

September 28, 2017

Commonwealth of Massachusetts

Submitted To: Joint Committee on Consumer Protection and Professional Licensure

24 Beacon Street

Room 109-E

Boston, MA 02133

Testimony in Strong Support of:

*S.107 An Act relative to disclosure of radiofrequency notifications requires manufacturer warnings be prominently displayed on product packaging of wireless radiation-emitting devices.*

Committee Members, Sponsor, Co-Sponsors, MA Department of Public Health, MA Department of Elementary and Secondary Education, MA Attorney General's Office and Governor Baker's Office:

Dear Honorable Legislators,

On behalf of Environmental Health Trust (EHT), a non-profit research and public educational organization of scientists, physicians, engineers, and public health specialists, I am writing in strong support of *S.107 An Act relative to disclosure of radiofrequency notifications requires manufacturer warnings be prominently displayed on product packaging of wireless radiation-emitting devices*. For the past decade, EHT has provided state of the art information to legislators around the world, including a series of [briefings](#) with members of your legislature in 2015, as well as officials of local school and health boards.

I was Founding Director of the Board on Environmental Studies and Toxicology of the U.S. National Research Council, and Founding Director of the Center for Environmental Oncology at the University of Pittsburgh Cancer Institute. President Clinton appointed me to the Chemical Safety and Hazard Investigation Board, and I am former Senior Advisor to the Assistant Secretary for Health in the Department of Health and Human Services.

All wireless technology devices—including laptops, tablets, cell phones, wireless access points, and all other “wireless” transmitters—emit radio frequency (RF) electromagnetic non-ionizing radiation. The Federal Communications Commission (FCC) regulates RF energy emitted from FCC-regulated transmitters, and ensures that all mobile phones and wireless devices sold in the United States comply with the agency's limit on RF energy exposure, however, only when used at a specified distance from the body.<sup>1</sup> The user manuals of all wireless devices contain this as RF safety information directing the user to maintain compliance with these FCC radio frequency limits by maintaining this distance between the device and the user's body.

For example, the FCC body separation distance for most wireless laptops, tablets, baby monitor bases, Wi-Fi routers, video gaming consoles, and other devices such as wireless printers is 20 centimeters (or 7.87 inches), as

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<sup>1</sup> FCC RF Safety Webpage <https://transition.fcc.gov/oet/rfsafety/rf-faqs.html#Q5>

stated in their user manuals.<sup>2</sup> For cell phones, the specific distance is stated in the user manual and usually ranges from 25mm to 5mm. Most people are unaware of these [fine print warnings](#).

A lack of awareness of [these separation distances](#) could result in individuals being exposed to radiation levels that exceed FCC regulations.

The reality that cell phone and wireless device users can be exposed to RF radiation values that exceed regulatory limits is confirmed by [recent information](#) released by the government of France. The French National Frequencies Agency (ANFR) tested over 300 cell phones in body contact positions (i.e., *without the separation*) and released findings this year showing that the vast majority of cell phones had radiation measurements that far exceed European allowable limits: *by over 3 times*. In other words, the cell phones only passed premarket laboratory tests when tested with a separation distance between the phone and test dummy. Without the separation distance, limits were breached.

If one were to take the French government data and generate the equivalent values with U.S. FCC testing methods at body distance, then numbers become *even more significant*. The cell phone radiation measurements could exceed United States allowable limits *by over 6 times*. Please see this chart below that shows France's data and an estimate of the U.S. equivalent data.

## France Data on Cell Phone SAR Radiation at Body Contact Positions

Examples of Some Phones That Exceed Regulatory Limits When Tested at Body Contact

Cell Phone make/model	SAR Radiation Measurement Test Results			Compare cell phone SAR test results with government regulatory SAR limits.
	Manufacturer test separation distance	0 mm Distance body contact simulation European test 10 gram average	0 mm Distance body contact simulation Estimated for US FCC test 1 gram average	
<b>Polaroid, PRO 881A</b>	1.050 W/kg at 15 mm	7.42 W/kg	14.84 W/kg	1.6 W/kg USA SAR LIMIT
<b>HTC, ONE SV</b>	0.366 W/kg at 15 mm	7.18 W/kg	14.36 W/kg	
<b>Blackberry Z10</b>	0.934 W/kg at 15 mm	6.80 W/kg	13.60 W/kg	2.0 W/kg Europe SAR LIMIT
<b>NOKIA, Lumina 530</b>	0.86 W/kg at 15 mm	6.57 W/kg	13.14 W/kg	
<b>Apple, IPHONE 5</b>	.825 W/kg at 10 mm	5.32 W/kg	10.64 W/kg	

