

Before the
U.S. COPYRIGHT OFFICE
LIBRARY OF CONGRESS

**In the matter of Exemption to Prohibition on Circumvention
of Copyright Protection Systems for Access Control Technologies**

Docket No. RM 2008-8

**Responsive Comment of Apple Inc.
In Opposition to Proposed Exemption 5A and 11A (Class #1)**

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I. SUMMARY OF OPPOSITION

Pursuant to the Copyright Office's notice in the Federal Register of December 29, 2008¹ soliciting responsive written comments on classes of works proposed for exemption from the prohibition against circumvention of technological measures that control access to copyrighted works in connection with the triennial rulemaking proceeding announced on October 6, 2008,² Apple Inc. submits this responsive comment in opposition to proposed Class #1 contained in proposed exemptions labeled 5A and 11A³ submitted by the Electronic Frontier Foundation (EFF) in the following form:

Proposed Class #1: Computer programs that enable wireless telephone handsets to execute lawfully obtained software applications, where circumvention is accomplished for the sole purpose of enabling interoperability of such applications with computer programs on the telephone handset.

¹ Notice of Rulemaking for Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, 73 Fed. Reg. 79,425 (Dec. 29, 2008).

² Notice of Inquiry of Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, 73 Fed. Reg. 58,073 (Oct. 6, 2008).

³ Apple's election not to submit responsive comments with respect to other proposed exemptions in this triennial rulemaking proceeding should not be construed as an indication that Apple either supports or opposes such proposed exemptions.

The computer programs referenced in the proposed Class #1 are colloquially referred to as “jailbreaking” software because they “break” (i.e., circumvent) technological protection measures surrounding the firmware contained on telephone handsets. Handsets to which such circumvention acts have been applied are referred to as “jailbroken” phones.

Apple is opposed to the proposed Class #1 exemption because it will destroy the technological protection of Apple’s key copyrighted computer programs in the iPhone™ device itself and of copyrighted content owned by Apple that plays on the iPhone, resulting in copyright infringement, potential damage to the device and other potential harmful physical effects, adverse effects on the functioning of the device, and breach of contract. The proponents of the exemption have also not satisfied their burden of proof of showing harm to non-infringing uses of the copyrighted works protected by the technological protection measures on the iPhone. In addition, because Congress has already explicitly addressed circumvention for interoperability in Section 1201(f) of the Digital Millennium Copyright Act (DMCA),⁴ the Copyright Office should not create interoperability exemptions outside that statutory structure, at least without a clear showing of specific and significant harm, which has not been put forth here.

II. INTRODUCTION AND BACKGROUND

A. The Proposed Exemption in Context

Although EFF’s proposed exemption is phrased in the obligatory language about a class of works, its arguments really amount to an attack on Apple’s particular business choices with respect to the design of the iPhone mobile computing platform and the strategy for delivering applications software for the iPhone through the iPhone App Store. Much of EFF’s arguments are based on issues that do not have relevance to a DMCA exemption, such as how Apple is compensated for distributing iPhone-compatible applications. EFF apparently desires to use the rulemaking process to alter Apple’s business practices by negating DMCA protection for technologies that interfere with what EFF seems to assume would be a more socially desirable business model that is more “open.” Specifically, it seeks through the proposed exemption to clear the path for those who would hack the iPhone’s operating system so that a proprietary mobile computing platform protected by copyright can be transformed into one on which any third party application can be run, without taking account of the undesirable consequences that would ensue from the transformation. EFF’s submission offers no proof that this proposed transformation would actually increase innovation or investment in creative works, and as this submission demonstrates, it would not do so.

EFF has picked an ironic target around which to center the arguments in its proposal.⁵ The combination of the iPhone hardware, the mobile computing platform that its operating

⁴ 17 U.S.C. § 1201 *et seq.*

⁵ Although the exemption is broadly worded and would cover computer programs that jailbreak all wireless handsets, the evidence and argument submitted in EFF’s submission to support the proposed exemption are almost entirely centered around Apple’s iPhone. Accordingly, the factual support and arguments in this responsive comment will center primarily around Apple’s iPhone and related applications, not only to illustrate why the EFF’s arguments and support are

system provides, and the App Store has resulted in a huge success story in the proliferation of copyrighted creative works – in just seven months, over 15,000 new applications have been made available through the App Store and over 500 million downloads of such works have taken place.

Congress did not envision the DMCA exemption process as a forum for economic restructuring of business models. Instead, Congress set up a focused and limited inquiry – whether prohibiting circumvention of access controls will in specific instances have a substantial adverse effect on noninfringing uses of particular classes of works. Here, the uses of the class of works that would result from the proposed exemption are infringing, namely, the creation of unauthorized derivative versions of Apple’s copyrighted bootloader and iPhone operating system software. This fact alone must result in denial of the exemption. The DMCA does not empower the Copyright Office, nor is it equipped, to consider whether the business practices of a particular commercial entity are socially optimal from a particular perspective. And even if the Copyright Office were the proper forum for consideration of such larger economic questions, the EFF has presented no evidence that would justify its apparent view that a more “open” business model is always more socially optimal for the creation and use of copyrighted works and consumer welfare. To the contrary, as this submission will demonstrate, the evidence shows that a business model in which handsets can be widely jailbroken with the attendant problems that result would in fact hinder the creation and distribution of creative works for the platform.

B. Background on the iPhone and the App Store

On June 29, 2007, Apple released its long-anticipated iPhone, a product hailed as revolutionary, unprecedented, and more advanced than any other mobile or “smart” phone then in the marketplace.⁶ The iPhone presented a breakthrough phone to consumers with a fully functional web browser, desktop-class email, industry-first visual voicemail, iPod music functionality, a built-in accelerometer (particularly useful for iPhone applications developers),

flawed, but also to demonstrate the harm that would flow to the particular handset and related applications that EFF has chosen to focus on to justify the proposed exemption.

⁶ David Pogue, “The iPhone Matches Most of Its Hype,” *The New York Times*, June 27, 2007, available at <www.nytimes.com/2007/06/27/technology/circuits/27pogue.html>. Hiawatha Bray, “Not only cool, but very likely groundbreaking,” *The Boston Globe*, June 30, 2007, available at

<www.boston.com/business/personaltech/articles/2007/06/30/not_only_cool_but_very_likely_groundbreaking>. Edward C. Baig, “Apple’s iPhone isn’t perfect, but it’s worthy of the hype,” *USA Today*, June 27, 2007, available at

<http://www.usatoday.com/tech/columnist/edwardbaig/2007-06-26-iphone-review_N.htm>;

Walter S. Mossberg and Katherine Boehret, “Testing Out the iPhone,” *The Wall Street Journal Online*, June 27, 2007, available at

<<http://online.wsj.com/article/SB118289311361649057.html>>; Connie Guglielmo, “Apple iPhone Reviewers Say Handset Lives Up to Hype,” *Bloomberg.com*, June 27, 2007, available at <<http://www.bloomberg.com/apps/news?pid=20601204&sid=aaVRCedJ9lAc>>.

and more – all via a groundbreaking Multi-Touch™ user interface, reported as “the largest and most beautiful screen ... ever seen on a cell phone[.]”⁷

The immediate demand for the iPhone on the part of consumers was extraordinary. Apple sold one million iPhones in just 74 days.⁸ The iPhone was one of the most successful product introductions in the history of cellular telephony, not only setting sales records but establishing a new reference point for what consumers demand in a mobile communications device. Every handset manufacturer is now chasing the iPhone, and the new devices and associated software such as may be found in and for the BlackBerry Storm™ phone, T-Mobile’s G1™ phone based on Google’s Android™ operating system, and the Palm Pre™ phone are now entering the marketplace after Apple’s groundbreaking innovative efforts.

When the iPhone was first introduced, a user could access and utilize web applications, but the device did not interoperate with any applications software that a consumer might download from a third party. Apple briefly delayed support for third party applications in order to safeguard the security, reliability and functionality of the iPhone and its brand-new operating system, and by extension the consumer’s overall experience with and enjoyment of the phone. This decision did not dampen overall consumer enthusiasm for the product, and Apple continued to develop and refine the iPhone technology and maintain and improve its security, reliability and overall functionality.

After Apple overcame the initial hurdle of successfully launching the iPhone, it turned to third party applications, using an approach to foster the development of third party applications that has also been hailed as revolutionary.⁹ In March 2008, Apple introduced its new iPhone Developer Program and released a software development kit (SDK) containing a rich and powerful set of application programming interfaces (APIs) and tools enabling independent software developers to design applications for the iPhone.¹⁰ In the first four days after its launch, there were more than 100,000 downloads of the SDK, a number that ballooned to 250,000 in a little over three months as iPhone application developers proliferated.¹¹ In July 2008, Apple

⁷ Walter S. Mossberg, “BlackJack Beats Out Palm 750, but iPhone May Well Top Both,” *The Wall Street Journal Online*, Jan. 11, 2007, available at <<http://online.wsj.com/article/SB116846792028973034.html?mod=mostpop>>; *see also* “Apple Reinvents the Phone with iPhone” (Press Release, Apple Inc., Jan. 9, 2007), available at <www.apple.com/pr/library/2007/01/09_iphone.html>.

