

APPLE'S (PROPOSED) REDACTIONS

EXHIBIT 9
[Filed Under Seal]

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

THE APPLE IPOD ITUNES
ANTI-TRUST LITIGATION.

Lead Case No.
C-05-00037-JW (HRL)

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VIDEOTAPED 30(b)(6) DEPOSITION OF
EDDY CUE
ON BEHALF OF
APPLE, INC.
VOLUME I

December 17, 2010
9:22 a.m.

1755 Embarcadero Road
Palo Alto, California

Ana M. Dub, RMR, CRR, CSR 7445

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MATTHEW COPE, VIDEOGRAPHER

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<p style="text-align: right;">41</p> <p>1 A. But it never got to that -- it never got 2 any further into specifics because there were two 3 criterias that we were looking at when they 4 certainly asked for interoperability or asked about 5 it, which was, number one: 6 We didn't think it was really technically 7 feasible in the sense that we were still making a 8 lot of changes to the way that the DRM worked. And 9 we were able to do that because we had the device, 10 the software ourselves and we could make the changes 11 all at the same time. And so we didn't think that 12 technically it would work very well if it was done. 13 And in hindsight, I think that was proven 14 to us in spades by WMA and Microsoft's plays for 15 sure, which failed miserably at trying to do that. 16 In addition to that, when we looked at it, 17 there was no one in the market that was -- either 18 had a successful store or a successful device that 19 we felt like, okay, let's go join that and work with 20 them to grow the market because they were 21 successful. 22 So neither of those two scenarios made it 23 viable. 24 Q. Is it accurate -- just to sort of get an 25 idea of sort of what the universe was at the launch,</p>	<p style="text-align: right;">43</p> <p>1 BY MS. BERNAY: 2 Q. Okay. But directly transferred only; is 3 that correct? 4 A. I -- 5 MR. MITTELSTAEDT: Object; compound, asked 6 and answered, ambiguous. 7 THE WITNESS: Again, it can be transferred 8 to an iPod or burned to a CD. Those were the two 9 ways that you could move songs off of iTunes. 10 BY MS. BERNAY: 11 Q. Okay. And at some point in time, is it 12 right that Apple had a deal with Motorola to have 13 sort of a music player on certain phones? 14 A. Yes, that's correct. 15 Q. Okay. So is it right that at some point 16 in time, songs purchased through the iTunes Store 17 could be directly transferred onto iPods and to 18 certain Motorola phones that were compat ble with 19 FairPlay? 20 A. Over time, songs could be transferred to 21 iPods, other Apple devices that we developed, and 22 the Motorola device and the HP iPod device. So 23 there were other devices that were added over time. 24 Q. And it's also right that at some point in 25 time, Apple went what's referred to as DRM-free; is</p>
<p style="text-align: right;">42</p> <p>1 is it right that at the launch of the iTunes Music 2 Store, that songs purchased through the iTunes Store 3 could only be directly transferred onto iPods at the 4 launch? 5 A. They could either be -- they could only be 6 transferred to an iPod or they could be burned to a 7 CD. And then any CD could be ripped back to 8 digital. 9 So customers always had the capability, if 10 they really wanted to, to take a song that they 11 purchased on the store and move it to another 12 player. 13 Q. But they could only be directly 14 transferred, isn't that correct, onto an iPod? 15 MR. MITTELSTAEDT: Let me just ask a 16 clarification. Are you saying other than playing on 17 the computer? When you say "transfer," you mean -- 18 MS. BERNAY: Yes. I'm talking about 19 moving music onto an iPod so that songs purchased 20 through the iTunes Store at the launch could only be 21 directly transferred onto an iPod. 22 MR. MITTELSTAEDT: Object; asked and 23 answered. 24 THE WITNESS: Again, a song could be 25 transferred to an iPod or burned to a CD.</p>	<p style="text-align: right;">44</p> <p>1 that right? 2 A. That is correct. 3 Q. And about when did that occur, that 4 DRM-free project? 5 A. Well, it was done in multiple steps. 6 Originally, it was done with EMI only and the -- and 7 many of the independents. And I don't recall the 8 exact date of that, but I'm sure we can look that 9 up. 10 And then approximately about a year later, 11 it was done with the three other majors that were 12 left. 13 Q. And is it accurate that now everything 14 that can be purchased in the United States, at 15 least, through the iTunes Store is sold DRM-free? 16 MR. MITTELSTAEDT: Music? 17 MS. BERNAY: Music. Thank you. 18 THE WITNESS: Yes. All music in the 19 world, with the exception of Japan, is purchased 20 DRM-free. 21 BY MS. BERNAY: 22 Q. We talked a little bit at the beginning 23 about negotiations with the launch of the store, and 24 we'd mentioned independent labels. Do you recall 25 that discussion?</p>

<div>1</div> <div>45</div> <div>[REDACTED]</div>	<div>1</div> <div>47</div> <div>[REDACTED]</div>
<div>1</div> <div>46</div> <div>[REDACTED]</div>	<div>1</div> <div>48</div> <div>[REDACTED]</div>

<p>1 myself. 53</p> <p>2 C [REDACTED]</p> <p>3 [REDACTED]</p> <p>4 [REDACTED]</p> <p>5 [REDACTED]</p> <p>6 [REDACTED]</p> <p>7 [REDACTED]</p> <p>8 [REDACTED]</p> <p>9 [REDACTED]</p> <p>10 [REDACTED]</p> <p>11 [REDACTED]</p> <p>12 [REDACTED]</p> <p>13 [REDACTED]</p> <p>14 [REDACTED]</p> <p>15 [REDACTED]</p> <p>16 [REDACTED]</p> <p>17 [REDACTED]</p> <p>18 [REDACTED]</p> <p>19 [REDACTED]</p> <p>20 [REDACTED]</p> <p>21 [REDACTED]</p> <p>22 [REDACTED]</p> <p>23 [REDACTED]</p> <p>24 [REDACTED]</p> <p>25 [REDACTED]</p>	<p>1 [REDACTED] 55</p> <p>2 [REDACTED]</p> <p>3 [REDACTED]</p> <p>4 [REDACTED]</p> <p>5 [REDACTED]</p> <p>6 [REDACTED]</p> <p>7 [REDACTED]</p> <p>8 [REDACTED]</p> <p>9 [REDACTED]</p> <p>10 [REDACTED]</p> <p>11 [REDACTED]</p> <p>12 [REDACTED]</p> <p>13 [REDACTED]</p> <p>14 (Cellular telephone rings.)</p> <p>15 MS. BERNAY: He comes in. Look at that.</p> <p>16 (Mr. Andeer leaves the proceedings.)</p> <p>17 BY MS. BERNAY:</p> <p>18 Q. Were there any music stores that you're</p> <p>19 aware of that sold online digital music at the time</p> <p>20 that the iTunes Store launched that sold their music</p> <p>21 DRM-free?</p> <p>22 A. No, there were none that I was aware of.</p> <p>23 Q. What about later, you know, in the months</p> <p>24 or years after the iTunes Music Store launched?</p> <p>25 Were you aware of any stores that sold online</p>
<p>1 [REDACTED] 54</p> <p>2 [REDACTED]</p> <p>3 [REDACTED]</p> <p>4 [REDACTED]</p> <p>5 [REDACTED]</p> <p>6 [REDACTED]</p> <p>7 [REDACTED]</p> <p>8 [REDACTED]</p> <p>9 [REDACTED]</p> <p>10 [REDACTED]</p> <p>11 [REDACTED]</p> <p>12 [REDACTED]</p> <p>13 [REDACTED]</p> <p>14 [REDACTED]</p> <p>15 [REDACTED]</p> <p>16 [REDACTED]</p> <p>17 [REDACTED]</p> <p>18 [REDACTED]</p> <p>19 [REDACTED]</p> <p>20 [REDACTED]</p> <p>21 [REDACTED]</p> <p>22 [REDACTED]</p> <p>23 [REDACTED]</p> <p>24 [REDACTED]</p> <p>25 [REDACTED]</p>	<p>1 content DRM-free? 56</p> <p>2 A. Yes.</p> <p>3 Q. And what are you -- what stores are you</p> <p>4 aware of?</p> <p>5 A. Amazon, Wal-Mart. There were many others.</p> <p>6 Q. What about eMusic? Is that an online</p> <p>7 store that you're familiar with?</p> <p>8 A. Yes, I am.</p> <p>9 Q. And what kind of music -- or what do they</p> <p>10 offer to consumers?</p> <p>11 A. They offered DRM-free music, but they did</p> <p>12 not have any of the major labels, and only</p> <p>13 independent music and not all of it. So they</p> <p>14 offered a subset of music that, I believe, was</p> <p>15 DRM-free.</p> <p>16 Q. And do you know whether eMusic existed at</p> <p>17 the time that the iTunes Store launched in 2003?</p> <p>18 A. I don't recall. I don't believe so, but I</p> <p>19 don't recall.</p> <p>20 Q. Do you know whether or not the iTunes</p> <p>21 Store sold some of the same music that was also</p> <p>22 available through eMusic?</p> <p>23 A. Again, depending on the time frame, but</p> <p>24 when they were both -- when they were both there,</p> <p>25 I'm sure that there were songs that we had that were</p>

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<p style="text-align: right;">121</p> <p>1 Q. It was a technology that would strip the 2 DRM protection from protected songs. Is that an 3 accurate description? 4 A. I would describe it as a hack to remove 5 the DRM. 6 Q. Okay. And what about -- 7 A. Which was illegal. 8 Q. Which was illegal? 9 A. Yes. 10 Q. And what are you basing that statement on, 11 that it was illegal? 12 A. Two things. Number one, the terms of 13 service that we gave to consumers certainly said 14 that when you buy the songs, these are the rights 15 that you gain by it and what you can do with it. 16 And secondly, we had the DRM protection on 17 there. And my understanding is there's some laws 18 around DMCA and things about stripping the 19 protection away that made it illegal. 20 Q. You said DMCA. What's that? 21 A. I don't -- again -- 22 Q. I just mean, do you know what the acronym 23 is? 24 A. I don't know what the acronym is. 25 Q. You just know that it's some --</p>	<p style="text-align: right;">123</p> <p>1 THE WITNESS: Okay. 2 BY MS. BERNAY: 3 Q. And going back to RealNetworks now, is 4 that something that stripped the DRM protection off 5 of a song? 6 A. No, it does not. It tried to put a DRM 7 to, again, hack to look at -- make it look like it 8 was a FairPlay DRM song. 9 Q. And would that be something that was 10 illegal, in your view? 11 MR. MITTELSTAEDT: Objection; calls for a 12 legal conclusion. 13 THE WITNESS: Again, I don't know. I did 14 not have -- don't know the answer to the question. 15 BY MS. BERNAY: 16 Q. Do you know whether JHymn actually 17 affected iTunes as opposed to the iPod? 18 A. What do you mean by "affected"? 19 Q. Just whether or not the way that it 20 functioned was at the software level of iTunes as 21 opposed to working on the firmware of the iPod. 22 MR. MITTELSTAEDT: Objection; compound. 23 BY MS. BERNAY: 24 Q. If you know. 25 A. I don't know the answer to the question.</p>
<p style="text-align: right;">122</p> <p>1 A. My attorneys have told me there's some 2 laws around stripping DRMs that are illegal. 3 Q. Okay. And what about something called 4 PyMusique? What is that? 5 A. It's a similar thing. Again, there are 6 many, many hacks that have been done over the years 7 to try to rip music off from iTunes. 8 Q. To rip music off from iTunes? Is that 9 what you said? 10 A. That's correct. 11 Q. And is PyMusique a hack? 12 A. It is also. 13 Q. And it's something that strips the DRM 14 protection from a song? 15 A. I believe so. I can't recall every single 16 one of them, so . . . 17 Q. Sure. And is that something that is 18 illegal, this PyMusique, in your view? 19 MR. MITTELSTAEDT: Objection; calls for a 20 legal conclusion. 21 THE WITNESS: Again, that's certainly what 22 my attorneys have represented. 23 MR. MITTELSTAEDT: Actually, don't -- 24 let's strike that. Don't talk about conversations 25 with the attorneys.</p>	<p style="text-align: right;">124</p> <p>1 Q. Do you know whether Apple ever sent any 2 cease and desist letters regarding JHymn? 3 A. I don't recall. 4 Q. Do you know whether Apple sent any cease 5 and desist letters regarding any hacks that it was 6 concerned about? 7 A. I don't know what our legal team did. 8 Q. That's not something that you followed up 9 on? Or followed, rather? 10 A. Well, we followed the hacks very closely. 11 But again, how legal responded is not 12 something that I -- most of these were done with 13 either people that were anonymous or people that 14 were in countries that -- were not in the U.S. and 15 other things to that nature that made it harder. So 16 I don't know how legal responded or what they did. 17 Q. Okay. And do you have any information 18 regarding any cease and desist letters that may have 19 been sent by Apple to any other companies that 20 either stripped the DRM or provided their own 21 version of DRM? 22 A. Again, I don't recall any. I don't know. 23 Q. Apart from any communications with the 24 labels, did you have any communications with other 25 people inside of Apple regarding RealNetworks'</p>

