

RECEIVED

November 25, 2011

2011 NOV 30 A 11: 10

Received & Inspected

NOV 28 2011

OFFICE OF ENGINEERING  
& TECHNOLOGY

FCC Mail Room

Federal Communications Commission  
Office of Managing Director/Data Quality Appeal  
445 12<sup>th</sup> Street, SW  
Washington, D.C. 20554

Re: Data Quality Appeal by Cynthia Franklin to challenges submitted July, 2011

Enclosed please find the appeal to the FCC OET ruling regarding 3 of the 5 challenges submitted in July, 2011. As stipulated in the OMB Guidelines for Data Quality Act appeals, this review and determination will be made by an agency other than the OET:

Paragraph III.3.ii: "... *An objective process will ensure that the office that originally disseminates the information does not have responsibility for both the initial response and resolution of a disagreement.*"

Please contact me with any questions or for further clarification of the enclosed information. Thank you.

Respectfully,

  
Cynthia Franklin

CC: Daniel E. Brannen Jr., Brannen Law LLC,  
215 W San Francisco St, #204, Santa Fe NM 87501  
Attorney for Appellant

NOV 28 2011

FCC Mail Room

**Appeal of FCC Determination Letter of 31 October 2011**

This summer, Cynthia Franklin filed five complaints under the Data Quality Act regarding four consumer website documents published by the Federal Communications Commission. (Exhibits A, B, and C.) In a determination dated 31 October 2011, the FCC Office of Engineering and Technology declined to take corrective action on any of the complaints. (Exhibit D.) Franklin hereby appeals the determination with respect to complaints 1, 2, and 3(b) (again, Exhibits A, B, and C.)<sup>1</sup>

**Factual Background**

Cell phones used by the general public emit radiofrequency (RF) radiation in the range from 100 kHz to 6GHz. Specific absorption rate, or SAR, is a measure of the rate by which a human body absorbs RF radiation when exposed to an RF transmitting source, such as a cell phone. To regulate the biological hazards from a human's absorption of such energy, FCC regulations require that cell phones for the general population limit RF exposure to a spatial peak SAR not exceeding 1.6W/kg as averaged over any one gram of human tissue. 47 C.F.R. § 2.1093(d). The SAR absorbed by a consumer while using a cell phone depends upon the distance of the cell phone from the user's body. According to the universally accepted Inverse Square Law of Physics, which governs exposure in relation to distance for any type of energy radiation, a separation distance of as little as one inch can reduce exposure to RF radiation by 16-fold.

The FCC has issued guidelines to assist manufacturers in producing, for FCC approval, cell phones that comply with this SAR limitation. The guidelines contain procedures under

---

<sup>1</sup> The FCC's determination was post-marked on November 7, a full week after the date on the letter, October 31. (Exhibit E.) Franklin intends to submit this appeal by November 30. In the event it arrives after that date due to delivery circumstances beyond her control, she will rely on the November 7 date as triggering the time for appeal.

which manufacturers are to test cell phones for consumers' use against their ears, and also in body-worn configuration use, which assumes the cell phone is positioned in a holster or other device that offers a separation distance, thereby reducing exposure to the user's body from the cell phone's radiating antenna.

With respect to testing for body-worn usage, the FCC guidelines allow manufacturers to test the phones for compliance with the SAR limitation with separation distances between 1.5 cm (.6 inch) and not greater than 2.5 cm (1 inch) away from the body, simulating the consumer "body-worn" use in a holster or other device that provides the required separation distance. (FCC, Office of Engineering Technology, OET Bulletin 65, Supplement C, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields," edition 01-01, p. 41.) The same guidelines advise manufacturers to warn consumers not to use such phones on their bodies closer than the tested distances, with the following language: "For body worn operation, this phone has been tested and meets FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the cell phone a minimum of (specified distance) from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines." *Id.* This non-mandatory advice becomes mandatory when, after documented testing, the FCC issues a manufacturer a "Grant of Equipment Authorization." These grants say, "SAR compliance for body-worn operating configuration is based on a separation distance of \_\_\_ cm between the back of the unit and the body of the user. End-users must be informed of the body-worn operating requirements for satisfying RF exposure compliance." (Exhibit F.)

None of the FCC's regulations or testing guidelines allow manufacturers to test or sell cell phones for body-worn configurations that involve keeping or using the device directly

against the body, separated from the body by nothing or by only an article of clothing. An independent scientific study, though not necessary for this appeal given the regulatory framework, proves that cell phone use against the body can exceed the allowed SAR exposure limit by two to seven times. (Exhibit G.) Yet the cell phone industry is well aware that common consumer usage today involves placement of the cell phone directly against the body, whether in a pocket, bra, or other convenient location.<sup>2</sup> And the industry explicitly markets cell phones to be used in body-worn configurations directly against the body. (See Exhibit H.) Yet the industry's warnings in user's manuals, such as the sample attached for the Blackberry Bold 9000, make clear that wearing phones on the body might present a risk of serious harm from the long term effects of exceeding RF exposure standards. (See Exhibit I.)

Given this factual environment, it is essential that information disseminated by the FCC accurately say that cell phones are not tested for RF exposure when used directly against the body and hence should not be so used. Such factual accuracy is required by the Federal Data Quality Act, 44 U.S.C. § 3501 *et seq.* There is no rational reason why consumers reading FCC information should not receive, or cannot understand, the very concept of a separation distance that the FCC requires manufacturers to explain in user's manuals.

### **Argument**

Here we address the substance of three of the five Data Quality Act complaints that Franklin submitted to the FCC this summer.<sup>3</sup>

---

<sup>2</sup> In other words, the testing guidelines, now ten years old, are obsolete when they imagine that consumers will utilize holsters with separation distances instead of just placing phones in pockets and bras.

<sup>3</sup> Franklin is a cell phone user, and therefore is an "affected person" under the Data Quality Act and the OMB and FCC guidelines thereunder. The FCC's determination letter does not assert otherwise.

**I. The FCC guide “Specific Absorption Rate (SAR) for Cell Phones: What it Means for You” inaccurately tells consumers that cell phones are tested against the body and next to the body**

The FCC publishes a guide for consumers called, “Specific Absorption Rate (SAR) for Cell Phones: What it Means for You.” (Exhibit J.) In the first paragraph under the section “SAR Testing,” the guide states explicitly that cell phones are tested “against the dummy head and body,” and that they are tested “next to the head and body.” These statements violate the Data Quality Act because they are not objective and not useful. (*See* complaint, exhibit A.)

In addition, in the section called “What SAR shows” is the statement, “FCC approval means that the device will never exceed the maximum levels of consumer RF exposure permitted by federal guidelines...” This statement also violates the Data Quality Act because it is not objective and it is not useful.

Objectivity

Under the FCC’s Information Quality Guidelines, objectivity has both substantive and presentational components. The substantive component means the data must “have full, unbiased, reliable, accurate, transparent documentation.” Stating that phones are tested “against ... the body” and “next to ... the body” violates substantive objectivity. Cell phones are tested for the body-worn exposure compliance positioned 1.5 to 2.5 cm away from the body, so there is no documentation to support the assertion that they are tested against or next to the body.

In addition, stating that FCC approved cell phones will never exceed maximum RF exposure also violates substantive objectivity, because there is no documentation that cell phones worn directly on the body will not exceed RF limitations.

The presentational component of objectivity means that the data ensures “unbiased clarity, accuracy, completeness, and reliability.” Stating that phones are tested “against ... the

body” and “next to ... the body” violates presentational objectivity. Because compliance testing for body-worn use of cell phones is done 1.5 to 2.5 cm away from the body, it is plainly inaccurate for data to assert that they are tested against or next to the body.

In addition, since a cell phone can test at the maximum exposure limit for the body-worn compliance positioned from 1.5 to 2.5 cm from the body, using a cell phone closer than this separation distance certainly will expose the user to greater than the safety standard of 1.6 W/kg. Using a cell phone in the typical manner, as in a pocket, WILL “exceed the maximum levels of consumer RF exposure permitted by federal guidelines.” Therefore it is a false statement, and so violates presentational objectivity, to say that “FCC approval means that the device will never exceed the maximum levels of consumer RF exposure permitted by federal guidelines.”

#### Utility

Under the FCC’s Information Quality Guidelines, the utility prong of data quality “refers to the usefulness of the information to its intended users, including the public. In assessing the usefulness of information that the Commission disseminates to the public, the Commission will consider the uses of the information not only from the perspective of the Commission but also from the perspective of the public.”

Stating that cell phones are tested “against ... the body” and “next to ... the body” violates informational utility. It naturally leads consumers to believe that cell phones are tested for use in pockets, bras, and other body-worn configurations lacking a separation distance. Hence, it naturally leads them to use cell phones in this manner, when in fact cell phones are tested 1.5 to 2.5 cm away from the body, and manufacturers must warn consumers not to use them contrary to this separation distance. Using cell phones directly against the body, as in a shirt or pants pocket, is not only a non-compliant usage, but since a cell phone can expose the

user to the maximum allowed SAR when tested or used 1.5 to 2.5 cm away from the body, using a cell phone in a pocket with little or no separation distance will in fact expose the user to SAR levels that exceed the FCC safety standard of 1.6 W/kg.

In addition, stating that “FCC approval means that the device will never exceed the maximum levels of consumer RF exposure permitted by federal guidelines” also violates the utility prong of informational quality. It naturally leads consumers to believe that use in any manner, including directly on the body, is approved by the FCC under RF exposure guidelines, when in fact such use is not approved. The separation distance in the testing scheme is designed to “regulate the biological hazards from a human’s absorption of [RF] energy.” 47 C.F.R. § 2.1093(d). So information that encourages a consumer to use the cell phone without the separation distance is physically harmful, and hence completely not useful.

#### FCC’s determination

The FCC’s determination rejects this complaint and declines to take corrective action. Generally the FCC says, “Including detailed discussions of technical or procedural information in this forum would reduce the usefulness of the information for the intended audience.” This is nonsense. Explaining the separation in plain English would not require the use of technical or procedural information that would interfere with objectivity or utility. There is no reason why consumers reading information disseminated in this FCC consumer website about SAR cannot understand that with respect to RF radiation, cell phones are tested 1.5 to 2.5 cm away from the body in specified accessory devices (e.g. holsters). Telling them that phones are tested against to and next to the body is plain false.

Specifically with respect to this complaint, the FCC’s determination also says, “we maintain that the level of details you seek is inconsistent with a document that is intended only to

assist consumers in understanding the meaning of the term SAR.” This is not an adequate basis on which to reject the complaint under the Data Quality Act. The Act and the OMB and FCC guidelines thereunder do not say that an information guide on one subject, here the meaning of the term SAR, can contain misinformation on another subject, here how cell phones are tested for compliance with SAR limitations.

Moreover, the FCC is splitting hairs when it suggests that information on separation distance in testing is unrelated to information on the meaning of the term SAR. The consumer guide plainly is meant to give consumers information not only about the definition of the term SAR, but on “What it Means to You,” which necessarily refers to what it means for consumer use of cell phones. Telling consumers that cell phones are tested against the body and next to the body gives them misinformation about the meaning of SAR and how it relates to their safe use of cell phone products. Stating that FCC approval means that the device will never exceed the maximum levels of consumer RF exposure permitted by federal guidelines is not only inaccurate, but misleads consumers into believing they can use their cell phone in a pocket and never exceed the federal safety guideline. To be accurate and useful, this statement must be changed as indicated on Franklin’s complaint.

**II. The FCC Office of Engineering and Technology’s consumer website “Radio Frequency Safety” inaccurately states that cell phones are required to meet safety requirements against the body, and therefore are compliant with the safety limit when used against the body.**

The FCC’s Office of Engineering and Technology publishes frequently-asked-questions. One of those is, “Do Hands-Free Earpieces for Mobile Phones Reduce Exposure to RF Emissions? What About Mobile Phone Accessories That Claim to Shield the Head from RF Radiation?” (Exhibit K.) The OET’s answer contains this:

"Hands-free" kits with ear pieces can be used with cell phones for convenience and comfort. In addition, because the phone, which is the source of the RF emissions, will not be placed against the head, absorption of RF energy in the head will be reduced. Therefore, it is true that use of an ear piece connected to a mobile phone will significantly reduce the rate of energy absorption (or "SAR") in the user's head. On the other hand, if the phone is mounted against the waist or other part of the body during use, then that part of the body will absorb RF energy. Even so, mobile phones marketed in the U.S. are required to meet safety limit requirements regardless of whether they are used against the head or against the body. So either configuration should result in compliance with the safety limit. Note that hands-free devices using "Bluetooth" technology also include a wireless transmitter; however, the Bluetooth transmitter operates at a much lower power than the cell phone.

Franklin's second complaint challenges the two consecutive sentences that say, "Even so, mobile phones marketed in the U.S. are required to meet safety limit requirements regardless of whether they are used against the head or against the body. So, either configuration should result in compliance with the safety limit." The assertions that phones marketed in the U.S. meet safety limitations when used "against the body" and that using a cell phone against the body results in compliance with the safety limit both violate the objectivity and utility prongs of data quality under the Data Quality Act.<sup>4</sup> (*See* complaint, exhibit B.)

#### Objectivity

The two challenged sentences violate both the substantive and presentational components of the objectivity prong of informational quality. They violate substantive objectivity because cell phones are tested for body-worn compliance positioned 1.5 to 2.5 cm away from the body, so there is no documentation to support the assertion that phones marketed in the U.S. are tested

---

<sup>4</sup> The FCC's Information Quality Guidelines attempt to exclude "FAQ's" from the definition of information subject to the Data Quality Act. The FCC's determination letter did not use that as a basis for rejecting the complaint. Nor could it. The Data Quality Act makes clear that the purpose of the Act is to ensure the accuracy of data provided to the public. *See* 44 U.S.C. § 3501(2). FAQ's are a much used mode for providing such information. The OMB's definition of information covered by the Act does not exclude FAQ's. *See* "Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies," section V.8, definition of "Dissemination," 67 FR 8452, at 8460. Hence, the FCC's effort to exclude FAQ's is unlawful under the Act.

for safety limitations when used “against the body.” And, there is no documentation to support the assertion that using a cell phone against the body “should result in compliance with the safety limit.” In addition, both assertions violate presentational objectivity because they are inaccurate, as there are no safety limit requirements that allow cell phones to be marketed for use against the body, and cell phone use against the body can exceed the allowed SAR exposure compliance limit by two to seven times. (Exhibit G.)

### Utility

The two challenged sentences violate the utility prong of informational quality too. They mislead consumers to believe that they safely may use cell phones against their bodies in a pocket, bra, or elsewhere, when in fact the safety limitations for phones used in a body-worn position are tested for use at least 1.5 to 2.5 cm away from the body. Hence these sentences encourage consumers to use cell phones in a manner contrary to the testing scheme, contrary to the warnings in the user’s manuals, and thus contrary to approved regulations for the maximum SAR limit.