⁸ “Apple Sells One Millionth iPhone” (Press Release, Apple Inc., Sept. 10, 2007), available at <www.apple.com/pr/library/2007/09/10iphone.html>. By way of comparison, it took almost two years to reach that milestone for the immensely popular and ubiquitous iPod product. *Id.*

⁹ Marguerite Reardon, “Apple answers call for iPhone applications,” *cNet.com*, June 10, 2008, available at <http://news.cnet.com/8301-10784_3-9964401-7.html>.

¹⁰ “Apple Announces iPhone 2.0 Software Beta” (Press Release, Apple Inc., March 6, 2008), available at <<http://www.apple.com/pr/library/2008/03/06iphone.html>>.

¹¹ “iPhone SDK Downloads Top 100,000” (Press Release, Apple Inc., March 12, 2008), available at <<http://www.apple.com/pr/library/2008/03/12iphone.html>>; “iPhone SDK

released its second-generation 3G iPhone and version 2.0 of the iPhone operating software, which was designed to allow iPhone owners to safely and reliably download third party applications. At the same time, Apple opened its groundbreaking iPhone App Store – a centralized repository where developers post, and users seamlessly review, preview and download thousands of newly created third party applications.

The success of the iPhone App Store has been nothing short of stunning. Opened with 500 applications, the App Store expanded to more than 800 applications within the first few days, and to 3,000 in two months, of which 90% were priced at under \$10 and more than 600 were free.¹² These applications were from hundreds (later, thousands) of developers around the globe, in a variety of categories including games, business, news, sports, health, reference and travel.¹³ Consumers responded with unprecedented enthusiasm. In the first weekend after opening, the App Store saw 10 million application downloads.¹⁴ Within two months, downloads topped *100 million* worldwide.¹⁵ In just seven months since it was launched, the App Store now contains over *15,000* applications, and consumers have made over *500 million* downloads.¹⁶

Since the introduction of the 3G iPhone and the App Store, overall consumer response to the iPhone itself has also increased dramatically. Compared to the 74 days it took to sell 1 million units of the first-generation iPhone, consumers purchased 1 million 3G iPhones in just three days.¹⁷ Similarly, in five quarters of availability, Apple’s first-generation iPhone sold 6.1 million units,¹⁸ whereas in the six months since the release of the 3G and corresponding App

Downloads Top 250,000” (Press Release, Apple Inc., June 9, 2008), available at <http://www.apple.com/pr/library/2008/06/09iphone_sdk.html>.

¹² “iPhone 3G On Sale Tomorrow” (Press Release, Apple Inc., July 10, 2008), available at <<http://www.apple.com/pr/library/2008/07/10iphone.html>>; “iPhone App Store Downloads Top 10 Million in First Weekend” (Press Release, Apple Inc., July 14, 2008), available at <<http://www.apple.com/pr/library/2008/07/14appstore.html>>; “App Store Downloads Top 100 Million Worldwide” (Press Release, Apple Inc., Sept. 9, 2008), available at <<http://www.apple.com/pr/library/2008/09/09appstore.html>>.

¹³ “iPhone 3G On Sale Tomorrow” (Press Release, Apple Inc., July 10, 2008), available at <<http://www.apple.com/pr/library/2008/07/10iphone.html>>; *see also* Jefferson Graham, “Application developers see iPhone as way to get noticed,” *USA Today*, Jan. 21, 2009, available at <http://www.usatoday.com/tech/products/services/2009-01-20-phanfare-Inernet-photos-iphone_N.htm>.

¹⁴ “iPhone App Store Downloads Top 10 Million in First Weekend” (Press Release, Apple Inc., July 14, 2008), available at <<http://www.apple.com/pr/library/2008/07/14appstore.html>>.

¹⁵ “App Store Downloads Top 100 Million Worldwide” (Press Release, Apple Inc., Sept. 9, 2008), available at <<http://www.apple.com/pr/library/2008/09/09appstore.html>>.

¹⁶ Jefferson Graham, “Application developers see iPhone as way to get noticed,” *USA Today*, January 20, 2009, available at <http://www.usatoday.com/tech/products/services/2009-01-20-phanfare-Inernet-photos-iphone_N.htm>.

¹⁷ “Apple Sells One Million iPhone 3Gs in First Weekend” (Press Release, Apple Inc., July 14, 2008), available at <<http://www.apple.com/pr/library/2008/07/14iphone.html>>.

¹⁸ “Apple Reports First Quarter Results” (Press Release, Apple Inc., Jan. 21, 2009), available at <<http://www.apple.com/pr/library/2009/01/21results.html>>.

Store, Apple sold 11.3 million 3G iPhones.¹⁹ In total, approximately 17.4 million iPhones have been sold in just over a year and a half, with over two-thirds of those sales coming in the last 6 months, since the opening and proliferation of the App Store.

The iPhone Developer Program and the App Store have played a significant part in the success of the 3G iPhone. The availability of hundreds, then thousands, and today over 15,000 innovative iPhone applications quickly became a primary differentiator for the iPhone in what many consider to be the single most crowded and competitive consumer electronics market in the world. iPhone applications – not the ability to make phone calls – were the primary emphasis of Apple’s advertising campaign for the 3G iPhone. The App Store created an unprecedented opportunity for iPhone software developers to meet and conduct business with iPhone users.

Although the App Store is beneficial to Apple, it has clearly been beneficial to developers and consumers as well, essentially eliminating the principal barrier to commerce: the means for iPhone developers to find potential customers in a secure and trusted marketplace. As a result, the cellphone application store was awarded the 2008 “Tech Idea of the Year” by the New York Times tech writer David Pogue:

The Cellphone App Store. What a concept: an online software catalog, stocked with thousands of wildly creative, visually stunning, free or cheap new programs that download directly to your phone, no computer needed. It began with Apple’s iPhone App Store, then spread to the Google Android Market; the Palm App Store opened this week and the BlackBerry Store opens in March. ... An app store turns the smartphone into something completely different: a pocket laptop, a stamp of individuality, an indispensable companion. It becomes the reason you buy one of these machines in the first place. And by making room for those 10,000 individual great ideas – the apps themselves – the cellphone app store takes the trophy as the Tech Idea of the Year.²⁰

As *BusinessWeek* recently reported, “Apple has grabbed an early lead in turning the mobile phone into a high-powered computing device capable of running all kinds of applications. The average iPhone owner has downloaded at least 15 applications in the past six months. The average person carrying a phone from Nokia (NOK), Motorola (MOT), or others hasn’t downloaded a single one, says Nielsen Mobile analyst Nic Covey.”²¹ The success of the iPhone App Store has spawned a host of “clone” stores for other phones – from the Google Android

¹⁹ *Id.*

²⁰ David Pogue, “Envelope, Please. It’s a Pogie,” *The New York Times*, Dec. 17, 2008, available at <www.nytimes.com/2008/12/18/technology/personaltech/18pogue.html>.

²¹ Peter Burrows, “The Apple App Monster,” *BusinessWeek*, January 15, 2009, available at <www.businessweek.com/magazine/content/09_04/b4117074590934.htm?chan=top+news_top+news+index+-+temp_news+%2B+analysis>.

Market to the Palm App Store and the upcoming Blackberry Store.²² This is all a clear example of dynamic competition, generating extraordinary innovation and consumer benefits.

Of particular significance for purposes of this proceeding, it is apparent that Apple's measured but innovative approach to the iPhone product and platform has been a boon to the creation and advancement of intellectual property, especially iPhone applications software. The force of Apple's innovations surrounding the iPhone and the App Store have been such that leading venture capital firm Kleiner, Perkins, Caufield & Byers launched a \$100 million "iFund" to support and invest in iPhone applications developers. In announcing the fund in March 2008, Kleiner partner John Doerr stated: "A revolutionary new platform is a rare and prized opportunity for entrepreneurs, and that's exactly what Apple has created with iPhone and iPod touch ... We think several significant new companies will emerge as this new platform evolves, and the iFund will empower them to realize their full potential."²³

C. Background on Technological Protection Measures in the iPhone

1. How the Technological Protection Measures Work

Ever since the first model, Apple engineers have designed the iPhone to contain technological protection measures (TPMs) that protect two critical pieces of software resident in the device that are core to its functioning – the bootloader²⁴ and the operating system (OS). The bootloader is a small computer program stored in nonvolatile memory (i.e., memory that is not erased when the power goes off) that is automatically read and executed when power to the iPhone is turned on. Its principal function is to perform a few initial tests of the hardware, then to load the OS into the device's main (volatile) memory for operation. The OS is the core operating software of the iPhone. It is responsible for handling the details of the operation of the device's hardware and for management and coordination of activities and operations that are necessary for the making and receiving of phone calls and for application programs (such as email and calendar) to execute on the device. Apple owns the copyrights in both the bootloader and the OS.