Most of the cell phones tested by France exceeded regulatory SAR limits

Passing S.107 is *the first step* in protecting the public. It would inform citizens that their devices expose them to radiofrequencymicrowave radiation, and this would raise public awareness. It also is a step towards addressing children's cumulative exposures to wireless radiation. Research has shown that children absorb proportionately more radiation than adults and are more vulnerable. "When electrical properties are considered, a child's head's

<sup>2</sup> FCC Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields OET Bulletin 65 Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions  
[https://transition.fcc.gov/Bureaus/Engineering\\_Technology/Documents/bulletins/oet65/oet65c.pdf](https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65c.pdf)

absorption can be over two times greater, and absorption of the skull's bone marrow can be ten times greater than adults" ([Gandhi et al. 2011](#)). Children's skulls are thinner, their heads are smaller, and the radiation penetrates more deeply into their brain.

Current FCC federal exposure limits for radio frequency electromagnetic fields (RF-EMF, which includes cell phone and wi-fi technologies) were established nearly 30 years ago based on outdated thermal standards. These FCC limits have come under sharp criticism by the [GAO](#), the [American Academy of Pediatrics](#), the [U.S. Department of the Interior](#), and research scientists from around the world for relying on outdated standards and outdated science. In response, the FCC opened a [Proceeding Number 13-84](#) in 2012 concerning human exposure limits to radio frequency radiation, which notably asks, "we specifically seek comment as to whether our current limits are appropriate as they relate to device use by children." Over 1,000 submissions have been made to the FCC. To date, no actions have been taken and no scientific research review has been completed by any federal agency.

Please learn more about the U.S. government's reports on cell phone and wireless radiation on our webpages "[EPA Reports on EMFs](#)" and "[U.S. Government Reports](#)". Currently there is no "safe" level of exposure, and until the United States sets adequate standards that protect children, it is imperative that local governments support policies that protect public health by reducing exposure to as low as possible.

Recently released research findings from the premiere test program of the National Institute of Environmental Health Sciences (NIEHS) add to the body of scientific evidence indicating that RF microwave radiation, even at legal limits, can be harmful. The 10 year, \$25 million NIEHS National Toxicology Program's [Studies of the Toxicology and Carcinogenicity of Cell Phone Radiation](#) reports that RF exposure resulted in increased rates of highly malignant, very rare tumors: gliomas of the brain and schwannomas of the heart.<sup>3</sup> These experimental findings are consistent with human studies showing increased rates of gliomas and acoustic neuromas (schwann cells) among humans exposed to cell phone radiation. This September, scientists from the National Toxicology Program (NTP) presented the radio frequency study genotoxicity findings at the annual meeting of the Environmental Mutagenesis and Genomics Society. They found DNA damage was significantly increased in specific brain tissues in some of the exposure groups. The NTP abstract concludes, "exposure to RFR [radio frequency radiation] has the potential to induce measurable DNA damage under certain exposure conditions."

Other studies finding increased risk of glioma in regular cell phone users are of special relevance. In 2014, a [French national study](#) linked higher cell phone exposure to increased glioma in cell phone users.<sup>4</sup> A newly published research [report](#) in the *American Journal of Epidemiology* found that Canadians who have used cell phones for 558 hours or more have more than a doubled risk of brain cancer.<sup>5</sup> Previously [published re-analysis](#) of the multi-country Interphone study data has found stronger, positive associations with glioma risk among

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<sup>3</sup> Wyde, Michael, et al. "[Report of Partial findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley® SD rats \(Whole Body Exposure\)](#)." *bioRxiv*, no. 055699, 2016.

<sup>4</sup> Coureau, Gaëlle, et al. "[Mobile phone use and brain tumours in the CERENAT case-control study](#)." *Occupational Environmental Medicine*, vol. 71, no. 7, 2014, pp. 514-22.

