

Re: MM Docket No. 99-325 (In the Matter of Digital Audio Broadcasting Systems and Their Impact on Terrestrial Audio Broadcast Services).

The following material supplements the comments and reply comments filed by the Electronic Frontier Foundation (“EFF”) in this docket.¹ It also responds to the supplemental materials filed by the Recording Industry Association of America (“RIAA”) in its August 16, 2004 letter to the Commission in this docket.²

I. The RIAA is asking the FCC to override copyright law and policy.

In its filings in this docket, the RIAA urges the Commission to adopt a sweeping copy protection technology mandate for DAB receiver/recorders, ostensibly because such a regulation is necessary for protecting policy objectives grounded in our copyright laws. When examined closely, however, the RIAA’s arguments amount to a demand that the Commission *override* the express copyright law principles set down by Congress and the courts.

A comparison of copyright law and the RIAA’s demands makes this clear:

For technology vendors:

DAB receiver is	Copyright law says	RIAA demands
within AHRA	no liability for the vendor. <i>See</i> 17 U.S.C. § 1008.	that the Commission <i>override</i> the AHRA’s statutory scheme and impose sweeping a tech mandate beyond that established by Congress in the AHRA.
outside AHRA	so long as the device is “merely capable of substantial noninfringing uses,” it is lawful to distribute. <i>See Sony v. Universal City Studios</i> , 464 U.S. 417 (1984). ³	that the Commission <i>override</i> the principles set out in the <i>Sony</i> case, as well as Congress’ historical aversion to tech mandates in copyright policy, and impose a tech mandate on devices that are lawful under copyright laws.

¹ *See* Comments of the Electronic Frontier Foundation and the Brennan Center for Justice Free Expression Policy Project, MM 99-325 (filed June 16, 2004) (“EFF Comments”); Reply Comments of the Electronic Frontier Foundation and the Brennan Center for Justice Free Expression Policy Project, MM 99-325 (filed Aug. 2, 2004).

² *See* Letter from Theodore D. Frank, counsel for the RIAA, to Marlene H. Dortch, Secretary of the FCC, dated Aug. 16, 2004, MM 99-325.

³ This decades-established principle was recently restated in *MGM v. Grokster*, 380 F.3d 1154 (9th Cir. 2004). This ruling has resulted in more judicial and legislative activity, in the form of a petition for certiorari to the Supreme Court, as well as legislative efforts like S. 2560 (Inducing Infringement of Copyright Act). Perhaps most telling is the fact that neither Congress nor the courts have evinced any interest in delegating this copyright law issue to the Commission.

For end-users:

DAB receiver is	Copyright law says	RIAA demands
within AHRA	no liability for an end-user. <i>See</i> 17 U.S.C. § 1008.	that the Commission <i>override</i> the statutory balance struck in the AHRA and impose more restrictions on consumer capabilities.
outside the AHRA	the question of liability turns on a case-by-case fair use analysis, with the decision expressly delegated to the courts. <i>See</i> 17 U.S.C. § 107.	that the Commission <i>override</i> the statutory fair use regime and substitute its blanket judgments in place of the case-by-case analysis required by 17 U.S.C. § 107.

In short, the RIAA appears to believe that existing copyright laws do not give its member companies enough control over the future development of DAB receiver/recorders. They are, however, addressing their dissatisfaction with existing copyright law and policy to the wrong entity. The Commission does not have the jurisdiction to override the express statutory copyright scheme established by Congress and the courts.

The RIAA member-companies retain all of their statutory copyright remedies against both technology vendors and end-users. If, as the RIAA suggests, most DAB receiver/recorders fall outside the scope of the AHRA and the doctrines announced in *Sony v. Universal City Studios*, the RIAA member companies are free to assert their rights against DAB receiver/recorder vendors in court, as they did against Sony when it launched the VCR and DAT recorders,⁴ and Diamond Multimedia when it launched the first portable MP3 player.⁵ In other words, if copyright law actually supported the RIAA's arguments, the regulatory intervention of the Commission would be unnecessary here. Instead, RIAA is effectively asking the Commission to *trump* existing copyright laws, substituting its regulatory judgments for the statutory regime adopted by Congress and the courts. This the Commission ought not do as a matter of policy, and cannot do as a matter of jurisdiction.