The OS is the key operational component of the iPhone and offers a number of functions or services to application programs and users. Application programs access these functions and services through "application programming interfaces" (APIs) or system calls. By invoking these APIs and system calls, an application program can request a service from the OS (such as reading or writing data), pass parameters, and receive the results of an operation. Users may also

²² Olga Kharif, "App Stores: Microsoft, Google Follow Apple," *BusinessWeek*, Sept. 5, 2008 available at <http://www.businessweek.com/technology/content/sep2008/tc2008095_539146.htm>.

²³ "Kleiner Perkins Caufield & Byers Launches \$100 Million iFund for iPhone Application Developers" (Press Release, Kleiner Perkins Caufield & Byers, March 6, 2008), available at <www.kpcb.com/initiatives/ifund/pressrelease.html>.

²⁴ In the iPhone Software License Agreement that governs the use of the software on the iPhone, the bootloader is referred to as the "Boot ROM code." Apple iPhone Software License Agreement, §1, available at <<http://images.apple.com/legal/sla/docs/iphone.pdf>>.

interact with the OS using the device's graphical user interface (GUI), which is generally considered to be part of the OS itself. The iPhone OS is based on Apple's Mac OS X™ operating system (the OS used in Apple's Mac™ line of computers). It was designed not just to enable the making of phone calls, but specifically to provide a rich mobile computing platform so that Apple, applications developers and iPhone users could all benefit from a very wide range of functionality. In that respect, the significance of the iPhone OS to Apple's entry and long-term product strategy cannot be overstated. The platform provided by the OS has created positive feedback loops so that a large community of developers has been willing to invest in iPhone technologies, elevate the platform and the iPhone user experience, and benefit themselves, Apple and consumers alike.

The iPhone contains a number of TPMs that protect the bootloader and OS from modification or corruption, and verify their origin, thereby helping to ensure proper functioning of the device. A secure read only memory (ROM) in the hardware of the device contains cryptographic keys that are used to validate the bootloader and the OS. Upon power up, the secure ROM uses the keys to validate the bootloader before loading it (by verifying its digital signature), and the bootloader then validates the OS before loading it for execution (again, by verifying its digital signature). The validation process verifies that the bootloader and OS originated from Apple and that they have not been altered. Commencing with version 2.0 of the OS, the OS similarly validates all application programs loaded into the iPhone, also by verifying their digital signatures to confirm that they have been accepted by Apple for execution on the iPhone and have not been altered. The sequence of validations from the bootloader to the OS to the application programs is referred to by Apple as the "*chain of trust*."

2. The Purpose of the Technological Protection Measures

Apple has always protected the OS against modifications, because modifications can readily cause significant problems in the operation of the iPhone for the following reasons, among others:

- The OS implements a number of essential safety and control functions. For example, it monitors the thermal condition of the device and shuts it down if it is overheating. It controls the charging of the battery, instructing the relevant circuitry when to start and stop charging the battery, and at what level to charge it. The OS also implements certain governors on the phone's volume. If modifications to the OS were to interfere with these control functions, even unintentionally, the phone could be physically damaged or the battery could be overcharged.
- The OS implements a number of security functions that protect both the iPhone itself and the telephone network to which it connects. For example, the OS implements certain controls on how application programs are able to execute on the iPhone to help prevent viruses and other forms of "malware" from executing. Modification of the OS can interfere with these functions and open up security holes that could enable malware to accomplish malicious things through the iPhone, such as stealing information from the user's contacts database. The OS also controls a critical portion of the device known as the "baseband processor" (BBP) that is used to connect to a telephone network and to

utilize services on the network. By circumventing access controls on the OS, third parties could gain unauthorized access to the BBP, which could in turn result in gaining unauthorized access to and use of the telephone network or even causing operational damage to the network.

- The OS makes available functions and services to application programs through its APIs and system calls. Modifications to the OS can, whether intentionally or unintentionally, interfere with the proper operation of the APIs and system calls, causing application programs to fail to operate correctly on the phone. Moreover, updates to the OS distributed by Apple may not work correctly with modified earlier versions of the OS. When users attempt to update a device whose OS has been previously modified, serious functional problems can result, potentially causing the device to fail to operate.

For these reasons, Apple has implemented TPMs that help protect the integrity of the OS, and other phone vendors have done the same.²⁵ Because the bootloader loads the OS upon power up, Apple has also implemented TPMs that help protect the integrity of the bootloader, to ensure that it will not load an Apple OS containing unauthorized modifications or an OS from a third party that may not work properly on the phone or with the telephone networks. These TPMs provide a mechanism for Apple to help ensure that each iPhone is running an OS that originates from Apple and has therefore been tested and accepted by Apple and has not been subjected to modifications that can cause the above-noted problems. This, in turn, aids Apple in helping to ensure that its devices work properly in the hands of its customers and that they have a rewarding and high quality experience with its iPhone product line.

For similar reasons, commencing with version 2.0 of the OS, Apple implemented TPMs in the OS that validate each application before it can be executed on the iPhone to help ensure that the application has passed review for conformance to Apple's developer requirements and been accepted by Apple, and has not been altered. As in the case of the bootloader and OS, these TPMs enhance the quality of Apple customers' experiences with the iPhone product line. Through the App Store, Apple is able to help prevent distribution of applications that could cause damage to its OS or cause other problems for end users. For example, through its current App Store review procedures, Apple has prevented distribution of applications that transfer excessive amounts of data to the phone network that can cause a degradation of service such as dropped calls, and applications that utilize undocumented APIs that are not designed for general usage and that can cause an application to crash when invoked.²⁶ Apple currently also reviews applications submitted to the App Store to screen for sexually explicit content and hate speech.

²⁵ For example, the EFF notes in its submission that the T-Mobile G1 smart phone, built around Google's "Android" operating system, will load only signed firmware images, which prevents G1 users from making modifications to the operating system kernel. EFF Submission at p. 6 n.21.

²⁶ EFF states in its submission that Apple refuses to approve applications that "duplicate functionality" offered by Apple's own software. EFF Submission at p. 6. This is incorrect. Apple has, for example, approved multiple general web browsers, which compete with Apple's own Safari™ web browser, and multiple mail programs, which compete with Apple's own mail program for the iPhone.

Under current procedures, when Apple denies approval of an application, it gives the developer the reasons why and encourages the developer to fix the identified problems and resubmit the application. The great majority of developers do, in fact, resubmit their applications and get them approved after resubmission.

These TPMs do more, however, than simply help ensure the quality of the customer's experience with iPhone applications. They also protect Apple's copyright interests in its own content, as well as the copyright interests of third parties in their content, that plays on the iPhone. There are many instances in which unauthorized persons "strip" the TPMs protecting such content, thereby placing it "in the clear" (i.e., in unprotected form). With the TPM removed, pirated copies of the content in unprotected form can then be widely distributed among persons who do not pay for it, typically through unlawful peer-to-peer networks and other online distribution sites. Such has happened, for example, to a copyrighted game owned by Apple called "Texas Hold 'Em," as well as to a host of popular games from third party vendors.²⁷ However, the stripped games can be played only on jailbroken iPhones, because the TPMs on the iPhone would otherwise prevent them from playing.²⁸ Apple believes that the proposed exemption would further facilitate and encourage this form of piracy. Piracy, in turn, can diminish the investment that developers are willing to make in the creation of copyrighted works for the iPhone, contrary to the fundamental purpose of the copyright law to encourage the creation of new works of authorship.

In its submission in support of its proposed exemption for Class #1, EFF argues that the TPMs that prevent unauthorized applications from executing on the iPhone have no purpose other than to protect a "business model decision on Apple's part, unrelated to any copyright interest in the firmware that operates the iPhone."²⁹ To the contrary, by prohibiting unauthorized modifications of the bootloader and the OS, the TPMs directly relate to Apple's copyright interests in those programs, the OS being the very heart of the iPhone platform. Section III.A below describes in detail the copyright infringement that results from jailbreaking. The infringing nature of those uses are, as a legal matter, dispositive of the issues properly before the Copyright Office. In later sections, Apple will address the relationship between Apple's "business model" and the proliferation of copyrighted works, demonstrating that EFF is incorrect in its claim that Apple's iPhone applications strategy is "unrelated to any copyright interest." In short, under either the correct legal and technical analysis that the DMCA requires or under EFF's preferred perspective, no exemption for jailbreaking is warranted.

²⁷ A search through a web search engine on the names of such games can readily turn up multiple web sites that host pirated versions of the games that will run on jailbroken phones.

²⁸ For example, a piece of software called the "NES emulator" is available that will enable stripped Nintendo games to be played on jailbroken iPhones. See Dusan Belic, "iPhone NES emulator 2.3.0 released; Accelerometer support included in the mix," *IntoMobile*, July 29, 2008, available at <<http://www.intomobile.com/2008/07/29/iphone-nes-emulator-230-released-accelerometer-support-included-in-the-mix.html>>.

²⁹ EFF Submission at p. 5.