<sup>5</sup> Momoli, F., et al. "[Probabilistic multiple-bias modelling applied to the Canadian data from the INTERPHONE study of mobile phone use and risk of glioma, meningioma, acoustic neuroma, and parotid gland tumors](#)." *American Journal of Epidemiology*, 2017.

long-term users and heavy users, and a [statistically significant association](#) between tumor location and amount of radiation exposure from a cell phone.<sup>6,7</sup>

We invite you to review the proceedings from an expert forum on Wireless and Health at the Hebrew University of Jerusalem, hosted by the Israel Institute for Advanced Study and the Environmental Health Trust, with participation and support from the U.S. National Institute of Environmental Health Sciences. Highlights of the conference with [lectures, videos, and slide presentations](#) can be found on our website. Environmental Health Trust also held an expert forum in Jackson Hole, Wyoming on July 30, 2017, and lectures by [Dr. Devra Davis](#), [Dr. Annie Sasco](#), [Dr. Marc Arazi](#) and [Dr. Anthony Miller](#) are now available as online resources.

In the United States, there are several local policies in place to inform the public about these separation distances. The City of Berkeley's "[Cell Phone Right To Know](#)" Ordinance requires phone sellers to publicly inform consumers with the following information:

"If you carry or use your phone in a pants or shirt pocket or tucked into a bra when the phone is ON and connected to a wireless network, you may exceed the federal guidelines for exposure to RF radiation."

In 2011, San Francisco, California was the first city in the nation to pass cell phone safety legislation with a "Right to Know" Ordinance unanimously passed by the Board of Supervisors. Although full implementation was blocked after [the CTIA sued the city](#), the City maintains a [public information webpage](#) on cell phone radiation which states "manufacturers warn (in the cell phone user manuals) "if a user holds a phone too close to their body, a phone may exceed the radiofrequency energy exposure limitation set by the Federal Communications Commission ("FCC")."

In 2011, the Burlingame, California City Council voted to include cell phone safety [guidelines](#) in their Healthy Living in Burlingame initiative, which gives [recommendations](#) on how to reduce exposure and states:

"The Federal Communications Commission (FCC) mandates that all cell phone manuals caution users to hold the phone a short distance (.6 inch to 1 inch) from the body. (See your manual's fine print.)

While scientists continue to research and debate this matter, here are some simple things you can do to minimize your exposure to cell phone emissions"

Awareness is growing that the public needs more information about wireless devices. In Suffolk, New York, [2014 legislation](#) requires all county buildings to post notices that wireless routers are in use stating, "Notice: Wireless technology in use."

A growing number of U.S. school districts across the country are taking measures to inform students that wireless devices should be used in positions away from the body.

Ashland, Massachusetts was the first U.S. public school system to develop Mobile Device "[Best Practices](#)", which includes:

- "Turn off the device when not in use

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<sup>6</sup> Turner, Michelle C., et al. "[Investigation of bias related to differences between case and control interview dates in five INTERPHONE countries.](#)" *Annals of Epidemiology*, vol. 26, 12, 2016, pp. 827-32.

<sup>7</sup> Grell, Kathrine, et al. "[The intracranial distribution of gliomas in relation to exposure from mobile phones: analyses from the INTERPHONE study.](#)" *American Journal of Epidemiology*, vol. 184, no. 11, 2016, pp. 818-28.

- Turn wifi on only when needed
- Always place the mobile device on a solid surface
- Viewing distance should be a minimum of 12 inches from the screen
- Specific product information guides are available by request through the IT Department
- All classrooms will have best practices posted.
- We ask that staff members regularly remind and instruct students in using best practices in regards to mobile devices.”

These Ashland [“Best Practices”](#) are posted in each classroom and teachers’ training includes a review of these policies.

In Worcester, Massachusetts, the school committee [recently voted to approve “Precautionary Options on Radiofrequency Exposure”](#) to be posted on the Worcester District Website. The public document includes FCC and EPA stated measures to reduce Radio Frequency exposure such as using a speakerphone to reduce total exposure to the head and “increase the distance between wireless devices and your body.”

Several Public School Districts, including [Montgomery County, Maryland](#), [Onteora School District, New York](#), and [Petaluma, California](#), recommend that laptops and tablets be on a table and “not on a lap.” Although these districts do not inform students and staff that these wireless devices emit radiation, it is important to note that parents in these Districts have lead strong efforts to hardwire the school internet connections, in order to eliminate the radiation exposures from the devices and access points. While such “Best Practices” may reduce some of the near-field radiation exposure for school children who might otherwise place the devices on their laps, the daily classroom radiation exposures from ceiling access points and classroom devices in use are ongoing and still need to be addressed.

[The Maryland State Children’s Environmental Health and Protection Advisory Council](#) (CEHPAC) issued a 2017 Report advising the Department of Education to recommend local school districts reduce classroom wireless radiation exposures by providing wired—rather than wireless—internet connections. CEHPAC recommendations also include placing devices on desks and other measures to reduce exposures. Wired connections with wireless functions OFF eliminate the radio frequency exposures from wireless devices and represent protective public health advice.