II. DAB radio offers audio quality that is, at best, comparable to analog FM.

There appears to be a lively debate regarding the relative audio quality of DAB broadcasts, as compared to CDs, analog FM broadcasts, and other alternate sources of music content.⁶

⁴ *See Sony v. Universal City Studios*, 464 U.S. 417 (1984) (lawsuit challenging Sony for manufacture of the VCR); *Cahn v. Sony*, 90-CIV-4537 (S.D.N.Y. filed Jul. 10, 1991) (lawsuit challenging Sony for the distribution of the digital audio tape (DAT) recorder).

⁵ *See RIAA v. Diamond Multimedia*, 180 F.3d 1072 (9th Cir. 1999) (lawsuit challenging Diamond for distribution of the Rio MP3 player).

⁶ *Compare* Comments of the Home Recording Rights Coalition, MM 99-325 (filed June 16,

In the interest of providing the Commission with empirical evidence on this question, EFF has created a demonstration compact disc (“EFF DAB Demo CD”) that includes music simultaneously recorded from the DAB and analog FM signals of the same broadcaster, KSAN in San Francisco. We have also added, as a point of reference, the same music taken from the commercially available CD, both in compressed MP3 format and uncompressed “Red Book” audio format.

In order to create the EFF DAB Demo CD, EFF personnel in July 2004 visited a prominent commercial broadcaster in the San Francisco Bay Area.⁷ The broadcaster made available high-quality, consumer-grade analog FM⁸ and DAB⁹ receivers, both of which offered analog audio outputs. With the assistance of the broadcaster and using a digital multi-track PC-based digital recorder, we were able to simultaneously record from the outputs of the DAB and analog FM receivers. The recordings were made to a 24-bit multi-track hard disk recorder sampled at 44.1Khz.

We were able to record from several San Francisco radio stations that were simulcasting their signals using both DAB and analog FM. For purposes of the EFF DAB Demo CD, two complete songs were chosen from the broadcast signal of KSAN, a classic rock station in the San Francisco Bay Area. Because KSAN uses nearly identical audio processing on both of its FM and DAB signals, its signal provided the best benchmark for comparisons.¹⁰ The songs recorded were Pink Floyd’s “Run Like Hell” and Ronnie James Dio’s “Rainbow in the Dark.”

After being recorded, the resulting 24-bit digital audio files were volume matched and output as 16-bit, 44.1Khz WAV files. The files were then transferred to a Apple Macintosh Powerbook and burned using iTunes to AHRA-compliant, royalty-paid CD-Rs.¹¹

The EFF DAB Demo CD includes the following tracks:

1. Run Like Hell (analog FM source)

2004) at 13-14; EFF Comments, at 12 *with* RIAA Reply Comments at 8-11 (filed Aug. 2, 2004).

⁷ The field recordings made by EFF here are not intended to establish an absolute benchmark of relative DAB and analog FM quality. Rather, they are meant to test the RIAA’s specific contention that typical consumers using commonly available recording tools would find the DAB source recordings substantially superior to analog FM recordings made with similar equipment or to MP3 files commonly found on P2P networks, such that DAB-sourced recordings would be a new and unique threat to the music industry’s fortunes.

⁸ Denon TU-380RD.

⁹ Kenwood KDC-722.

¹⁰ Many commercial broadcasters treat their analog FM and DAB signals to very different pre-broadcast audio processing, thereby making post-reception recordings difficult to compare. KSAN, in contrast, treated both analog FM and DAB signals to very similar pre-broadcast audio processing.

¹¹ iTunes “Sound Check” automatic level adjustment was employed in order to minimize the volume differences between tracks. Nevertheless, because of the audio compression used by most commercial broadcasters, the tracks recorded from the KSAN signal are considerably “louder” overall (i.e., have less dynamic range) than the tracks sourced from the original CDs.

2. Run Like Hell (DAB source)
3. Run Like Hell (192kbps MP3 source)
4. Run Like Hell (uncompressed CD source)
5. Rainbow in the Dark (analog FM source)
6. Rainbow in the Dark (DAB source)
7. Rainbow in the Dark (192kbps MP3 source)
8. Rainbow in the Dark (uncompressed CD source)

The results were telling—except on esoteric high-end equipment,¹² it was impossible to reliably distinguish the analog FM source from the DAB source recordings.