### FCC’s determination

The FCC’s determination letter rejects this complaint, for two reasons. First it says that the phrase “mounted against the waist or other part of the body” in the sentence prior to the challenged one makes clear that all references to body-worn usage mean usage in a regulatory approved fashion. This is not so. The term “mounted” is not a term a typical cell phone user would interpret as a method for using a cell phone involving a holster. Manufacturers market their phones to be used in pockets, so a user may be confused into thinking that “mounted against the waist” means tucked into a waistband or belt, both non-compliant use positions that may exceed the maximum exposure compliance safety standard. In addition, after the reference to

“mounted” use, the challenged sentence begins with the phrase “Even so.” The phrase “Even so” disrupts the reader’s concept of mounted use to introduce a new thought. The new thought is that regardless of earpiece usage or body-worn usage, cell phones meet safety limitations for use “against the body.” They do not, and hence the challenged sentence must be revised.

The FCC’s second basis for rejecting this complaint is, “Moreover, the sentence does not in any way suggest that it supersedes any information on appropriate use of the devices provided in the instructions that come with the device.” This is not an adequate defense. The Data Quality Act and the guidelines thereunder do not say that if there is accurate information in a user’s manual, then agency information may be inaccurate. Availability of information elsewhere is not a justification for agency information to violate the requirements of informational quality, objectivity, and utility. The purpose of the Data Quality Act is to ensure that agency information is accurate, regardless of the accuracy of information in the universe outside the agency. *See* 44 U.S.C. § 3501(2).

**III. The FCC guide “Wireless Devices and Health Concerns” used to contain, and misleadingly dropped, a warning that consumers not use cell phones on belts or in pockets**

The FCC publishes a consumer guide called, “Wireless Devices and Health Concerns.” Under a section heading “What You Can Do,” in a paragraph beginning “Some measures to reduce your RF exposure,” the guide used to say, “Keep wireless devices away from your body when they are on, mainly by not attaching them to belts or carrying them in pockets.” (Exhibit L.) In September 2010, the FCC dropped this factual consumer safety warning from the website document. (Exhibit M.) Dropping this phrase from the FCC disseminated website information violates the objectivity and utility prongs of informational quality under the Data Quality Act. (See complaint, exhibit C.)

### Objectivity

Dropping the phrase from the guide violates the Data Quality Act objectivity prong for informational quality. In particular, it violates the objectivity requirement of unbiased completeness. The remaining admonition in the guide, “Increase the distance between wireless devices and your body,” is incomplete. It fails to inform consumers clearly that use of cell phones attached to belts or in pockets is contrary to testing of the devices 1.5 to 2.5 cm from the body, and that usage in this manner directly against the body is a non-compliant use. That the industry markets cell phones for pocket use makes it essential, for unbiased completeness, that the FCC information clearly warn consumers not to use cell phones on belts or in pockets.

### Utility

Dropping the phrase also violates the Data Quality Act utility prong for informational quality. It leaves the consumer with a useless suggestion just to increase the distance between devices and the body. Putting the phrase back in would be far more useful, making it clear to consumers that use on belts and in pockets is contrary to the regulatory testing and approval of the devices and also contrary to the consumer safety warnings regarding necessary separation distance that the FCC requires manufacturers to place in user’s manuals.

### FCC’s determination

The FCC’s determination rejects this complaint. It says, “the specific sentence to which you refer has been replaced by more appropriate language that addresses more universally the issue of separation.”<sup>5</sup> For the reasons already explained, the new sentence is not more appropriate. It is not objective because it is incomplete, in a biased fashion. And it is not useful,

---

<sup>5</sup> Franklin does not pursue her argument that dropping the phrase required a period of public comment.

because it does not quantify the separation distance with either numbers or specific usage advice. Putting the omitted phrase back in will be more objective and useful by clearly telling consumers not to use cell phones attached to belts or in pockets.

**Conclusion**

For these reasons, Franklin requests that the FCC reverse its determination letter with respect to the three complaints addressed in this appeal and take the corrective action requested in those complaints.

Respectfully submitted,

  
Cynthia Franklin

Date: November 25, 2011

Daniel E. Brannen Jr., Brannen Law LLC  
Attorney for appellant Cynthia Franklin  
215 W San Francisco St, Suite #204  
Santa Fe, NM 87501  
505-795-7434

## FCC Data Quality Act Challenge

1

**Title of information packet with errors (2):** “Specific Absorption Rate (SAR) for Cell Phones: What it Means for You” (<http://www.fcc.gov/guides/specific-absorption-rate-sar-cell-phones-what-it-means-you>)

**Date of information product:** current version (no date found on website)

**Complaint filed by:** Cynthia Franklin and Environmental Health Trust

**Date submitted:** July 12, 2011 (received by FCC)

**1) Specific comment:** Currently, there are 2 factually inaccurate and misleading statements in the paragraph titled “SAR Testing” which violate the DQ Guidelines mentioned above:

- 2<sup>nd</sup> sentence - “against the dummy head and body”, and
- 3<sup>rd</sup> sentence - “next to the head and body”

SAR testing guidelines as defined in “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields” Supplement C (edition 01-01) to OET Bulletin 65 page 43 under “Recommended Test Positions” allow all cell phones to be tested for SAR while positioned in a simulated holster held up to 2.5 cm away from the dummy body. Because of this allowed separation distance during testing, all end users are required to be informed of the “body worn configuration” (OET compliance grant document “Application for Equipment Authorization” OET RCB FCC Form 731 under “Grant Comments”) to never wear/carry or use a cell phone closer than this separation distance from the body. Warning consumers of this required separation safety distance is a condition for manufacturers' compliance with federal radiation exposure guidelines.

The above two inaccurate and misleading statements must be changed immediately to stop declarations by the industry which uses these statements to declare that “the FCC's website says cell phones are safe when used in any manner.” This is NOT true as using a cell phone directly against the body as in a pocket or attached to a belt could expose the user to many times greater RF exposure than allowed under federal safety guidelines.

It is factually inaccurate and deceptively misleading to assure consumers that wearing or using a cell phone directly against the body is a compliant and safe manner of usage. And, it is equally inaccurate and deceptively misleading for this FCC website to state that cell phones are tested while held directly against the body.

**FCC Data Quality Guidelines violated:** “Objectivity”, “Quality” and “Integrity”. The two factually inaccurate and misleading statements mentioned above are “Influential” as this misinformation has extremely negative consequences for the 300 million US cell phone users. If the facts about the separation distance are not disclosed to consumers, they may wear and/or use a cell phone directly against their body while transmitting and expose themselves to greater than the federal RF emissions limit. For the FCC to claim on their consumer website that cell phones are tested held directly against the body is not only inaccurate, it is a blatant misrepresentation of the facts.

**Action FCC needs to take** - Pursuant to the provisions of the Data Quality Act, we request the FCC resolve this complaint in the following manner:

- Replace “against the dummy head and body” with “held away from the dummy head by a slight separation distance simulating the ear and held up to 1 inch away from the torso simulating use of a holster.” (NOTE: Using “cm” or “mm” is misleading and deceptive as US consumers are not familiar with the metric system. “Inches” or “in.” must be used to ensure objective, accurate and quality dissemination of usable information.
- Replace “next to the head and body” with the same statement recommended above: “held away from the dummy head by a slight separation distance simulating the ear and held up to 1 inch away from the torso simulating use of a holster.” (NOTE: Using “cm” or “mm” is misleading and deceptive as US consumers are not familiar with the metric system. “Inches” or “in.” must be used to ensure objective, accurate and quality dissemination of usable information.

**2) Specific comment:** In the paragraph titled, “What SAR Shows” there is a factually inaccurate and misleading statement.

The statement, “FCC approval means that the device will never exceed the maximum levels of consumer RF exposure permitted by federal guidelines” is factually incorrect and demonstrates a blatant bias toward the industry-wide deceptive claim that a cell phone is safe when used directly against the body. OET officials know that this statement is inaccurate; it actually gives FCC approval to consumer use of cell phones in a potentially unsafe manner.

**FCC Data Quality Guidelines violated:** “Objectivity”, “Quality” and “Integrity”. The factually inaccurate and misleading statement mentioned above is highly “Influential” as this misinformation has extremely negative consequences for the 300 million US cell phone users. If the facts about the separation distance are not disclosed to consumers, they may wear and/or use a cell phone directly against their body while transmitting and expose themselves to greater than the federal RF emissions limit. For the FCC to claim on their consumer website that cell phones “will never exceed the maximum levels of consumer RF exposure permitted by federal guidelines” is not only inaccurate, it is a blatant misrepresentation of the facts.

**Action FCC needs to take** - Pursuant to the provisions of the Data Quality Act, we request the FCC to resolve this complaint in the following manner:

Replace the above inaccurate and misleading statement with caps as shown for emphasis: “FCC approval means that the device will never exceed the maximum levels of consumer RF exposure permitted by federal guidelines **AS LONG AS THE DEVICE IS NOT CARRIED OR USED WHILE ATTACHED TO A BELT OR IN A POCKET AGAINST THE BODY.**”

**Contact:** Cynthia Franklin  
Email: [cwfranklin@aol.com](mailto:cwfranklin@aol.com)

Exhibit B

## FCC Data Quality Act Challenge 2

**Title of information packet with errors (2):** FCC>OET>RF Safety Document “Radio Frequency Safety” in the section, “Frequently Asked Questions”. URL: <http://transition.FCC.gov/oet/rfsafety/rf-faqs.html#Q13>

**Date of information product:** 08/04/10

**Complaint filed by:** Cynthia Franklin and Environmental Health Trust

**Date submitted:** July 12, 2011 (received by FCC)

### Specific comments:

Under question titled, “Do Hands-Free ear pieces for mobile phones reduce exposure to RF emissions?” There are two factual errors (underlined) in this statement, in the 5<sup>th</sup> and 6<sup>th</sup> sentences, “Even so, mobile phones marketed in the US are required to meet safety limit requirements regardless of whether they are used against the head or against the body. So, either configuration should result in compliance with the safety limit.”

**FCC Data Quality Guidelines violated:** “Objectivity”, “Quality”, and “Integrity”

The two above-mentioned, underlined statements are BOTH factually incorrect and misleading, thereby violating the DQ Guidelines for “Quality” and “Objectivity”. All cell phones are tested for compliance with federal SAR exposure limits while positioned away from the body (simulating use in a holster) – (see “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”, Supplement C (Edition 01-01) to OET Bulletin 65, page 43 in the paragraph beginning “Body-worn accessories may not always be supplied or available...”). Therefore, as OET staff is aware, compliance guidelines REQUIRE that end users must be informed to NEVER carry or use a cell phone directly against the body (as when attached to a belt or when worn or used in a pocket) or they may be exposed to RF energy that exceeds federal safety limits (see OET compliance grant document, “Application for Equipment Authorization” OET RCB FCC Form 731 under “Grant Comments.”)

Warning consumers of this required separation safety distance is a condition for manufacturers' compliance with federal radiation exposure guidelines. Claiming that cell phones meet safety limits and are compliant EVEN IF WORN OR USED DIRECTLY AGAINST THE BODY is a blatant violation of the Data Quality Act.

The current incorrect and misleading statements are highly influential as they give explicit approval for the country's 300 million cell phone consumers to use a cell phone against the body, in spite of OET officials knowing this position is potentially unsafe and not a compliant manner of use. Including the 2 above, underlined statements are additionally, a clear violation of the DQ “Integrity” guideline as these statements constitute a blatant corruption and falsification of the facts.

Exhibit B

**Action FCC needs to take:**

Both sentences 5 and 6, beginning with “Even so, mobile phones marketed in the U.S....” and ending with, “...compliance with the safety limit.” must be deleted and replaced with the following in order to be factually accurate, unbiased and complete:

“All mobile phones marketed in the U.S. are tested for meeting federal radiation emission safety guidelines while held from .6 to 1 inch from the testing body, simulating use in a holster. Therefore, when connected to a network, your cell phone must never be carried or used to make calls directly against your body as when attached to a belt or carried in a shirt or pants pocket. Doing so is not compliant with FCC safety guidelines and could result in exposure to RF energy which exceeds the federal safety limit.”

**Contact:** Cynthia Franklin

Email – [cwfranklin@aol.com](mailto:cwfranklin@aol.com)

# FCC Data Quality Act Challenge

Exhibit C  
3b

**Title of information packet with error:** "Wireless Devices and Health Concerns"  
(<http://www.fcc.gov/guides/wireless-devices-and-health-concerns>)

**Date of information product:** current version - no date on website

**Complaint filed by:** Cynthia Franklin and Environmental Health Trust

**Date submitted:** July 12, 2011 (Received by FCC)

**Specific comment:** Under section heading, "What You Can Do", in paragraph beginning "Some measures to reduce your RF exposure include:" - the precaution, "Keep wireless devices away from your body when they are on, mainly by not attaching them to belts or carrying them in pockets." was deleted from the previous version of this document (dated November 5, 2009). To NOT include the precaution implies to consumers that it is safe to carry a cell phone in the pocket, when in fact, doing so positions the radiating device closer than the separation distance used during the SAR compliance test. Therefore, using a phone while attached to a belt or worn in a pocket may expose the user to microwave radiation greater than the regulatory guidelines stated in FCC's "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" Supplement C (Edition 01-01) to OET Bulletin 65.

This accurate, cautionary consumer safe use warning which DID exist in the previous version of this consumer website was removed without public notice or justification. This warning to not wear or use a cell phone attached to a belt or in a pocket is an FCC-required consumer warning about which all consumers MUST be informed to avoid exposure to radio frequency emissions that exceed the federal compliance SAR limit. This requirement for every cell phone's compliance that "end users must be informed" to NEVER carry or use a cell phone directly against the body (as when attached to a belt or when worn or used in a pocket) or they may be exposed to RF energy that exceeds federal safety limits is stated in OET compliance grant document, "Application for Equipment Authorization" OET RCB FCC Form 731 under "Grant Comments.

## **FCC Data Quality Guidelines violated:**

- 1) Omission of the consumer warning (which used to appear in this document) is "Influential" as it has extremely negative consequences for the 300 million US cell phone users. If consumers are NOT informed, they may wear and/or use a cell phone directly against their body while transmitting and expose them to greater than the federal RF emissions limit.
- 2) "Objectivity" - Omission of the consumer safe-use warning demonstrates a bias toward the cell phone industry by concealing the fact that the use of a cell phone attached to the belt of in a breast or pants pocket not only violates compliance guidelines, but is a potentially UNSAFE manner of use.
- 3) "Quality" - Omission of this warning renders this document misleading, incomplete and unreliable.

