UNITED STATES COPYRIGHT OFFICE

Long Comment Regarding a Proposed Exemption Under 17 U.S.C. § 1201

Although we will not be providing multimedia evidence in connection with this comment, we provide in-text hyperlinks throughout the comment (represented as blue, underlined words) that link to documentary evidence and/or some cited documents.

ITEM A. COMMENTER INFORMATION

These comments are submitted on behalf of the Motion Picture Association of America, Inc. ("MPAA"), the Entertainment Software Association ("ESA"), the Recording Industry Association of America ("RIAA"), and the Association of American Publishers ("AAP"). They are collectively referred to herein as the "Joint Creators and Copyright Owners." They may be contacted through their counsel at Mitchell Silberberg & Knupp LLP, J. Matthew Williams, 202-355-7904, mxw@msk.com, 1818 N. Street, NW, 8th Floor, Washington, D.C. 20036.

The Motion Picture Association of America, Inc. ("MPAA") is a trade association representing some of the world's largest producers and distributors of motion pictures and other audiovisual entertainment material for viewing in theaters, on prerecorded media, over broadcast TV, cable and satellite services, and on the internet. The MPAA's members are: Paramount Pictures Corp., Sony Pictures Entertainment Inc., Twentieth Century Fox Film Corp., Universal City Studios LLC, Walt Disney Studios Motion Pictures, and Warner Bros. Entertainment Inc.

The Entertainment Software Association ("ESA") is the United States trade association serving companies that publish computer and video games for video game consoles, handheld video game devices, personal computers, and the internet. It represents nearly all of the major video game publishers and major video game platform providers in the United States.

The Recording Industry Association of America ("RIAA") is the trade organization that supports and promotes the creative and financial vitality of the major music companies. Its members are the music labels that comprise the most vibrant record industry in the world. RIAA members create, manufacture and/or distribute approximately 85% of all recorded music produced in the United States.

The Association of American Publishers ("AAP") represents the leading book, journal, and education publishers in the United States on matters of law and policy, advocating for outcomes that incentivize the publication of creative expression, professional content, and learning solutions. As essential participants in local markets and the global economy, our members invest in and inspire the exchange of ideas, transforming the world we live in one word at a time.

The Joint Creators and Copyright Owners all rely on technological protection measures to offer innovative products and licensed access to consumers. Access controls make it possible (i) for consumers to enjoy recorded music through subscription services like SiriusXM, Spotify, Amazon Music Unlimited, YouTube Red, Apple Music and Pandora, including on mobile devices, through in-home voice assistants, and in their vehicles; (ii) for consumers to view motion pictures at home or on the go via discs, downloadable copies, digital rental options, cloud storage platforms, TV Everywhere, video game consoles, and subscription streaming services; (iii) for consumers to play their favorite video games on consoles, computers, and mobile devices; and (iv) for consumers to enjoy and learn from books, journals, poems and stories (including through subscription, lending, and rental options) on dedicated e-book readers, such as the Kindle and the Nook, on tablets and smartphones, and via personal computers. As the Register concluded in the recent Section 1201 Study, "[t]he dramatic growth of streaming

services like Netflix, Spotify, Hulu, and many others suggests that for both copyright owners and consumers, the offering of access—whether through subscriptions, *à la carte* purchases, or ad-supported services—has become a preferred method of delivering copyrighted content. . . . [T]he law should continue to foster the development of such models." U.S. Copyright Office, *Section 1201 of Title 17: A Report of the Register of Copyrights* 45-46 (2017) ("1201 Study").

ITEM B. PROPOSED CLASS ADDRESSED

Proposed Class 7: Computer Programs - Repair

ITEM C. OVERVIEW

In 2015, the Register recommended, and the Librarian granted, an exemption allowing circumvention of access controls applied to electronic control units ("ECUs") in motor vehicles for the purpose of repairing the vehicles. 37 C.F.R. § 201.40(b)(6). However, the Register excluded from the scope of the exemption circumvention to access ECUs on in-vehicle entertainment systems. The Register concluded that "[t]here was insufficient evidence in the record to support a need for circumvention of the TPMs on these ECUs, especially when balanced against concerns about unauthorized access to the services and content they protect." U.S. Copyright Office, *Section 1201 Rulemaking: Sixth Triennial Proceeding to Determine Exemptions to the Prohibition on Circumvention: Recommendation of the Register of Copyrights* 246 (2015) ("2015 Rec.").