This result comports with the independent lab tests submitted by iBiquity to the Commission. For example, the test procedures document submitted to the Commission by the National Radio Systems Committee (“NRSC”) and iBiquity on August 2, 2004 states:

Although it has been argued that the majority of consumers listen to radio over loudspeakers, *iBiquity recognizes that the difference in sound quality between unimpaired FM analog and digital at higher bitrates may be very subtle, requiring participants to listen over the most critical delivery system* (i.e., high quality headphones) in order to be able to discern differences.¹³

This exactly mirrored our empirical findings—audio differences between analog FM and DAB were negligible in virtually all consumer grade audio systems. EFF encourages Commission staff to experiment with the EFF DAB Demo CD and form their own opinions (or to make their own field recordings from DAB and analog FM broadcasts).

Of course, there are many other advantages that DAB can provide over analog FM broadcasts, and some of these advantages motivated the Commission to approve DAB rollout in the first instance. But the RIAA is simply incorrect when it claims that DAB provides substantially superior audio fidelity when compared to analog FM broadcasts of music.¹⁴ The empirical results bear out our earlier observation that the bitrate limitations of iBiquity’s IBOC technology (96kbps maximum under current Commission regulations) constrain audio quality of DAB to a level comparable to analog FM and the MP3 files commonly available on peer-to-peer (“P2P”) networks. The audio fidelity of DAB certainly does not present any new or unique threat to the music industry as compared to recordings sourced from analog FM broadcasts.

¹² Listening closely using a system comprised of a \$6,000 Mark Levinson No. 39 CD player, \$3,800 Headroom Blockhead headphone amplifier, and \$500 Sennheiser HD-650 headphones, the author was able to reliably distinguish between the DAB and analog FM source in blind tests. On more typical consumer equipment, including both home audio and car audio equipment, it was impossible to do so.

¹³ See Letter from Albert Shuldiner, General Counsel of iBiquity, to Marlene H. Dortch, Secretary of the FCC, MM 99-325 (filed Aug. 2, 2004), at Appendix A (“Proposal for Subjective Evaluation of Generation 3 HD Radio Hardware”), page 1.

¹⁴ EFF further notes that the RIAA fails to provide any of its own empirical evidence to support its claims, choosing instead to rely on quotes taken out of context from iBiquity and Commission documents.

III. There is no basis for singling DAB out for copy protection mandates.

There is one issue on which EFF and the RIAA agree: consumers are already able, or will soon be able, to make digital audio recordings from a variety of broadcast media that will serve as functionally perfect substitutes for those made by the hypothetical DAB receiver/recorders that the RIAA envisions. Accordingly, there is no rational reason to single out DAB for extensive regulation. Such an approach will be wholly ineffective at protecting the music industry, while artificially retarding innovation in, and adoption of, DAB technologies.

The following chart recapitulates the many other existing sources that can provide perfectly adequate substitutes for recordings made from DAB sources:

source	digital recording devices?	metadata?	automated disaggregation?	Products available?
analog FM	Widely available now.	RDS widely available now and growing; acoustic fingerprinting soon.	Beginning to appear now (e.g., Neuros)	Griffin Radio Shark; Neuros MP3 Computer; FM tuner cards for PC.
webcasts	Widely available now.	Widely available now, either from playlists, or in-stream metadata (e.g. Shoutcast). Acoustic fingerprinting soon.	Widely available now (e.g., Streamripper, Audio Xtract).	Streamripper, RadioLover, StationRipper, Audio Xtract, many others.
cable music services	Prototypes now, retail soon.	Available in video signal now; acoustic fingerprinting soon.	In working prototypes now.	At least 2 companies showing prototypes, patents filed.
satellite music services	First products hitting market now; more soon.	Available with signal now.	Standard feature in TimeTrax.	TimeTrax for XM PCR receiver. ¹⁵
P2P	Widely available now.	Metadata standard in most songs.	N/A—all songs already disaggregated.	Kazaa, eDonkey, Morpheus, Grokster, LimeWire, Bit Torrent.

¹⁵ The TimeTrax product was blocked when XM Radio ceased distribution of the PCR receiver. See Paul Festa, *XM Radio Pulls PC Hardware Amid Piracy Concerns*, CNET News, Aug. 30, 2004 (<http://news.com.com/XM+Radio+pulls+PC+hardware+amid+piracy+concerns/2100-1026_3-5330698.html>). Similar products are being developed for other XM Radio receiver products, however.

Please feel free to contact me with any further inquiries on this topic.

Fred von Lohmann
Senior Intellectual Property Attorney
Electronic Frontier Foundation
fred@eff.org
(415) 436-9333 x123

October 14, 2004