Exhibit C

- 4) "Utility" - Without this warning, this document implies that a cell phone is safe and compliant when used attached to a belt or transmitting in a breast or pants pocket directly against the body.
- 5) "Integrity" - Deletion of the two afore-mentioned sentences demonstrates a clear compromise of this document through corruption and falsification by omission of information that is necessary for safe product usage.

**Action FCC needs to take** - Pursuant to the provisions of the Data Quality Act, we request the FCC . resolve this complaint in the following manner:

Reinsert the statement that was deleted from the previous version of this consumer website (November 5, 2009) in the bulleted list of "measures to reduce your RF exposure":

"The FCC warns that you must keep wireless devices away from your body when they are on, mainly by not attaching them to belts or carrying them in pockets."

The initial words, "**The FCC warns that you must**" are required to be included as this is not a SUGGESTION, but a consumer safety WARNING about which all consumers must be informed in order to comply with federal radiation emission guidelines. To state that this is merely a suggestion for a way to reduce RF exposure is inaccurate and misleading. To omit the phrase, "The FCC warns that you must...." shows blatant bias against consumer safety (in favor of the cell phone industry) and a disregard for the FCC's own radiation emission compliance guidelines.

**Contact:** Cynthia Franklin  
Email – [cwfranklin@aol.com](mailto:cwfranklin@aol.com)



Federal Communications Commission  
Washington, D.C. 20554

Exhibit D

October 31, 2011

Ms. Cynthia Franklin  
520 Ridgeway Drive  
Bellingham, WA 98225

Dear Ms. Franklin:

We have received your Data Quality Act complaints regarding four documents the FCC disseminated to the public pertaining to radiofrequency (RF) exposure from wireless devices. The Data Quality Act allows interested parties to bring concerns to our attention. The FCC Information Quality Guidelines define the policy and procedures for reviewing and substantiating the quality<sup>1</sup> of information before it is disseminated to the public, as well as administrative mechanisms allowing persons to seek and obtain, where appropriate, correction of information disseminated that does not comply with the Data Quality Act.<sup>2</sup>

You submitted complaints regarding certain consumer documents that inform the public regarding the nature of FCC RF exposure rules and procedures and how they protect the public.<sup>3</sup> These fact sheets are intended to disseminate information to consumers who may not have particular technical expertise or knowledge regarding electrical engineering, RF propagation or science, RF emissions characteristics, research practices, or how the FCC regulates portable devices to interpret more clinical or detailed scientific information. Their purpose is to explain in easy-to-understand terms the regulatory rules and policies adopted in response to notice and comment rulemakings.<sup>4</sup> Including detailed discussions of technical or procedural information in

<sup>1</sup> *Quality* is a term encompassing utility, objectivity, and integrity. *Utility* refers to the usefulness of the information to its intended users, including from the perspective of both the Commission and the public. *Objectivity* involves two distinct elements, presentation and substance. *Objectivity* means substantively that, where appropriate, data should have full, unbiased, reliable, accurate, transparent documentation; and error sources affecting data quality should be identified and disclosed to users. *Integrity* refers to the security of information – protection of the information from unauthorized access or revision to ensure that the information is not compromised through corruption or falsification.

<sup>2</sup> See *Implementation of Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Pursuant to Section 515 of Public Law No. 105-554*, Appendix A, 17 FCC Rcd 15972, 15976 (rel. Aug. 9, 2002), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-02-277A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-02-277A1.pdf).

<sup>3</sup> Specific Absorption Rate (SAR) for Cell Phones: What it Means for You, available at <http://www.fcc.gov/guides/specific-absorption-rate-sar-cell-phones-what-it-means-you>; OET RF Safety Frequently asked questions about the safety of radiofrequency (RF) and microwave emissions from transmitters and facilities regulated by the FCC – Do “hands-free” ear pieces for mobile phones reduce exposure to RF emissions?, available at <http://www.fcc.gov/oet/rfsafety/rf-faqs.html#Q13>; Wireless Devices and Health Concerns, available at <http://www.fcc.gov/guides/wireless-devices-and-health-concerns>.

<sup>4</sup> In its 1996 Report and Order and its 1997 Second Memorandum Opinion and Order in ET Docket 93-62, the Commission, among other matters, established rules and guidelines for evaluating the environmental effects of radiofrequency radiation. Report and Order, ET Docket 93-62 (Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation), 11 FCC Rcd 15123 (1996); Second Memorandum Opinion and Order and Notice of Proposed Rule Making, ET Docket 93-62 (WT Docket 97-192), 12 FCC Rcd 13494 (1997).

Exhibit D

this forum would reduce the usefulness of the information for the intended audience. To the extent many of your concerns relate to the commission's rules or their implementation, you are free to file a petition for rule making.

The following responses address your complaints individually:

1. *Specific Absorption Rate (SAR) for Cell Phones: What it Means for You*  
(<http://www.fcc.gov/guides/specific-absorption-rate-sar-cell-phones-what-it-means-you>)

**Summary of complaint:** You assert that the paragraph entitled "SAR Testing" is inaccurate when describing measurement procedures for demonstration of portable consumer device compliance as "against" or "next to" a dummy head and body. You complain that manufacturers mislead consumers regarding these statements and fail to adequately inform consumers regarding separation distances with which phones are tested to determine their SAR compliance. You further assert that the paragraph entitled "What SAR Shows" is inaccurate in stating that portable consumer devices "will never exceed" the exposure limit and complain that this leads consumers to use cell phones in a potentially unsafe manner.

**Response:** Your complaint regarding how outside parties use data (in this case, manufacturers' practices) is not appropriate for a Data Quality Act action. With regard to the specific text in the paragraph entitled "What SAR Shows," we maintain that the level of details you seek is inconsistent with a document that is intended only to assist consumers in understanding the meaning of the term SAR.

2. *OET RF Safety Frequently asked questions about the safety of radiofrequency (RF) and microwave emissions from transmitters and facilities regulated by the FCC – Do "Hands-Free" Ear Pieces for Mobile Phones Reduce Exposure to RF Emissions?*  
(<http://www.fcc.gov/oet/rfsafety/rf-faqs.html#Q13>)

**Summary of complaint:** You complain that the response to the question is misleading when it states that mobile phones "are required to meet safety limit requirements regardless of whether they are used against the head or against the body [and that either of these configurations should result in compliance with the limit]." You specifically claim that the term "against" misleads consumers because of the separation distance used when SAR compliance testing is done for the "body-worn" test.

**Response:** The sentence that precedes the one you cite refers to devices "mounted against the waist or other part of the body." This suggests that some form of apparatus is used to hold the device. In context, the point of the sentence that you reference is that phones are tested in various configurations, including with an apparatus that is used to mount the device against the waist or other part of the body. The text would not most commonly be read to suggest that all wireless devices will be compliant with the SAR standards if used without any appropriate apparatus to mount the device against the body. Moreover, the sentence does not in any way

suggest that it supersedes any information on appropriate use of the devices provided in the instructions that come with the device.

### 3. *Wireless Devices and Health Concerns*

(<http://www.fcc.gov/guides/wireless-devices-and-health-concerns>)

**Summary of complaint:** You complain that the statements in the section entitled “Recent Developments” are misleading when they state that according to the Food and Drug Administration (FDA), the World Health Organization (WHO), and others there is not an established link between portable device exposure and any known health problems.<sup>5</sup> You also complain that other statements in that section are not sufficiently specific in noting the concerns by some outside parties that children are at greater risk of harm from RF emissions than adults. You disagree with the concluding statement that “currently no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses,” citing your interpretation of the statements of the WHO and the International Agency for Research on Cancer (IARC). You also complain that the section entitled “What You Can Do” is incorrect and misleading because it implies that the FCC does not endorse the need for additional safety measures when using cell phones and that the prior suggestion by the FCC to “keep wireless devices away from your body when they are on, mainly by not attaching them to belts or carrying them in pockets” was deleted inappropriately, as consumers should be advised to “NEVER carry or use a cell phone directly against the body (as when attached to a belt or when used in a pocket).” You also complain that the statement from a previous version of the site: “Keep wireless devices away from your body when they are on, mainly by not attaching them to belts or carrying them in pockets” does not appear on the current page and was removed without public notice or justification. In this regard, you insist that the FCC does in fact endorse the practice of keeping wireless devices away from the body because it requires information regarding “body worn configuration” in users’ manuals.

**Response:** With respect to “Recent Developments,” it would appear that you disagree with the FCC’s interpretation of the research done in this area, which is not a data or information matter. Our website provides links to various sites where interested consumers can access the underlying information and data for themselves. With respect to “What You Can Do,” the FCC does not endorse and has never endorsed the specific recommendations for reducing exposure offered in this section because they are beyond those necessary to achieve compliance with our exposure limits and are not known to increase safety. The subject information is included only to provide

<sup>5</sup> The FDA cites the May 31, 2011 IARC classification of radiofrequency fields on its website [words missing?] that it “interprets the 2B classification as meaning there is limited evidence showing radiofrequency carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals,” available at <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm>. As a federal health and safety agency, the FDA has the authority to take action if cell phones are shown to emit radiofrequency energy (RF) at a level that is hazardous to a user, but it has taken no such action given the recent IARC classification, nor is the FCC aware of FDA’s intention to do so given the evidence available to date. However, the FDA, FCC, and other federal agencies continue to monitor research developments in exposure to radiofrequency fields.

information for those consumers who wish to take additional precautionary steps to further reduce exposure. The information in this section assumes appropriate cell phone use consistent with manufacturers' information and instruction. With respect to removal of the specific statement regarding use of belt clips and pockets, we note first that updates to consumer information pages do not require public notice and comment. We also note that the specific sentence to which you refer has been replaced by more appropriate language that addresses more universally the issue of separation.

You also submitted a complaint regarding OET Bulletin 65 Supplement C (Edition 01-01).<sup>6</sup> This publication, while a public document, is not written for general consumer use; rather it provides FCC staff, parties responsible for review of applications, and parties filing applications for equipment authorization with guidance on complying with evaluation requirements and test procedures. It is useful to note that OET Bulletin 65 does not establish mandatory procedures.

#### 4. *OET Bulletin 65, Supplement C*

**Summary of Complaint:** You complain that the guidance in OET Bulletin 65, Supplement C for user's manuals is not sufficiently specific because it does not specify font size or location of operating instructions in user's manuals for "body-worn" and the examples given are incomplete and not written in user-friendly terms.

**Response:** This document was reviewed prior to its dissemination in October 2001. Because dissemination of this document preceded the complaint procedures established by the Data Quality Act and the FCC's own Information Quality Guidelines,<sup>7</sup> neither the Data Quality Act nor the Information Quality Guidelines apply.<sup>8</sup> For your information, we note that the FCC provides guidance both through its Information Quality Guidelines and by other means<sup>9</sup> and also considers scientifically-sound approaches developed independently by applicants. We also note that your complaint - that the font size and location for printing body-worn operating instructions in user manuals are not specified - fundamentally suggest that the Commission should adopt more specific rules rather than whether the data contained in the document is accurate.

---

<sup>6</sup> OET Bulletin 65 Supplement C (Edition 01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields: Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions, *available at* [http://www.fcc.gov/Bureaus/Engineering\\_Technology/Documents/bulletins/oet65/oet65c.pdf](http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65c.pdf).

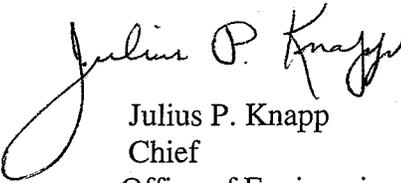
<sup>7</sup> Information Quality Guideline Appendix A at 9, *available at* [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-02-277A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-02-277A1.pdf) "Affected persons seeking correction of information disseminated in the context of a rulemaking proceeding should raise concerns about the quality, objectivity, utility and integrity of the information in accordance with the procedures for public comment in the rulemaking process rather than the complaint process set forth in these guidelines."

<sup>8</sup> Information Quality Guideline Appendix A at 10, *available at* [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-02-277A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-02-277A1.pdf) "The administrative mechanisms noted in section IV shall apply only to information dissemination products that the Commission disseminates on or after October 1, 2002."

<sup>9</sup> For example, the Office of Engineering and Technology publishes up-to-date technical rule interpretations and measurement guidance on its Knowledge Database (KDB) publications website: <https://apps.fcc.gov/oetcf/kdb/>.

If you wish to appeal this decision, under the terms of the Data Quality Act your application for review must be submitted in writing to the Federal Communications Commission, Office of Managing Director/Data Quality Appeal, 445 12th Street, SW, Washington, DC 20554, within thirty (30) days of the date of this letter. You may also submit an e-mail copy of the written appeal if you wish. This optional e-mail copy should be sent to [DataQualityAppeal@fcc.gov](mailto:DataQualityAppeal@fcc.gov). The written appeal must include a copy of the original complaint and the response thereto and an explanation of how the initial resolution of the complaint or the corrective action was contrary to the Commission's or OMB's information quality guidelines.

Sincerely,

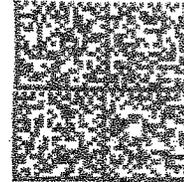
A handwritten signature in black ink that reads "Julius P. Knapp". The signature is written in a cursive style with a large, looping initial "J".