Also in 2015, the Register denied an exemption that would have authorized circumvention to repair video game consoles. The Register concluded, *inter alia*, that "major game console manufacturers appear to offer repair services for in- and out-of warranty consoles either for free or at reasonable prices." *Id.* at 200-01.

The current proposal by the Electronic Frontier Foundation, *et al.* ("EFF") to expand the automobile repair exemption to cover every conceivable device and machine, including devices through which consumers access expressive content such as video games, literary works, motion pictures, and music, is overbroad and factually unsupported.[1] Indeed, there is no evidence in the record of a need to expand the exemption to cover in-vehicle entertainment systems, much less every device on which expressive content is accessed. EFF has not attempted to establish that it is necessary to engage in circumvention to repair any such devices. And the time for proffering such evidence has passed. *Exemptions To Permit Circumvention of Access Controls on Copyrighted Works: Notice of Proposed Rulemaking*, 82 Fed. Reg. 49,550, 49,558 (Oct. 26, 2017) ("NPRM") ("Proponents of exemptions should present their complete affirmative case for an exemption during the initial round of public comment …"). Thus, any expanded exemption related to repairing devices or vehicles should categorically exclude devices and software used to access expressive works, including in-vehicle entertainment systems. It should also exclude circumvention to access any type of work other than computer programs.

EFF has also failed to meet its burden to establish that modifying such devices or software is noninfringing and unlikely to cause harm to copyright owners. In 2017, the Register declined to recommend that Congress create a statutory exception to permit circumvention to access software on devices for the purpose of modifying the software because modification "raises significantly different issues from repair." 1201 Study at 95. Specifically, the Register stated that modification "is hard to define" and "may result in the creation of new works in ways

[1] Consumers Union and Free Software Foundation ("FSF") also filed comments supportive of such a broad exemption. However, their comments were devoid of any real evidence or arguments, and instead contained general expressions of displeasure with copyright law and with § 1201, which do not add anything to this proceeding. Thus, the Joint Creators and Copyright Owners' comments will focus on responding to EFF's comments.

that implicate the copyright owner's exclusive right to prepare derivative works." *Id.* at 96. Moreover, the Register could not "say that lawful modification of software is categorically unlikely to result in harm to the legitimate interests of copyright owners." *Id.* In order to recommend that EFF's proposed exemption should be adopted, the Register would have to reverse her position on all of these issues. Nothing in the record justifies doing so.

Nor does anything in the record justify expanding the exemption to cover trafficking in circumvention services or tools. As the Register stated in the Notice of Proposed Rulemaking, and concluded in the 2015 proceeding and the Section 1201 Study, the Register "cannot affirmatively recommend exemption language that is likely to be read to authorize unlawful trafficking activity." NPRM at 49,561, n. 121.

Finally, if the Register does recommend any expansion of the exemption related to repair, such exemption should – in addition to excluding devices used to access expressive works – incorporate limitations from § 117, including by defining "repair" of a machine as "the restoring of the machine to the state of working *in accordance with its original specifications* and any changes to those specifications *authorized* for that machine." 17 U.S.C. § 117(d)(2) (emphasis added). Any repair that results in a machine enabling access to unauthorized copies or transmissions of works after the repair is completed would run afoul of these limitations.

ITEM D. TECHNOLOGICAL PROTECTION MEASURE(S) AND METHOD(S) OF CIRCUMVENTION

The requested exemption would authorize hacking of every access control on every "software-enabled" device, including devices designed to enable access to expressive works. It is impossible to list all of the access controls that would be undermined by this extremely broad proposal.

ITEM E. ASSERTED ADVERSE EFFECTS ON NONINFRINGING USES

1. The Record Does Not Establish A Need To Circumvent Access Controls On Devices Used To Access Expressive Works, Including In-Vehicle Entertainment Systems.

The Register's 2015 treatment of a request to engage in circumvention to repair video game consoles properly analyzed whether the proponents of the exemption had established that circumvention was necessary to accomplish the specific repairs identified by the proponents. She considered both whether alternatives to circumvention existed (such as authorized repair services) and whether access controls were truly causing any adverse effects (*i.e.*, actually preventing the specific repairs at issue). 2015 Rec. at 200-01. Establishing that no alternatives to circumvention exist and that access controls are causing substantial adverse effects on a noninfringing use are critical components of justifying any exemption.