<p>157</p> <p>1 Q. You anticipated. My next question was: 2 Who is Peter that's referred to here? 3 So this says it's a Q&A prep for Peter. 4 Do you see that? 5 A. I do. 6 Q. And is it accurate that on occasion, the 7 CFO of Apple would have to answer questions from the 8 press and others in public forums? 9 A. Generally not from the press. This would 10 generally be from analysts. 11 Q. Okay. And so it says: 12 "[He] wants to be prepared to 13 answer the following questions." 14 Do you see that? 15 A. I do. 16 Q. And is this something that -- again, I 17 think you testified earlier that you would work with 18 people in -- I guess mostly in media, PR 19 departments, helping to prepare public statements on 20 behalf of Apple; is that right? 21 A. Yeah. This is -- this is different. 22 Q. How is it different? 23 A. Because it's not meant for the press. 24 It's not with PR. 25 This is generally around giving Peter</p>	<p>159</p> <p>1 [REDACTED] 2 [REDACTED] 3 [REDACTED] 4 [REDACTED] 5 [REDACTED] 6 [REDACTED] 7 [REDACTED] 8 [REDACTED] 9 [REDACTED] 10 [REDACTED] 11 [REDACTED] 12 [REDACTED] 13 [REDACTED] 14 [REDACTED] 15 [REDACTED] 16 [REDACTED] 17 [REDACTED] 18 [REDACTED] 19 [REDACTED] 20 [REDACTED] 21 [REDACTED] 22 [REDACTED] 23 [REDACTED] 24 [REDACTED] 25 [REDACTED]</p>
<p>158</p> <p>1 mostly facts, numbers that have been -- that we have 2 that he wants to communicate, or just points that 3 we've already publicly made that he's asking about. 4 But again, geared toward analysts, not the press. 5 [REDACTED] 6 [REDACTED] 7 [REDACTED] 8 [REDACTED] 9 [REDACTED] 10 [REDACTED] 11 [REDACTED] 12 [REDACTED] 13 [REDACTED] 14 [REDACTED] 15 [REDACTED] 16 [REDACTED] 17 [REDACTED] 18 [REDACTED] 19 [REDACTED] 20 [REDACTED] 21 [REDACTED] 22 [REDACTED] 23 [REDACTED] 24 [REDACTED] 25 [REDACTED]</p>	<p>160</p> <p>1 Apple's. 2 Q. Was there ever a quarter that you're aware 3 of where the iTunes Music Store was not profitable? 4 A. I don't believe so. There may have been a 5 quarter where it was basically break-even, but I 6 don't believe there was any quarter where it was not 7 profitable. 8 Q. Even going back to when it first launched? 9 A. I would say if we looked at the first full 10 quarter, I don't know exactly, on a particular 11 month, if we launched on April -- we may have -- I 12 don't know whether we were profitable the first 13 month we were in business or not. 14 Q. Fair enough. 15 A. Certainly the first quarter we were in 16 business, we were. 17 Q. There's a question, the third question 18 here is: 19 "Did you notice any impact from 20 the Microsoft or other music store 21 launches?" 22 Do you see that? 23 A. I do. 24 Q. And then you have: 25 "In the U.S. our market is around</p>

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<div>1</div> <div>209</div> <div>[REDACTED]</div>	<div>211</div> <div>[REDACTED]</div>
<div>210</div> <div>[REDACTED]</div>	<div>212</div> <div>[REDACTED]</div>

APPLE'S (PROPOSED) REDACTIONS

EXHIBIT 10
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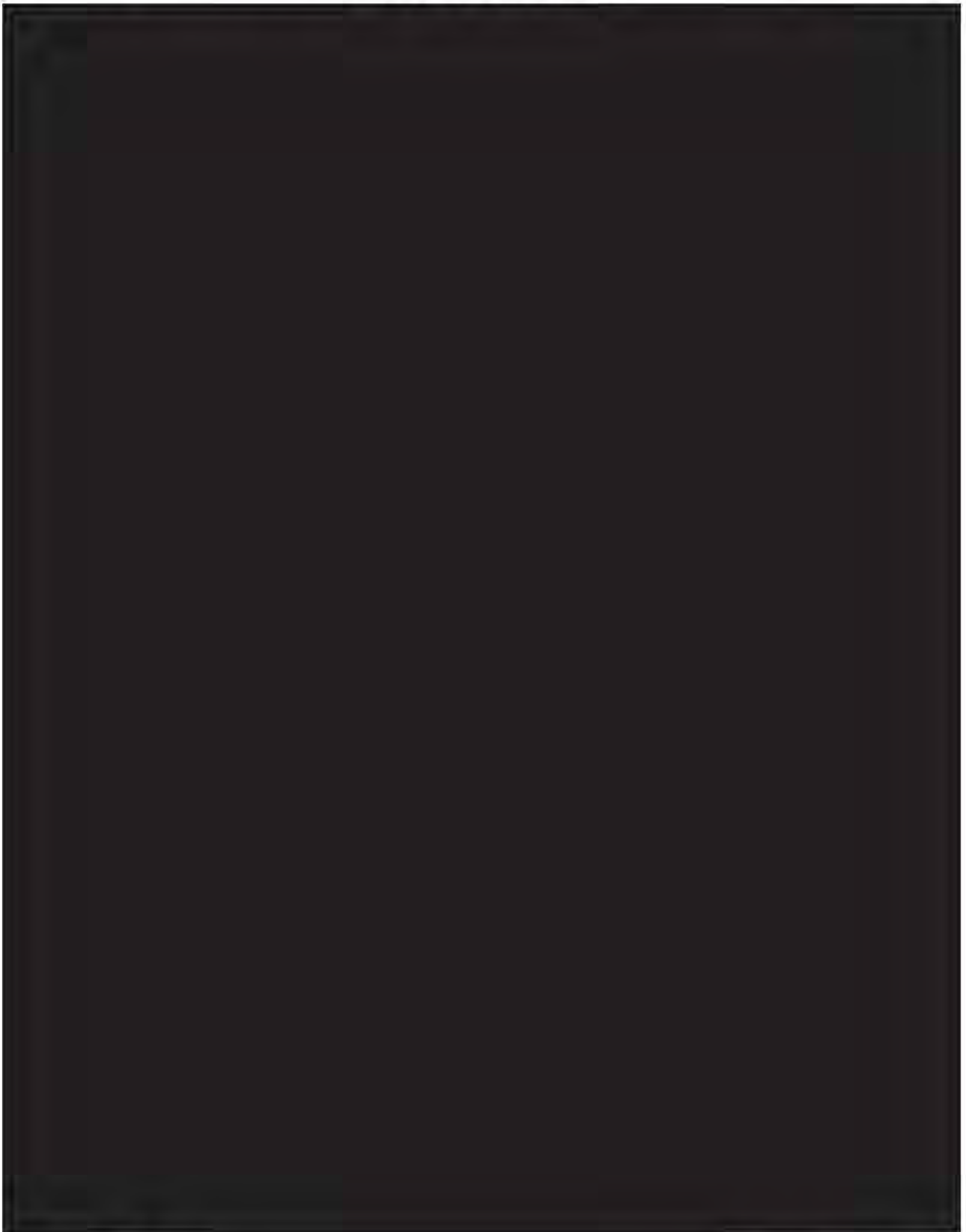
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December 3, 2010 9:23 a.m.	
1755 Embarcadero Road Palo Alto, California	
Ana M. Dub, RMR, CRR, CSR 7445	
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6 PAULA M. ROACH ESQ	Nos. APPLE_A A00094578-84
7 655 West Broadway Suite 1900	5 Exhibit 2 Digital Rights Management109
8 San Diego California 92101	(DRM) Details, Bates
9 619 231 1058	Nos. Apple_A A00094571-77
10 xanb@rgrdlaw.com	7 Exhibit 3 E-Mail Chain, Top E-Mail114
11 proach@rgrdlaw.com	Dated September 20, 2003, to
12	Steve Jobs from Eddy Cue,
13 and	14 Bates Nos. Apple_A A
14 BONNETT FARBOURN FREDMAN & BALNTPC	00098373-75
15 TODD D. CARPENTER ESQ	10 Exhibit 4 iTunes Version Spreadsheet,125
16 2901 N. Central Avenue Suite #1000	Bates Nos. Apple_A A
17 Phoenix Arizona 85012	00330727-34
18 (619) 756 6978	12 Exhibit 5 E-Mail Dated February 2, 2004131
19 tcarpenter@bfb.com	to Dave Heller, et al.,
20 For the Defendant Apple Computer, Inc.	13 from Grace Kvamme, Bates
21 JONES DAY	Nos. Apple_A A00091750-54
22 ROBERT A. MITTELSTAEDT ESQ	14 Exhibit 6 E-Mail Dated January 13, 2004135
23 555 California Street 26th Floor	to Eddy Cue, et al., from
24 San Francisco California 94104	15 Jeff Robbin, Bates
25 415 626 3939	Nos. Apple_A A00092493-94
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1 of FairPlay as the digital rights management
 2 solution that Apple was offering?
 3 A. Yes.
 4 Q. And what did you do? What work did you do
 5 on that?
 6 A. In the very beginning, I helped design how
 7 it would work. I might have fixed some bugs in the
 8 code as it was being developed. I didn't do the
 9 core implementation, but I worked on the
 10 architecture for it.
 11 Q. And when you say you worked on the
 12 architecture for that, can you explain to people
 13 like me, who do not have a software background, what that
 14 means?
 15 A. It means that I would have worked with the
 16 engineers to try to figure out the mechanisms for
 17 implementing the DRM. So trying to just figure out
 18 how it would work, how we would keep it secret or
 19 secure. It's a broad...
 20 Q. Sure. And I'm just trying to get at sort
 21 of a general understanding as to what you -- how you
 22 worked on it.
 23 A. Mm-hmm.
 24 Q. And so I've seen some references to
 25 something called an AAC audio stream. Can you tell

50

1 me what that is?
 2 A. AAC is an audio codec format. It's how
 3 you convert sound into a compressed form.
 4 Q. Okay. And so right that FairPlay files
 5 were MP4 files with an encrypted AAC audio stream?
 6 Is that accurate?
 7 A. FairPlay is a DRM. It's more than just a
 8 file format. An MP4 is an AAC file that has
 9 FairPlay applied to it.
 10 Q. Okay. And so right that Apple put
 11 FairPlay on a music that it sold in the iTunes
 12 Music Store once the iTunes Music Store was launched
 13 or it was protected by FairPlay?
 14 A. All songs that we sold when the iTunes
 15 Music Store first opened were protected with
 16 FairPlay.
 17 Q. Were there or have there been various
 18 versions or iterations of FairPlay over the years?
 19 A. Yes.
 20 Q. Do you know how many versions of FairPlay
 21 there've been over the years?
 22 A. No.
 23 Q. Have there been sort of major revisions
 24 and minor revisions, as that term is understood by
 25 you?