Julius P. Knapp  
Chief  
Office of Engineering & Technology

Exhibit E

Federal Communications Commission  
Washington, D.C. 20554

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300



Master

016H26513110

\$00.640

11/07/2011

Mailed From: 20743

US POSTAGE

Ms. Cynthia Franklin  
520 Ridgeway Drive  
Bellingham, WA 98225

126

5822536422 0046

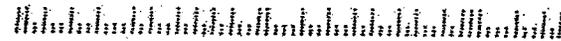


Exhibit E

Exhibit F-1


[Search](#) | [RSS](#) | [Updates](#) | [E-Filing](#) | [Initiatives](#) | [Consumers](#) | [Find People](#)  
 Federal Communications Commission

**REBOOT** FCC.gov

Office of Engineering and Technology

[Close This Window](#)

 Print

**Application for Equipment Authorization FCC Form 731 TCB Version**

Black Berry Pearl (see page 3)\*

**Applicant Information**

**Applicant's complete, legal business name:** Research In Motion Limited  
**FCC Registration Number (FRN):** 0006040703  
**Line one:** 295 Phillip Street  
**Line two:**  
**P.O. Box:**  
**City:** Waterloo, Ontario  
**State:** N/A  
**Country:** Canada  
**Zip Code:**

**TCB Information**

**TCB Application Email Address:** Vina.Kerai@babt.com  
**TCB Scope:** A4: UNII devices & low power transmitters using spread spectrum techniques

**FCC ID**

**Grantee Code:** L6A **Product Code:** RCX70UW

**Person at the applicant's address to receive grant or for contact**

**First Name:** Masud  
**Middle Name:**  
**Last Name:** Attayi  
**Title:** Sr. Certification Engineer  
**Telephone Number:** (519) 888-7465 **Extension:**  
**Fax Number:** (519) 888-6906  
**Email:** mattayi@rijm.net  
**Mail Stop:**

**Technical Contact**

**Firm Name:** Research In Motion Limited  
**First Name:** Masud  
**Middle Name:**  
**Last Name:** Attayi

Exhibit F-1

**Line 1:** 295 Phillip Street  
**Line 2:**  
**P.O. Box:**  
**City:** Waterloo  
**State:**  
**Country:** Canada  
**Zip Code:** N2L 3W8  
**Telephone Number:** (519) 888-7465 **Extension:**  
**Fax Number:** (519) 888-6906  
**E-Mail:** mattayi@rim.net

#### Non Technical Contact

**Firm Name:** Research In Motion Limited  
**First Name:** Masud  
**Middle Name:**  
**Last Name:** Attayi  
**Line 1:** 295 Phillip Street  
**Line 2:**  
**P.O. Box:**  
**City:** Waterloo  
**State:**  
**Country:** Canada  
**Zip Code:** N2L 3W8  
**Telephone Number:** (519) 888-7465 **Extension:**  
**Fax Number:** (519) 888-6906  
**E-Mail:** mattayi@rim.net

#### Long-Term Confidentiality

**Does this application include a request for confidentiality for any portion(s) of the data contained in this application pursuant to 47 CFR § 0.459 of the Commission Rules?:** Yes

#### Short-Term Confidentiality

**Does short-term confidentiality apply to this application?:** No

**If so, specify the short-term confidentiality release date (MM/DD/YYYY format):**

*Note: If no date is supplied, the release date will be set to 45 calendar days past the date of grant.*

#### Software Defined/Cognitive Radio

**Is this application for software defined/cognitive radio authorization?** No

#### Equipment Class

**Equipment Class:** DTS - Digital Transmission System

**Description of product as it is marketed: (NOTE: This text will appear below the equipment class on the grant):** Handheld Blackberry® with GSM/ EDGE 850/1900, WCDMA/HSDPA IV, 802.11/b/g, Bluetooth and GPS

**Related OET KnowledgeDataBase Inquiry****Is there a KDB inquiry associated with this application?** No**Modular Equipment****Modular Type:** Does not apply**Application Purpose****Application is for:** Original Equipment**Composite/Related Equipment****Is the equipment in this application a composite device subject to an additional equipment authorization?**

Yes

**Is the equipment in this application part of a system that operates with, or is marketed with, another device that requires an equipment authorization?** No**The related application is in the process of being filed under the FCC ID(s) L6ARCX70UW****Equipment Specifications**

Line Entry	Lower Frequency	Upper Frequency	Power Output	Tolerance	Emission Designator	Microprocessor Number	Rule Parts	Grant Notes
1	2412.00000000	2462.00000000	0.0591600				15C	CC

**Test Firm Information**

Name of test firm and contact person on file with the FCC:

**Firm Name:** RIM Testing Services**First Name:** Masud**Last Name:** Attayi**Telephone Number:** 519-888-7465 **Extension:** 72442**Fax Number:** 519-888-6906**E-mail:** mattayi@rim.com**Grant Comments****Enter any text that you would like to appear at the bottom of the Grant of Equipment Authorization:**

Output power is conducted. The highest reported DTS Head SAR was 0.43 W/kg. The highest reported DTS Body SAR was 0.27 W/kg. The highest reported DTS Body SAR using the 2.5 cm separation was 0.14 W/kg. This filing pertains to models RCX71UW and RCX72UW. This device and its antenna(s) must not be co-located or operated in conjunction with any antenna or transmitter not described under this FCC id. SAR compliance for body worn operating configurations must be restricted to belt-clips and holsters described in this filing, or which maintain a minimum separation distance of 2.5 cm and which contain no metallic component in the assembly. End-users must be informed of the body-worn operating requirements for satisfying RF exposure compliance.

**Equipment Authorization Waiver****Is there an equipment authorization waiver associated with this application?** No**If there is an equipment authorization waiver associated with this application, has the associated waiver been approved and all information uploaded?:** No

Exhibit F-2


[Search](#) | [RSS](#) | [Updates](#) | [E-Filing](#) | [Initiatives](#) | [Consumers](#) | [Find People](#)



Office of Engineering and Technology

[Close This Window](#)

 Print

**Application for Equipment Authorization FCC Form 731 TCB Version**

LG 355 (see page 3)

**Applicant Information**

**Applicant's complete, legal business name:** LG Electronics USA  
**FCC Registration Number (FRN):** 0020630604  
**Line one:** 1000 Sylvan Avenue  
**Line two:**  
**P.O. Box:**  
**City:** Englewood Cliffs  
**State:** New Jersey  
**Country:** United States  
**Zip Code:** 07632

**TCB Information**

**TCB Application Email Address:** randy@pctestlab.com  
**TCB Scope:** B1: Personal mobile radio services equipment in the following 47 CFR Parts 22 (cellular), 24,25 & 27

**FCC ID**

**Grantee Code:** BEJ **Product Code:** LX350

**Person at the applicant's address to receive grant or for contact**

**First Name:** Christopher  
**Middle Name:**  
**Last Name:** Johnson  
**Title:** Sr. Manager, Standards & Compliance  
**Telephone Number:** 201-266-2419 **Extension:**  
**Fax Number:** 201-816-2003  
**Email:** chris.johnson@lge.com  
**Mail Stop:**

**Technical Contact**

**Firm Name:** PCTEST Engineering Lab., Inc.  
**First Name:** Randy

Exhibit F-2

**Middle Name:****Last Name:** Ortanez**Line 1:** 6660-B Dobbin Road**Line 2:****P.O. Box:****City:** Columbia**State:** Maryland**Country:** United States**Zip Code:** 21045**Telephone Number:** 410-290-6652 **Extension:****Fax Number:** 410-290-6654**E-Mail:** randy@pctestlab.com**Non Technical Contact****Firm Name:****First Name:****Middle Name:****Last Name:****Line 1:****Line 2:****P.O. Box:****City:****State:****Country:****Zip Code:****Telephone Number:** **Extension:****Fax Number:****E-Mail:****Long-Term Confidentiality****Does this application include a request for confidentiality for any portion(s) of the data contained in this application pursuant to 47 CFR § 0.459 of the Commission Rules?:** Yes**Short-Term Confidentiality****Does short-term confidentiality apply to this application?:** No**If so, specify the short-term confidentiality release date (MM/DD/YYYY format):** 04/03/2006*Note: If no date is supplied, the release date will be set to 45 calendar days past the date of grant.***Software Defined/Cognitive Radio****Is this application for software defined/cognitive radio authorization?** No**Equipment Class****Equipment Class:** PCE - PCS Licensed Transmitter held to ear**Description of product as it is marketed: (NOTE: This text will appear below the equipment class on the grant):**Tri-Mode Dual-Band Phone  
(AMPS/CDMA) w/ Bluetooth

**Related OET KnowledgeDataBase Inquiry**

**Is there a KDB inquiry associated with this application?** No

**Modular Equipment**

**Modular Type:** Does not apply

**Application Purpose**

**Application is for:** Original Equipment

**Composite/Related Equipment**

**Is the equipment in this application a composite device subject to an additional equipment authorization?**

Yes

**Is the equipment in this application part of a system that operates with, or is marketed with, another device that requires an equipment authorization?** Yes

**The related application is in the process of being filed under the FCC ID(s)** BEJLX350

**Equipment Specifications**

Line Entry	Lower Frequency	Upper Frequency	Power Output	Tolerance	Emission Designator	Microprocessor Number	Rule Parts	Grant Notes
1	824.04	848.97	0.45	2.5 ppm	40K0F8W		22	BC
2	824.04	848.97	0.45	2.5 ppm	40K0F1D		22	BC
3	824.7	848.31	0.319	2.5 ppm	1M25F9W		22H	HC
4	1851.25	1908.75	0.327	2.5 ppm	1M25F9W		24E	HC

**Test Firm Information**

Name of test firm and contact person on file with the FCC:

**Firm Name:** PCTEST Engineering Laboratory, Inc.

**First Name:** Randy

**Last Name:** Ortanez

**Telephone Number:** 4102906652 **Extension:**

**Fax Number:** 4102906654

**E-mail:** randy@pctestlab.com

**Grant Comments**

**Enter any text that you would like to appear at the bottom of the Grant of Equipment Authorization:**

Output is ERP for Part 22 and EIRP for Part 24. SAR compliance for body-worn operating configuration is based on a separation distance of 1.5 cm between the back of the unit and the body of the user. End-users must be informed of the body-worn operating requirements for satisfying RF exposure compliance. Belt clips or holsters may not contain metallic components. RF exposure compliance was determined with the integral Bluetooth transmitter active. The highest reported SAR values are: Part 22 – Head: 1.24 W/kg; Body-worn: 1.12 W/kg, Part 24 – Head: 0.748 W/kg; Body-worn: 0.807 W/kg. HAC Rating: M3

Exhibit F-3


 Federal Communications Commission
 [Search](#) | [RSS](#) | [Updates](#) | [E-Filing](#) | [Initiatives](#) | [Consumers](#) | [Find People](#)

**REBOOT** FCC.GOV

Office of Engineering and Technology

[Close This Window](#)

 Print

**Application for Equipment Authorization FCC Form 731 TCB Version**

Motorola flipout (see page 3)

**Applicant Information**

**Applicant's complete, legal business name:** Motorola Mobility, Inc.  
**FCC Registration Number (FRN):** 0004321311  
**Line one:** Motorola Mobility, Inc.  
**Line two:** 8000 W. Sunrise Blvd.  
**P.O. Box:**  
**City:** Plantation  
**State:** Florida  
**Country:** United States  
**Zip Code:** 33322

**TCB Information**

**TCB Application Email Address:** pctesttcb@pctestlab.com  
**TCB Scope:** B1: Personal mobile radio services equipment in the following 47 CFR Parts 22 (cellular), 24,25 & 27

**FCC ID**

**Grantee Code:** IHD **Product Code:** T56LD1

**Person at the applicant's address to receive grant or for contact**

**First Name:** John  
**Middle Name:** J.  
**Last Name:** Lewczak  
**Title:** FCC Liaison  
**Telephone Number:** 954-723-6272 **Extension:**  
**Fax Number:** 954-337-2377  
**Email:** John.Lewczak@motorola.com  
**Mail Stop:** 52-5JJ

**Technical Contact**

**Firm Name:** PCTEST Engineering Laboratory, Inc.  
**First Name:** Randy

Exhibit F-3

**Middle Name:****Last Name:** Ortanez**Line 1:** 6660-B Dobbin Road**Line 2:****P.O. Box:****City:** Columbia**State:** Maryland**Country:** United States**Zip Code:** 21045**Telephone Number:** 410-290-6652 **Extension:****Fax Number:** 410-290-6654**E-Mail:** pctesttcb@pctestlab.com**Non Technical Contact****Firm Name:****First Name:****Middle Name:****Last Name:****Line 1:****Line 2:****P.O. Box:****City:****State:****Country:****Zip Code:****Telephone Number:** **Extension:****Fax Number:****E-Mail:****Long-Term Confidentiality**

**Does this application include a request for confidentiality for any portion(s) of the data contained in this application pursuant to 47 CFR § 0.459 of the Commission Rules?:** Yes

**Short-Term Confidentiality**

**Does short-term confidentiality apply to this application?:** Yes

**If so, specify the short-term confidentiality release date (MM/DD/YYYY format):** 09/01/2010

*Note: If no date is supplied, the release date will be set to 45 calendar days past the date of grant.*

**Software Defined/Cognitive Radio**

**Is this application for software defined/cognitive radio authorization?** No

**Equipment Class**

**Equipment Class:** PCE - PCS Licensed Transmitter held to ear

**Description of product as it is marketed: (NOTE: This text will appear below the equipment class on the grant):**

Portable Cellular/ PCS WCDMA/ GSM/ EDGE  
Transceiver with WLAN and Bluetooth

**Related OET KnowledgeDataBase Inquiry****Is there a KDB inquiry associated with this application?** No**Modular Equipment****Modular Type:** Does not apply**Application Purpose****Application is for:** Original Equipment**Composite/Related Equipment****Is the equipment in this application a composite device subject to an additional equipment authorization?**

Yes

**Is the equipment in this application part of a system that operates with, or is marketed with, another device that requires an equipment authorization?** No**The related application is in the process of being filed under the FCC ID(s) IHDT56LD1****Equipment Specifications**

Line Entry	Lower Frequency	Upper Frequency	Power Output	Tolerance	Emission Designator	Microprocessor Number	Rule Parts	Grant Notes
1	826.4	846.6	0.21	0.1 ppm	4M55F9W		22H	HC
2	824.2	848.8	0.695	0.1 ppm	243KGXW		22H	HC
3	824.2	848.8	0.395	0.1 ppm	241KG7W		22H	HC
4	1852.4	1907.6	0.798	0.1 ppm	4M30F9W		24E	HC
5	1850.2	1909.8	1.854	0.1 ppm	243KGXW		24E	HC
6	1850.2	1909.8	1.262	0.1 ppm	251KG7W		24E	HC

**Test Firm Information**

Name of test firm and contact person on file with the FCC:

**Firm Name:** Motorola Inc.**First Name:** Albert**Last Name:** Patapack**Telephone Number:** 847-523-3670 **Extension:****Fax Number:** 847-523-4538**E-mail:** albert.patapack@motorola.com**Grant Comments****Enter any text that you would like to appear at the bottom of the Grant of Equipment Authorization:**

Power output listed is ERP for Part 22 and EIRP for Part 24. SAR compliance for body-worn operation is based on a separation distance of 2.5 cm between the unit and the body of the user. End-users must be informed of the body-worn operating requirements for satisfying RF exposure compliance. Belt clips or holsters not listed in this filing may not contain metallic components. The highest reported SAR values are: Part 22 - Head: 0.47 W/kg; Body-worn: 0.15 W/kg; Part 24 - Head: 0.61 W/kg; Body-worn: 1.06 W/kg.