> To meet the burden of proof, proponents of an exemption must provide evidence either that actual harm currently exists or that it is "likely" to occur in the next three years. The amount of evidence required to do so may vary with the factual context of the alleged harm. *It is generally necessary to demonstrate actual instances of verifiable problems occurring in the marketplace generally to prove actual harm. Although circumstantial evidence may also support a claim of present or likely harm, it must reasonably demonstrate that a measure protecting access was the cause of the harm.*
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> . . .
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> *The identification of existing or likely problems is not, however, the end of the analysis.* For an exemption of a particular class of works to be warranted, a proponent must show that the problems justify an exemption in light of all of the relevant facts. The identification of isolated or anecdotal problems generally will be insufficient to warrant an exemption. Similarly, the mere fact that a particular medium or technology may be more convenient to use for noninfringing purposes than other formats is generally insufficient to support an exemption. *The Register and Librarian will, when appropriate, assess the alternatives that exist to accomplish the proposed noninfringing uses. Such evidence is relevant to the inquiry regarding whether the prohibition adversely affects the noninfringing use of the class of works. If sufficient alternatives exist to permit the noninfringing*

> *use, there is no substantial adverse impact.* Proponents of an exemption must show sufficient harm to warrant the exemption from the default rule established by Congress, the prohibition against circumvention.

U.S. Copyright Office, *Section 1201 Rulemaking: Fifth Triennial Proceeding to Determine Exemptions to the Prohibition on Circumvention: Recommendation of the Register of Copyrights* 8 (2012) ("2012 Rec.") (emphasis added).

EFF's comments do not even discuss whether access controls prevent specific repairs of devices used to access expressive works. Nor does EFF attempt to establish that viable alternatives to circumvention do not exist with respect to repairing such devices.[2] Instead, the only specific examples provided in EFF's comments relate to *modifications* of devices, rather than *repairs*. The fact that EFF's proposal is so broad does not excuse EFF from establishing the requisite evidentiary record. Its failure to do so should be dispositive. The Register should deny EFF's requested exemption.

The Register should also decline to expand the exemption applicable to motor vehicles to cover circumventing access controls on in-vehicle entertainment systems. The Register's 2015 analysis holds true today.

> Access controls on entertainment system ECUs not only preserve the integrity of the ECU itself, but also protect the content that is played through the entertainment system. Telematics systems, too, rely on TPMs to protect proprietary offerings. Opponents' concerns of unauthorized access to the content made available through such systems were not effectively rebutted by proponents. The record is sparse concerning noninfringing uses that would be facilitated by allowing circumvention of the TPMs protecting these systems.

[2] Not only has EFF not met its burden to establish that alternative repair services that do not require circumvention are unavailable, a review of the marketplace indicates that such services are available. For example, video game console manufacturers provide free repairs while consoles are under warranty and inexpensive repair services post-warranty. *See* ESA, Class 7 Long Comments (Feb. 12, 2018) ("ESA 2018 Comment"). Repair services are also available for Blu-ray players and other products that access expressive works. *See e.g.*, Samsung Blu-ray & DVD Players Solutions.

2015 Rec. at 235.

Just like the record in 2015, the current record contains "insufficient evidence to support a need for circumvention of these TPMs on these ECUs, especially when balanced against concerns about unauthorized access to the services and content they protect."[3] 2015 Rec. at 246. In fact, the record contains evidence that circumvention related to in-vehicle entertainment systems would likely undermine protections on content. *See* Exhibit 1, Written Statement of Christopher Bell, VP, Technology & Anti-Piracy, Business Development, Warner Music Group ¶¶ 5-7 (describing how root access could lead to unauthorized copying and access).

2. EFF Does Not Establish That All Repairs Involve Noninfringing Uses.

EFF fails to establish that the copying and adaptation involved in repairing devices used to access expressive works is a noninfringing use. Section 117 is limited in scope and would not apply to all repair activities. 2015 Rec. at 222, 237-38; U.S. Copyright Office, *Software-Enabled Consumer Products: A Report of the Register of Copyrights* 35-38 (2016). Moreover, fair use is a case-by-case analysis that could result in different outcomes in different contexts. Repair typically involves copying or adapting a work to cause the work to perform the same purpose it was originally intended to perform. That is not a transformative use. *Wall Data Inc. v. L.A. Cty. Sheriff's Dep't*, 447 F.3d 769, 778 (9th Cir. 2006). In addition, exposing expressive works to unauthorized access causes the first factor to weigh against fair use. *See* 2015 Rec. at 234 ("[T]he Register finds that, on the current record, the first factor is generally favorable to