III. LEGAL AND FACTUAL ARGUMENTS AGAINST CLASS #1 OF EXEMPTIONS 5A AND 11A

Section 1201(a)(1)(B) permits the granting of exemptions only where a proponent meets its burden of demonstrating that users of a particular class of works are, or are likely to be in the succeeding 3-year period, adversely affected by virtue of an access control “in their ability to make noninfringing uses” of the works.³⁰ Because the proposed exemption here results in *infringing* uses of copyrighted works protected by the TPMs in the iPhone, the proposed exemption does not satisfy a fundamental prerequisite of the statute and should be rejected. Nor are the jailbreaking activities protected by either 17 U.S.C. § 117(a) or the fair use doctrine, as EFF’s submission argues. EFF’s failure to meet its burden as to these threshold questions is, as a legal matter, alone dispositive of the issues properly before the Copyright Office.³¹ But even beyond that, the statutory factors laid out in Section 1201(a)(1)(C) for consideration in exemption proceedings also weigh heavily against granting the proposed exemption for jailbreaking.

A. Jailbreaking Results in Copyright Infringement

Section 1201(a)(1)(B) permits the granting of exemptions only where users of a particular class of works are, or are likely to be in the succeeding 3-year period, adversely affected by virtue of an access control “in their ability to make noninfringing uses” of the particular class of works. Because the proposed exemption results in *infringing* uses of copyrighted works protected by the TPMs in the iPhone, the exemption does not satisfy a fundamental prerequisite

³⁰ 17 U.S.C. § 1201(a)(1)(B).

³¹ EFF’s proposal to fundamentally alter the methodology and standard used by the Copyright Office in deciding upon the proposed exemptions should be rejected. The new proposed approach – that if an activity in question *might plausibly* be a fair use or protected by any other statutory exception, but there is “some doubt” on the question, the Librarian should grant the exemption but narrow it to apply only so long as the activity in question is noninfringing (EFF Submission at p. 3) – is inconsistent with the statutory language in Section 1201(a)(1)(B). That language clearly requires that the uses enabled by the circumvention be “noninfringing,” not “might plausibly” be noninfringing. Exemptions phrased to apply “only so long as the activity in question is noninfringing” (*id.* at p. 4) will be confusing at best (if not circular, given that the statutory standard is noninfringing), unclear in scope, and encourage litigation. Moreover, EFF’s main argument in support of the new standard – that courts would be otherwise “foreclose[d]...from ‘breaking new ground’ in fair use cases” and “may never have the opportunity to rule on the questions because a defendant may be unable to raise the fair use defense against a § 1201(a)(1) claim” (*id.* at p. 3) – is entirely unsupported. EFF cites to no case that has so held in the decade since the DMCA was enacted, but only “dicta” from a single district court case. This is scant support for an argument that would serve to fundamentally alter, against clear Congressional command, the proper standard in these proceedings. The Copyright Office has in all three previous rulemakings placed the burden on the proponent to establish that a use to be enabled by circumvention is in fact noninfringing. This approach is consistent with the statutory language and the legislative history, and there is no good reason to depart from it now.

of the statute and must be rejected.

Current jailbreak techniques now in widespread use utilize unauthorized modifications to the copyrighted bootloader and OS, resulting in infringement of the copyrights in those programs. For example, the current most popular jailbreaking software for the iPhone, PwnageTool (cited by EFF in its submission), causes a modified bootloader and OS to be installed in the iPhone, resulting in infringement of Apple's reproduction and derivative works rights. Specifically, in the spring of 2008, hackers were able to determine how to circumvent the secure ROM in the iPhone and falsely sign the bootloader. Using such knowledge, a falsely signed modified version of Apple's bootloader was created that will fool the secure ROM into loading it, thereby circumventing the TPM implemented by the secure ROM. PwnageTool directly modifies a copy of the bootloader and loads it onto the iPhone. The modified bootloader is configured so that it does not perform the authentication check of the OS, and it therefore loads a modified version of Apple's OS that is not signed, thereby circumventing the TPM implemented by the bootloader. The modified OS, in turn, is configured so that it does not perform authentication checks on application programs loaded onto the iPhone, thereby jailbreaking the device. In sum, PwnageTool circumvents every link of Apple's "chain of trust" TPMs in the iPhone. More generally, as the EFF submission admits, "decryption and modification of the iPhone firmware appears to be necessary for any jailbreak technique to succeed on a persistent basis."³²

Jailbreaking therefore involves infringing uses of the bootloader and OS, the copyrighted works that are protected by the TPMs being circumvented. Unauthorized derivative versions of the bootloader and OS have been created. Copies of those infringing works have been stored on web sites, and infringing reproductions of those works are created each time they are downloaded through Pwnage Tool and loaded onto the iPhone.³³ In addition, as discussed in Section II.B.2 above, the jailbroken OS enables pirated copies of Apple copyrighted content and other third party content such as games and applications to play on the iPhone, resulting in further infringing uses of copyrighted works and diminished incentive to create those works in the first place.

In sum, the jailbreaking of the iPhone that would be permitted by the proposed Class #1 exemption in 5A and 11A would result in infringing uses of copyrighted works. It would involve the creation, distribution, and copying of unauthorized modified versions of the bootloader and OS, and it would facilitate and encourage the making, distribution, and use of infringing copies of copyrighted material such as games and applications, owned by both Apple

³² EFF Submission at p. 7.

³³ The initial act of jailbreaking is not the only act of copyright infringement that users of jailbroken iPhones may need to engage in. Further modifications to the OS are often necessary to enable certain kinds of applications to run even after the basic jailbreaking is accomplished. Such modifications are infringing and can give rise to additional functional problems on the iPhone, such as interfering with operation of certain APIs or system calls, or creating incompatibilities with other updated components of the OS. In short, the initial infringing acts on the OS often lead to other infringing acts, which in turn can lead to yet further functional problems.

and third parties, that run only on jailbroken phones. The proposed exemption therefore does not satisfy the fundamental prerequisite of the statute that it aid “noninfringing uses” of copyrighted works and should be rejected.

The infringing uses of copyrighted works that result from jailbreaking distinguish the proposed Class #1 exemption in 5A and 11A from that of the 2006 exemption for circumvention of firmware in a wireless telephone handset in order to connect to a wireless telephone communication network.³⁴ With respect to that exemption, the Librarian of Congress found in 2006 that the reason the four statutory factors “appear[] to be neutral is that in this case, the access controls do not appear to actually be deployed in order to protect the interests of the copyright owner or the value or integrity of the copyrighted work”³⁵ Regardless whether the Librarian was correct in this finding in the 2006 rulemaking, it is clear from the preceding discussion that such is not the case here. The TPMs in the iPhone are indeed deployed to protect the integrity, and therefore the interests of Apple as the copyright owner, of the bootloader and the OS, so as to avoid the many adverse consequences discussed in Section II.B.2 above that can flow from unauthorized modifications or compromise of those critical operating software components of the iPhone. They also protect the copyright interests of Apple and other developers in applications designed to run on the iPhone.

B. The Unauthorized Modifications to the Bootloader and OS Made in the Course of Jailbreaking Are Not Protected by Section 117

EFF argues in its submission that, to the extent a jailbreak technique requires the reproduction or adaptation of existing firmware in a smart phone beyond the scope of any license by the copyright owner, it would fall within the ambit of Section 117(a) of the copyright statute. This argument is incorrect, at least as applied to the iPhone.

Unauthorized modifications to the bootloader and OS of the iPhone required by PwnageTool and other jailbreaking software are not covered by Section 117(a) for at least four reasons:

- First, the Final Report of the National Commission on New Technological Uses of Copyrighted Works (“CONTU Report”), which all courts but one to examine the issue have taken as the legislative history of Section 117 or at least indicative of Congressional intent,³⁶ makes clear that the adaptation right of Section 117(a) can be negated by

³⁴ Exemption 5 from the 2006 rulemaking reads: “Computer programs in the form of firmware that enable wireless telephone handsets to connect to a wireless telephone communication network, when circumvention is accomplished for the sole purpose of lawfully connecting to a wireless telephone communication network.” Final Rule on Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, 71 Fed. Reg. 68472, 68476 (Nov. 27, 2006).

³⁵ *Id.* at 68476.

³⁶ See *Krause v. Titleserv*, 402 F.3d 119, 128 (2d Cir. 2005); *Aymes v. Bonelli*, 47 F.3d 23, 26-27 (2d Cir. 1995); *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1520 n.5 (9th Cir. 1992); *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 260-61 (5th Cir. 1988); *Apple Computer, Inc.*

contract. The CONTU Report states, “Should proprietors feel strongly that they do not want rightful possessors of copies of their programs to prepare such adaptations, they could, of course, make such desires a contractual matter.”³⁷ Apple has done precisely that, for the software license agreement that governs the software on the iPhone, including the bootloader and OS, prohibits any modification of such software. Specifically, Section 2(c) of that license provides, “You may not and you agree not to, or to enable others to, ... decrypt, modify, or create derivative works of the iPhone software”³⁸ Accordingly, the Section 117(a) adaptation rights have been removed by contract, and adaptations of the bootloader and OS made in the course of jailbreaking an iPhone would constitute a breach of the software license agreement. To the extent the proposed exemption encourages more users to jailbreak their devices, it will result in more users breaching their iPhone software license agreement with Apple. These breaches represent an additional negative consequence that would flow from the proposed exemption.