## SARs for pocket-mounted mobile telephones at 835 and 1900 MHz

Gang Kang and Om P Gandhi

Department of Electrical and Computer Engineering, University of Utah, 3280 MEB,  
50 S Central Campus Drive, Salt Lake City, UT 84112, USA

E-mail: [gandhi@ece.utah.edu](mailto:gandhi@ece.utah.edu)

Received 13 June 2002

Published 20 November 2002

Online at [stacks.iop.org/PMB/47/4301](http://stacks.iop.org/PMB/47/4301)

### Abstract

Increasingly, mobile telephones are becoming pocket-sized and are being left in the shirt pocket with a connection to the ear for hands-free operation. We have considered an anatomic model of the chest and a planar phantom recommended by US FCC to compare the peak 1 and 10 g SARs for four typical cellular telephones, two each at 835 and 1900 MHz. An agreement within  $\pm 10\%$  is obtained between calculated and experimental 1 and 10 g SARs for various separations (2–8 mm) from the planar phantom used to represent different thicknesses of the clothing both for the antenna away from or turned back towards the body. Because of the closer placement of the antennas relative to the body, the peak 1 and 10 g SARs are considerably higher (by a factor of 2–7) for pocket-mounted telephones as compared to the SARs obtained using a 6 mm thick plastic ear head model—a procedure presently accepted both in the US and Europe. This implies that a telephone tested for SAR compliance against the model of the head may be severely out of compliance if it were placed in the shirt pocket.

(Some figures in this article are in colour only in the electronic version)

### 1. Introduction

Increasingly, mobile telephones are becoming pocket-sized and are being left in the shirt pocket with a connection to the ear via an earphone for a hands-free operation. In particular, this configuration is being increasingly used while driving. In the absence of specific instructions to the contrary, the telephones may be placed with antennas away from or towards the body. Some of the antennas may thus be in near contact with the chest with a separation of not more than a few millimetres depending on the thickness of the clothing between the pocket and the torso. The SAR distributions for such telephones are radically different from these telephones held against the ear. The telephones are presently tested held against a homogeneous model of

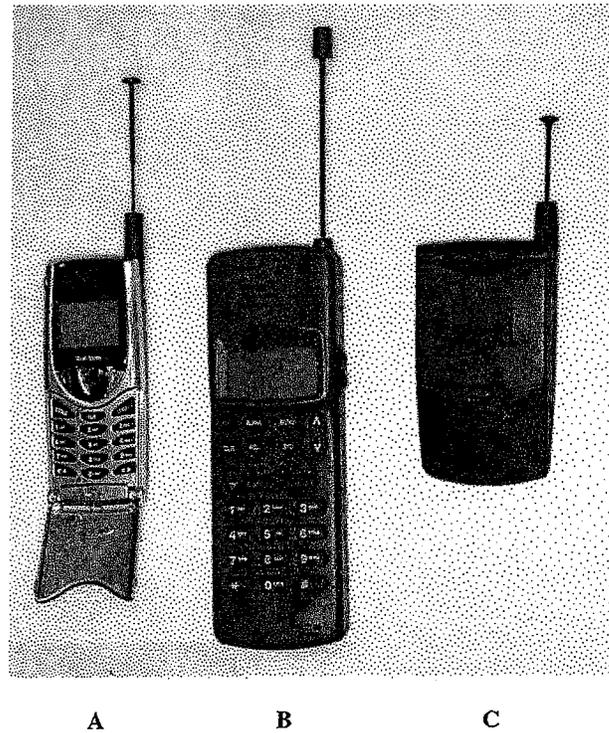


Figure 1. Three commercial telephones A, B and C selected for SAR testing at 835 and 1900 MHz.



Figure 2. A 6 mm thick plastic ear model with homogeneous head-simulant properties recommended by US FCC (2001).

the head with a 6 mm tapered plastic spacer in lieu of a pressed pinna for compliance with peak 1 or 10 g SAR prescribed in IEEE (1999) or ICNIRP (1998) safety guidelines, respectively. The purpose of this paper is to compare peak 1 and 10 g SARs for some typical telephones shown in figure 1 when they are held against the ear or put in the shirt pocket. For the former, we have used a shaped homogeneous head model (see figure 2), while for the latter (placement

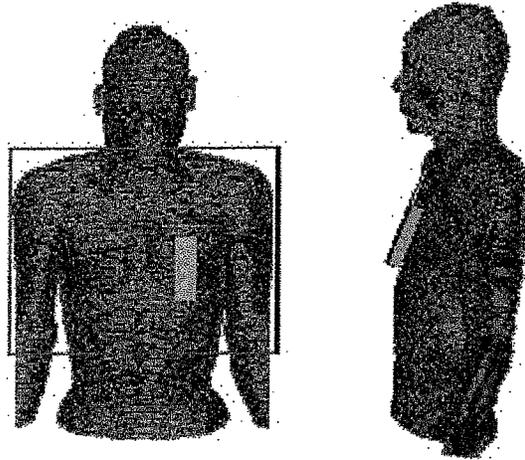


Figure 3. The 31-tissue Utah anatomic model of the human with resolution of  $2 \times 2 \times 2 \text{ mm}^3$  (Tinniswood *et al* 1998). The truncated model between the two lines is used for calculations of absorbed energy.

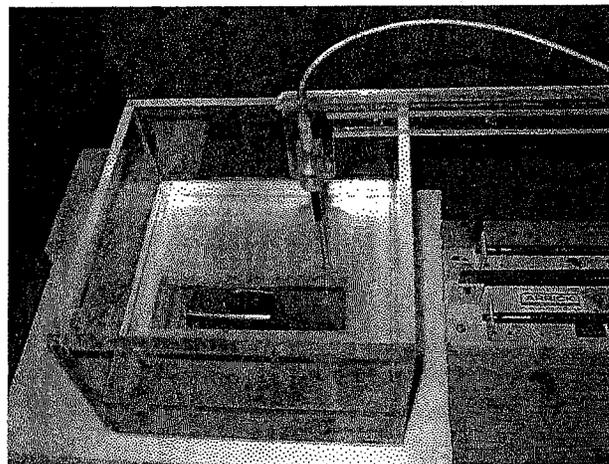


Figure 4. A flat 2.0 mm (0.079 in) base-thickness phantom used for SAR testing. A Styrofoam block is used under the base to prevent buckling.

against the chest) we use the anatomically-based model of the human body (figure 3) where a truncated model between neck and the waist (marked by the two horizontal lines) is found to be adequate for proper representation of electromagnetic coupling to the body.

For the body-worn operating configurations (including the pocket-mounted situations), the United States Federal Communications Commission (US FCC) recommends the use of a flat planar phantom such as the one shown in figure 4 (US FCC Supplement C to OET Bulletin 65, 2001). Furthermore, this same FCC Supplement C recommends a base thickness of  $2.0 \pm 0.2 \text{ mm}$  for this phantom and dielectric properties that must be used to simulate body tissues at various frequencies. Even though a base thickness of  $2.0 \pm 0.2 \text{ mm}$  has been recommended

**Table 1.** The dielectric properties used for the SAR calculations at 835 and 1900 MHz (US FCC 2001).

Model	835 MHz		1900 MHz	
	$\epsilon_r$	$\sigma$ (S m <sup>-1</sup> )	$\epsilon_r$	$\sigma$ (S m <sup>-1</sup> )
Anatomic chest model				
Skin (dry)	41.76	0.85	38.71	1.22
Fat (mean)	11.36	0.10	10.99	0.20
Flat phantom to simulate torso	55.2	0.97	53.3	1.52
Plastic ear head model	41.5	0.90	40.0	1.40
Sphere phantom model	41.5	0.90	40.0	1.40

in FCC Supplement C (US FCC 2001), we have also taken base thicknesses of 4, 6 and 8 mm to simulate the situations when different layers of clothing are used by individuals and would alter the separation between the telephone and the planar phantom as a simulant of the torso. The data thus obtained also help determine if the FCC-suggested base thickness of 2 mm is appropriate for a proper representation of SARs obtained for an anatomical model of the chest. In addition, we have also used a homogeneous sphere model with 2, 4, 6 and 8 mm base thicknesses to understand the reduction factors for peak 1 and 10 g SARs for millimetre type separations of cellular telephones from tissue-simulant fluid.

## 2. Numerical and experimental methods

### 2.1. Telephones

Three telephones marked A, B and C are used both for numerical simulation and experimental measurements. The telephones A, B and C in figure 1 are of approximate dimensions  $2.2 \times 4.2 \times 10.6$ ,  $2.6 \times 5.6 \times 16.8$  and  $2.8 \times 5.6 \times 9.6$  cm<sup>3</sup>, and use antennas of lengths 8.0, 9.0 and 4.0 cm, respectively. Telephones A and B operate in the frequency band 824–849 MHz while telephone C operates in the PCS band 1850–1910 MHz. For the PCS band, we have also assumed another telephone D that uses a nominal quarter-wavelength antenna of length 4.0 cm but with box dimensions  $2.2 \times 4.2 \times 12.2$  cm<sup>3</sup> in order to obtain an additional data set at 1900 MHz.

### 2.2. Numerical calculations

As aforementioned, we have used a shaped homogeneous head model (see figure 2) with dielectric properties recommended by the US FCC (2001) given in table 1. Since the telephones are presently tested using a 6 mm plastic spacer, we have assumed a dielectric constant  $\epsilon_r = 2.56$  for the pinna thickness 6 mm for calculation of peak 1 and 10 g SARs. For pocket-mounted telephones, we have used the 31-tissue Utah anatomic model of the human with  $2 \times 2 \times 2$  mm<sup>3</sup> resolution (Tinniswood *et al* 1998) shown in figure 3, where a truncated model between the two lines passing through the neck and the waist is found to be adequate to represent electromagnetic coupling for the various telephones to the human body. Also given for comparison are the calculated peak 1 and 10 g SARs for body-simulant planar phantoms suggested by the US FCC and a sphere of 21.2 cm diameter (similar to the dimensions of the human head). A sphere phantom is used primarily to understand variation of SAR for increasing separations from the lossy phantom of the order of millimetres. As for the flat planar phantom, here too, base thicknesses of 2, 4, 6 and 8 mm are used.

The finite-difference time-domain (FDTD) method has been used for the SAR calculations given in this paper. This method, described in several texts (e.g., Taflov 1998, Taflov and Hagness 2000), has been used successfully by various researchers (Dimbylow and Mann 1994, Gandhi and Chen 1995, Jensen and Rahmat-Samii 1995, Okoniewski and Stuchly 1996) and, therefore, will not be described here in any detail.

The resolution of all the models, e.g., head with plastic ear, anatomic chest and planar and sphere models is  $2 \times 2 \times 2 \text{ mm}^3$ . The telephones A–D are modelled as metal boxes of appropriate dimensions covered with a plastic of effective dielectric constant  $\epsilon_r = 1.43$  (reduced as in Gandhi *et al* (1996) because of thinner plastic and thicker 2 mm cell size for the FDTD cell grid).

Assumed for the calculations is a dielectric constant  $\epsilon_r = 2.56$  and negligible conductivity  $\sigma = 0$  for the plastic ear and for the acrylic base used for both the planar and sphere phantoms that are assumed to be filled with tissue-simulant fluids required by US FCC (2001) to simulate the dielectric properties of the body or the head tissues, respectively. Properties of these fluids are given in table 1. The dielectric constants ( $\epsilon_r$ ) and conductivities ( $\sigma$ ) for the various tissues of the anatomically-based chest model are taken from the FCC website ([www.fcc.gov/fcc-bin/dielec.sh](http://www.fcc.gov/fcc-bin/dielec.sh)) except that for fat, we have taken fat (mean) values and for skin, we have taken skin (dry) values. The values taken for fat and skin are also listed in table 1.

For all of the numerical results in this paper, the peak 1 or 10 g SARs are calculated by taking averaging volumes in the shape of a cube as prescribed in the ANSI/IEEE guidelines and in the European Standard EN50361 (2001). It is recognized that unlike the ANSI/IEEE and FCC guidelines, the ICNIRP guidelines suggest a localized SAR averaging mass of 10 g of contiguous tissue. For near-field exposures such as those from cellular telephones, this mass is likely to be mostly at the surface. An averaging volume in the shape of a cube of 10 g mass has, nevertheless, been suggested in the European Standard EN50361 (2001) and has, therefore, been used for all the 10 g SARs given in this paper.

### 2.3. Experimental phantom

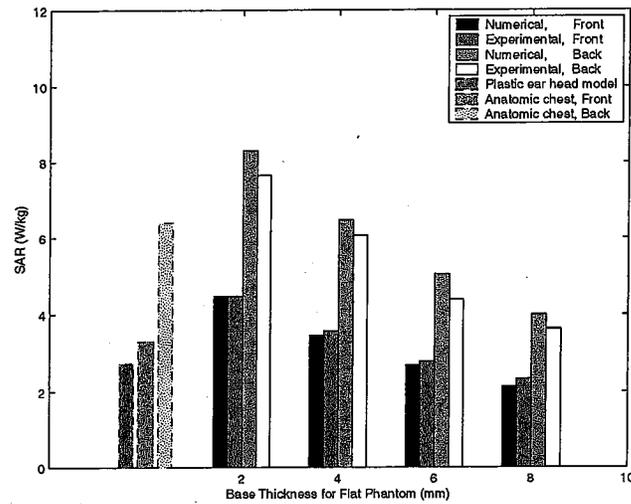
As suggested in US FCC (2001), for body-mounted configurations, a flat planar phantom of internal dimensions  $30 \times 30 \text{ cm}^2$  with a plastic base thickness of 2 mm may be used both for numerical simulation and experimental measurements. For numerical calculations and experimental measurements, separations of 2, 4, 6 and 8 mm from the bottom of the lossy 15 cm depth tissue-simulant fluid (see figure 4) are, however, used here.

### 2.4. Experimental measurements

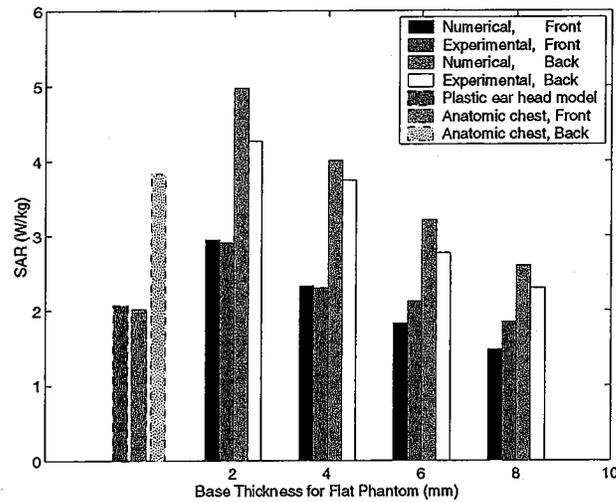
The 3D stepper-motor-based University of Utah SAR measurement system (Yu *et al* 1999) is used to measure peak 1 and 10 g SARs for telephones A, B and C placed against the flat planar phantom of internal dimensions  $30 \times 30 \text{ cm}^2$  with separations of 2, 4, 6 and 8 mm from the bottom of the lossy tissue-simulant fluid (see figure 4). The peak 1 g SAR is obtained for a 10 mm cube, while the 10 g SAR is for a cube of dimension 21.5 mm for each of the sides.