### **Medical Recommendations**

The American Academy of Pediatrics (AAP)—our nation’s largest organization of pediatrician and pediatric specialists—has repeatedly [warned](#) of children’s greater vulnerability to wireless radiation and recommended [policy action](#) to update our nation’s radio frequency radiation limits and inform consumers about cellular radiation. The AAP [recommends](#) that exposure to children be reduced and has issued ten strategies to reduce families’ exposures. In addition to the American Academy of Pediatrics, the [Vienna Medical Association](#) and [Athens Medical Association](#) are among the many [international medical organizations](#) that have issued practical measures for the public to reduce exposure to cell phone and wireless devices in their daily lives.

Two years ago, over 230 scientists who have published peer-reviewed research on EMFs and health appealed to the United Nations in [The EMF Scientist Appeal](#) urging immediate action to protect the public and strengthen exposure limits. More recently, over 180 scientists and doctors from 35 countries sent [a declaration](#) to officials of the European Commission calling for a moratorium on the increase of cell antennas for planned 5G expansion.



The Connecticut Department of Health has [issued cell phone advice](#) in a two page document, which includes, “*It is wise to reduce your exposure to radiofrequency energy from cell phones whenever possible.*” Cell Phone proclamations have been issued in [Jackson Hole, Wyoming](#), [Pembroke Pines, Florida](#), and [Portland Maine](#). In 2014, the [Greenbelt, Maryland City Council](#) unanimously voted to alert citizens about the fine print warnings and possible health risks of cell phones and wireless devices by sharing resources on how to reduce cell phone radiation exposure.

The governments of France, Belgium, Canada, Austria, the United Kingdom (UK), India, Australia, Germany, Switzerland, Israel, Finland, Greece, Russia, Switzerland, Cyprus, Singapore, Turkey, and the Council of Europe all have online [public resources](#) specifically recommending that children’s exposure should be reduced or minimized, and these governments provide resources detailing how the public can reduce exposure to radio frequency radiation.

As it has done on passive tobacco smoke and air bags for cars, Massachusetts now has an incredible opportunity to lead the nation in informing the public about the radio frequency exposure from cell phones and wireless devices. For your review, I have included a list of the fine print manufacturers’ advice on several commonly used cell phones and wireless devices. Environmental Health Trust advisors stand ready to answer any questions and provide additional information.

Sincerely,



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**Appendix I: Fine Print Warnings on Cell Phones and Wireless Devices**

“Keep the BlackBerry device at least 0.59 in. (15 mm) from your body (including the abdomen of pregnant women and the lower abdomen of teenagers) when the BlackBerry device is turned on and connected to the wireless network.” - [Blackberry Bold 9930](#)

When you wear the BlackBerry device close to your body, use a RIM approved holster with an integrated belt clip or maintain a distance of 0.98 in. (25 mm) between your BlackBerry device and your body while the BlackBerry device is transmitting. Use of body-worn accessories, other than RIM approved holsters with an integrated belt clip, might cause your BlackBerry device to exceed radio frequency (RF) exposure standards if the accessories are worn on your body while the BlackBerry device is transmitting. The long term effects of exceeding RF exposure standards might present a risk of serious harm.” - [Blackberry Torch 9800 & 9900](#)

”To be sure that human exposure to RF energy does not exceed the FCC, IC, and European Union guidelines, always follow these instructions and precautions: Orient the device in portrait mode with the Home button at the

bottom of the display, or in landscape mode with the cellular antenna away from your body or other objects.” - [Apple iPads](#)

“iPod has been tested and meets applicable limits for radio frequency (RF) exposure. Specific Absorption Rate (SAR) refers to the rate at which the body absorbs RF energy. The SAR limit is 1.6 watts per kilogram in countries that set the limit averaged over 1 gram of tissue and 2.0 watts per kilogram in countries that set the limit averaged over 10 grams of tissue. During testing, iPod radios are set to their highest transmission levels and placed in positions that simulate use near the body, with 5mm separation.

