condition.” *Id.*

²⁵³ *See Mobile Antenna Systems Handbook* at 340 (Kyohei Fujimoto ed., 3rd Ed. 2008) (“During committee deliberations that led to IEEE C95.1-2005, the focus was on conservatism; during deliberations on the compliance standards, the focus was on precision. Worst-case assumptions were always considered. While it is always a good practice to make precise and accurate measurements, there is a trade-off when assessing compliance of a device with limits having large built-in safety margins. That is, whether or not a product meets a specified limit is a compliance issue—not a safety issue. An unrealistic focus on precision causes one to lose sight of the objective.”); *IARC Monograph* at 35 (“The whole-body SAR provides little information about spatial or organ-specific energy deposition, as it strongly depends on field polarization and animal posture.”).

The existing emission standards are premised on the assumption that consumers have neither knowledge of, nor the ability to control, RF emissions.²⁵⁴ As the Commission notes, the SAR data for body-worn configurations does not apply when consumers disregard manufacturer disclosures about maintaining a body-worn separation distance.²⁵⁵ Likewise, because such disclosures are discretionary, some consumers may not receive the information in the first place. Consistent with the fifty-fold safety factor and the Commission’s assumption about the general population’s lack of knowledge and control, emission standards and evaluation criteria for the general public have and should continue to be viewed as accounting for all reasonable scenarios.

There is no shortage of usage scenarios or variables that affect body-worn SAR values,²⁵⁶ and thus there is no proximity restriction that will accurately measure the amount of RF energy absorbed by a single person, let alone an entire population. As between a zero-spacing restriction and the existing proximity restriction, however, the latter more accurately mimics real-world SAR levels and usage. For one, SAR measurements are performed while a device is operating at maximum power, “[but] given typical operating conditions, the SAR of the device

²⁵⁴ OET Bulletin 65, Supplement C (June 2001), at 10, *available at* http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65c.pdf.

²⁵⁵ *NOI*, ¶ 248.

²⁵⁶ No testing regime can account for all consumer use or misuse, or knowledge or lack thereof. The Commission surely had this in mind when it established the fifty-fold safety factor. As the Commission explains, “[t]his ‘safety’ factor can well accommodate a variety of variables such as different physical characteristics and individual sensitivities – and even the potential for exposures to occur in excess of our limits without posing a health hazard to humans.” FCC, “Reassessment of Exposure to Radiofrequency Electromagnetic Field Limits and Policies, Proposed Rule” (June 4, 2013), *available at* <https://www.federalregister.gov/articles/2013/06/04/2013-12713/reassessment-of-exposure-to-radiofrequency-electromagnetic-fields-limits-and-policies>.

during normal [body-worn] use would be less than tested.”²⁵⁷ A device’s given power levels depend in part on whether it is in use and the strength of the signal it is accessing. Because consumers typically leave their phones on but are not always “using” them, the device is often not operating at maximum power—and therefore emitting RF at a level below the tested SAR. In fact, “to minimize interference in the networks, the power is dynamically reduced to the minimum necessary to carry out calls,” and 3G phones, even when in use, “only operate[] at a few percent of the maximum power.”²⁵⁸ Moreover, most modern devices possess power-saving functionalities that reduce RF emissions when a phone is on but not in use, meaning “transmissions . . . are brief and infrequent, and exposure is expected to be very small when averaged over time.”²⁵⁹ Clothing, holsters and other accessories—which can serve as barriers between the device and the body—likewise reduce the amount of RF energy absorbed by the body. Finally, absorption also varies from person to person based on the inevitable inhomogeneity of human anatomy and tissues.²⁶⁰ Each of these factors significantly *reduces* a device’s *actual* (as opposed to tested) SAR level, yet the existing compliance procedures and proximity restrictions do not take them into account.

The above examples illustrate that emission-reduction mechanisms and varying usage practices play a significant role that can *more than* counteract the fact that a device is sometimes kept closer than 2.5 cm from the body. Although imperfect (as any separation standard will be), the existing separation standard acknowledges the dual realities that devices are oftentimes held

²⁵⁷ *NOI*, ¶ 251; *see also IARC Monograph* at 54 (“Values in normal usage positions should be lower than the values declared by manufacturers because the positions used in the testing standards are designed to mimic near worst-case conditions.”).

²⁵⁸ *IARC Monograph* at 54.

²⁵⁹ *Id.* at 55.