## 3. Results

The calculated peak 1 and 10 g SARs for the plastic ear head model and for the anatomic chest model for telephones A–D are given in figures 5–8, parts (a) and (b), respectively. Also given in the same figures are the calculated and measured 1 and 10 g SARs of the planar phantom for various base thicknesses of 2, 4, 6 and 8 mm, respectively. In these figures are given the SARs when the antenna is pointed away from the chest or the planar phantom (marked



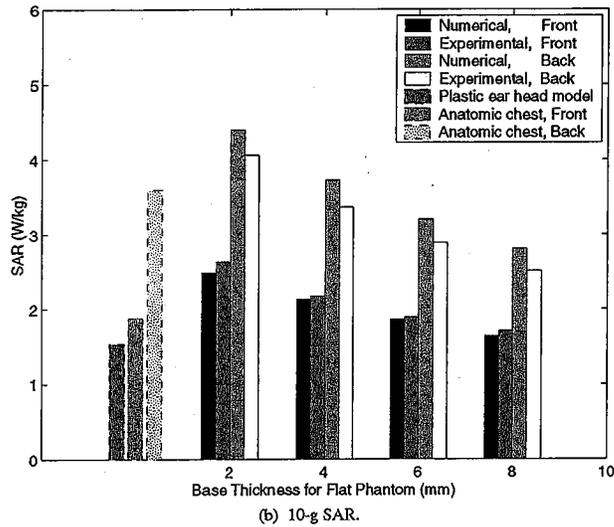
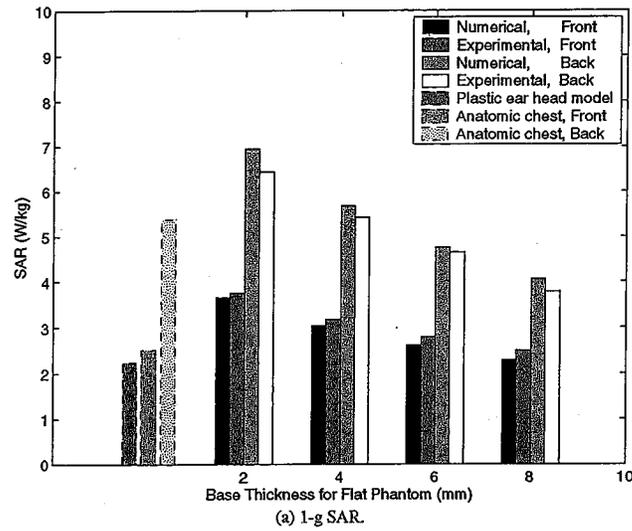
(a) 1-g SAR.



(b) 10-g SAR.

**Figure 5.** The calculated and measured peak 1 and 10 g SARs as a function of separation from the tissue-simulant fluid of the flat phantom for telephone A at 835 MHz. Also shown are the calculated peak 1 and 10 g values for a 6 mm thick plastic ear head model and for an anatomic model of the chest. Radiated power = 600 mW.

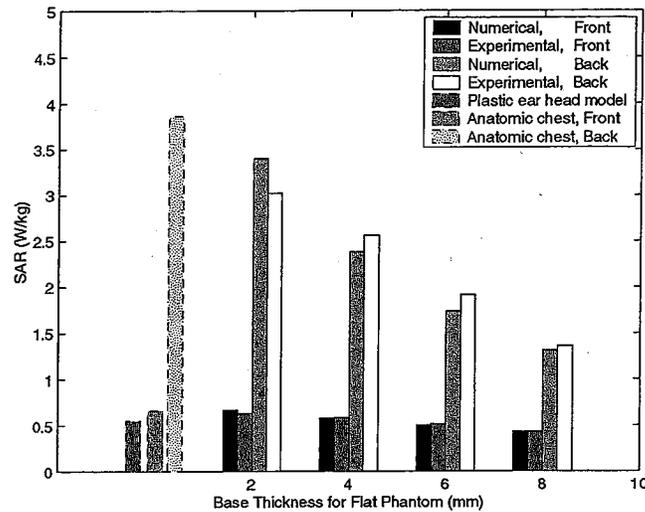
'front') as well as when the antenna is turned 'back' and is, therefore, closer to the chest or the planar phantom. Even though a base thickness of  $2 \pm 0.2$  mm has been suggested for this phantom for SAR compliance testing of pocket- or body-mounted telephones by the US FCC (2001), we have also considered additional base thicknesses of 4, 6 and 8 mm, both for numerical calculations as well as experimental measurements. This is done to study the effect of millimetre-type separations from the phantom, e.g., due to clothing, as well as to check the



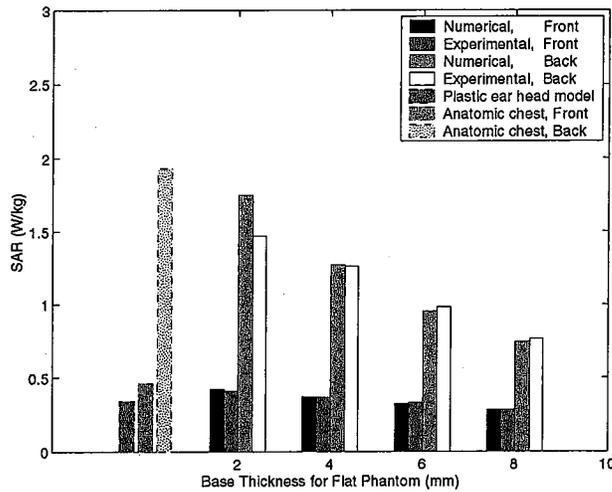
**Figure 6.** The calculated and measured peak 1 and 10 g SARs as a function of separation from the tissue-simulant fluid of the flat phantom for telephone B at 835 MHz. Also shown are the calculated peak 1 and 10 g values for a 6 mm thick plastic ear head model and for an anatomic model of the chest. Radiated power = 600 mW.

appropriateness of using the recommended base thickness of 2 mm for obtaining SARs for pocket-mounted telephones. By looking at the data for the SARs in figures 5–8, the following conclusions may be drawn.

1. As expected, the peak 1 and 10 g SARs are considerably higher when the antenna is closer to the chest or the planar phantom (the so-called ‘back’ placement) as compared to the



(a) 1-g SAR.

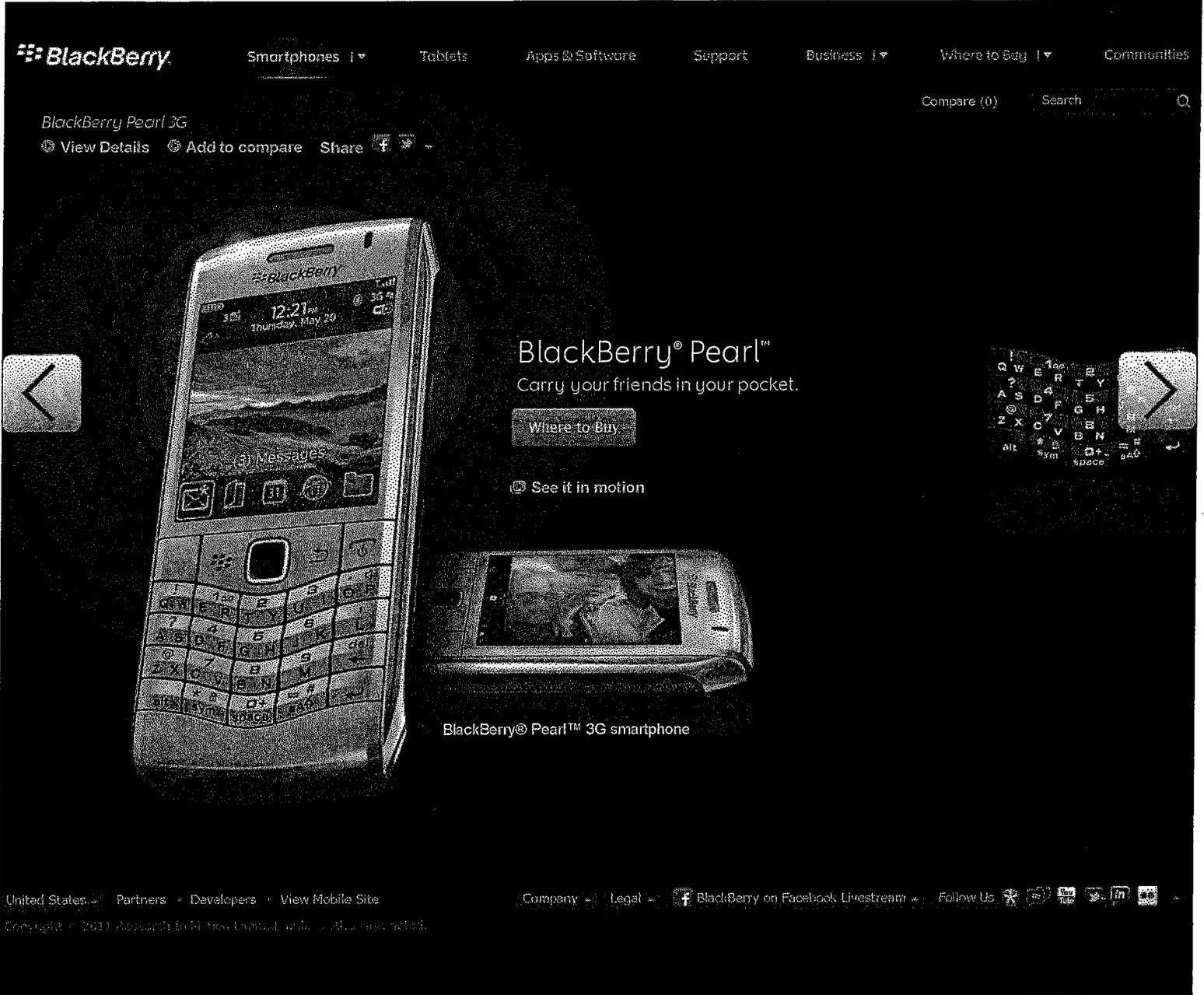


(b) 10-g SAR.

**Figure 7.** The calculated and measured peak 1 and 10 g SARs as a function of separation from the tissue-simulant fluid of the flat phantom for telephone C at 1900 MHz. Also shown are the calculated peak 1 and 10 g values for a 6 mm thick plastic ear head model and for an anatomic model of the chest. Radiated power = 125 mW.

placement when the antenna is further from the body ('front' placement). The SARs for placement of telephones with antennas closer to the body ('back' position) are up to 2.1 times higher at 835 MHz (telephones A and B) and up to 5.8 times higher at 1900 MHz (telephones C and D) as compared to the SARs for telephone placement with antennas further from the body ('front' position)—see figures 5–8. This is to be expected since the antenna may be up to 12–16 mm further from the body for the 'front' position rather than

Exhibit H-1



RIM - Research in Motion

"Carry your friends in your pocket."

Exhibit H-1

Exhibit H-2



Search all of LG

- Mobile
- Mobile Phones
- All Phones
- LG355

Discontinued Product

[Back to Mobile Phones](#)

# LG355 DISCONTINUED PRODUCT



- OVERVIEW
- FEATURES
- GALLERY
- SPECIFICATIONS
- REVIEWS
- RESOURCES
- ACCESSORIES
- FUN STUFF

Share: [Compare 10%](#) [Recently Viewed \(1\)](#)

## You've Got the Whole World in Your Pocket



LG LG355

### Mobile Phone with Bluetooth® and Flash Video-Camera

Get ready for multimedia fun with the LG355. Take pictures and shoot flicks with its 1.3 megapixel camera/camcorder. Connect to Mobile Web anytime, anywhere. Talk with friends hands-free using speakerphone, Bluetooth® technology, or via our exclusive voice recognition system.

What you need to know about Mobile Phones

This product has been DISCONTINUED. But you can see all of our current Mobile Phones here:

[See All Mobile Phones](#)

[Explore Product Features](#)

[Talk about it in the LG Community](#)

#### Recently Viewed



**LG260**  
Mobile Phone with Music Player and QWERT.....

#### Recommended Products



**CB630**  
Mobile Phone with Music Player and 1.3MP....



**VX8610**  
Mobile Phone with Bluetooth®, 2.0 MP Cam....

US: English

[Contact Us](#) | [Sitemap](#) | [Glossary](#) | [Buyers' Guide](#) | [Careers](#) | [LG Recycling Program](#) | [Commercial Customers](#)  
[Low Bandwidth Site](#) | [Public Notices](#) | [Privacy](#) | [Legal](#) | Copyright 2011 LG Electronics. All Rights Reserved.

[Sign Up for Email Updates](#)

[Cart \(0\) - Checkout Your Cart is Empty](#)  
Need help with your order?  
800-520-8412  
M-F 9:00AM-8:00PM ET

Exhibit H-3  


Motorola

PHONE    FEATURES    MOTOBLUR    ACCESSORIES    WEBTOP    BUY NOW

Overview

# THE WORLD'S MOST POWERFUL SMARTPHONE

With its advanced dual-core processing technology, MOTOROLA ATRIX™ 4G puts the power of a PC in your pocket. The MOTOROLA ATRIX 4G features webtop, a web-based application used with optional docks that truly mobilizes your desktop.



-  SHARE
-  ACCESSORIES
-  SUPPORT
-  BUY NOW
-  WEBTOP APP

... power of a PC in your pocket."

Certain features, services and applications are network dependent and may not be available in all areas; additional terms, conditions and/or charges may apply. All features, functionality and other product specifications are subject to change without notice or obligation. Contact your service provider for details.

[Motorola Home](#) > [Consumer Product & Services](#) > [Mobile Phones](#) > MOTOROLA ATRIX™ 4G

[ABOUT US](#)    [MEDIA](#)    [INVESTORS](#)    [LEGAL](#)    [CAREERS](#)

Questions? Call 800-520-8412

[CONTACT US](#)       USA [change location](#)

©2011 MOTOROLA MOBILITY, INC. ALL RIGHTS RESERVED

[I+ SITE FEEDBACK](#)

4G speeds delivered by HSPA+ with enhanced backhaul. Available in limited areas. Availability increasing with ongoing backhaul deployment. Learn more at [att.com/network](#). [More](#)

Google, Google Search, Google Maps, Gmail, Google Latitude, Google Talk, YouTube, Google Quick Search Box, Android, and Android Market are trademarks of Google, Inc. DROID is a trademark of Lucasfilm Ltd. and its related companies. Used under license.

Certain features, services and applications are network dependent and may not be available in all areas; additional terms, conditions and/or charges may apply. All features, functionality and other product specifications are subject to change without notice or obligation. Contact your service provider for details.

Exhibit H-3

Exhibit H-4



[Sign Up for Email Updates](#)

Cart (0) - Checkout Your Cart is Empty  
Need help with your order?  
800-520-6412  
M-F 9:00AM-8:00PM ET

Search



## MEDIA CENTER

Share

[Motorola Home](#) > [About Motorola](#) > [Media Center](#) > [Press Releases](#)

Like

14 people like this.