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1 A. Yes.
 2 Q. Do you know where I would find out sort of
 3 a comprehensive history of FairPlay? Is that
 4 something that Apple would maintain?
 5 A. No.
 6 Q. Okay. Do you know whether there's sort of
 7 documents documenting each change? If there's not
 8 sort of a comprehensive history, do you believe that there
 9 are documents that explain what each version of
 10 FairPlay over the years has been?
 11 A. No, I don't think there's a document that
 12 describes each version of FairPlay.
 13 MR. MITTELSTAEDT: When you come to a
 14 convenient stopping point, if we could take a short
 15 break.
 16 MS. BERNAY: Why don't we do that now.
 17 That's totally fine. Is that all right?
 18 MR. MITTELSTAEDT: Sure.
 19 THE VIDEOGRAPHER: Off the record at
 20 10:13 A.M.
 21 (Recess taken.)
 22 THE VIDEOGRAPHER: And we are back on the
 23 record at 10:20 A.M.
 24 MS. BERNAY: Thank you. We come back from
 25 our short break.

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1 Ms. Court Reporter, would you mind just
 2 reading back the last question and answer, please.
 3 (Record read as follows:
 4 "QUESTION: Okay. Do you know whether
 5 there's sort of documents documenting
 6 each change? If there's not sort of a
 7 version history, do you believe that
 8 there are documents that explain what
 9 each version of FairPlay over the years
 10 has been?
 11 "ANSWER: No, I don't think there's a
 12 document that describes each version of
 13 FairPlay.")
 14 MS. BERNAY: Thank you.
 15 BY MS. BERNAY:
 16 Q. We were just talking about that there were
 17 a number of versions of FairPlay. Is that accurate?
 18 A. Yes.
 19 Q. Okay. Do you know whether at some point
 20 in time, music sold at the -- on the iTunes Store
 21 was no longer protected by FairPlay?
 22 A. Yes.
 23 Q. And when approximately did that occur?
 24 A. I don't remember the exact date. And it's
 25 not all music. There's still some music still



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APPLE'S (PROPOSED) REDACTIONS

EXHIBIT 11
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<p>UNITED STATES DISTRICT COURT NORTHERN DISTRICT OF CALIFORNIA SAN JOSE DIVISION</p> <p>THE APPLE IPOD ITUNES Lead Case No. ANTI-TRUST LITIGATION. C-05-00037-JW (HRL)</p> <p>-----</p> <p>HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY</p> <p>VIDEOTAPED 30(b)(6) DEPOSITION OF AUGUSTIN J. FARRUGIA ON BEHALF OF APPLE, INC. VOLUME I</p> <p>December 8, 2010 9:16 a.m.</p> <p>1755 Embarcadero Road Palo Alto, California</p> <p>Ana M. Dub, RMR, CRR, CSR 7445</p>	<p>1 INDEX OF EXAMINATION</p> <p>2</p> <p>3 WITNESS: AUGUSTIN J. FARRUGIA</p> <p>4 EXAMINATION PAGE</p> <p>5 By Mr. Carpenter 7</p> <p>6 By Mr. Kiernan 212</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
<p>1 APPEARANCES OF COUNSEL</p> <p>2 For the Plaintiffs:</p> <p>3 BONNETT, FAIRBOURN, FRIEDMAN, & BALINT, P.C.</p> <p>4 TODD D. CARPENTER, ESQ.</p> <p>5 2901 N. Central Avenue, Suite 1000</p> <p>6 Phoenix, Arizona 85012</p> <p>7 619.756.6978</p> <p>8 tcarpenter@bffb.com</p> <p>9</p> <p>10 and</p> <p>11 ROBBINS GELLER RUDMAN & DOWD LLP</p> <p>12 PAULA M. ROACH, ESQ.</p> <p>13 655 West Broadway, Suite 1900</p> <p>14 San Diego, California 92101</p> <p>15 619.231.1058</p> <p>16 proach@rgrdlaw.com</p> <p>17 For the Defendant Apple, Inc.:</p> <p>18 JONES DAY</p> <p>19 DAVID C. KIERNAN, ESQ.</p> <p>20 555 California Street, 26th Floor</p> <p>21 San Francisco, California 94104</p> <p>22 415.875-5745</p> <p>23 dkiernan@jonesday.com</p> <p>24</p> <p>25 and</p> <p>26 JONES DAY</p> <p>27 MICHAEL CULHANE HARPER, ESQ. (Morning Session)</p> <p>28 1755 Embarcadero Road</p> <p>29 Palo Alto, California 94303</p> <p>30 650.739.3916</p> <p>31 mcharper@jonesday.com</p> <p>32 Also Present:</p> <p>33 APPLE, INC.</p> <p>34 LISA OLLE, SENIOR CORPORATE COUNSEL LITIGATION</p> <p>35 1 Infinite Loop, MS 36-35U</p> <p>36 Cupertino, California 95014</p> <p>37 408.862.8888</p> <p>38 olle@apple.com</p> <p>39</p> <p>40 MATTHEW COPE, VIDEOGRAPHER</p>	<p>1 INDEX TO EXHIBITS</p> <p>2</p> <p>3 Exhibit Description Page</p> <p>4 Exhibit 21 Organization Chart, Bates13</p> <p>5 No. Apple_AIIA00099092</p> <p>6</p> <p>7 Exhibit 22 Letter on the Letterhead of23</p> <p>8 Jones Day Dated</p> <p>9 November 15, 2010 to</p> <p>10 Alexandra Bernay from David</p> <p>11 Kiernan</p> <p>12</p> <p>13 Exhibit 23 E-Mail Chain, Top E-Mail125</p> <p>14 Dated April 27, 2005, to</p> <p>15 Tom Neumayr from Greg</p> <p>16 Joswiak, Bates</p> <p>17 Nos. Apple_AIIA00090485-88</p> <p>18</p> <p>19 Exhibit 24 Printout of iChat, Bates132</p> <p>20 Nos. Apple_AIIA00798326-27</p> <p>21 Exhibit 25 Series of E-Mails, Top144</p> <p>22 E-Mail Dated July 5, 2005,</p> <p>23 to Roger Pantos from</p> <p>24 Augustin J. Farrugia, Bates</p> <p>25 Nos. Apple_AIIA00099178-91</p> <p>26 Exhibit 26 E-Mail Chain, Top E-Mail147</p> <p>27 Dated November 7, 2005, to</p> <p>28 Jeff Robbin from Augustin</p> <p>29 J. Farrugia, Bates</p> <p>30 No. Apple_AIIA00091906</p> <p>31 Exhibit 27 Printout of iChat, Bates154</p> <p>32 No. Apple_AIIA00798303</p> <p>33</p> <p>34 Exhibit 28 E-Mail Dated April 25, 2006162</p> <p>35 To Dave Heller from Chris</p> <p>36 Wysocki and Attachment,</p> <p>37 Bates Nos. Apple_AIIA00094563-69</p> <p>38</p> <p>39</p> <p>40</p> <p>41</p> <p>42</p> <p>43</p> <p>44</p> <p>45</p>



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<p>45</p> <p>1 management technology or software; correct?</p> <p>2 A. What do you mean by "software"? You put</p> <p>3 "software" here.</p> <p>4 Q. Okay. How about I leave out "software."</p> <p>5 And the question is: FairPlay is a</p> <p>6 digital rights management technology; correct?</p> <p>7 A. Which is correct.</p> <p>8 Q. If I refer to digital rights management as</p> <p>9 DRM, you'll understand what I'm talking about?</p> <p>10 A. Correct.</p> <p>11 Excuse me. Before you ask question, can I</p> <p>12 have a glass of water, please?</p> <p>13 Q. Sure.</p> <p>14 When was FairPlay originally developed?</p> <p>15 A. I cannot say about FairPlay before my</p> <p>16 time, but I developed the first version of FairPlay</p> <p>17 when I was at Apple.</p> <p>18 Q. I'm sorry. Did you say that you developed</p> <p>19 the first version of FairPlay when you came to</p> <p>20 Apple?</p> <p>21 A. I cannot speak before my time --</p> <p>22 Q. Sure.</p> <p>23 A. -- because Apple has a FairPlay</p> <p>24 implementation before my time and I cannot speak</p> <p>25 about that.</p>	<p>47</p> <p>1 A. Yeah.</p> <p>2 Q. Okay. How would you describe the music</p> <p>3 file that's transferred to the end user's computer?</p> <p>4 A. It's a file that contain the song encoded</p> <p>5 with ASE's encoding process.</p> <p>6 Q. In technical terms, what would you</p> <p>7 describe the file as or how would you name the file?</p> <p>8 A. Song, digital song.</p> <p>9 Q. Okay. Is it accurate to say that the song</p> <p>10 that is transferred to the end user's computer is in</p> <p>11 MPEG-4 container format?</p> <p>12 A. Maybe.</p> <p>13 Q. Is it your testimony that you're not aware</p> <p>14 of what the song format is?</p> <p>15 A. I'm not -- I'm not sure about the format.</p> <p>16 Q. Okay. What would you -- how would you</p> <p>17 explain the primary purpose for developing or</p> <p>18 redesigning FairPlay in the manner that you did once</p> <p>19 you were with Apple, once you came to Apple?</p> <p>20 A. Developing or redesigning?</p> <p>21 Q. Developing.</p> <p>22 A. I rather answer the question about</p> <p>23 redesigning first --</p> <p>24 Q. Sure.</p> <p>25 A. -- if you don't mind.</p>
<p>46</p> <p>1 But I did what I called the Version 1.0 of</p> <p>2 FairPlay when I came.</p> <p>3 Q. And that Version 1.0, was that an update</p> <p>4 to FairPlay?</p> <p>5 A. No. It was a change on the architecture.</p> <p>6 It was a complete redesign.</p> <p>7 Q. It was a complete redesign?</p> <p>8 A. Redesign, yes.</p> <p>9 Q. Are you familiar with an MPEG-4 file?</p> <p>10 A. M? MPEG-4, yes.</p> <p>11 Q. Okay. Can you describe or explain what an</p> <p>12 MPEG-4 is to me?</p> <p>13 A. It's a container which contain different</p> <p>14 type of content.</p> <p>15 THE COURT REPORTER: I'm sorry.</p> <p>16 THE WITNESS: A container that contains</p> <p>17 digital content. It's a standard.</p> <p>18 BY MR. CARPENTER:</p> <p>19 Q. Does Apple utilize MPEG-4 files -- strike</p> <p>20 that.</p> <p>21 Are the iTunes music contained in MP-4 --</p> <p>22 MPEG-4 files?</p> <p>23 A. Maybe.</p> <p>24 Q. Okay. When you say "maybe," you're not</p> <p>25 sure?</p>	<p>48</p> <p>1 As a security expert, the first thing you</p> <p>2 do when you come to a project like FairPlay is to</p> <p>3 analyze what you have and to do a risk assessment.</p> <p>4 And the risk assessment I saw at the time</p> <p>5 was completely upside down, which mean that the</p> <p>6 design and the architecture and the implementation</p> <p>7 Apple had of FairPlay before my time was really</p> <p>8 upside down.</p> <p>9 The example I use is: Do you like to walk</p> <p>10 with shoes with the heel on the front? That was I</p> <p>11 discover. That's pretty difficult, right?</p> <p>12 And this was my first initial reaction,</p> <p>13 saying: Look, your design is upside down. We need</p> <p>14 to redesign everything.</p> <p>15 Q. From a technical standpoint, why did you</p> <p>16 believe that it was upside down?</p> <p>17 A. Because as a security expert, it was done</p> <p>18 incorrectly.</p> <p>19 Q. Okay. What leads you to say that it was</p> <p>20 done incorrectly if we had to drill down into what</p> <p>21 the actual process was?</p> <p>22 A. A common practice we know in security, and</p> <p>23 you have -- you know what you design in security,</p> <p>24 and it was done upside down vis-a-vis the common</p> <p>25 practice we have in security.</p>



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1 Q. Okay. And did you take any action to
2 react to this security concern?