To reduce exposure to RF energy, use the supplied headphones or other similar accessories. Carry iPod at least 5mm away from your body to ensure exposure levels remain at or below the as-tested levels. Cases with metal parts may change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified.” - [Apple iPod Touch](#)

"To reduce exposure to RF energy, use a handsfree option, such as the built in speakerphone, the supplied headphones, or other similar accessories. Carry iPhone at least 10mm away from your body to ensure exposure levels remain at or below the tested levels. Cases with metal parts may change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified." - [Apple iPhone 5](#)

"To reduce exposure to RF energy, use a handsfree option, such as the built in speakerphone, the supplied headphones, or other similar accessories. Carry iPhone at least 5mm away from your body to ensure exposure levels remain at or below the as tested levels. Cases with metal parts may change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified." - [Apple iPhone 5S](#)

"To reduce exposure to RF energy, use a hands free option, such as the built-in speakerphone, the supplied headphones, or other similar accessories. Carry iPhone at least 10mm away from your body to ensure exposure levels remain at or below the as tested levels. Cases with metal parts may change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified." - [Apple iPhone 4S](#)

"To reduce exposure to RF energy, use a handsfree option, such as the built in speakerphone, the supplied headphones, or other similar accessories. Carry iPhone at least 10mm away from your body to ensure exposure levels remain at or below the as tested levels. Cases with metal parts may change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified." - [Apple iPhone 4](#)

"To reduce exposure to RF energy, use a hands free option, such as the built-in speakerphone, the supplied headphones, or other similar accessories. Carry iPhone at least 15mm away from your body to ensure exposure levels remain at or below the as tested levels. Cases with metal parts may change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified." - [Apple iPhone 3GS](#)

“During testing, Apple Watch radios are set to their highest transmission levels and placed in positions that simulate use against the head, with 10mm separation, and on the wrist, with no separation. When placing Apple

Watch near your face, keep at least 10 mm of separation to ensure exposure levels remain at or below the as-tested levels.” - [Apple Watch](#)

“Specific Absorption Rate (SAR) refers to the rate at which the body absorbs RF energy. The SAR limit is 1.6 watts per kilogram in countries that set the limit averaged over 1 gram of tissue and 2.0 watts per kilogram in countries that set the limit averaged over 10 grams of tissue. During testing, iPod radios are set to their highest transmission levels and placed in positions that simulate use near the body, with 5mm separation. To reduce exposure to RF energy, use the supplied headphones or other similar accessories. Carry iPod at least 5mm away from your body to ensure exposure levels remain at or below the as-tested levels. Cases with metal parts may change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified.” - [iPod Touch](#)

“Bodyworn SAR testing has been carried out at a separation distance of 1.0 cm. To meet RF exposure guidelines during bodyworn operation, the device should be positioned at least this distance away from the body. Organizations such as the World Health Organization and the US Food and Drug Administration have suggested that if people are concerned and want to reduce their exposure, they could use a handsfree accessory to keep the wireless device away from the head and body during use, or reduce the amount of time spent using the device.” - [Samsung Galaxy Note 3](#)

“Body- worn SAR testing has been carried out at a separation distance of 1.0 cm. To meet RF exposure guidelines during body worn operation, the device should be positioned at least this distance away from the body.” - [Samsung Galaxy S5](#)

“Bodyworn SAR testing has been carried out at a separation distance of 1 cm. To meet RF exposure guidelines during bodyworn operation, the device should be positioned at least this distance away from the body. Organizations such as the World Health Organization and the US Food and Drug Administration have suggested that if people are concerned and want to reduce their exposure, they could use a handsfree accessory to keep the wireless device away from the head and body during use, or reduce the amount of time spent using the device.” - [Samsung Galaxy S5 Active](#)

“Usage precautions during 3G connection : Keep safe distance from pregnant women’s stomach or from lower stomach of teenagers. Body worn operation: Important safety information regarding radiofrequency radiation (RF) exposure. To ensure compliance with RF exposure guidelines the Notebook PC must be used with a minimum of 20.8 cm antenna separation from the body.” - [Samsung 3G Laptop](#)

“Caution: Exposure to Radiofrequency Radiation: The device shall be used in such a manner that the potential for human contact normal operation is minimized. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.” - Belkin WIFI Router Manual

“In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.” - [HP Printer](#)

“This device meets RF exposure guidelines when used either in the normal use position against the ear or when positioned at least 1.5 cm away from the body. When a carry case, belt clip or holder is used for body worn



operation, it should not contain metal and should position the product at least 1.5 cm away from your body.” - [Google Nexus 5](#)

“To ensure that RF exposure levels remain at or below the tested levels, use a belt clip, holster, or similar accessory that maintains a minimum separation distance of 1.0cm between your body and the device, with either the front or back of the device facing towards your body. Such accessories should not contain any metallic components. Body worn accessories that do not meet these specifications may not ensure compliance with applicable SAR limits and their use should be avoided.” - [HTC Desire](#)