- Second, as the PwnageTool case illustrates, end users typically do not themselves create the modifications to the bootloader and the OS that they load onto their iPhones to jailbreak them. Rather, such modified versions are created by others, then are downloaded to end users wishing to jailbreak their devices when PwnageTool executes. Under the express language of Section 117(a), the owner of the copy of a computer program must either make the adaptation herself or authorize the making of the adaptation on her behalf.³⁹ Because in the vast majority of cases, the end user will not herself create the modified versions of the bootloader and the OS, nor will she have

v. Franklin Computer Corp., 714 F.2d 1240, 1252 (3d Cir. 1983), *cert. denied*, 464 U.S. 1033 (1984); *Foresight Resources Corp. v. Pfortmiller*, 719 F. Supp. 1006, 1009 (D. Kan. 1989); *Apple Computer, Inc. v. Formula Int’l, Inc.*, 594 F. Supp. 617, 621 (C.D. Cal. 1984). *But see Lotus Dev. Corp. v. Borland Int’l, Inc.*, 788 F. Supp. 78, 93 (D. Mass. 1992), *rev’d on other grounds*, 49 F.3d 807 (1st Cir. 1995), *aff’d by an equally divided court*, 116 S. Ct. 804 (1996).

³⁷ Final Report of the National Commission on New Technological Uses of Copyrighted Works (1978) at 13-14 (hereinafter cited as the “CONTU Report”). No court has directly ruled on whether the adaptation right of Section 117 may be negated by contract. In *RAV Communications, Inc. v. Philipp Brothers, Inc.*, 1988 U.S. Dist. LEXIS 3048 (S.D.N.Y. Apr. 13, 1988), the court quoted the sentence in text from the CONTU Report concerning contractual negation of Section 117’s adaptation right, but did not rely on the statement in deciding the case. *Id.* at * 7. In *Foresight Resources Corp. v. Pfortmiller*, 719 F. Supp. 1006, 1010 (D. Kan. 1989), the court rejected the plaintiff’s argument that the defendant’s adaptations to its copy of the plaintiff’s computer program were prohibited by the software license agreement because “there is some reason to question the enforceability of” the agreement. However, the court went on in dicta to state without elaboration, “Even if the agreement is enforceable, the court does not believe that plaintiff’s right to improve or enhance its products is exclusive.” *Id.*

³⁸ Apple iPhone Software License Agreement, §2(c), available at <<http://images.apple.com/legal/sla/docs/iphone.pdf>>.

³⁹ *Krause v. Titleserv, Inc.*, 402 F.3d 119, 122 (2d Cir.) (“To come within the protection of § 117(a)(1) on these facts, [defendant] must demonstrate that the new adaptation of [plaintiff’s] program (i) was made by the ‘owner of a copy of [the] computer program’”), *cert. denied*, 126 S. Ct. 622 (2005).

authorized the third parties who created such modified versions to do so for her personal use on her own iPhone, Section 117(a) does not cover such adaptations. In addition, Section 117(b) provides, “Adaptations so prepared [in accordance with the provisions of this section] may be transferred only with the authorization of the copyright owner.” Because Apple has not authorized the distribution of the modified versions of the bootloader and OS that jailbreak its iPhones, Section 117(b) prohibits the distribution of such adapted versions that occur when PwnageTool or other similar tools are executed.⁴⁰ Accordingly, neither the creation of the adapted versions of the bootloader and OS that are used in jailbreaking, nor their distribution, are covered under Section 117(a).⁴¹

- Third, modifications are permitted under Section 117(a) only to the extent they do not harm the interests of the copyright owner. Section 117(a)(1) authorizes the adaptation of a computer program provided that it “is created as an essential step in the utilization of the computer program in conjunction with a machine.” Although early decisions under Section 117 construed this requirement narrowly to apply only to adaptations that were necessary to allow a computer program to function on the user’s particular hardware or operating system,⁴² more recent decisions have construed Section 117(a) to allow a user of a computer program to add new features to it, subject to a number of limitations.⁴³ One of those important limitations is that the right to add features can “only be exercised so long as they [do] not harm the interests of the copyright proprietor.”⁴⁴

⁴⁰ *Midway Mfg. Co. v. Strohon*, 564 F. Supp. 741, 745 n.2 (Section 117 “is not authority for [defendant’s] sales of reproductions of [plaintiff’s] program as adapted.”).

⁴¹ *See Foresight Resources Corp. v. Pfortmiller*, 719 F. Supp. 1006, 1009 (D. Kan. 1989) (citing several cases finding inapplicability of Section 117 because “they involved situations where the defendant’s alterations to the plaintiff’s software were designed for widespread marketing to third parties.”); *see also Apple Computer, Inc. v. Formula Int’l, Inc.*, 594 F. Supp. 617, 622 (C.D. Cal. 1984) (“The copy authorized by Section 117 must be made only for the owner-user’s internal use and . . . cannot be made accessible to others.”). *Cf.* R. Saltman, *Computer Science and Technology: Copyright in Computer-Readable Works: Policy Impacts of Technological Change*, NBS Special Publication 500-17 (Oct. 1977), *reprinted in III Copyright, Congress and Technology: The Public Record* 368 (N. Henry ed., 1980) (“The right to internal use should not include the right to make the work available to outsiders via a computer network or otherwise.”) (report submitted by the National Science Foundation to CONTU in connection with its deliberations on Section 117).

⁴² *See, e.g., Micro-Sparc, Inc. v. Amtype Corp.*, 592 F. Supp. 33 (D. Mass 1984); *Midway Mfg. Co. v. Strohon*, 564 F. Supp. 741 (N.D. Ill. 1983); *Hubco Data Prods. Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. 450 (D. Idaho 1983).

⁴³ *See, e.g., Krause v. Titleserv, Inc.*, 402 F.3d 119, 127-28 (2d Cir.), *cert. denied*, 126 S. Ct. 622 (2005); *Weitzman v. Microcomputer Resources, Inc.*, 510 F. Supp. 2d 1098, 1109 (S.D. Fla. 2007).

⁴⁴ *Krause v. Titleserv, Inc.*, 402 F.3d 119, 129 (2d Cir.), *cert. denied*, 126 S. Ct. 622 (2005) (quoting CONTU Report at 13); *see also Weitzman v. Microcomputer Resources, Inc.*, 510 F. Supp. 2d 1098, 1109 (S.D. Fla. 2007) (right to add features under Section 117(a) is permitted so long as the modifications “do not disrupt [the] interests” of the copyright owner).

Here, the modifications to the bootloader and the OS that are made to jailbreak the iPhone clearly harm the interests of Apple as the owner of the copyright in those programs. As discussed in Section II.B.2 above, those modifications can readily cause significant problems in the operation of the iPhone – interference with safety, control and security functions of the device; interference with the proper operation of the APIs and system calls of the OS, causing application programs to fail to operate correctly on the phone; and failure of updates to the OS distributed by Apple to work correctly, which can also result in functional problems with the device, potentially causing it to fail to operate.⁴⁵ These functional problems diminish the value of the iPhone, including the software that makes it operate. The value to Apple of the OS as the key operational component of the iPhone depends upon preservation of its operational integrity so that users have a consistently good experience with the product.

Equally important, functional problems that result from unauthorized modifications to the OS increase Apple's support costs substantially. Apple's iPhone support department has received literally millions of reported incidents of software that crashes on jailbroken iPhones, although it works properly on unmodified iPhones. For example, one recent software crash caused by jailbroken phones was reported over 1.6 million times from users of just 10,000 jailbroken phones. Two other recent crashes caused by jailbroken phones were reported over 2 million times and over 2.4 million times, respectively. Apple has also become aware that some jailbroken versions of the bootloader make it impossible to update the baseband processor (BBP) in the iPhone, which controls the ability of the iPhone to connect up to the telephone network and make calls. Because each update that Apple distributes to the BBP contains updates and fixes, a phone that cannot update the BBP will potentially experience problems making calls. When that happens, Apple's support department gets flooded with calls.

Apple incurs very substantial expenses to investigate these problems reported to its support department to determine whether they result from problems in Apple's own software, or result from unauthorized modifications performed by users in jailbreaking. Apple expects that reported problems from jailbroken phones will increase dramatically if the Class #1 exemption proposed by EFF were to be allowed, substantially increasing Apple's support costs even more.

In sum, as the OS becomes more costly to support because of millions of instances of problems reported from users of jailbroken phones, its value to Apple obviously diminishes. And the unauthorized pirating of Apple's copyrighted content such as Texas Hold 'Em and of other third party content that jailbreaking encourages diminishes the value to Apple and other owners of those copyrighted works as well.