3 A. I never take any action.

4 Q. Why did you never take any action if you
5 were concerned about this as a security threat?

[illegible]

1 Q. But you had identified this as a problem,
2 that RealNetworks was storing the keys in its
3 digital music files that enabled them to be played
4 on the iPod; correct?

5 A. Which is incorrect. The things we
6 identified was the weakness and bad design of the
7 architecture.

8 MR. CARPENTER: Can we go off the record
9 for a second?

10 MR. KIERNAN: Yeah.

11 THE VIDEOGRAPHER: We're off the record,
12 2:14 P.M.

13 (Recess taken.)

14 THE VIDEOGRAPHER: We're back on the
15 record at 2:26 P.M.

16 MR. CARPENTER: I'd like to introduce
17 Exhibit No. 28 to the deposition of Mr. Farrugia.
18 It is Bates stamped AIIA00094564 – actually, make
19 that 94563 – and concluding at AIIA00094569.

20 (Whereupon, Deposition Exhibit 28 was
21 marked for identification.)

22 MR. CARPENTER: Take a minute to review
23 this.

24 (Witness reviews document.)

[illegible]

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<p style="text-align: right;">193</p> <p>1 A. Let me read.</p> <p>2 Q. I'm sorry?</p> <p>3 A. Can I read?</p> <p>4 MR. KIERNAN: He said let him read.</p> <p>5 MR. CARPENTER: Oh, absolutely.</p> <p>6 (Witness reviews document.)</p> <p>7 THE WITNESS: Yes, it has been implemented</p> <p>8 partially.</p> <p>9 BY MR. CARPENTER:</p> <p>10 Q. When you say "partially," it has not been</p> <p>11 implemented to the extent described by this</p> <p>12 document?</p> <p>13 A. This document were describing 2005, 2006.</p> <p>14 And things has changed to have a better way of doing</p> <p>15 that.</p> <p>16 Q. So the particular description that's</p> <p>17 provided by this document has evolved; is that</p> <p>18 accurate?</p> <p>19 A. Correct.</p> <p>20 Q. Okay. And how has it evolved or improved?</p> <p>21 MR. KIERNAN: Objection; lacks foundation.</p> <p>22 THE WITNESS: Evolved because we want to</p> <p>23 have better performances, for example.</p> <p>24 BY MR. CARPENTER:</p> <p>25 Q. I'm sorry. Did you say better</p>	<p style="text-align: right;">195</p> <p>1 A. Not that I remember.</p> <p>2 Q. Can I direct your attention to page 80,</p> <p>3 please. In particular, the section that reads —</p> <p>4 the section underneath the subheading [REDACTED]</p> <p>5 [REDACTED]</p> <p>6 (Witness reviews document.)</p> <p>7 BY MR. CARPENTER:</p> <p>8 Q. Are you ready?</p> <p>9 A. Mm-hmm.</p> <p>10 Q. Is the reference in this section to the</p> <p>11 word "Real" a reference to RealNetworks?</p> <p>12 A. Should be.</p> <p>13 Q. Okay. Can you read the sentence that</p> <p>14 begins [REDACTED]</p> <p>15 [REDACTED]</p> <p>16 [REDACTED]</p> <p>17 [REDACTED]</p> <p>18 [REDACTED]</p> <p>19 [REDACTED]</p> <p>20 Q. Did you draft this section?</p> <p>21 A. Correct.</p> <p>22 Q. Okay. What did you mean by Real could DRM</p> <p>23 their music?</p> <p>24 A. Is the thing we discussed about the</p> <p>25 injection.</p>
<p style="text-align: right;">194</p> <p>1 performances?</p> <p>2 A. Yeah.</p> <p>3 Q. What is your metric to determine whether</p> <p>4 you're achieving better performances?</p> <p>5 A. User. If it is too slow to play your</p> <p>6 song, it's a bad performance. You have to admit</p> <p>7 that if you play better — you wait twenty second</p> <p>8 before you have a song, it's not good.</p> <p>9 Q. Is it accurate to say that the version</p> <p>10 that's described by this document has been improved</p> <p>11 by making it faster?</p> <p>12 A. For example.</p> <p>13 Q. What FairPlay version was it implemented</p> <p>14 into — first implemented into?</p> <p>15 A. Guesstimate is the first version of</p> <p>16 Core FP. Remember Core FP?</p> <p>17 Q. Is it implemented into any subsequent</p> <p>18 versions of Core FP?</p> <p>19 A. Yes.</p> <p>20 Q. All subsequent versions or particular</p> <p>21 subsequent versions?</p> <p>22 A. All, should be all version.</p> <p>23 Q. When you're describing the evolved version</p> <p>24 or the improved version, is that — does that</p> <p>25 correlate to a specific version of Core FP?</p>	<p style="text-align: right;">196</p> <p>1 Q. Okay. Does that mean that you're</p> <p>2 acknowledging that Real could DRM their music to</p> <p>3 make it compatible or able to be played on an iPod?</p> <p>4 MR. KIERNAN: Objection; lacks foundation.</p> <p>5 Objection; form.</p> <p>6 THE WITNESS: We know that on the risk</p> <p>7 management we have, and we have this flaw, and it</p> <p>8 was exploited by Real.</p> <p>9 BY MR. CARPENTER:</p> <p>10 Q. Okay. And when you say the flaw was</p> <p>11 exploited by Real, did you mean that Real was able</p> <p>12 to make its music to be played on the iPod?</p> <p>13 A. In any way. Yes, correct.</p> <p>14 Q. Okay. Why would you describe that as a</p> <p>15 flaw?</p> <p>16 A. Because, like I said, if you inject things</p> <p>17 improperly inside the ecosystem and you do it</p> <p>18 improperly, the user will have a bad experience.</p> <p>19 Q. If the user desired to have its</p> <p>20 RealNetwork music played on the iPod, wouldn't that</p> <p>21 be viewed as a positive experience?</p> <p>22 MR. KIERNAN: Objection; lacks foundation,</p> <p>23 calls for speculation, objection to form.</p> <p>24 THE WITNESS: As we may have seen that we</p> <p>25 have customers after that, they are calling us, and</p>



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<p>201</p> <p>1 Music purchased from iTunes or music purchased from 2 Real? 3 A. All the musics. 4 Q. Okay. 5 A. All the songs. 6 Q. How would the music -- how would the music 7 be erased? 8 [REDACTED] 9 [REDACTED] 10 [REDACTED] 11 [REDACTED] 12 Q. Okay. What -- at what point in the 13 consumer experience would this problem occur? When 14 the consumer sunk the iPod with its computer, or 15 when the consumer sunk the iPod with the RealNetwork 16 media player? 17 A. It would be when the consumer tried to 18 play the music. 19 Q. Okay. I'm a little bit confused. If the 20 consumer tried to play the music on the iPod, 21 wouldn't the -- strike that. 22 Would the iPod -- would the consumer not 23 be able to play its music from the moment it 24 downloaded the RealNetworks song? 25 MR. KIERNAN: Objection to form; lacks</p>	<p>203</p> <p>1 (Whereupon, Deposition Exhibit 30 was 2 marked for identification.) 3 BY MR. CARPENTER: 4 Q. You ready? 5 A. Mm-hmm. 6 Q. Can you describe this document for me? 7 A. It looks like it's e-mail that I sent Tony 8 Fadell and Guy, October 2006. 9 Q. Okay. And you believe this is an e-mail 10 that you sent to Tony Fadell and Guy Bar-Nahum? 11 A. Mm-hmm. 12 Q. And would you normally communicate with 13 them through e-mail in the normal course of 14 business? 15 A. Correct. 16 Q. Have you ever seen this e-mail before 17 today? 18 A. Yes, I did. 19 Q. Aside from when you originally drafted it? 20 A. Yes, I should. Yeah. 21 Q. Can you explain the contents to me or put 22 it in context? 23 [REDACTED] 24 [REDACTED] 25 [REDACTED]</p>
<p>202</p> <p>1 foundation. 2 THE WITNESS: You are confusing me now. 3 BY MR. CARPENTER: 4 Q. Okay. What would immediately precede the 5 music being rendered inoperable? What would the 6 last action the consumer would have taken have been? 7 MR. KIERNAN: Objection; lacks foundation, 8 calls for speculation. Objection; form. 9 THE WITNESS: That will occur when the 10 consumer will sync the content on the iPod. 11 MR. CARPENTER: I'm sorry. Can you repeat 12 that. 13 (Record read as follows: 14 "THE WITNESS: That will occur when the 15 consumer will sync the content on the 16 iPod.") 17 BY MR. CARPENTER: 18 Q. What content are you referring to? 19 A. Any content which is not synced with a 20 correct ecosystem. 21 MR. CARPENTER: Okay. Set that aside. 22 And can I introduce Exhibit No. 30, I 23 believe, to Mr. Farrugia's deposition, Bates stamped 24 AIIA00802966. 25</p>	<p>204</p> <p>1 Q. Can I turn your attention to the second 2 page. 3 A. Mm-hmm. 4 Q. Is this -- and can you explain to me what 5 this is? 6 A. Looks like is a page of a forum from 7 RealNetworks. 8 Q. Did you send this Web page to the 9 recipients of this e-mail? 10 A. Probably. 11 Q. Okay. Do you recall why you sent this to 12 them? 13 [REDACTED] 14 [REDACTED] 15 [REDACTED] 16 [REDACTED] 17 [REDACTED] 18 [REDACTED] 19 [REDACTED] 20 [REDACTED] 21 [REDACTED] 22 [REDACTED] 23 [REDACTED] 24 [REDACTED] 25 [REDACTED]</p>