“To ensure that RF exposure levels remain at or below the tested levels, use a belt clip, holster, or similar accessory that maintains a minimum separation distance of 1.0 cm between your body and the device, with either the front or back of the device facing towards your body. Such accessories should not contain any metallic components. Body worn accessories that do not meet these specifications may not ensure compliance with applicable SAR limits and their use should be avoided.” - [HTC One M8](#)

“Exposure to Radio Frequency Signal Your wireless handheld portable telephone is a lowpower radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency (RF) signals. In August, 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for handheld wireless phones. Those guidelines are consistent with the safety standards previously set by both U.S. and international standards bodies: ANSI C95.1 (1992) \* NCRP Report 86 (1986) ICNIRP (1996) Those standards were based on comprehensive and periodic evaluations of the relevant scientific literature. Phone Operation NORMAL POSITION: Hold the phone as you would any other telephone with the antenna pointed up and over your shoulder. Safety Guidelines: 119 Tips on Efficient Operation For your phone to operate most efficiently: ] Do not touch the antenna unnecessarily when the phone is in use. Contact with the antenna affects call quality and may cause the phone to operate at a higher power level than otherwise needed. Check the laws and regulations on the What steps can I take to reduce my exposure to radiofrequency energy from my wireless phone? If there is a risk from these products - 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 exposure to radiofrequency energy (RF). Since time is a key factor in how much exposure a person receives, reducing the amount of time spent using a wireless phone will reduce RF exposure. If you must conduct extended conversations by wireless phone every day, you could place more distance between your body and the source of the RF, since the exposure level drops off dramatically with distance. For example, you could use a headset and carry the wireless phone away from your body or use a wireless phone connected to a remote antenna. Again, the scientific data do not demonstrate that wireless phones are harmful. But if you are concerned about the RF exposure from these products, you can use measures like those described above to reduce your RF exposure from wireless phone use.” - [LG Vu Plus](#)

“This device was tested for typical body worn operations with the back of the phone kept 1 cm (0.39 inches) between the user’s body and the back of the phone. To comply with FCC RF exposure requirements, a minimum separation distance of 1 cm (0.39 inches) must be maintained between the user's body and the back of the phone.” - [LG G2](#)

“When a carry case, belt clip or holder is used for body worn operation, it shouldn't contain metal and should position the product at least 1.5 cm away from your body. In order to transmit data files or messages, this device requires a quality connection to the network. In some cases, transmission of data files or messages may be

delayed until such a connection is available. Ensure the above separation distance instructions are followed until the transmission is completed.” - [LG G3](#)

“This device meets RF exposure guidelines when used either in the normal use position against the ear or when positioned at least 5/8 inch (1.5 centimeters) away from the body. The specific maximum SAR values can be found in the Certification Information (SAR) section of this user guide. For more info, go to [www.sartick.com](http://www.sartick.com). When a carry case, belt clip or other form of device holder is used for body worn operation, it should not contain metal and should provide at least the above stated separation distance from the body. Note that mobile devices may be transmitting even if you are not making a voice call.” - [Nokia Lumia Icon](#)

“For bodyworn operation, the phone has been tested when positioned a minimum of 15 mm from the body without any metal parts in the vicinity of the phone or when properly used with an appropriate accessory and worn on the body. For devices which include “WiFi hotspot” functionality, SAR measurements for the device operating in WiFi hotspot mode were taken using a separation distance of 10 mm.” - [Sony Xperia Z2](#)

“Note: Reduce the risk of heat-induced injury or fire by adhering to the following:

- 1) Do not place the computer or AC adapter on a soft surface, such as a bed.
- 2) Do not rest the computer or AC adapter on your lap for extended periods.
- 3) Use the computer on a flat, hard surface, such as a desk.
- 4) Ensure that the ventilation is not obstructed.”

- [Acer C720 Chromebook](#)

“WARNING! Exposure to Radio Frequency Radiation: The radiated output power of this device is below the FCC radio frequency exposure limits. Nevertheless, the device should be used in such a manner that the potential for human contact is minimized during normal operation of tablet PCs and notebook computers. WARNING! To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. During normal operation of notebook computers with displays greater than 30.5 cm (12 inches): To avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antennas should not be less than 20cm (8 inches), including when the computer display is closed. To identify the location of the wireless antennas, refer to the computer user guides included with your computer.” - [HP Chromebook 14 G4](#)

“Do not leave your notebook PC on your lap or near any part of your body to prevent discomfort or injury from heat exposure. Do not place your notebook PC on uneven or unstable work surfaces.”