⁴⁵ Users of jailbroken phones who experience problems after loading an updated version of the OS from Apple will often resort back to an older version of the OS, which can mean, for example, that their iPhone will not contain the latest security updates and may therefore be vulnerable to malware or other known risks.

- Fourth, modifications made under Section 117(a) can be used only as an essential step in the utilization of the computer program in conjunction with a machine and “in no other manner.” In *Krause v. Titleserv, Inc.*,⁴⁶ the Second Circuit noted, “Whether a questioned use is a use *in another manner* seems to us to depend on the type of use envisioned in the creation of the program.”⁴⁷ The modifications to the bootloader and the OS made to jailbreak a phone result in those programs being used in ways that were never envisioned in their creation. As described earlier, the bootloader and OS were designed from the beginning in a fashion that would preserve their operational integrity, so as to avoid the many potential problems that unauthorized modifications cause. Modifications made to jailbreak a phone destroy this fundamental characteristic of operational integrity, thereby also destroying the “chain of trust” that Apple designed into its iPhone. Use of these copyrighted programs in a jailbroken phone is therefore use “in another manner” that is not covered by Section 117(a).

C. The Unauthorized Modifications to the Bootloader and OS Made in the Course of Jailbreaking Are Not Protected by The Fair Use Doctrine

EFF further argues in its submission that, even if reproduction and modification of a phone’s firmware incident to jailbreaking were to fall outside the scope of Section 117, it would nevertheless constitute a non-infringing fair use. This, too, fails as to Apple’s iPhone software. Looking at the four statutory fair use factors,⁴⁸ although the use *per se* of the modified iPhone bootloader and OS on an individual handset is of a personal nature, it is not a transformative use, and because a jailbroken OS is often used to play pirated content, such activity should be considered of a commercial nature since it avoids paying fees for the content. Therefore, factor 1 weighs against fair use.⁴⁹ Factors 2 and 3 also weigh against fair use because the copyrighted works at issue are highly creative and not factual in nature, and essentially the entire work is being copied.⁵⁰

⁴⁶ 402 F.3d 119 (2d Cir.), *cert. denied*, 126 S. Ct. 622 (2005).

⁴⁷ *Id.* at 129 (emphasis in original).

⁴⁸ The four nonexclusive statutory fair use factors prescribed in § 107 of the copyright statute are: (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work.

⁴⁹ *See, e.g., Wall Data Inc. v. Los Angeles County Sheriff’s Dept.*, 447 F.3d 769, 778-79 (9th Cir. 2006) (under the first fair use factor, use of software that saves the expense of purchasing a copy is a commercial use, and creating exact copies of software and putting them to the same purpose as the original software is not transformative).

⁵⁰ *See id.* at 779-80 (second factor weighed against fair use because copyright protects software and the computer program at issue cost millions of dollars to develop; third factor weighed against fair use in view of verbatim copying of the entire computer program).

Of most importance is factor 4,⁵¹ because the effect of these unauthorized uses is to diminish the value of the copyrighted works to Apple. For the reasons discussed in Section II.B.2 and elaborated in the discussion of Section 117 above, jailbreaking the bootloader and the OS clearly diminishes the value of those copyrighted works directly by giving rise to a host of problems in the safety, security and operation of the iPhone, and by substantially increasing Apple's costs to support the software.

EFF's argument that factor 4 cuts in favor of fair use because Apple makes various versions of the iPhone firmware available "for free from its own website, demonstrating that the firmware has no independent economic value"⁵² is wholly off the mark. The iPhone firmware is not itself a product; it is a component of the iPhone mobile computing product. The value of the OS software to the iPhone, and therefore to Apple, cannot be assessed independent of the iPhone itself. The OS's value is as platform software for the mobile computing experience that differentiates the iPhone from its many competitors. The value of platform software, in turn, is related to the number and quality of applications written to run on the platform and the availability of safe and secure means of distributing these applications to consumers. Apple created at substantial cost the ecosystem that makes the SDK and the App Store available to developers, who in turn write applications to the platform, which in turn make the iPhone a more attractive product to consumers. All of these benefits are promoted by the TPMs that safeguard the iPhone OS. EFF's submission offers no evidence to support the bald assertions that nullifying DMCA protections for such TPMs will produce more benefits for society and more investment in copyrighted works than Apple has demonstrably created through its iPhone product design and strategy.

In sum, the value of the iPhone, and hence the software embedded in it, is substantially diminished when the integrity and functionality of that software is compromised by jailbreaking, when Apple is left to deal with the problems that ensue, and when the positive feedback loops enabled by the App Store and the iPhone Developer Program are compromised.

D. The Section 1201(a)(1)(C) Statutory Factors Relevant To This Rulemaking Weigh Heavily Against Granting the Proposed Exemption

Section 1201(a)(1)(C) provides that, in conducting the rulemaking proceeding at issue, the Librarian of Congress shall examine the following factors:

- (i) the availability for use of copyrighted works;
- (ii) the availability for use of works for nonprofit archival, preservation, and educational purposes;
- (iii) the impact that the prohibition on the circumvention of technological measures applied to copyrighted works has on criticism, comment, news reporting, teaching, scholarship, or research;

⁵¹ *Harper & Row, Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539, 566 (1985) (effect on the market for the copyrighted work is "undoubtedly the single most important element of fair use").

⁵² EFF Submission at p. 9.

- (iv) the effect of circumvention of technological measures on the market for or value of copyrighted works; and
- (v) such other factors as the Librarian considers appropriate.

EFF argues that the importance of the four nonexclusive factors recited in Section 1201(a)(1)(C) “recedes” because the access controls on smart phone firmware do not appear to actually be deployed in order to protect the interests of the copyright owner or the value or integrity of the copyrighted work, but rather simply to protect Apple’s “business decision” to limit third party applications.⁵³ EFF argues in the alternative that, in any event, the delineated factors, in addition to “additional public interest factors that militate strongly in favor of granting the exemption,” support the exemption.⁵⁴ EFF is incorrect on both counts.

1. Apple’s Creation of and Interest in the iPhone Product and iPhone Applications Ecosystem Is Fundamentally Related to Copyright Interests, and Exemplifies the Very Purpose of the DMCA

EFF’s first argument that the firmware access controls exist only to protect a business model decision on Apple’s part, unrelated to any copyright interest in the firmware that operates the iPhone, is incorrect. As elaborated in Section II.B.2 above, the TPMs deployed on the iPhone were put in place from the very beginning precisely to protect the integrity of the iPhone software from infringing unauthorized modifications that lead to significant functional problems. As they squarely protect Apple’s interests as the underlying developer, creator and copyright owner, the access controls are proper.

Although the above is conclusive as to the specific inquiry with respect to the proposed exemption in this rulemaking, the repeated characterization in EFF’s submission of Apple’s choice to implement TPMs in the iPhone as merely a “business model decision” bereft of anything having to do with copyright law cannot be left unaddressed by Apple. As prefaced in the introduction to this submission, EFF is apparently seeking to use this rulemaking proceeding to alter Apple’s business practices so as to create a world where the iPhone is forced into a more “open” business model by way of granting protection to those who would hack the iPhone, gain access to Apple’s copyrighted works, and allow any third party applications to run on the device. But the “more open is better” philosophy behind this particular proposed exemption is not grounded in the policies underlying the Copyright Act or the DMCA.⁵⁵ Indeed, if followed, this philosophy would serve to stifle the very thing the DMCA seeks to protect and grow – creation and proliferation of copyrighted works.

⁵³ *Id.* at p. 10.

⁵⁴ *Id.*

⁵⁵ This is made clear by the many claims in EFF’s submission that have nothing to do with copyright law, let alone the DMCA exemption at issue before the Copyright Office. EFF’s concern with how Apple is compensated for distributing iPhone-compatible applications (EFF Submission at p. 6) is one such example, as is EFF’s wholly unsupported speculation, contrary to the facts of the last 9 months, that an exemption would “foster[] competition in the software market, thereby encouraging innovation, and expanding consumer choice.” (*Id.* at p. 12)

The DMCA was put into place precisely to incentivize and drive the creation of copyrighted works by allowing owners of such works to protect them against unauthorized access and use. As the Copyright Office has summarized, the anti-circumvention provisions of the DMCA serve to:

prevent circumvention of technological measures used to protect copyrighted works, and to prevent tampering with the integrity of copyright management information. These obligations serve as technological adjuncts to the exclusive rights granted by copyright law. They provide legal protection that the international copyright community deemed critical to the safe and efficient exploitation of works on digital networks.⁵⁶

By the measure of incentivizing creation of works of authorship, Apple's conception, creation and development of the iPhone, along with its Developer Program and App Store distribution mechanism, is exactly what the global copyright community and Congress sought to protect and incentivize. As discussed in greater detail in Section II.B, *supra*, and in Section III.D.2.a, *infra*, the iPhone is likely one of the greatest success stories in the proliferation of copyrighted creative works in recent memory, with 15,000 new applications and over 500 million copies of those applications lawfully distributed to users in just seven months.