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<p>1 MR. CARPENTER: Can I have that answer 2 back. 3 (Record read as follows: 4 [REDACTED] 5 [REDACTED] 6 [REDACTED] 7 [REDACTED] 8 [REDACTED] 9 [REDACTED] 10 [REDACTED] 11 [REDACTED] 12 [REDACTED] 13 [REDACTED] 14 [REDACTED] 15 [REDACTED] 16 [REDACTED] 17 [REDACTED] 18 [REDACTED] 19 [REDACTED] 20 [REDACTED] 21 [REDACTED] 22 [REDACTED] 23 [REDACTED] 24 [REDACTED] 25 [REDACTED]</p>	<p>205</p> <p>1 [REDACTED] 2 THE WITNESS: I don't know what the 3 consumer going to say here because they are not 4 referring to any things you purchase on Real. They 5 are saying if you transfer track from RealPlayer, 6 which means the client. They are not speaking about 7 the purchase or the CD you rip. They are speaking 8 about the transfer from the RealPlayer, which is a 9 player. 10 BY MR. CARPENTER: 11 Q. So if you purchased a song from 12 RealNetworks, could you put it on the iPod at that 13 point? 14 A. I don't know. I don't know the format of 15 the song. What I can tell you is if you rip your CD 16 you purchase, you were able to put on the iPod. 17 MR. CARPENTER: I'm sorry. Can you repeat 18 that. 19 (Record read as follows: 20 "ANSWER: I don't know. I don't know 21 the format of the song. What I can 22 tell you is if you rip your CD you 23 purchase, you were able to put on the 24 iPod.") 25 THE WITNESS: The CD you purchase through</p> <p>207</p>
<p>206</p> <p>1 [REDACTED] 2 [REDACTED] 3 [REDACTED] 4 [REDACTED] 5 [REDACTED] 6 [REDACTED] 7 [REDACTED] 8 [REDACTED] 9 [REDACTED] 10 [REDACTED] 11 [REDACTED] 12 [REDACTED] 13 [REDACTED] 14 [REDACTED] 15 [REDACTED] 16 [REDACTED] 17 [REDACTED] 18 [REDACTED] 19 [REDACTED] 20 [REDACTED] 21 [REDACTED] 22 [REDACTED] 23 [REDACTED] 24 [REDACTED] 25 [REDACTED]</p>	<p>208</p> <p>1 Tower Record, iTunes allow you to rip the CD -- 2 right? -- and you would be able to transfer that 3 inside your iPod. 4 BY MR. CARPENTER: 5 Q. So you couldn't directly purchase the song 6 from RealNetworks and put it on your iPod without 7 ripping it; correct? 8 MR. KIERNAN: Objection; lacks foundation, 9 calls for speculation. 10 THE WITNESS: I don't know what was 11 RealNetworks at the time. 12 BY MR. CARPENTER: 13 Q. But you sent this e-mail that demonstrated 14 that a song could not be transferred directly from 15 Real to the iPod; correct? 16 A. Correct. 17 Q. Okay. So did you take that to understand 18 that at that point in time, you could not purchase a 19 song from Real and put it on the iPod? 20 A. This is not my understanding. My 21 understanding is you cannot transfer a song, where 22 ever you purchase it, using RealPlayer. 23 Q. Okay. Why would a purchase of a song be 24 any different than the transfer of a song if the 25 purchase of the song also involved the transfer of</p>



APPLE'S (PROPOSED) REDACTIONS

EXHIBIT 14
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CONFIDENTIAL - ATTORNEYS' EYES ONLY

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

THE APPLE IPOD ITUNES Lead Case No.
ANTI-TRUST LITIGATION. C-05-00037-JW (HRL)

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HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

VIDEOTAPED 30(b)(6) DEPOSITION OF  
DAVID K. HELLER  
ON BEHALF OF  
APPLE, INC.  
VOLUME I

December 15, 2010  
9:16 a.m.

1755 Embarcadero Road  
Palo Alto, California

Ana M. Dub, RMR, CRR, CSR 7445

## CONFIDENTIAL - ATTORNEYS' EYES ONLY

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MATTHEW COPE, VIDEOGRAPHER

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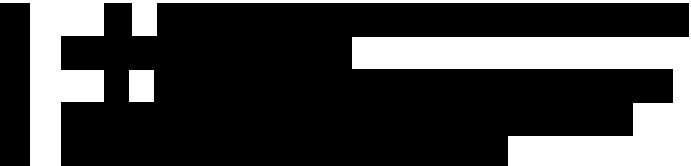
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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 order to purchase content on the iTunes Store, a<br/>2 user had to update their iPod firmware?<br/>3 MR. MITTELSTAEDT: And implicitly, you're<br/>4 meaning to ask: And to play that on an iPod?<br/>5 MS. BERNAY: I'm sorry.<br/>6 BY MS. BERNAY:<br/>7 Q. And to play that on an iPod.<br/>8 Thank you, Bob.<br/>9 A. I -- yeah. So the -- to answer the first<br/>10 part of your question, there's never been a firmware<br/>11 update that required you to update your iPod to buy<br/>12 content from the store.<br/>13 Q. Okay.<br/>14 A. But to sync content down, I believe that I<br/>15 can only recall the one time.<br/>16 Q. Okay. You had mentioned there were a<br/>17 number of file formats that that first generation of<br/>18 iPods could play. Do you recall that --<br/>19 A. Yes.<br/>20 Q. -- testimony?<br/>21 Do you know whether you could buy online<br/>22 music from sources before the iTunes Music Store was<br/>23 launched and play them on your iPod?<br/>24 MR. MITTELSTAEDT: Object; scope.<br/>25 THE WITNESS: If those -- if those sources</p> <p style="text-align: right;">Page 46</p>                                                        | <p>1 were offering up standard MP3 or WAV or AIFF files,<br/>2 those should have played on the pod just fine.<br/>3 BY MS. BERNAY:<br/>4 Q. Okay.<br/>5 A. I'm not aware of specific examples of such<br/>6 services.<br/>7 Q. Do you know whether iTunes, the Desktop<br/>8 Client, worked with any other media players prior to<br/>9 the launch of the iTunes Store?<br/>10 MR. MITTELSTAEDT: Objection; scope.<br/>11 THE WITNESS: What do you mean by "media<br/>12 player"?<br/>13 BY MS. BERNAY:<br/>14 Q. For example, a Zune or other device, a<br/>15 non-iPod device.<br/>16 A. iTunes had support for several specific<br/>17 third-party devices in iTunes prior to the launch of<br/>18 the Store.<br/>19 Q. Do you know if iTunes had support for<br/>20 other devices after the launch of the iTunes Store?<br/>21 A. Yes, we did.<br/>22 Q. What other devices?<br/>23 A. It's the same set as before the Store.<br/>24 Q. So I think one of the devices that<br/>25 provided support -- or that iTunes provided support</p> <p style="text-align: right;">Page 47</p>                                                                                                                                  |
| <p>1 for was the Rio One. Are you familiar with that<br/>2 device?<br/>3 MR. MITTELSTAEDT: Objection; scope. Can<br/>4 I have a continuing objection to this line on scope?<br/>5 MS. BERNAY: Sure.<br/>6 MR. MITTELSTAEDT: Thank you.<br/>7 THE WITNESS: The Rio One was one of the<br/>8 devices we added support for.<br/>9 BY MS. BERNAY:<br/>10 Q. And it's your testimony that the Rio One<br/>11 could still play -- could it purchase -- I'm sorry.<br/>12 Could a user of a Rio One, after the<br/>13 launch of the iTunes Store, purchase content from<br/>14 the iTunes Store and play it on the Rio One after<br/>15 the launch of the iTunes Store?<br/>16 A. To the best of my knowledge, the Rio One<br/>17 did not support our protected format and that<br/>18 content would not play.<br/>19 Q. Okay. When the iTunes Store was launched,<br/>20 it was only Mac compatible; is that right?<br/>21 A. Yes.<br/>22 Q. And do you know about when the iTunes<br/>23 for -- iTunes Store for Windows was launched?<br/>24 A. iTunes for Windows itself, which had the<br/>25 support for the Store, was launched, I believe, in</p> <p style="text-align: right;">Page 48</p> | <p>1 October of 2003.<br/>2 Q. Prior to October of 2003, there was -- is<br/>3 it right that there wasn't a desktop media player<br/>4 iTunes version that was available for Windows?<br/>5 MR. MITTELSTAEDT: Objection; scope.<br/>6 THE WITNESS: Apple did not offer iTunes<br/>7 on the Windows platform prior to the first -- that<br/>8 first version of iTunes for Windows.<br/>9 BY MS. BERNAY:<br/>10 Q. Okay. Thank you.<br/>11 Prior to the launch in October 2003 of the<br/>12 iTunes -- is it right to say client for Windows or<br/>13 the iTunes program?<br/>14 A. iTunes application for Windows.<br/>15 Q. Thank you.<br/>16 Was there something for Windows that was<br/>17 compatible with an iPod prior to that time?<br/>18 A. Apple had an arrangement with Musicmatch<br/>19 to do support within Musicmatch for putting files<br/>20 onto an iPod. I don't recall when that arrangement<br/>21 began, but that was a Windows solution for using<br/>22 Windows with an iPod.<br/>23 Q. So another topic -- and we've sort of been<br/>24 talking about all these things because they do<br/>25 overlap -- was the general overview of how updates</p> <p style="text-align: right;">Page 49</p> |

1 Q. And is that something that you did  
2 anything about?  
3 A. Can you clarify that?  
4 Q. What did the iTunes Team do in response to  
5 that?  
6 MR. MITTELSTAEDT: Objection; assumes  
7 facts not in evidence.  
8 THE WITNESS: As far as I know, we did  
9 nothing to do anything about Harmony.  
10 BY MS. BERNAY:  
11 Q. Did you investigate or look at the Harmony  
12 software at any time?  
13 A. We did, yes.  
14 Q. Okay. And why did you do that?  
15 A. We were looking to see what they were  
16 doing to get their protected songs onto the iPod and  
17 why the iPod would be able to play them.  
18 Q. Why did you do that?  
19 A. We wanted to see if this was a  
20 DRM-circumvention hack.



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1 Q. You said that they were mimicking Apple's  
2 DRM system.  
3 A. They were encrypting the files the same  
4 way that FairPlay does.  
5 Q. So how would that be a problem or a  
6 circumvention?