[Media Center RSS Feeds](#)

ABOUT MOTOROLA

CAREERS

CORPORATE RESPONSIBILITY

ENVIRONMENT

HISTORY

INVESTOR RELATIONS

MEDIA CENTER

EVENT CALENDAR

EXECUTIVE TEAM

FACT SHEETS

IMAGE GALLERY

INDUSTRY ANALYSTS

MEDIA CONTACTS

NEWS BYTES

PRESS KITS

PRESS RELEASES

SOCIAL MEDIA

MOTOROLA MOBILITY

VENTURES

TECHNOLOGY

## PRESS RELEASES

### Motorola FLIPOUT™ with MOTOBLUR™: Stylishly Square & Pocket Perfect

Multi-touch screen pivots to reveal QWERTY keypad on Motorola's latest Android-based smartphone

June 02, 2010



Embed: `<object width="480" height="289"><param name="movie" val`

**BASINGSTOKE, UK – June 2, 2010** – Motorola (NYSE: MOT) today announced Motorola FLIPOUT™ with MOTOBLUR™, a stylishly square and compact smartphone that's as individual as its users.

Launching in Europe from Q2 2010, FLIPOUT runs on Android™ 2.1 and features an innovative square pivot design that opens to reveal a five-row QWERTY keypad with a separate row for numeric keys. FLIPOUT features up to seven customizable home screens, live wallpapers and added security for exchange server users. It also offers enhanced MOTOBLUR features making it easier to follow who and what really matters to you.

"FLIPOUT merges Motorola's design heritage with Android to deliver a new take on the typical smartphone form. In an incredibly compact square, FLIPOUT fits neatly in your palm, purse or small pocket, making it fun and easy to stay connected while on the go," said Ralf Gerbershagen, vice president and GM, Mobile Devices, Western Europe, Motorola. "For fans of social networking, FLIPOUT also features enhancements to MOTOBLUR, allowing users to connect with their networks however they want."

FLIPOUT's array of colors will be country-specific and could include Licorice, Fairway Green, Raspberry Crush, Brilliant Blue, Poppy Red, Saffron or White.

#### Enhanced MOTOBLUR

MOTOBLUR is Motorola's exclusive Android experience that syncs contacts, posts, messages, photos and much more — from sources such as Facebook®, MySpace, Twitter™, Gmail™, work and personal e-mail, and last.fm — and automatically delivers them to the home screen. MOTOBLUR automatically backs up contacts, log-in information, home screen customizations and e-mail to a secure server and provides remote data wipe for lost or stolen devices. One username and password restores contacts, messages and connectivity to prior networks and email providers.

FLIPOUT offers enhanced MOTOBLUR functionality and features, including:

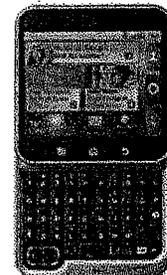
- Happenings and Messages widgets – filter by social networking account, by contact(s) or by

#### PRESS RELEASE OPTIONS

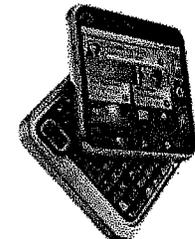
Download all as a .zip



Motorola FLIPOUT with MOTOBLUR Front Home  
[View](#) | [Download](#)



Motorola FLIPOUT with MOTOBLUR Front Open  
[View](#) | [Download](#)



Motorola FLIPOUT with MOTOBLUR Dyn L Part Open  
[View](#) | [Download](#)

Exhibit H-4

Pantech

Exhibit H-5

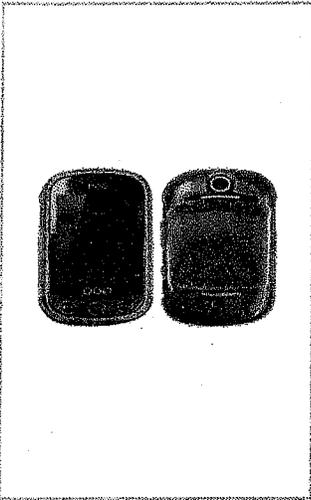
Get live help placing your order. Chat Now

Back to Accessories  
Bookmark this page  
Print this page

### Body Glove Clear Frosted Snap on Shell (TM) Pantech Pursuit II

Overall rating 3 out of 5

Like 2



FEATURES COMPATIBILITY REVIEWS

#### Overview

The Body Glove Illusion Case adds virtually no bulk to your phone and easily slides into pocket or purse. Clear front and back protects your phone from nicks and scratches while allowing phone's aesthetics to show through.

Item SKU: 40073(Body Glove Clear Frosted Snap on Shell (TM) Pantech Pursuit II)

Retail Price \$29.99  
Total Due at Time of Shipping \$29.99

Add to Cart

[Other Monthly Charges](#) | [Plan Terms](#) | [Online Pricing](#)  
[Returns Policy & Early Termination Fee](#) | [Additional Messaging & Data Charges \(http://www.wireless.att.com/learn/articles-resources/wireless-legal-charges.jsp\)](#)  
[Shipping Information](#)

† Not redeemable for cash.

Service provided by AT&T Mobility.

\* Limited 4G LTE availability in select markets.

Wireless Legal Site (<http://www.att.com/wirelesslegal>) | Wireless Customer Agreement (<http://www.att.com/wirelessterms>) | Cell Phone Records Security (<http://www.att.com/learn/articles-resources/records-security.jsp>)

Get apps for your Nokia device ([Set device](#))

Exhibit H-6

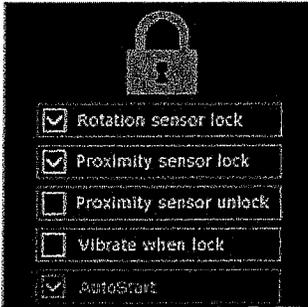
[Sign in](#)

Nokia

Search for content for your phone

- Home
- Business
- City guides & maps
- Entertainment
- Music
- News & info
- Photo & video
- Reference
- Social networks
- Sports
- Utilities
- Games
- Audio & video
- Personalization
- Collections

Applications Utilities Smart Pocket Lock



Set your phone to see if this item is compatible. Use the [Nokia phone selector](#).

### Smart Pocket Lock

by: [DMKHO](#)

Utilities - 0.03 MB

Auto-lock and/or auto-unlock your phone with Smart Pocket Lock application. Rotate the phone upside down or put it into pocket in order to lock screen and keys automatically. Application is using rotation and proximity sensors. Extra options: vibrate when lock and auto-start when phone starts. More info on <http://dmkho.tripod.com>



Share

Set my phone



Contact publisher for issues found in content: <http://dmkho.tripod.com/spl/index.html> | [dmkho.mailbox@gmail.com](mailto:dmkho.mailbox@gmail.com)

\$ 0.99

For all other issues, please go to [support.ovi.com](http://support.ovi.com)

Download

[Report abuse](#)

#### Related

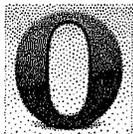
#### Reviews

[Next](#)

Here are the most popular items that are similar to Smart Pocket Lock:



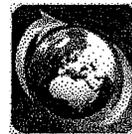
UC Browser  
Utilities  
★★★★★



Opera Mini web  
browser  
Utilities  
★★★★★



Nokia Browser -  
New & Improved  
Utilities  
★★★★★



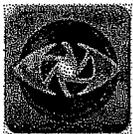
Icon Browser  
Utilities  
★★★★★



Pregnancy  
Utilities  
★★★★★



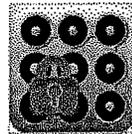
Skype  
Utilities  
★★★★★



Remote Eye Lite  
Utilities  
★★★★★



Free WiFi Locator  
Utilities  
★★★★★



MazeLock  
Utilities  
★★★★★



Best Web Browsers  
Utilities  
★★★★★

Exhibit H-6

# Exhibit I

From the BlackBerry Bold 9000 User Manual (in type 8 size font as printed in user manual):

*"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® Bold™ 9000: FCC ID L6ARBT70UW*

Same user warning copied below in type 12 size font so it is more easily read with bolded statement about long term effects of exceeding RF exposure standards:

***"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."***

Exhibit I

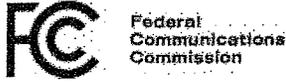


Exhibit J

①

Home / Specific Absorption Rate (SAR) For Cell Phones: What It Means For You

## Guide

### Specific Absorption Rate (SAR) For Cell Phones: What It Means For You

There is considerable confusion and misunderstanding about the meaning of the maximum reported Specific Absorption Rate (SAR) values for cell phones (and other wireless devices). SAR is a measure of the rate of RF (radiofrequency) energy absorption by the body from the source being measured – in this case, a cell phone. SAR provides a straightforward means for measuring the RF exposure characteristics of cell phones to ensure that they are within the safety guidelines set by the FCC.

Many people mistakenly assume that using a cell phone with a lower reported SAR value necessarily decreases a user's exposure to RF emissions, or is somehow "safer" than using a cell phone with a high SAR value. While SAR values are an important tool in judging the maximum possible exposure to RF energy from a particular model of cell phone, 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. Rather, the SAR values collected by the FCC are intended only to ensure that the cell phone does not exceed the FCC's maximum permissible exposure levels even when operating in conditions which result in the device's highest possible – but not its typical - RF energy absorption for a user.

#### SAR Testing

SAR testing uses standardized models of the human head and body that are filled with liquids that simulate the RF absorption characteristics of different human tissues. In order to determine compliance, each cell phone is tested while operating at its highest power level in all the frequency bands in which it operates, and in various specific positions against the dummy head and body, to simulate the way different users' typically hold a cell phone, including to each side of the head. To test cell phones for SAR compliance, the phone is precisely placed in various common positions next to the head and body, and a robotic probe takes a series of measurements of the electric field at specific pinpoint locations in a very precise, grid-like pattern within the dummy head and torso. All data for each phone placement are submitted as a part of the equipment approval test report for final authorization. However, *only the highest SAR values* for each frequency band are included in the final authorization to demonstrate compliance with the FCC's RF guidelines.

#### What SAR Shows

The FCC requires that cell phone manufacturers conduct their SAR testing to include the *most severe, worst-case (and highest power) operating conditions for all the frequency bands* used in the USA for that cell phone. The SAR values recorded on the FCC's authorization and in the cell phone manual to demonstrate compliance with Commission rules indicate only the highest single measurement taken for each frequency range that the particular model uses. FCC approval means that the device will never exceed the maximum levels of consumer RF exposure permitted by federal guidelines, but it does not indicate the amount of RF exposure consumers experience during normal use of the device. While only the maximum SAR values are used for FCC approval, all test reports submitted by the manufacturer are available *in full* for public inspection on the Commission's website.

#### What SAR Does Not Show

The SAR value used for FCC approval does not account for the multitude of measurements taken during the testing. Moreover, cell phones constantly vary their power to operate at the minimum power necessary for communications; operation at maximum power occurs infrequently. Consequently, cell phones cannot be reliably compared for their overall exposure characteristics on the basis of a single SAR value for several reasons (each of these examples is based on a reported SAR value for cell phone A that is higher than that for cell phone B):

- Cell phone A might have one measurement that was higher than any single measurement for cell phone B. Cell phone A would, therefore, have a higher reported SAR value than cell phone B, even if cell phone B has higher measurements than A in most other locations and/or usage configurations. In such a case, a user generally would receive more RF energy overall from cell phone B.
- Cell phone A might communicate more efficiently than cell phone B, so that it operates at lower power than cell phone B would under comparable conditions. Consequently, a user would receive more RF energy overall from cell phone B.
- The highest value from cell phone A might come from a position which the user seldom or never employs to hold a phone, whereas that user might usually hold a phone in the position that resulted in the highest value for cell phone B. Therefore, the user would receive the highest RF exposure that cell phone B delivers but would not receive the highest RF exposure that cell phone A delivers.

## The Bottom Line

ALL cell phones must meet the FCC's RF exposure standard, which 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. For users who are concerned with the adequacy of this standard or who otherwise wish to further reduce their exposure, the most effective means to reduce exposure are to hold the cell phone away from the head or body and to use a speakerphone or hands-free accessory. These measures will generally have much more impact on RF energy absorption than the small difference in SAR between individual cell phones, which, in any event, is an unreliable comparison of RF exposure to consumers, given the variables of individual use.

## For More Information

For information about other communications issues, visit the FCC's Consumer & Governmental Affairs Bureau website, or contact the FCC's Consumer Center by calling 1-888-CALL-FCC (1-888-225-5322) voice or 1-888-TELL-FCC (1-888-835-5322) TTY; faxing 1-866-418-0232; or writing to:

Federal Communications Commission  
Consumer & Governmental Affairs Bureau  
Consumer Inquiries and Complaints Division  
445 12th Street, SW  
Washington, D.C. 20554.

## Print Out

Specific Absorption Rate (SAR) For Cell Phones: What It Means For You Guide (pdf)

Bureaus & Offices: Consumer & Governmental Affairs

[Printer-friendly version](#)

## Related Topics

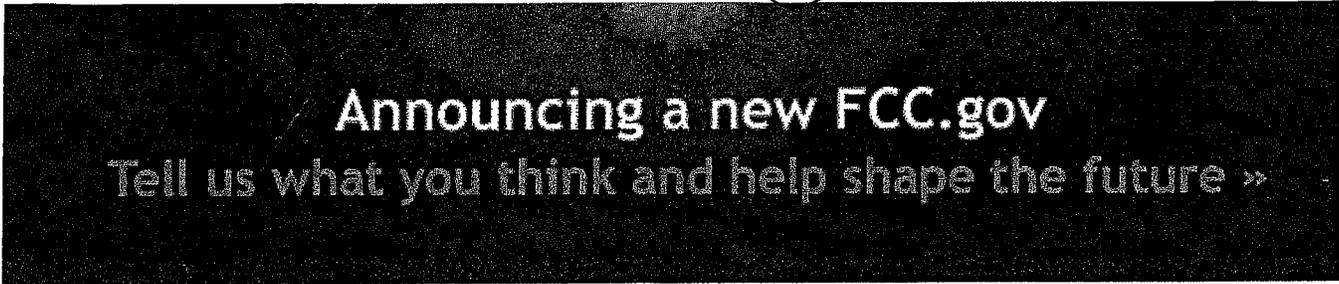
<a href="#">Consumers</a>	<a href="#">Public Safety</a>
<a href="#">Health Care</a>	<a href="#">Wireless</a>
<a href="#">Measurement Procedures</a>	

---

Federal Communications Commission  
445 12th Street SW, Washington, DC 20554  
Phone: 1-888-225-5322  
TTY: 1-888-835-5322  
Fax: 1-866-418-0232  
E-mail: [fccinfo@fcc.gov](mailto:fccinfo@fcc.gov)

Exhibit K

2



Search | RSS | Updates | E-Filing | Initiatives | Consumers | Find People

### Radio Frequency Safety

[FCC](#) > [OET](#) > [RF Safety](#) > RF Safety FAQ's

Search the FCC:

[Help](#) | [Advanced](#)

## Radio Frequency Safety



Office of Engineering and Technology (OET)

RF Safety FAQ's

Frequently asked questions about the safety of radiofrequency (RF) and microwave emissions from transmitters and facilities regulated by the FCC

FDA Website



Visit the FDA consumer information [wireless phone website](#).