²⁶⁰ *Id.* at 73.

near the body, and in such instances, the amount of RF energy absorbed is generally less than the SAR value would suggest. Ultimately, CTIA supports the existing proximity restriction and does not believe a zero-spacing measurement requirement would either mimic actual usage or increase safety.

In response to the Commission’s request for comment on whether to advise consumers about body-worn separation distance, CTIA submits that no such disclosures are necessary.²⁶¹ As already discussed above, the conservative nature of the current emission standards and their incorporation of a fifty-fold safety factor already provides appropriate protection to the public. Despite variability of device usage and associated RF emission levels, the current emission standards “accommodate a variety of variables.”²⁶² Under the “bright-line rule” of the current RF emission standards,²⁶³ body-worn separation does not pose a serious safety issue. CTIA observes that, while the body-worn separation distance disclosures once recommended by the Commission were well-intended, they have been taken out of context to suggest that devices are dangerous within 2.5 cm distance.²⁶⁴ Thus, body-worn disclosures may simply create unnecessary confusion on the part of the consumer and raise unwarranted doubts about the sufficiency of the RF standard.²⁶⁵

²⁶¹ *NOI*, ¶¶ 248, 252.

²⁶² *NOI*, ¶ 236.

²⁶³ *Id.* (noting that under the bright-line rule of the present Commission exposure limit, “there is no further requirement to further reduce exposure.”).

²⁶⁴ See Mobile Manufacturers Association, *How Head and Body SAR are Measured*, available at http://mmfai.info/public/docs/eng/111027_MMF_vp_SARReporting_final.pdf (last viewed Aug. 6, 2013) (explaining that one “issue that routinely causes confusion is when a user manual refers to a ‘separation distance’ between the phone and the body.”).

²⁶⁵ See Section III.C.1, *supra*.

Further confusion for both the consumer and manufacturer results from the discretionary nature of body-worn disclosures. As the Commission explains, “[m]anufacturers have been *encouraged* since 2001 to include information in device manuals to make consumers aware of the need to maintain the body-worn distance.”²⁶⁶ This disclosure, however, is not mandatory.²⁶⁷ And, given the Commission’s limited guidance on the content of disclosures, the messaging and level of detail in device manuals varies from manufacturer to manufacturer.²⁶⁸ What is more, with the forthcoming discontinuation of OET Bulletin 65 Supplement C, this recommendation may become even more nebulous. CTIA suggests that the Commission revisit the advisability of consumer disclosures concerning separation distances and normal usage. The Commission’s general population emission standards more than account for all expected exposures, including exposures associated with abnormal usage.

Finally, CTIA submits that any guidelines relating to body-worn SAR should be issued through the OET’s KDB publications. The Commission’s policies in this area have evolved as devices have evolved,²⁶⁹ and it has timely issued KDBs to reflect changes in body-worn SAR evaluation procedures as a result of novel technologies, among other reasons.²⁷⁰ As devices and

²⁶⁶ *NOI*, ¶ 248 (emphasis added).

²⁶⁷ The disclosure recommendation is found in OET Bulletin 65, Supplement C at 41. The Commission has noted, however, that “OET Bulletin 65 (including its Supplements) is not mandatory.” *See also* FCC KDB 212821, *available at* <https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=20559&switch=P> (“[I]t is recommended that some information about SAR may be useful in the manual for users to understand the device characteristics.”).

²⁶⁸ Supplement C merely provides that “[i]n order for user to be aware of the body-worn operating requirements for meeting RF exposure compliance, operating instructions and caution statements should be included in the manual.” OET Bulletin 65, Supp. C at 41 (June 2001).

²⁶⁹ *NOI*, ¶ 250.

²⁷⁰ *See, e.g.*, FCC KDB 941225 D01 “SAR Measurement Procedures for 3G Devices;” FCC KDB 941225 D02 “SAR Guidance for HSPA, HSPA+, DC-HSDPA and 1x-Advanced;” FCC KDB 941225 D03 “Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE;”

technologies will undoubtedly continue to evolve, so too should the Commission's guidelines. Continued use of the KDB publications is the best way to accomplish that.

IV. CONCLUSION

Given the scientific evidence backing the current RF emission standards, the Commission is correct to have confidence in its current regime. Nevertheless, CTIA applauds the Commission's inquiry into its RF standards and its efforts to ensure that the standards reflect the latest scientific developments.

Respectfully submitted,

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