“To maintain compliance with FCC RF exposure compliance requirements please avoid direct contact to the transmitting antenna during transmitting. End users must follow the specific operating instructions for satisfying RF exposure compliance.” - [ASUS Notebook PC for Chromebook](#)

“Warning, Exposure to Radio Frequency (RF) Radiation: The radiated output of this device is below the FCC radio frequency exposure limits. Nevertheless, the device should be used in such a manner that the potential for human contact during normal operation is minimized. The end user must avoid any extended human RF exposure directly in front of the device, up to a distance of 20cm, when unit is on.” - [Luxul Wireless Controller System](#)

“United States of America USA and Canada Safety Requirements and Notices

Do not touch or move antenna while the unit is transmitting or receiving.

Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.

Regardless of the power levels, care should be taken to minimize human contact during normal operation.

This device should be used more than 20 cm (8 inches) from the body when wireless devices are on and transmitting.

FCC Statement for Wireless LAN use:

“While installing and operating this transmitter and antenna combination the radio frequency exposure limit of 1mW/cm<sup>2</sup> may be exceeded at distances close to the antenna installed. Therefore, the user must maintain a minimum distance of 20cm from the antenna at all times” - [Samsung Chromebook](#)

"The Baby unit shall be installed and used such that parts of the user's body other than the hands are maintained at a distance of approximately 20 cm (8 inches) or more." - [Motorola Baby Monitor MBP33](#)

“CAUTION: The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.” - [HP Laserjet Printer](#)

“Caution: To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm (8 inches) must be maintained between the antenna for the integrated Wireless LAN Mini PCI Express Card built into the screen section and all persons. You are not allowed to disable “sleep mode” for the power management function, if you cannot maintain the sufficient antenna separation (at least 20 cm).” - [Lenovo Computer](#)

“To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.” - [TP LINK Wireless Router](#)

“WARNING: While this device is in operation, a separation distance of at least 20 cm (8 inches) must be maintained between the radiating antenna and users exposed to the transmitter in order to meet the FCC RF exposure guidelines.” - [Verizon Fios Router](#)

“This product complies with FCC radiation exposure limits under the following conditions:

- The base must be placed to allow a minimum of 20 cm (8 inches) between the antenna and all persons during normal operation.” - [Toshiba DECT Phone](#)

“FCC RF Exposure Warning:

To comply with FCC RF exposure requirements, the base unit must be installed and operated 20 cm (8 inches) or more between the product and all person's body.” - [Panasonic DECT Home Cordless Phone](#)

“To reduce exposure to RF energy, use a hands-free accessory or other similar option to keep this device away from your head and body. Carry this device at least 10 mm away from your body to ensure exposure levels remain at or below the as-tested levels. Choose the belt clips, holsters, or other similar body-worn accessories which do not contain metallic components to support operation in this manner. Cases with metal parts may

change the RF performance of the device, including its compliance with RF exposure guidelines, in a manner that has not been tested or certified, and use such accessories should be avoided.”

“For body-worn operation, this device has been tested and meets the ICNIRP guidelines and the European Standard EN 62209-2, for use with dedicated accessories. SAR is measured with this device at a separation of 1.5 cm to the body, while transmitting at the highest certified output power level in all frequency bands of this device. Use of other accessories which contain metals may not ensure compliance with ICNIRP exposure guidelines.” - [Asus Phone](#)

“The RF field strength of the wireless device or devices that may be embedded in your notebook are well below all international RF exposure limits as known at this time. Because the wireless devices (which may be embedded into your notebook) emit less energy than is allowed in radio frequency safety standards and recommendations, manufacturer believes these devices are safe for use. Regardless of the power levels, care should be taken to minimize human contact during normal operation. ...As a general guideline, a separation of 20 cm (8 inches) between the wireless device and the body, for use of a wireless device near the body (this does not include extremities) is typical. This device should be used more than 20 cm (8 inches) from the body when wireless devices are on and transmitting.”

[The Samsung Chromebook manual](#)

“Usage precautions during 3G connection : Keep safe distance from pregnant women’s stomach or from lower stomach of teenagers. Body worn operation: Important safety information regarding radiofrequency radiation (RF) exposure. To ensure compliance with RF exposure guidelines the Notebook PC must be used with a minimum of 20.8 cm antenna separation from the body.”