For further information on these (and other) topics please refer to [OET Bulletin 56](#). You may also contact the FCC's RF Safety Program at [rfsafety@fcc.gov](mailto:rfsafety@fcc.gov) or 1-888-225-5322

#### Index (click on topic below)

- [What is "radiofrequency" and microwave radiation?](#)
- [What is non-ionizing radiation?](#)
- [How is radiofrequency energy used?](#)
- [How is radiofrequency radiation measured?](#)
- [What biological effects can be caused by RF energy?](#)
- [Can people be exposed to levels of radiofrequency radiation and microwaves that could be harmful?](#)
- [Can radiofrequency radiation cause cancer?](#)
- [What research is being done on RF biological effects?](#)
- [What levels are safe for exposure to RF energy?](#)
- [Why has the FCC adopted guidelines for RF exposure?](#)
- [How safe are mobile phones? Can they cause cancer?](#)
- [How can I obtain the specific absorption rate \(SAR\) value for my mobile phone?](#)
- [Do "hands-free" ear pieces for mobile phones reduce exposure to RF emissions? What about mobile phone accessories that claim to shield the head from RF radiation?](#)
- [Can mobile phones be used safely in hospitals and near medical telemetry equipment?](#)
- [Are cellular and PCS towers and antennas safe?](#)

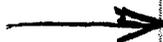
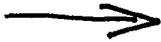


Exhibit K

For portable phones and devices authorized since June 2, 2000, maximum SAR levels should be noted on the grant of equipment authorization. For phones and devices authorized between about mid-1998 and June 2000, detailed information on SAR levels is typically found in one of the "exhibits" associated with the grant. Therefore, once the grant is accessed in the FCC database, the exhibits can be viewed by clicking on the appropriate entry labeled "View Exhibit." Electronic records for FCC equipment authorization grants were initiated in 1998, so devices manufactured prior to this date may not be included in our electronic database.

Although the FCC database does not list phones by model number, there are certain non-government Web sites such as [www.cnet.com](http://www.cnet.com) that provide information on SAR from specific models of mobile phones. However, the FCC has not reviewed these sites for accuracy and makes no guarantees with respect to them. In addition to these sites, some mobile phone manufacturers make this information available at their own Web sites. Also, phones certified by the Cellular Telecommunications and Internet Association (CTIA) are now required to provide this information to consumers in the instructional materials that come with the phones.

If you want additional consumer information on safety of cell phones and other transmitting devices please consult the information available below at this Web site. In particular, you may wish to read or download our [OET Bulletin 56](#) (see "OET RF Safety Bulletins" listing) entitled: "Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields." If you have any problems or additional questions you may contact us at: [rfsafety@fcc.gov](mailto:rfsafety@fcc.gov) or you may call: 1-888-225-5322. You may also wish to consult a consumer update on mobile phone safety published by the U.S. Food and Drug Administration (FDA) that can be found at: [www.fda.gov/cellphones/](http://www.fda.gov/cellphones/). ([Back to Index](#))



### **DO "HANDS-FREE" EAR PIECES FOR MOBILE PHONES REDUCE EXPOSURE TO RF EMISSIONS? WHAT ABOUT MOBILE PHONE ACCESSORIES THAT CLAIM TO SHIELD THE HEAD FROM RF RADIATION?**

"Hands-free" kits with ear pieces can be used with cell phones for convenience and comfort. In addition, because the phone, which is the source of the RF emissions, will not be placed against the head, absorption of RF energy in the head will be reduced. Therefore, it is true that use of an ear piece connected to a mobile phone will significantly reduce the rate of energy absorption (or "SAR") in the user's head. On the other hand, if the phone is mounted against the waist or other part of the body during use, then that part of the body will absorb RF energy. Even so, mobile phones marketed in the U.S. are required to meet safety limit requirements regardless of whether they are used against the head or against the body. So either configuration should result in compliance with the safety limit. Note that hands-free devices using "Bluetooth" technology also include a wireless transmitter; however, the Bluetooth transmitter operates at a much lower power than the cell phone.

This is Google's cache of <http://www.fcc.gov/cgb/consumerfacts/mobilephone.html>. It is a snapshot of the page as it appeared on Sep 18, 2010 08:04:34 GMT. The current page could have changed in the meantime. [Learn more](#)

↗ Sept. 18, 2010

[Text-only version](#)

**FCC** Federal Communications Commission

Search | RSS | Updates | E-Filing | Initiatives | Consumers | Find People

**REBOOT** .FCC.GOV

Consumer & Governmental Affairs Bureau

FCC > CGB Home > Consumer Publications > Wireless Devices and Health Concerns [FCC site map](#)

<b>Wireless Devices and Health Concerns</b>	<b>FCC Consumer Facts</b>
---	---------------------------

(refer to 2nd page)

**Current Exposure Limits**

Since 1996, the Federal Communications Commission (FCC) has required that all wireless communications devices sold in the United States meet minimum guidelines for safe human exposure to radio frequency (RF) energy. The FCC relies on the expertise of the Food and Drug Administration (FDA) and other federal health, safety and environmental agencies to help determine safe levels for human exposure to RF energy. In adopting its guidelines for RF exposure, the FCC considered opinions from these agencies as well as limits recommended by two non-profit, expert organizations, the Institute of Electrical and Electronics Engineers (IEEE), and the National Council on Radiation Protection and Measurements (NCRP).

The FCC's guidelines specify exposure limits for hand-held wireless devices in terms of the Specific Absorption Rate (SAR). The SAR is a measure of the rate that RF energy is absorbed by the body. For exposure to RF energy from wireless devices, the allowable FCC SAR limit is 1.6 watts per kilogram (W/kg), as averaged over one gram of tissue.

The FCC approves all wireless devices sold in the US. If the FCC determines that exposure from an approved wireless device exceeds its guidelines, it can withdraw its approval. In addition, if the FDA determines that RF exposure from a device is hazardous, it can require the manufacturer of the device to notify users of the health hazard and to repair, replace, or recall the device.

Several US government agencies and international organizations work cooperatively to monitor the health effects of RF exposure. According to the FDA, to date the weight of scientific evidence has not linked exposure to radio frequency energy from mobile devices with any health problems. FDA maintains a Web site on RF issues at [www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures](http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures)

</HomeBusinessandEntertainment/CellPhones/default.htm>. You can find additional useful information and links to some of the other responsible organizations on the FCC's Web site at [www.fcc.gov/oet/rfsafety](http://www.fcc.gov/oet/rfsafety). Finally, the World Health Organization (WHO) has established an International Electromagnetic Fields Project to provide information on health risks, establish research needs, and support efforts to harmonize RF exposure standards. For more information go to [www.who.int/peh-emf/en](http://www.who.int/peh-emf/en).

---

## Recent Developments

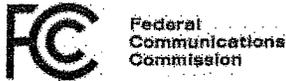
Recent reports by some health and safety interest groups have suggested that wireless device use can be linked to cancer and other illnesses. These questions have become more pressing as more and younger people are using the devices, and for longer periods of time. No scientific evidence currently establishes a definite link between wireless device use and cancer or other illnesses, but almost all parties debating the risks of using wireless devices agree that more and longer-term studies are needed. After listening to several expert witnesses, a United States Senate committee recently came to this same conclusion.

## What You Can Do

Even though no scientific evidence currently establishes a definite link between wireless device use and cancer or other illnesses, some parties recommend taking the precautions listed below. When considering these precautions, remember that your wireless device only emits RF energy when you are using it and that the closer the device is to you, the more energy you will absorb. Also, some parties assert that any potential health risks are probably greater for children than for adults. Finally, some experts think that low frequency magnetic fields rather than RF energy measured by the SAR possibly are responsible for any potential risk associated with wireless devices. The precautions are:

- Use an earpiece or headset. While wired earpieces may conduct some energy to the head and wireless earpieces also emit a small amount of RF energy, both wired and wireless earpieces remove the greatest source of RF energy from proximity to the head and thus can greatly reduce total exposure to the head. Avoid continually wearing a wireless earpiece when not in use.
- If possible, keep wireless devices away from your body when they are on, mainly by not attaching them to belts or carrying them in pockets.
- Use the cell phone speaker to reduce exposure to the head.
- Consider texting rather than talking, but don't text while you are driving.
- Buy a wireless device with lower SAR. The FCC does not require manufacturers to disclose the RF exposure from their devices. Many manufacturers, however, voluntarily provide SAR values. You can find links to manufacturer Web sites providing these SAR values on the FCC's Web site at [www.fcc.gov/cgb/sar](http://www.fcc.gov/cgb/sar). Note that the variation in SAR from one mobile device to the next is relatively small compared to the reduction that can be achieved by using an earpiece or headset.





- current version - Exhibit M

## Wireless Devices and Health Concerns

(refer to 2nd page)

### Current Exposure Limits

While there is no federally developed national standard for safe levels of exposure to radiofrequency (RF) energy, many federal agencies have addressed this important issue. In addition to the Federal Communications Commission (FCC), federal health and safety agencies such as the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) have been actively involved in monitoring and investigating issues related to RF exposure. For example, the FDA has issued guidelines for safe RF emission levels from microwave ovens, and it continues to monitor exposure issues related to the use of certain RF devices such as cellular telephones. NIOSH conducts investigations and health hazard assessments related to occupational RF exposure.

Federal, state and local government agencies and other organizations have generally relied on RF exposure standards developed by expert non-government organizations such as the Institute of Electrical and Electronics Engineers (IEEE) and the National Council on Radiation Protection and Measurements (NCRP). Since 1996, the FCC has required that all wireless communications devices sold in the United States meet its minimum guidelines for safe human exposure to radiofrequency (RF) energy. The FCC's guidelines and rules regarding RF exposure are based upon standards developed by IEEE and NCRP and input from other federal agencies, such as those listed above. These guidelines specify exposure limits for hand-held wireless devices in terms of the Specific Absorption Rate (SAR). The SAR is a measure of the rate that RF energy is absorbed by the body. For exposure to RF energy from wireless devices, the allowable FCC SAR limit is 1.6 watts per kilogram (W/kg), as averaged over one gram of tissue.

All wireless devices sold in the US go through a formal FCC approval process to ensure that they do not exceed the maximum allowable SAR level when operating at the device's highest possible power level. If the FCC learns that a device does not conform with the test report upon which FCC approval is based - in essence, if the device in stores is not the device the FCC approved - the FCC can withdraw its approval and pursue enforcement action against the appropriate party.

### Recent Developments

Several US government agencies and international organizations work cooperatively to monitor research on the health effects of RF exposure. According to the FDA and the World Health Organization (WHO), among other organizations, to date, the weight of scientific evidence has not effectively linked exposure to radio frequency energy from mobile devices with any known health problems.

The FDA maintains a website on RF issues. The World Health Organization (WHO), which has established an International Electromagnetic Fields Project (IEFP) to provide information on health risks, establish research needs and support efforts to harmonize RF exposure standards, provides additional information on RF exposure and mobile phone use. For more information on the IEFP, go to [www.who.int/peh-emf/en](http://www.who.int/peh-emf/en).

Recently, some health and safety interest groups have interpreted certain reports to suggest that wireless device use may be linked to cancer and other illnesses, posing potentially greater risks for children than adults. While these assertions have gained increased public attention, currently no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses. Those evaluating the potential risks of using wireless devices agree that more and longer-term studies should explore whether there is a better basis for RF safety standards than is currently used. The FCC closely monitors all of these study results. However, at this time, there is no basis on which to establish a different safety threshold than our current requirements.

You can find additional useful information and links to some of the other responsible organizations on the FCC's website.

## What You Can Do

Even though no scientific evidence currently establishes a definite link between wireless device use and cancer or other illnesses, and even though all cell phones must meet established federal standards for exposure to RF energy, some consumers are skeptical of the science and/or the analysis that underlies the FCC's RF exposure guidelines. Accordingly, some parties recommend taking measures to further reduce exposure to RF energy. **The FCC does not endorse the need for these practices**, but provides information on some simple steps that you can take to reduce your exposure to RF energy from cell phones. **For example**, wireless devices only emit RF energy when you are using them and the closer the device is to you, the more energy you will absorb.

Some measures to reduce your RF exposure include:

- Use a speakerphone, earpiece or headset to reduce proximity to the head (and thus exposure). While wired earpieces may conduct some energy to the head and wireless earpieces also emit a small amount of RF energy, both wired and wireless earpieces remove the greatest source of RF energy (the cell phone) from proximity to the head and thus can greatly reduce total exposure to the head.
- Increase the distance between wireless devices and your body.
- Consider texting rather than talking - **but don't text while you are driving.**

Some parties recommend that you consider the reported SAR value of wireless devices. However, comparing the SAR of different devices may be misleading. First, the actual SAR varies considerably depending upon the conditions of use. The SAR value used for FCC approval does not account for the multitude of measurements taken during the testing. Moreover, cell phones constantly vary their power to operate at the minimum power necessary for communications; operation at maximum power occurs infrequently. Second, the reported highest SAR values of wireless devices do not necessarily indicate that a user is exposed to more or less RF energy from one cell phone than from another during normal use (see our guide on SAR and cell phones). Third, the variation in SAR from one mobile device to the next is relatively small compared to the reduction that can be achieved by the measures described above. Consumers should remember that all wireless devices are certified to meet the FCC maximum SAR standards, which incorporate a considerable safety margin. (Information about the maximum SAR value for each phone is publicly available on the FCC website.)

## Other Risks

Some studies have shown that wireless devices might interfere with implanted cardiac pacemakers if used within eight inches of the pacemaker. Pacemaker users may want to avoid placing or using a wireless device this close to their pacemaker.

## For More Information

For information about other communications issues, visit the FCC's Consumer & Governmental Affairs Bureau website, or contact the FCC's Consumer Center by calling 1-888-CALL-FCC (1-888-225-5322) voice or 1-888-TELL-FCC (1-888-835-5322) TTY; faxing 1-866-418-0232; or writing to:

Federal Communications Commission  
Consumer & Governmental Affairs Bureau  
Consumer Inquiries and Complaints Division  
445 12th Street, SW  
Washington, D.C. 20554.

## Print Out

Wireless Devices and Health Concerns Guide (pdf)

Bureaus & Offices: Consumer & Governmental Affairs  
Printer-friendly version

## Related Topics