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1 purchased from RealNetworks Harmony did anything to  
2 the iPod database that caused any of the problems  
3 that you just referred to?  
4 MR. MITTELSTAEDT: Objection; beyond the  
5 scope.  
6 THE WITNESS: The -- RealNetworks did not  
7 write a completely correct database that would cause  
8 loss of functionality in the iTunes application.  
9 BY MS. BERNAY:  
10 Q. What was not completely correct about it?  
11 A. They --  
12 MR. MITTELSTAEDT: Objection; beyond the  
13 scope.  
14 THE WITNESS: They neglected to preserve  
15 the song ID attributes and the artist and playlist  
16 ID attributes, the songs purchased from the iTunes  
17 Store. The RealNetworks Harmony database neglected  
18 to preserve what we called the DRM versions field of  
19 the database, as well as neglecting to preserve a  
20 lot of the iTunes UI aspects of the database.  
21 BY MS. BERNAY:  
22 Q. Which iTunes UI of the database did it  
23 neglect to preserve?  
24 A. The -- if a customer had gone through  
25 their playlist on the iPod and set up custom views,

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1 custom columns, sorting, all that information was  
2 lost when the RealNetworks database was written.  
3 Q. And is this something that actually  
4 occurred that you're aware of?  
5 A. Yes.  
6 Q. And how are you aware that any of these  
7 items that you mentioned occurred?  
8 A. Because my analysis of the database showed  
9 that this data was being lost when RealNetworks  
10 would save the database.  
11 Q. Did any customer ever tell you that any of  
12 these issues -- or I'm sorry.  
13 Did any customer ever tell Apple that any  
14 of these issues occurred?  
15 MR. MITTELSTAEDT: Objection; beyond the  
16 scope --  
17 THE WITNESS: I am --  
18 MR. MITTELSTAEDT: -- calls for  
19 speculation, lack of foundation.  
20 THE WITNESS: I am not involved in  
21 customer relations, so I do not know.  
22 BY MS. BERNAY:  
23 Q. Are these problem that you're referring to  
24 theoretical problems?  
25 MR. MITTELSTAEDT: Objection;

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| <p>1 And that's a -- it says:<br/>2 "(New iPod.)"<br/>3 Do you see that?<br/>4 A. Yes.<br/>5 Q. And is that the photo iPod?<br/>6 A. No. The color iPod --<br/>7 Q. Oh, I'm sorry. Thank you.<br/>8 A. -- is that.<br/>9 ■■■ is the iPod shuffle. It's the first<br/>10 iPod shuffle.<br/>11 Q. Okay. And you mentioned that that was --<br/>12 there was a specific iTunes update to deal just with<br/>13 the iTunes shuffle earlier.<br/>14 A. Yes. iTunes 4.7.1.<br/>15 MS. BERNAY: Put that to the side, please.<br/>16 The next document was previously marked as<br/>17 Exhibit 15. It's a single-page document<br/>18 Bates-stamped Apple_A11A00090427.<br/>19 If you could take a moment to review that,<br/>20 please.<br/>21 MR. MITTELSTAEDT: 15, did you say?<br/>22 MS. BERNAY: It was previously Exhibit 15.<br/>23 (Witness reviews document.)<br/>24 THE WITNESS: Okay.<br/>25</p> <p style="text-align: right;">Page 126</p>                                                                                              | <p>1 BY MS. BERNAY:<br/>2 Q. You've had a chance to look at the<br/>3 Exhibit 15?<br/>4 A. Yes.<br/>5 Q. And I think when we talked earlier today,<br/>6 you said you had looked at a number of documents,<br/>7 some of which had refreshed your recollection.<br/>8 Is this one of those documents?<br/>9 A. Yes.<br/>10 Q. And what is Exhibit 15?<br/>11 A. Exhibit 15 is an e-mail I sent to Jeff<br/>12 Robbin and others around what we discovered when we<br/>13 first looked at Harmony.<br/>14 Q. And the bottom e-mail there is something<br/>15 from Mr. Robbin. Do you see that?<br/>16 A. Yes.<br/>17 Q. And it says:<br/>18 "Hi guys: I don't have a PC here,<br/>19 but harmony appears to be<br/>20 downloadable from . . ."<br/>21 And he lists the Web site. He notes:<br/>22 "I'm available on my cell phone at<br/>23 any time."<br/>24 Did I read that accurately?<br/>25 A. Yes.</p> <p style="text-align: right;">Page 127</p>                                                                                                                                                                                        |
| <p>1 Q. And did you perceive this e-mail from<br/>2 Mr. Robbin as a request to do a technical evaluation<br/>3 of the -- of Harmony?<br/>4 A. I believe this was a request, yes, for us<br/>5 to go look at Harmony.<br/>6 Q. And why would Mr. Robbin have asked you to<br/>7 do that?<br/>8 MR. MITTELSTAEDT: Object; beyond the<br/>9 scope, calls for speculation, lack of foundation.<br/>10 THE WITNESS: Well, he is my boss. And<br/>11 the -- the time that these hacks come out, usually<br/>12 it's his direction for us to go and look at<br/>13 particular ones rather than for us to discover on<br/>14 our own what was going on.<br/>15 BY MS. BERNAY:<br/>16 Q. So you said "the time that these hacks<br/>17 come out"?<br/>18 A. Yes.<br/>19 Q. So at this time, you believe that Harmony<br/>20 was a hack?<br/>21 A. Yes.<br/>22 Q. And it notes here that:<br/>23 ". . . harmony appears to be<br/>24 downloadable . . ."<br/>25 Is this -- is it accurate that you had</p> <p style="text-align: right;">Page 128</p> | <p>1 discussed with Mr. Robbin or others Harmony prior to<br/>2 its release?<br/>3 MR. MITTELSTAEDT: Object; argumentative.<br/>4 THE WITNESS: It -- I don't recall. It<br/>5 probably was discussed around the fact that the<br/>6 Harmony had a press release around the product, and<br/>7 he's telling us here that it looks like it's<br/>8 actually available for download now.<br/>9 BY MS. BERNAY:<br/>10 Q. Do you know whether, in fact, you spoke to<br/>11 anyone at Apple prior to the release of Harmony<br/>12 about what it would be able to do before it was<br/>13 released?<br/>14 A. I wasn't aware of it before it was<br/>15 released.<br/>16 Q. What about when the press release came<br/>17 out? Is that when you first became aware of it?<br/>18 A. I can't say it was the same day as the<br/>19 press release.<br/>20 Q. Okay. Fair enough.<br/>21 And it's from you and -- well, it's been<br/>22 signed at the bottom there "The 'Dave &amp; Tom' Show."<br/>23 Do you see that?<br/>24 A. (Witness nods head.)<br/>25 Q. And that's you and Mr. Dowdy; is that</p> <p style="text-align: right;">Page 129</p> |

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 correct?</p> <p>2 A. Yes.</p> <p>3 Q. And you worked together to take a look at</p> <p>4 Harmony; is that right?</p> <p>5 A. Yes.</p> <p>6 Q. And do you have a specific or general</p> <p>7 recollection regarding actually taking a look at</p> <p>8 Harmony?</p> <p>9 MR. MITTELSTAEDT: Objection; compound.</p> <p>10 THE WITNESS: I vaguely recall doing that</p> <p>11 and composing this e-mail.</p> <p>12 BY MS. BERNAY:</p> <p>13 Q. What did you do?</p> <p>14 A. Pretty much what I needed to do to come up</p> <p>15 with these items, which was install the Harmony</p> <p>16 software, get a Harmony store count -- whatever the</p> <p>17 term was -- download a song, take that song and use</p> <p>18 the Harmony software to put it on an iPod, [REDACTED]</p> <p>[REDACTED]</p> <p>23 Q. And is this something that you did at the</p> <p>24 office?</p> <p>25 A. Yes.</p> <p style="text-align: right;">Page 130</p>                                                                                                                                                                                                                      | <p>1 Q. And I assume you have access to various</p> <p>2 computers and iPods at your office; is that</p> <p>3 accurate?</p> <p>4 MR. MITTELSTAEDT: Objection;</p> <p>5 argumentative.</p> <p>6 THE WITNESS: Yes, I do have access to</p> <p>7 several iPods.</p> <p>8 BY MS. BERNAY:</p> <p>9 Q. Okay. And so you note here that you took</p> <p>10 a look at Harmony, and then you have:</p> <p>11 "Here is what we found."</p> <p>12 And then you have a list of 12 items; is</p> <p>13 that right?</p> <p>14 A. Yes.</p> <p>15 Q. Do you know whether there was anything</p> <p>16 that you discovered when looking at Harmony that you</p> <p>17 did not include in this list?</p> <p>18 A. I don't recall.</p> <p>19 Q. Okay. So the first thing here that you</p> <p>20 note is:</p> <p>21 "Downloaded song is 192kbps AAC."</p> <p>22 Do you see that?</p> <p>23 A. Yes.</p> <p>24 Q. What is that 192kpb -- bps AAC?</p> <p>25 A. It means 192 kilobits per second, which is</p> <p style="text-align: right;">Page 131</p>                                                            |
| <p>1 a measurement of the audio bit rate and quality for</p> <p>2 an AAC audio file.</p> <p>3 Q. Do you know what the audio bit rate was at</p> <p>4 this time for music that was purchased from the</p> <p>5 iTunes Store?</p> <p>6 A. It was 128 kbps.</p> <p>7 Q. And is it accurate that generally</p> <p>8 speaking, the 192 kbps is a better quality of audio</p> <p>9 than the 128 kbps?</p> <p>10 MR. MITTELSTAEDT: Objection; beyond the</p> <p>11 scope --</p> <p>12 THE WITNESS: If --</p> <p>13 MR. MITTELSTAEDT: -- lack of foundation.</p> <p>14 THE WITNESS: If the files are created</p> <p>15 with the same encoder, 192 should be better. But to</p> <p>16 say that a file that's 192 is always better than 128</p> <p>17 is not an accurate statement.</p> <p>18 BY MS. BERNAY:</p> <p>19 Q. And why is that not an accurate statement?</p> <p>20 MR. MITTELSTAEDT: Same objection.</p> <p>21 THE WITNESS: The quality of the encoder</p> <p>22 and the techniques used by the particular encoding</p> <p>23 software is -- is very germane to the resulting</p> <p>24 file's quality.</p> <p>25</p> <p style="text-align: right;">Page 132</p> | <p>1 BY MS. BERNAY:</p> <p>2 Q. At some point did music at the iTunes</p> <p>3 Store -- I'm sorry.</p> <p>4 At some point was music sold through the</p> <p>5 iTunes Store sold at a rate higher or different than</p> <p>6 this 128 kbps?</p> <p>7 MR. MITTELSTAEDT: Objection; beyond the</p> <p>8 scope.</p> <p>9 THE WITNESS: Most songs we offer in the</p> <p>10 iTunes Store today are 256 kbps.</p> <p>11 BY MS. BERNAY:</p> <p>12 Q. What about in 2007? What was the kbps</p> <p>13 rate that was sold on music at the iTunes Store?</p> <p>14 MR. MITTELSTAEDT: Objection; beyond the</p> <p>15 scope.</p> <p>16 THE WITNESS: I do not recall when we</p> <p>17 started offering the higher bit rate songs.</p> <p>18 BY MS. BERNAY:</p> <p>19 Q. What -- after -- what was the first</p> <p>20 upgrade or increase in kbps rates of music that was</p> <p>21 sold through the iTunes Store?</p> <p>22 MR. MITTELSTAEDT: Objection; beyond the</p> <p>23 scope.</p> <p>24 THE WITNESS: I'm sorry. When you say</p> <p>25 "what was"?</p> <p style="text-align: right;">Page 133</p> |

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\*APPLE'S (PROPOSED) REDACTIONS\*

EXHIBIT 48  
[Filed Under Seal]