EFF's submission does not provide any support for the assumption underlying the proposed jailbreaking exemption – that copyright advancement will be furthered and the level of innovation would be the same or better by nullifying TPMs on the iPhone in order to force a more open iPhone platform. Indeed, this assumption is contrary to Congress' expressed beliefs in passing the DMCA in the first place – that without the “technological adjuncts” of laws preventing circumvention of access controls, copyright expansion and innovation (so important to the U.S. economy) would be chilled, as companies questioned whether to spend millions on innovations that might not be legally protectable. In other words, that society would never even get innovations like the iPhone and the applications it has spawned in the first place.

Rather than addressing directly the role that TPMs play in encouraging innovation, EFF's submission instead relies on the Copyright Office's statement in the 2006 Rulemaking Recommendation that “business decisions” unrelated to copyright interests are not protected under the DMCA.⁵⁷ The 2006 exemption for circumvention of firmware in a wireless telephone handset in order to connect to a wireless telephone communication network,⁵⁸ which prompted

⁵⁶ The Digital Millennium Copyright Act of 1998, U.S. Copyright Office Summary, December 1998, p. 3, available at <www.copyright.gov/legislation/dmca.pdf>.

⁵⁷ *E.g.*, EFF Submission at p. 5.

⁵⁸ Exemption 5 from the 2006 rulemaking reads: “Computer programs in the form of firmware that enable wireless telephone handsets to connect to a wireless telephone communication network, when circumvention is accomplished for the sole purpose of lawfully connecting to a wireless telephone communication network.” Final Rule on Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, 71 Fed. Reg. 68472, 68476 (Nov. 27, 2006).

the Copyright Office’s “business decision” comments, addressed a far different circumstance than the jailbreaking proposal. With respect to that 2006 exemption, the Register of Copyrights found on the record submitted that “there does not appear to be any concern about protecting access to the copyrighted work itself. The purpose of the software lock appears to be limited to restricting the owner’s use of the mobile handset to support a business model, rather than to protect access to a copyrighted work itself.”⁵⁹ Putting aside serious questions as to whether the findings with respect to the 2006 exemption were correct factually or whether the 2006 exemption should have been granted, it is clear that the “business model” concept discussed in the Register’s 2006 Recommendation, and Final Rule, was addressed to business strategies that are fundamentally unrelated to copyright interests. In other words, when there is no reasonable relationship to protecting a copyrighted work itself or advancing the interests of copyright, TPMs ought not protect a “business model.”⁶⁰ That is the only sensible reading of either the DMCA or the 2006 Rulemaking Recommendation, for the core purpose of the DMCA is to strengthen the “business model” of creating and marketing copyrighted works.⁶¹

⁵⁹ Recommendation of the Register of Copyrights in RM 2005-11; Rulemaking on Exemptions from Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, Nov. 17, 2006, pp. 50-51, available at <www.copyright.gov/1201/docs/1201_recommendation.pdf>.

⁶⁰ The 2006 Recommendation based this language on the House Commerce Committee Report, which states as follows:

The growth and development of the Internet has already had a significant positive impact on the access of American students, researchers, consumers, and the public at large to informational resources A plethora of information, most of it embodied in materials subject to copyright protection, is available to individuals, often for free, that just a few years ago could have been located and acquired only through the expenditure of considerable time, resources, and money. New examples of this greatly expanded availability of copyrighted materials occur every day.

Still, the Committee is concerned that marketplace realities may someday dictate a different outcome, resulting in less access, rather than more, to copyrighted materials that are important to education, scholarship, and other socially vital endeavors. This result could flow from a confluence of factors, including the elimination of print or other hard-copy versions, the permanent encryption of all electronic copies, and the adoption of business models that depend upon restricting distribution and availability, rather than upon maximizing it. In this scenario, it could be appropriate to modify the flat prohibition against the circumvention of effective technological measures that control access to copyrighted materials, in order to ensure that access for lawful purposes is not unjustifiably diminished.

H.R. Rep. No. 105-551, pt. 2, at 35-36 (1998).

⁶¹ Indeed, the Register explicitly noted the following:

Nothing in this discussion is intended to be construed as expressing approval or disapproval of any particular business models, or as expressing any views on telecommunications policy. The Register’s recommendation is based on law and

By contrast, the Copyright Office is faced with a fundamentally different set of circumstances as to proposed Class #1 exemption. Here Apple, as the copyright owner, is seeking to protect its copyrighted works, the iPhone bootloader and OS. As noted above, the TPMs in the iPhone are used to protect the integrity, and therefore the interests of Apple as the copyright owner, of the bootloader and the OS. The motivation is to avoid the adverse consequences that can arise from unauthorized modifications or compromise of those critical operating software components of the iPhone, *see* Section II.B.2, *supra*, and thereby significantly affect user experience, interest and demand for the iPhone.

In essence, the arguments in EFF's submission require the Copyright Office to go on faith that forcing Apple to move to an iPhone platform that can execute any third party application, regardless of problems that may ensue, will result in a better world. But this rulemaking proceeding is not the place to bring about or even to argue that sort of marketplace restructuring. Nothing in the DMCA permits that sort of inquiry.

2. Each of the Individual 1201(a)(1)(C) Factors Weighs Against Granting the Proposed Exemption

We turn now to the individual factors set forth in 1201(a)(1)(C). Each demonstrates that the proposed exemption should be denied.

a. The Availability for Use of Copyrighted Works

The first factor, which is the most relevant to the proposed Class #1 exemption in 5A and 11A, focuses on whether a TPM at issue is affecting, or likely to affect in the succeeding 3-year period, the availability for use of a copyrighted work for noninfringing purposes. Because, as demonstrated above, the uses of the bootloader and the OS (the copyrighted works protected by the TPM's in the iPhone) that would be permitted by the proposed exemption are infringing, the first factor weighs conclusively against the exemption.

Even if one looks more broadly under the first factor to whether the TPMs at issue here adversely affect the *creation* of copyrighted works, and therefore their availability for use in the first instance, the factor weighs against the proposed exemption. The support costs associated with jailbroken phones may well cause potential competitive entrants into the handset market not to enter at all if their phone's firmware cannot be adequately protected from such problems by TPMs, thereby reducing the availability for use of copyrighted works. As EFF's submission

policy considerations relating to 17 U.S.C. § 1201(a)(1) and on her conclusion that the record relating to this proposed class of works does not demonstrate any copyright-based rationale for enforcing the prohibition on circumvention of technological measures that control access to works protected by copyright.

Recommendation of the Register of Copyrights in RM 2005-11; Rulemaking on Exemptions from Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, Nov. 17, 2006, p. 51 n.148, available at <www.copyright.gov/1201/docs/1201_recommendation.pdf>.

notes, the new entrant T-Mobile G1 smart phone contains TPMs protecting the integrity of the phone's OS in a similar fashion to Apple, illustrating the importance of such TPMs to manufacturers.⁶²

Moreover, as the Register noted in the Oct. 6, 2008 Notice announcing this rulemaking, “[a]nother consideration relating to the availability for use of copyrighted works is whether the measure supports a distribution model that benefits the public generally.”⁶³ The TPMs in the iPhone that are the subject of the proposed exemption do support a distribution model that benefits the public in significant ways. As noted in Section II.A above, the iPhone is part of a larger “ecosystem” that Apple established around the product, which includes developers who create applications that have passed review by Apple through its App Store and that iPhone users can feel confident in running. The iPhone is much more than just a telephone, and its value to the consumer is enhanced by the availability of high quality applications that add functionality of all sorts to the device.

To ensure that a large number of attractive applications would be available from the ecosystem, Apple created its App Store. The App Store achieves the goal of encouraging development of a large number of applications (i) by providing an online store of high quality and far reach (branded by Apple) where developers of applications can make money or simply establish a reputation by making available their applications to a wider audience and with far less effort than if they had to establish their own web site or other marketing channels through which to sell their applications, and (ii) by providing a central and convenient location where iPhone users can go to try out and download a myriad of applications, similar to the way the iTunes Store provides a central location for users to go to purchase music for Apple's iPod™ products.⁶⁴ And as Section II.A demonstrated, that success has been tremendous. The App Store has encouraged the development of over 15,000 applications to date for the iPhone in only seven months of operation. This represents a tremendous boost in the creation and availability of copyrighted works – the very thing the copyright laws are designed to make happen – in addition to enhancing the ability of authors of applications to benefit from them. A few examples are illustrative:

- “iPhone is changing the entire mobile industry and has quickly become the number one mobile device for accessing eBay,” explains Ken G. Sun, group product manager for eBay Mobile. “Users can shop, track bids and get great deals from the largest online marketplace in the world directly from their iPhone. We

⁶² EFF Submission at p. 6.

⁶³ 73 Fed. Reg. at 58076.