[3] Consumer Technology Association ("CTA") apparently advocates for expanding the exemption for vehicles to include entertainment systems because it is supposedly always fair use under *Sony-Betamax* to store unauthorized copies of works. CTA, Class 7 Long Comment at 6 (Dec. 18, 2017). This is a misinterpretation of *Sony* that demonstrates the dangers associated with allowing hacking of entertainment systems. *See* 2015 Rec. at 107, n.645 (quoting *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 421 (1984)) (explaining that the Supreme Court defined fair use time-shifting in the context of broadcast television as "record[ing] a program [one] cannot view as it is being televised and [then] to watch it once at a later time").

proponents, *except with respect to ECU computer programs that are primarily designed to support vehicle entertainment and telematics systems*.") (emphasis added). Moreover, the fourth factor analysis for repair with respect to many devices will weigh against fair use. As the Register previously concluded in the context of "jailbreaking" video game consoles, the software on such consoles is intended to prevent piracy and once it is hacked (even for repair) it ceases to fulfill that purpose, rendering it less valuable and marketable. Also, because piracy becomes more likely, the fourth factor weighs against fair use. *See* 2012 Rec. at 44; ESA 2018 Comment. Although the Register recommended in the Section 1201 Study that Congress should pass a statutory repair exception, the Study does not contain a complete fair use analysis applicable to all devices. 1201 Study at 92-95. The fact that EFF's Comments do not contain such an analysis either renders its proposal inappropriate in the context of this rulemaking.

3. Modifying Software On Devices Used To Access Expressive Works Likely Would Involve Infringement Of Both The Modified Software And Works Accessible Via The Devices.

As the Register previously concluded, lawful "modification" or "tinkering" is too difficult to define with any precision.

> Copyright owners strongly opposed an exemption for "tinkering" on the ground that it would be vague and overbroad. AAP, ESA, MPAA, and RIAA opined that "[t]his type of broad-brush approach was rejected by Congress when the DMCA was drafted because creating such vaguely-defined exemptions without specific instructions . . . is a recipe for misuse and confusion." Moreover, they indicated that an exemption for modification would present substantially greater risk of infringement than one limited to diagnosis, repair, and maintenance: "[W]hile 'maintenance and repair' can be tied to Section 117 activity, going beyond that to cover all 'modifications' or 'customizations' or efforts to 'improve the functionality' of computer programs would invite the creation of infringing derivative works." … These concerns of copyright owners are valid, and the comments received in response to this study suggest that tinkering is hard to define, and that there is no accepted meaning or limitations on what it involves. To be sure, in many cases modification activities may not implicate significant

> copyright interests. On the other hand, some tinkering activities may result in the creations of new works in ways that implicate the copyright owner's exclusive right to prepare derivative works. Commenters have suggested no reliable way to define with any precision a category of lawful adaptations, generally, for purposes of section 1201.

1201 Study at 96-97.

No commenter in the current proceeding proffers a definition of "lawful modification" that should alter this analysis. The inability to clearly define in an exemption what types of modifications are permitted would render subject to abuse any exemption applicable to devices on which expressive works are accessed.

In fact, one of the examples that EFF proposes as a lawful modification of a device has already been determined by the Register to *not* qualify as likely noninfringing. In passing, EFF posits that people should be able to "run software of their choice" on video game consoles. EFF *et al*., Class 7 Long Comment at 6 (Dec. 18, 2017) ("EFF 2017 Comment"). However, the Register already analyzed whether jailbreaking a console to install independent software applications qualified as a likely fair use and rejected the proposition. *See* 2012 Rec. at 41 ("Where a console [i]s jailbroken to play independent gaming or entertainment content (whether pirated or not), the use would not appear to be transformative."); *id.* at 44 (fourth factor "strongly" disfavors fair use where adapting code after circumvention would likely lead to piracy); *see also* ESA 2018 Comment.

4. The Section 1201(a)(1)(C) Factors Weigh Against EFF's Proposal.

Nor do the § 1201(a)(1)(C) factors favor an exemption allowing for modification of software on devices through which expressive works are accessed.

First, depriving copyright owners of the exclusive right to modify their software and subjecting devices designed for accessing expressive works to modifications that undermine their ability to prevent piracy and unauthorized access would ultimately prevent recoupment of

investments, cause copyright owners to reconsider certain digital business models, and decrease the availability for use of works. *See* 2012 Rec. at 48; *see also* Exhibit 1, Written Statement of Christopher Bell, VP, Technology & Anti-Piracy, Business Development, Warner Music Group ¶¶ 5-9.