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| <p style="text-align: center;">1</p> <p style="text-align: center;">UNITED STATES DISTRICT COURT<br/>NORTHERN DISTRICT OF CALIFORNIA<br/>SAN JOSE DIVISION</p> <p style="text-align: center;">--oOo--</p> <p>THE APPLE IPOD ITUNES ANTI-TRUST<br/>LITIGATION</p> <p style="text-align: center;">Lead Case No. C-05-00037-JW(HRL)</p> <p>This Document Relates To:<br/>ALL ACTIONS</p> <p style="text-align: center;">VIDEOTAPED DEPOSITION OF<br/>MARK DONNELLY<br/>Monday, December 20, 2010<br/>1:25 P.M.<br/>1755 Embarcadero<br/>Palo Alto, California</p> <p style="text-align: center;">**HIGHLY CONFIDENTIAL, ATTORNEYS EYES ONLY**</p> <p style="text-align: center;">Corey W. Anderson, CSR #096</p>                   | <p style="text-align: center;">3</p> <p>1 INDEX OF EXAMINATION<br/>2 WITNESS: MARK DONNELLY<br/>3<br/>4 EXAMINATION Page<br/>5 EXAMINATION BY MS. ROACH 7<br/>6<br/>7 INDEX TO EXHIBITS<br/>8 No. Description Page<br/>9 Exhibit 95 Plaintiff's Rule 30(B)(6) Notice Of Videotaped Deposition Of Corporate Designees 10<br/>10<br/>11 Exhibit 96 Apple Computer, Inc. Minimum Advertised Price (MAP) Confidential Listing (Apple_AIIA00972959-962) 15<br/>12<br/>13 Exhibit 97 Apple Computer, Inc. Confidential Adjustment Price Listing for FY03 Approved Federal Contracts (Apple_SOM00000600-603) 27<br/>14<br/>15 Exhibit 98 Apple Computer, Inc. Collegiate Purchase Program Premier Price List May 6, 2003 (Apple_SOM00000604-629) 29<br/>16<br/>17 Exhibit 99 Apple Computer, Inc. Collegiate Purchase Program Demo Unit Confidential Price List April 12, 2003 (Apple_SOM00000538) 31<br/>18<br/>19<br/>20<br/>21 Exhibit 100 Apple Computer, Inc. Direct Purchase Resellers Confidential Price List April 12, 2003 (Apple_SOM00000539-547) 32<br/>22<br/>23<br/>24<br/>25</p>                                                                                                                                                                                                                                                                                                                               |
| <p style="text-align: center;">2</p> <p>1 APPEARANCES OF COUNSEL<br/>2<br/>3 FOR THE PLAINTIFF:<br/>4 ROBBINS GELLER RUDMAN &amp; DOWD LLP<br/>5 655 West Broadway, Suite 1900<br/>6 San Diego, CA 92101<br/>7 BY: PAULA M. ROACH, ESQ.<br/>8 619-231-7423<br/>9 ROBBINS GELLER RUDMAN &amp; DOWD LLP<br/>10 655 West Broadway, Suite 1900<br/>11 San Diego, CA 92101<br/>12 BY: ALEXANDRA BERNAY, ESQ.<br/>13 619-231-7423<br/>14 FOR THE DEFENDANT:<br/>15 JONES DAY<br/>16 555 California Street, 26th Floor<br/>17 San Francisco, CA 94104<br/>18 BY: ROBERT MITTELSTAEDT, ESQ.<br/>19 415-626-3939<br/>20<br/>21 --oOo--<br/>22 ALSO PRESENT:<br/>23 ERICA GREULICH<br/>24 LISA OLLE<br/>25 FRANK CLAIRE, VIDEOGRAPHER</p> | <p style="text-align: center;">4</p> <p>1 Exhibit 101 Apple Computer, Inc. Apple Education Individual Purchase Program Price List April 12, 2003 (Apple_SOM00000548-555) 36<br/>2<br/>3 Exhibit 102 Apple Computer, Inc. Education, State And Local Government Price List August 16, 2003 (Apple_SOM00000916-941) 38<br/>4<br/>5 Exhibit 103 Apple Computer, Inc. Wholesaler Confidential Price List June 14, 2003 (Apple_SOM00000766-775) 41<br/>6<br/>7 Exhibit 104 Private Committee March 17, 2003 (Apple_AIIA_B_000104-114) 63<br/>8<br/>9 Exhibit 105 June 9, 2005 E-Mail from Davina Takeda to Doug Smith, et al. (Apple_AIIA_B_000340-347) 96<br/>10<br/>11 Exhibit 106 June 30, 2004 E-Mail from Mark Donnelly to Tim Cook, et al. (Apple_AIIA_B_000190-192) 102<br/>12<br/>13 Exhibit 107 Price Committee December 15, 2003 Decision: iPod, Xserve, Xserve RAID (Apple_AIIA_B_000150-176) 105<br/>14<br/>15 Exhibit 108 Price Committee February 13, 2006, Decision: Mac, Mini, iPod (Apple_AIIA_B_000230-248) 109<br/>16<br/>17 Exhibit 109 August 14, 2008 E-Mail from Joe Hardegger to Davina Takeda (Apple_AIIA_B_000249-257) 114<br/>18<br/>19 Exhibit 110 Price Committee June 30, 2004, Decision: iPod (Apple_AIIA_B_000193-203) 117<br/>20<br/>21 Exhibit 111 October 4, 2004 e-mail from Davina Takeda to Stephanie Anderson, et al. (Apple_AIIA_B_000204-229) 121<br/>22<br/>23<br/>24<br/>25</p> |





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| <div data-bbox="233 955 852 1757"><p>34</p><p>1 [REDACTED]</p><p>2 [REDACTED]</p><p>3 [REDACTED]</p><p>4 [REDACTED]</p><p>5 [REDACTED]</p><p>6 [REDACTED]</p><p>7 [REDACTED]</p><p>8 [REDACTED]</p><p>9 [REDACTED]</p><p>10 [REDACTED]</p><p>11 [REDACTED]</p><p>12 [REDACTED]</p><p>13 [REDACTED]</p><p>14 [REDACTED]</p><p>15 [REDACTED]</p><p>16 [REDACTED]</p><p>17 [REDACTED]</p><p>18 [REDACTED]</p><p>19 [REDACTED]</p><p>20 [REDACTED]</p><p>21 [REDACTED]</p><p>22 [REDACTED]</p><p>23 [REDACTED]</p><p>24 [REDACTED]</p><p>25 [REDACTED]</p></div> | <div data-bbox="852 955 1479 1757"><p>36</p><p>1 [REDACTED]</p><p>2 [REDACTED]</p><p>3 [REDACTED]</p><p>4 [REDACTED]</p><p>5 [REDACTED]</p><p>6 [REDACTED]</p><p>7 [REDACTED]</p><p>8 [REDACTED]</p><p>9 [REDACTED]</p><p>10 [REDACTED]</p><p>11 [REDACTED]</p><p>12 [REDACTED]</p><p>13 [REDACTED]</p><p>14 [REDACTED]</p><p>15 [REDACTED]</p><p>16 [REDACTED]</p><p>17 [REDACTED]</p><p>18 [REDACTED]</p><p>19 [REDACTED]</p><p>20 [REDACTED]</p><p>21 [REDACTED]</p><p>22 [REDACTED]</p><p>23 [REDACTED]</p><p>24 [REDACTED]</p><p>25 [REDACTED]</p></div> |


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\*APPLE'S (PROPOSED) REDACTIONS\*

EXHIBIT 50  
[Filed Under Seal]

# **The Apple iPod iTunes Anti-Trust Litigation**

**Videotaped Deposition of**

**ROGER NOLL, PH.D.**

**December 18, 2013**

**\*\*\*CONFIDENTIAL\*\*\***



**Confidential - Attorneys' Eyes Only**  
**The Apple iPod iTunes Anti-Trust Litigation**

**Roger Noll, Ph.D.**

| Page 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Page 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |      |                  |   |   |  |   |  |   |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |
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| <div style="display: flex; justify-content: space-between;"><div><p>1 UNITED STATES DISTRICT COURT</p><p>2 NORTHERN DISTRICT OF CALIFORNIA</p><p>3 OAKLAND DIVISION</p><p>4</p><p>5 THE APPLE IPOD ITUNES      Lead Case No. C 05-00037</p><p>ANTI-TRUST LITIGATION</p><p>6</p><p>7 _____</p><p>8 This Document Relates To:</p><p>9 ALL ACTIONS</p><p>10 _____</p><p>11</p><p>12</p><p>13</p><p>14 CONFIDENTIAL - ATTORNEYS' EYES ONLY</p><p>15 VIDEOTAPED DEPOSITION OF ROGER G. NOLL, PH.D.</p><p>16 Wednesday, December 18, 2013</p><p>17 Palo Alto, California</p><p>18</p><p>19</p><p>20</p><p>21</p><p>22</p><p>23 Reported by:</p><p style="padding-left: 20px;">Darcy J. Brokaw</p><p>24 RPR, CRR, CSR No. 12584</p><p>25 Job No. 10008944</p></div><div><p>Page 1</p></div></div>                                                                                                      | <div style="display: flex; justify-content: space-between;"><div><p>1 UNITED STATES DISTRICT COURT</p><p>2 NORTHERN DISTRICT OF CALIFORNIA</p><p>3 OAKLAND DIVISION</p><p>4</p><p>5 THE APPLE IPOD ITUNES      Lead Case No. C 05-00037</p><p>ANTI-TRUST LITIGATION</p><p>6</p><p>7 _____</p><p>8 This Document Relates To:</p><p>9 ALL ACTIONS</p><p>10 _____</p><p>11</p><p>12</p><p>13 CONFIDENTIAL - ATTORNEYS' EYES ONLY</p><p>14</p><p>15 Videotaped Deposition of ROGER G. NOLL, PH.D.,</p><p>16 taken on behalf of the Defendant, at 1755 Embarcadero</p><p>17 Road, Palo Alto, California, beginning at 9:06 a.m. and</p><p>18 ending at 11:54 p.m., on Wednesday, December 18, 2013,</p><p>19 before Darcy J. Brokaw, CSR No. 12584.</p><p>20</p><p>21</p><p>22</p><p>23</p><p>24</p><p>25</p></div><div><p>Page 2</p></div></div>                                                                                                                                        |               |      |                  |   |   |  |   |  |   |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |
| <div style="display: flex; justify-content: space-between;"><div><p>1 APPEARANCES</p><p>2</p><p>3</p><p>4 For the Plaintiffs and the deponent, Dr. Noll:</p><p>5 ROBBINS GELLER RUDMAN &amp; DOWD, LLP</p><p>6 BY: ALEXANDRA S. BERNAY, ESQ.</p><p>7 BY: JENNIFER N. CARINGAL, ESQ.</p><p>655 West Broadway, Suite 1900</p><p>San Diego, California 92101</p><p>(619)231-1058</p><p>xanb@rgrdlaw.com</p><p>9</p><p>10 For the Defendant, Apple Inc.:</p><p>11 JONES DAY</p><p>12 BY: DAVID KIERNAN, ESQ.</p><p>13 BY: AMIR AMIRI, ESQ.</p><p>14 BY: ROBERT MITTELSTAEDT, ESQ.</p><p>555 California Street, 26th Floor</p><p>San Francisco, California 94104</p><p>(415)626-3939</p><p>dkiernan@jonesday.com</p><p>15</p><p>16</p><p>17</p><p>18 Also present:</p><p>19 Peter Hibdon, Videographer</p><p>20</p><p>21</p><p>22</p><p>23</p><p>24</p><p>25</p></div><div><p>Page 3</p></div></div> | <div style="display: flex; justify-content: space-between;"><div><p>1 INDEX TO EXAMINATION</p><p>2 ROGER G. NOLL, PH.D.</p><p>3</p><p>4</p><table style="width: 100%; border: none;"><tr><td style="width: 60%;">5 EXAMINATION</td><td style="width: 40%; text-align: right;">PAGE</td></tr><tr><td>6 BY MR. KIERNAN</td><td style="text-align: right;">7</td></tr><tr><td>7</td><td></td></tr><tr><td>8</td><td></td></tr><tr><td>9</td><td></td></tr><tr><td>10</td><td></td></tr><tr><td>11</td><td></td></tr><tr><td>12</td><td></td></tr><tr><td>13</td><td></td></tr><tr><td>14</td><td></td></tr><tr><td>15</td><td></td></tr><tr><td>16</td><td></td></tr><tr><td>17</td><td></td></tr><tr><td>18</td><td></td></tr><tr><td>19</td><td></td></tr><tr><td>20</td><td></td></tr><tr><td>21</td><td></td></tr><tr><td>22</td><td></td></tr><tr><td>23</td><td></td></tr><tr><td>24</td><td></td></tr><tr><td>25</td><td></td></tr></table></div><div><p>Page 4</p></div></div> | 5 EXAMINATION | PAGE | 6 BY MR. KIERNAN | 7 | 7 |  | 8 |  | 9 |  | 10 |  | 11 |  | 12 |  | 13 |  | 14 |  | 15 |  | 16 |  | 17 |  | 18 |  | 19 |  | 20 |  | 21 |  | 22 |  | 23 |  | 24 |  | 25 |  |
| 5 EXAMINATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |      |                  |   |   |  |   |  |   |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |
| 6 BY MR. KIERNAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |      |                  |   |   |  |   |  |   |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |
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1 regression are correlated within a particular group  
2 and you don't do anything to correct for that, what  
3 would be the impact on the reported standard errors?  
4 MS. BERNAY: Objection. Vague and  
5 ambiguous.  
6 THE WITNESS: I didn't completely follow  
7 the question. Ask it again.  
8 BY MR. KIERNAN:  
9 Q. If the residual errors in the regression  
10 are correlated within a particular group and you  
11 don't do anything to correct for that, what would be  
12 the impact on the reported standard errors?  
13 MS. BERNAY: Same objection.  
14 THE WITNESS: It could be either way. It  
15 could make them higher or it could make them lower,  
16 depending on the nature of the correlation.  
17 BY MR. KIERNAN:  
18 Q. And why would it impact the reported  
19 standard errors?  
20 A. Well, it's all built up in the – in the  
21 nature of the assumptions one makes in doing a  
22 regression analysis, which is an independence of the  
23 standard errors. And if the standard errors – if  
24 the – if the random shock that is –  
25 (Reporter inquires.)