⁶⁴ EFF correctly notes in its submission that Apple charges a 30% commission on applications distributed through the App Store. EFF Submission at p. 5. EFF fails to note, however, that no commission is charged for the many hundreds of *free* applications on the App Store, and that developers themselves can set whatever price (including zero) for their applications on the App Store. The commissions charged for paid applications are necessary to support the cost of operation of the App Store and of the review of the applications available through it, both free and paid, which costs are quite substantial.

couldn't deliver such a complete and easy-to-use eBay experience on any other mobile device and iPhone users can download it free from the new App Store.”⁶⁵

- “iPhone’s unique capabilities, easy SDK and the ability to reach an audience of millions via the App Store made this an easy development choice for us,” says John Pollard, CEO of Jott Networks. “To date, we’ve had hundreds of thousands of downloads of Jott for iPhone, which has been a major win for our company.”⁶⁶
- “Because I already had a full-time job I used the iPhone SDK to create Trism in my spare time and in my wildest dreams I never expected this kind of result,” explains Steve Demeter, founder of Demiforce. “Selling over 27,000 downloads in the first three weeks means I now have a significant new income stream and some exciting career choices.”⁶⁷
- “As an 18 year old iPhone Developer Program member I won an Apple WWDC student scholarship and used the opportunity to complete my app over the summer,” says Bryan Henry, developer of iPhone app, Equivalence. “It was a lot of fun to pull it together and certainly the most lucrative summer job I’ve ever had as I made over \$8,000 in my first month of App Store sales.”⁶⁸
- “iPhone enables The Associated Press to deliver news in a way that simply wasn’t possible before,” says Benjamin Mosse, director of Mobile Products for The Associated Press. “Taking advantage of iPhone’s revolutionary location-based services, our Mobile News network can capture and store local news stories that can be read by users even when they’re offline”⁶⁹

The App Store achieves the other goal of helping to ensure that third party applications are suitable for the iPhone by setting up a mechanism through which developers submit their applications for review. As described earlier, this review procedure helps to weed out applications that may constitute “malware” or cause compatibility problems with the iPhone.

As stated in the Oct. 6, 2008 Notice, “the Register’s inquiry must assess any benefits to the public resulting from the prohibition as well as the adverse effects that may be established.”⁷⁰ It should be clear that the iPhone ecosystem Apple has built is good for developers, good for iPhone users, good for Apple, and good for the policies underlying the copyright laws to encourage the creation of works of authorship. That ecosystem depends upon the “chain of trust” implemented in the iPhone through its TPMs. The proposed exemption would destroy that chain of trust and threaten many of the benefits the ecosystem affords, and should therefore be

⁶⁵ “iPhone 3G On Sale Tomorrow” (Press Release, Apple Inc., July 10, 2008), available at <<http://www.apple.com/pr/library/2008/07/10iphone.html>>.

⁶⁶ “App Store Downloads Top 100 Million Worldwide” (Press Release, Apple Inc., Sept. 9, 2008), available at <http://www.apple.com/pr/library/2008/09/09appstore.html>.

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ “iPhone 3G On Sale Tomorrow” (Press Release, Apple Inc., July 10, 2008), available at <<http://www.apple.com/pr/library/2008/07/10iphone.html>>.

⁷⁰ *Id.*

rejected.

b. The Availability for Use of Works for Nonprofit Archival, Preservation, and Educational Purposes

If the market for availability of works in the first instance is harmed for the preceding reasons, the availability for use for nonprofit archival, preservation, and educational purposes is necessarily also harmed.

c. The Impact on Criticism, Comment, News Reporting, Teaching, Scholarship, or Research

This factor does not seem particularly relevant to the Class #1 exemption in 5A and 11A, and as the EFF submission notes, the exemption is not directed toward ameliorating these harms.⁷¹ In any event, if the market for availability in the first instance is harmed for the reasons cited, the availability for use for the purposes recited in this factor is necessarily also harmed.

d. The Effect on the Market for, or Value of, Copyrighted Works

For the reasons detailed in Section II.B.2, as elaborated in the discussions of Section 117 and the fair use doctrine above, the proposed exempted circumventions will have significant negative impact on the value of Apple's copyrighted works, including the bootloader and OS, as well as other copyrighted content owned by Apple and by third parties that gets pirated for use on jailbroken phones.

e. Other Factors the Copyright Office Should Consider

In addition to the previously noted considerations, Apple believes that the Copyright Office should weigh heavily the fact that Congress has already explicitly addressed the issue of interoperability and the scope of permissible circumvention to achieve interoperability of computer programs in Section 1201(f). The Copyright Office should therefore be extremely cautious about creating interoperability exemptions outside that statutory structure. Although in this instance, for the reasons articulated, the proposed exemption is not warranted under even the normal applicable requirements, the burden on the proponents for an interoperability exemption outside the statutory provision Congress set up should be even higher and is not met here.

E. The Proponents Have Not Demonstrated the Required Harm

Proponents of an exemption bear the burden of proof of establishing harm to the ability to make noninfringing uses of a particular class of works. Here, as demonstrated in this response, the uses that would be made of the class of works that would be circumvented under the exemption – the iPhone bootloader and OS – are infringing, so there has been no showing that *noninfringing* uses are being harmed.

⁷¹ EFF Submission at p. 11.

But even if one looks beyond the class of works actually being circumvented to assess harm to the use of iPhone applications, the EFF submission has simply not met the required burden of proof. First, as noted, many uses of applications on jailbroken phones are of pirated applications that a jailbroken phone is capable of running – clearly not noninfringing uses. But even as to legitimate applications, the clear evidence is that the TPMs at issue on the iPhone have not harmed the availability for use of applications on the iPhone. Indeed, quite the opposite is true, as the App Store has made available over 15,000 iPhone applications to date.

The EFF submission argues “harm” in the form of phone users who supposedly would like to run third party applications available outside the App Store. Yet the EFF submission does not contain any data regarding which or how many third party applications outside the iPhone App Store users would like to run on their iPhone, or whether those applications might be available to run on other phones.⁷² As the Register stated in the Oct. 6, 2008 Notice, “The harm identified by a proponent of an exemption must be balanced with the harm that would result from an exemption. In some circumstances, the adverse effect of a proposed exemption in light of these considerations may be greater than the harm posed by the prohibition on circumvention of works in the proposed class.”⁷³ The harms that will flow from the proposed exemption have been delineated in detail in this response, and they clearly outweigh the speculative showing of harm that has been put forth by the proponents of the exemption.

IV. SUMMARY AND CONCLUSION

The proposed Class #1 exemption in 5A and 11A should be rejected. The acts of circumvention that the exemption would permit would result in infringing uses of copyrighted firmware stored on smart phones and of copyrighted content that runs on those phones, thereby failing the fundamental prerequisite requirement of Section 1201(a)(1)(B) for an exemption. Although that fact alone should preempt any need for further consideration, the proposed exemption should also be rejected because of a host of bad consequences that will flow from it. In the case of the iPhone, it will destroy the “chain of trust” that Apple has carefully engineered into the product to protect users from serious functional problems that often result from unauthorized modifications to the device’s OS. It will potentially open up the iPhone to security holes and malware, as well as possible physical damage. Currently, Apple’s support department receives literally millions of reported instances of problems flowing from jailbroken phones. Apple’s support costs would be increased substantially as the exemption encourages thousands of additional users to jailbreak their phones.

Of equal significance, the proponents of the proposed exemption have simply not demonstrated the need for it. They have not satisfied their burden of proof of showing harm to non-infringing uses of the copyrighted works protected by the technological protection measures on the iPhone, or to the creation of copyrighted works for the iPhone more generally, but instead have simply submitted wholly unsupported assertions. Indeed, quite the opposite is the case.

⁷² As the Register stated in the Oct. 6, 2008 Notice, “[T]he full range of availability of a work for use is necessary to consider in assessing the need for an exemption to the prohibition on circumvention.” 73 Fed. Reg. at 58,076.

⁷³ *Id.* at 58,078.

The current ecosystem of development and distribution of iPhone applications that Apple has set up based on the chain of trust implemented by the TPMs in the device is working beautifully. It has resulted in the creation of over 15,000 applications to date, which have been downloaded for use by users over 500 million times. Certainly, then, those TPMs have not inhibited the availability for use of copyrighted works – in fact, other competitors have been motivated to follow with their own stores, resulting in even more copyrighted works – so there is no need to create an exemption that would destroy the TPMs.

The Notice that commenced this rulemaking proceeding quite correctly observed that “the prohibition [against circumvention] is presumed to apply to all classes of works unless an adverse impact has been shown.”⁷⁴ In assessing that impact, “the Register’s inquiry must assess any benefits to the public resulting from the prohibition as well as the adverse effects that may be established.”⁷⁵ For all of the many reasons set forth in this comment, that assessment weighs very clearly in favor of not upsetting the statutory prohibition in the case of acts of jailbreaking. The public has been greatly benefited by the iPhone and its related ecosystem, which have proved to be a tremendous engine of creation of copyrighted works that is unquestionably furthered by the TPMs Apple has innovated into the iPhone. The Copyright Office should reject in its entirety the proposed exemption that would permit jailbreaking.

⁷⁴ *Id.* at 58,075.

⁷⁵ *Id.* at 58,076.