[Samsung 3G Laptop Manual](#)

“A cellular antenna is located at the top edge of iPad Wi-Fi + 3G, when oriented with the Home button at the bottom. For optimal mobile device performance and to be sure that human exposure to RF energy does not exceed the FCC, IC, and European Union guidelines, always follow these instructions and precautions: Orient the device in portrait mode with the Home button at the bottom of the display, or in landscape mode with the cellular antenna (located under the black edge at the top of the device) away from your body or other objects.”

[Apple iPad Manual](#)

“Use hands-free operation if it is available and keep the BlackBerry device at least 0.98 in. (25 mm) from your body (including the abdomen of pregnant women and the lower abdomen of teenagers) when the BlackBerry device is turned on and connected to the wireless network.” [Blackberry Bold Manual](#)

Caution: Exposure to Radio Frequency Radiation. The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized. When connecting an external antenna to the device, the antenna shall be placed in such a manner to minimize the potential for human contact during normal operation. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

- [Belkin Wi-Fi Router](#)

“To reduce exposure to RF energy, use a hands-free accessory or other similar option to keep this device away from your head and body. Carry this device at least 10 mm away from your body to ensure exposure levels

remain at or below the as-tested levels. SAR is measured with this device at a separation of 1.5 cm to the body, while transmitting at the highest certified output power level in all frequency bands of this device. Use of other accessories which contain metals may not ensure compliance with ICNIRP exposure guidelines.” - [Zenphone 2](#)

“Note: Reduce the risk of heat-induced injury or fire by adhering to the Following: 1) Do not place the computer or AC adapter on a soft surface, such as a bed. 2) Do not rest the computer or AC adapter on your lap for extended Periods. 3) Use the computer on a flat, hard surface, such as a desk. 4) Ensure that the ventilation is not obstructed.” - [Acer C720 Laptop](#)

“Use the device only in its normal operating positions. This device meets RF (Radio Frequency) exposure guidelines when used normally. It should not contain metal and you should position the device the above-stated distance from your body. To successfully transmit data files or messages, this device requires a good quality connection to the network. In some cases, transmission of data files or messages may be delayed until such a connection is available. Ensure that the above separation distance instructions are followed until the transmission is completed.” - [HP Products with Wireless Modules](#)

“IMPORTANT NOTE: FCC Compliance statement This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures: • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help. IMPORTANT NOTE: FCC Operation Guide This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. IMPORTANT NOTE: FCC Caution Statement Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. IMPORTANT NOTE: FCC RF exposure statement The antenna(s) used for this device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. This device is restricted to indoor use only within the 5.15-5.25 GHz band to reduce any potential for harmful interference to co-channel MSS operations. IMPORTANT NOTE: FCC Shielded cable statement This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to insure compliance.” - [Samsung Mobile Media Streaming Device](#)

“This application and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter. A minimum separation distance of 20cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.” - [Samsung Communication Controller for Wireless Devices](#)

“Low power, Radio LAN type devices (radio frequency (RF) wireless communication devices), operating in the 2.4 GHz/5 GHz Band, may be present (embedded) in your printer system. The following section is a general overview of considerations while operating a wireless device. ... The power output of the wireless device or



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7100 N Rachel Way  
Unit 6 Eagles Rest  
Teton Village WY 83025



*For U.S. Mail*  
P.O. Box 58  
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www.ehtrust.org

devices that may be embedded in your printer is well below the RF exposure limits as known at this time. Because the wireless devices (which may be embedded into your printer) emit less energy than is allowed in radio frequency safety standards and recommendations, manufacturer believes these devices are safe for use. Regardless of the power levels, care should be taken to minimize human contact during normal operation. As a general guideline, a separation of 20 cm (8 inches) between the wireless device and the body, for use of a wireless device near the body (this does not include extremities) is typical. This device should be used more than 20 cm (8 inches) from the body when wireless devices are on and transmitting." - [Samsung Monochrome Laser Printer](#)

"Keep the mobile device and its antenna at least 2.5 centimetres (1 inch) from your body when transmitting. If you have an implantable medical device, such as a pacemaker or defibrillator, consult your doctor before using this mobile device. Persons with implantable medical devices should observe the following precautions: • ALWAYS keep the mobile device more than 20 centimetres (8 inches) from the implantable medical device when the mobile device is turned ON. • DO NOT carry the mobile device in the breast pocket. Small children Keep your mobile device and its accessories away from small children. These products are not toys and may be hazardous to small children." - [MOTOROLA XOOM](#)