Second, EFF's proposed uses, to the extent they are even discernable, are unrelated to archival, preservation or educational purposes. Although EFF mentions, as an afterthought, teaching about modification, EFF 2017 Comment at 12, circumvention to modify software for educational purposes is not remotely the focus of the proposal.

Third, EFF's proposed uses, to the extent they are discernable, are unrelated to criticism or commentary. *See* 2012 Rec. at 41 (jailbreaking "is not for purpose of criticism and comment; rather, the circumvented console code is serving the same fundamental purpose as is served by the unbroken code").

Fourth, unauthorized modification of software on devices through which expressive works are accessed would negatively impact the value of copyrighted software as well as other expressive works. *See* Exhibit 1, Written Statement of Christopher Bell, VP, Technology & Anti-Piracy, Business Development, Warner Music Group ¶ 9 ("I consider access controls on device firmware, including firmware that operates in-vehicle entertainment systems, to be one important aspect of ensuring secure delivery of content."). As the Register concluded in 2012 and 2015, where software is intended to prevent piracy, reducing its ability to do so lowers the value of the work while simultaneously exposing other works to infringement. 2012 Rec. at 49-50; 2015 Rec. at 200. *See also* 1201 Study at 97 ("[T]he Office cannot say that lawful modification of software is categorically unlikely to result in harm to the legitimate interests of copyright owners."). The proposed exemption should be denied.

5. The Register Should Not Recommend Any Exemption That Invites Unlawful Trafficking.

As noted in the NPRM, several of the commenters propose exemptions that would clearly apply to unlawful trafficking. NPRM at 49,561. As also noted in the NPRM, such exemptions cannot be granted in this proceeding. *Id.* Indeed, the Register "cannot affirmatively recommend exemption language that is likely to be read to authorize unlawful trafficking activity." *Id.*

The NPRM's statement, quoting the Section 1201 Study, that "the Office will avoid recommending 'unduly narrow definitions of exemption beneficiaries' in the context of the 1201 rulemaking," *id.* at 49,561, n. 121, should not be misunderstood to invite requests for trafficking exemptions. The Joint Creators and Copyright Owners recognize that the Register has recommended that Congress should authorize her to recommend, in future rulemakings, limited provision of circumvention services. *See* 1201 Study at 60. However, they respectfully submit that in the absence of such authorization by Congress, it would not be within the Register's authority to recommend exemptions for service providers that would be used to justify conduct that is unlawful under § 1201(a)(2). The services and tools discussed in the comments clearly are unlawful under that provision.

6. If The Register Recommends Expanding The Existing Exemption To Additional Categories Of Devices, She Should Also Recommend Additional Limitations To Prevent Unauthorized Access To Works.

As stated above, the Joint Creators and Copyright Owners oppose expansion of the exemption related to repairing motor vehicles to cover other machines or devices used to access expressive works or to include in-vehicle entertainment systems. If the Register recommends any other expansions, the Joint Creators and Copyright Owners request that, in addition to

excluding these devices, she recommend that additional limitations be placed on the exemption. Specifically, the exemption should be limited, per the § 117(d) definition of "repair," which covers "the restoring of a machine to the state of working in accordance with its original specifications and any changes to those specifications authorized for that machine." The Register suggested in the Section 1201 Study that this could prove to be a helpful way of preventing vagueness from creeping into the regulatory drafting. 1201 Study at 94. It would also ensure that a device or machine was not rendered capable of gaining unauthorized access to works or of playing pirated copies of works as a result of a repair that involved removal of access controls designed to prevent infringement. In addition, only circumvention to access computer programs should be covered by any recommended exemption. Access to other categories of works should be categorically excluded.

DOCUMENTARY EVIDENCE

The Joint Creators and Copyright Owners submit Exhibit 1, the Written Statement of Christopher Bell, VP, Technology & Anti-Piracy, Business Development, Warner Music Group. Additionally, throughout the comment, links are provided for documentary evidence.

DATE: February 12, 2018

/s/ J. Matthew Williams
J. Matthew Williams
Dima S. Budron
Mitchell Silberberg & Knupp LLP (MSK)
1818 N Street, N.W., 8th Floor
Washington, D.C. 20036
mxw@msk.com
202-355-7904

EXHIBIT 1

UNITED STATES COPYRIGHT OFFICE

Exemptions To Permit Circumvention of Access Controls On Copyrighted Works	*	**Written Statement of Christopher Bell, VP Technology & Anti-Piracy, Business Development Warner Music Group**
Docket No. 2017-10	*	**Proposed Class 7**

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1. I am VP, Technology & Anti-Piracy, Business Development, for Warner Music Group ("WMG"). I have worked at WMG for 1 year and in this same technical field for 25 years. I have built software products for entertainment services, media, publishing, and communication services. I have worked with other music and media companies including Universal Music Group ("UMG") and multiple film and television studios and have developed embedded systems for content distribution such as with AT&T/DirecTV.

2. As part of my regular job duties, I analyze technologies used to protect WMG's copyrighted sound recordings from unauthorized copying, distribution, public performance, and access. I submit this statement to raise concerns regarding the petition of the Electronic Frontier Foundation related to repairing and modifying consumer devices and regarding other proposals related to repairing or modifying in-vehicle entertainment systems.

3. Consumers access music in their vehicles via multiple digital services, including SirisXM, Spotify, Pandora, and other services. Similar services are accessible on a variety of other devices. Most of these services require subscription payments for access. Some services have regular tiers and premium tiers, such that paying a higher subscription price results in access to more music or to other benefits.

4. Although each service differs somewhat, and WMG does not have a complete view of the technical measures used by each service, subscription streaming services would typically use multiple measures to prevent unauthorized access. First, they would require a customer log-in and password to verify that a subscription has been obtained. Second, they would encrypt streams as they are delivered to the consumer. Third, they would implement controls to monitor the number of devices through which a consumer may access the service. Most services limit the total number of devices allotted to each customer to prevent account sharing beyond a single household. Fourth, they would use technical measures to delete or render inaccessible temporary downloads that expire after a set period of time or after a user's subscription expires. There are other measures involved with streaming services, but these are typical examples.

5. To authenticate consumer accounts and authorized access levels, devices, such as in-vehicle entertainment systems, generally depend on some means of key/token distribution or sharing. In other words, the service must share with the device information regarding how the service identifies the consumer and what content the consumer is entitled to receive. Although WMG is not privy to the precise methods used to securely communicate or store such keys/token on every device, it is my opinion that obtaining root access to the firmware on devices used to access streaming music services in order to install arbitrary code to run on the devices may lead to a compromise of the above referenced protection schemes that would otherwise not be technologically feasible. Even if gaining unauthorized access to music, or to the keys/tokens used to access streaming content, was not a person's goal in the first instance, it may be the inevitable consequence of rooting a device. If the boot loader is opened, it may be possible to read keys/tokens and to reverse engineer device software in ways that reveal keys/tokens and other shared secrets.

6. First, once a person obtains root access to a device, I believe that it is likely that person could successfully attach a peripheral device and obtain permanent copies of sound recordings that the consumer only paid to access via a temporary subscription. The person might also be able to store these copies on the rooted device itself, but that would depend on the amount of storage space available. Such downloading could be accomplished very quickly, resulting in large numbers of recordings being obtained faster than they could be listened to in real time.

7. Second, once a person obtains root access to a device, I believe that person could potentially avoid limitations imposed by a service provider on the number of devices through which one subscription account may be accessed. This could result in multiple consumers sharing accounts in ways that are inconsistent with the service's terms of use and that would otherwise not be technologically feasible.

8. Such sharing is analogous to so-called "MAC address spoofing." Some internet service providers or cable television providers allow only a certain number of computers or devices to connect to the Internet or to cable signals by default. They accomplish this by "locking" the connection to the unique Media Access Control ("MAC") addresses of computers and devices. A MAC address is a unique identifier built into modems, routers and other network hardware. To circumvent the "lock," a person must configure a device to pretend to have the same MAC address as an "approved" device, instead of its own address. Similarly, if a person had access to the keys/tokens by which one subscriber accessed a music streaming service, that person could pretend that its own device was an approved device, and access a service under circumstances that would otherwise be prevented by technical measures.

9. There are likely other ways that obtaining root access to devices could result in unauthorized access to, or copying of, sound recordings and other copyrighted works. Although

WMG seeks to ensure that its recordings will only be accessible by consumers in manners that are consistent with the various service providers' terms of use, we do not control every aspect of the delivery process. I consider access controls on device firmware, including firmware that operates in-vehicle entertainment systems, to be one important aspect of ensuring secure delivery of content.

10. Thank you for considering these issues.

Christopher Bell

February 9, 2018

Date