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1 THE WITNESS: If the random shock that is  
2 in the regression equation does not satisfy the  
3 independence assumption, then the effect on the  
4 standard errors of the coefficients could be either  
5 to elevate them or to reduce them, depending on the  
6 nature of the violation of the independence  
7 assumption.  
8 BY MR. KIERNAN:  
9 Q. Okay. And are there standard statistical  
10 tests to test whether the residual errors are  
11 correlated within a particular group?  
12 MS. BERNAY: Objection. Vague.  
13 THE WITNESS: There are many such tests  
14 and many such corrections. But the effect is – the  
15 existence of even statistically significant  
16 correlations is small unless those correlations are  
17 high. All right.  
18 So the corrections for autocorrelation of  
19 residuals are not something that actually matters in  
20 the vast majority of cases because the – it's  
21 almost never the case there's no correlation in  
22 residual errors, but it's almost never the case that  
23 making a correction for the auto- – the correlation  
24 that does exist matters in terms of the regression.  
25 It's also the case here that we're not

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| <p>1 talking about a source of bias in the coefficients.<br/> 2 We're talking about a source of bias in the<br/> 3 estimated statistical significance, the –<br/> 4 BY MR. KIERNAN:<br/> 5 Q. The standard errors?<br/> 6 A. Yeah, the values of the – the expected<br/> 7 value of the regression coefficients is not<br/> 8 affected.<br/> 9 Q. The coefficients aren't affected, but the<br/> 10 calculations of the standard errors are affected?<br/> 11 A. Right, the calculations of the standard<br/> 12 errors are affected, but the – but the estimated<br/> 13 effect of the independent variable is the same, the<br/> 14 expected estimated effect.<br/> 15 Q. And if the residual errors are correlated<br/> 16 within a particular group, the standard errors could<br/> 17 either be overstated or understated?<br/> 18 A. Yes.<br/> 19 Q. Without a correction?<br/> 20 A. They could be. Although, again, the –<br/> 21 it's not – it's not a dichotomous issue. They –<br/> 22 A, they may be affected, and B, the magnitude of the<br/> 23 effect depends on the exact conditions.<br/> 24 Q. And to know the magnitude of effect, you'd<br/> 25 have to test it, you'd have to run one of the</p> | <p>Page 25</p> | <p>1 standard statistical tests?<br/> 2 MS. BERNAY: Objection. Calls for<br/> 3 speculation.<br/> 4 THE WITNESS: Well, actually, that's not<br/> 5 what most – what typically –<br/> 6 BY MR. KIERNAN:<br/> 7 Q. Can you just eyeball it?<br/> 8 A. – happens.<br/> 9 (Reporter inquires.)<br/> 10 BY MR. KIERNAN:<br/> 11 Q. Can you just eyeball it?<br/> 12 MS. BERNAY: Objection. Vague.<br/> 13 THE WITNESS: Can I finish my first answer<br/> 14 before I answer the next question?<br/> 15 BY MR. KIERNAN:<br/> 16 Q. Yes.<br/> 17 A. Okay. It is the case that if you plot the<br/> 18 errors, you will know from experience if you<br/> 19 actually have a problem that is causing the<br/> 20 regression equation to be unreliable. But so<br/> 21 "eyeball" is sort of a bizarre word.<br/> 22 What you actually do is you look at the<br/> 23 actual scatter plot of points around the regression<br/> 24 line and see if there is a clustering of<br/> 25 observations above and below it. The problem with</p> | <p>Page 26</p> |
| <p>1 that – that's a good way to see if there's positive<br/> 2 error correlation, but it's not a good way to see if<br/> 3 there's negative error correlation.<br/> 4 And the second point is that the nature of<br/> 5 the error correlation may be that it's dependent on<br/> 6 particular combinations of variables; and that one,<br/> 7 the standard tests wouldn't even tell you that it<br/> 8 exists.<br/> 9 Q. In this case, did you do anything to check<br/> 10 whether the residual errors in your regression set<br/> 11 forth in Exhibits 3A and 3B to Noll 10 are<br/> 12 correlated with any particular group?<br/> 13 MS. BERNAY: Objection. Vague and<br/> 14 ambiguous.<br/> 15 THE WITNESS: What do you mean by "group"?<br/> 16 BY MR. KIERNAN:<br/> 17 Q. Within any group.<br/> 18 A. What do you mean, "a group"? I don't<br/> 19 understand what you mean by a group.<br/> 20 Q. We've been using group for the last ten<br/> 21 minutes.<br/> 22 MS. BERNAY: Objection. Argumentative.<br/> 23 BY MR. KIERNAN:<br/> 24 Q. Same group that you've – the same group<br/> 25 that you've been referring to.</p>                                                                               | <p>Page 27</p> | <p>1 A. I didn't refer to a group. I don't know<br/> 2 what you're talking about. I know I fully<br/> 3 intended –<br/> 4 Q. You used the term "cluster" –<br/> 5 (Reporter admonishes.)<br/> 6 BY MR. KIERNAN:<br/> 7 Q. You used the word cluster, within a<br/> 8 cluster.<br/> 9 A. I don't agree that there are any clusters<br/> 10 here.<br/> 11 MS. BERNAY: Objection.<br/> 12 BY MR. KIERNAN:<br/> 13 Q. That's not my question, Dr. Noll. I asked<br/> 14 you, did you do anything to check whether the<br/> 15 residual errors in your regressions set forth in<br/> 16 Exhibit 3A and 3B are correlated within any cluster<br/> 17 or group?<br/> 18 MS. BERNAY: Objection. Asked and<br/> 19 answered.<br/> 20 THE WITNESS: I don't know what you mean<br/> 21 by a group. And you used the word "or," and I don't<br/> 22 believe there are any clusters. So how can I test<br/> 23 for something when I don't – I think it either<br/> 24 doesn't exist or I don't understand what you're<br/> 25 asking?</p> | <p>Page 28</p> |

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| <p>Page 33</p> <p>1 there, so instead of having 100-odd iPod models, I<br/>2 only had 20, and within those 20, I had just drawn a<br/>3 sample of transactions instead of looking at the<br/>4 entire universe, then, in principle, there might be<br/>5 a clustering problem. But when you don't have a<br/>6 sample of either the models or the transactions,<br/>7 it's not a cluster problem.<br/>8 So testing for cluster effects is a<br/>9 non sequitur. It's inappropriate, because you don't<br/>10 have cluster samples.<br/>11 Q. Okay. And other than that basis that<br/>12 there's not a clustering problem because it's not a<br/>13 sample from a population, any other reason, any<br/>14 other basis for your opinion that there's not a<br/>15 clustering issue?<br/>16 A. Only the fact it doesn't satisfy the<br/>17 conditions for doing cluster analysis?<br/>18 Q. The one that you just described.<br/>19 A. Yes. That's why it isn't a cluster<br/>20 problem, is because it's not a cluster sample. And<br/>21 cluster sampling is a procedure you use when you are<br/>22 sampling on both groups and people within a group.<br/>23 If you have a population instead of a<br/>24 sample, there's no cluster issue, by definition.<br/>25 Q. And so if the mean residual errors within</p> | <p>Page 34</p> <p>1 certain particular groups in the transaction data at<br/>2 issue in this case are correlated, that is, they are<br/>3 statistically significantly different from zero,<br/>4 your opinion is it has no impact on the calculation<br/>5 of the standard errors in the case?<br/>6 A. That's not what I said.<br/>7 MS. BERNAY: Objection. Misstates his<br/>8 prior testimony.<br/>9 BY MR. KIERNAN:<br/>10 Q. What was wrong with -- what do you<br/>11 disagree with in the question I just asked?<br/>12 MS. BERNAY: Objection. Vague.<br/>13 THE WITNESS: First of all, if you look<br/>14 within a -- if you define the group as a particular<br/>15 model of an iPod, and you look at the errors in<br/>16 predicting that, and you find they're correlated, it<br/>17 may be -- it's perfectly explained if you took into<br/>18 account all the values of all the other independent<br/>19 variables.<br/>20 So that test in and of itself doesn't<br/>21 prove anything. All right. The only way it proves<br/>22 something -- again, let's go back to the reasons<br/>23 cluster sampling can be a problem. And as stated in<br/>24 the report, there's three reasons why it can be a<br/>25 problem. One is a sample bias problem, and the</p> |
| <p>Page 35</p> <p>1 other two are versions of omitted variable problems.<br/>2 So the issue is, is there a sampling issue<br/>3 here? The answer is no.<br/>4 Are there omitted variables? I'm not<br/>5 aware of any that would add statistical significance<br/>6 to the regression equation without being so highly<br/>7 multicollinear that they would destroy the<br/>8 coefficient estimates.<br/>9 So there can't -- there isn't any -- none<br/>10 of the three reasons why you might have a problem<br/>11 exist. So I don't care what the test is, because<br/>12 it's testing for something that, in principle, can't<br/>13 exist as a problem in the regression.<br/>14 BY MR. KIERNAN:<br/>15 Q. So if you run a test on a particular group<br/>16 of transactions and the test shows that the mean<br/>17 residual errors are statistically significantly<br/>18 different from zero, your opinion is it has no<br/>19 impact on the calculation of the standard errors?<br/>20 MS. BERNAY: Objection. Vague and<br/>21 ambiguous. Misstates prior testimony as well.<br/>22 BY MR. KIERNAN:<br/>23 Q. Let me put it differently. It does not<br/>24 overstate or understate the standard errors that<br/>25 you're calculating?</p>                                                                  | <p>Page 36</p> <p>1 MS. BERNAY: Same objection.<br/>2 THE WITNESS: It may or may not. You<br/>3 haven't -- there's not enough information in your<br/>4 question to make a prediction about the effect on<br/>5 the calculation of the standard errors.<br/>6 BY MR. KIERNAN:<br/>7 Q. What additional information do you need?<br/>8 A. You have to understand what is the source<br/>9 of what you're measuring. All right. You have<br/>10 to --<br/>11 Q. The source of the observations?<br/>12 A. No.<br/>13 THE REPORTER: What's the question?<br/>14 You guys are cutting each other off.<br/>15 THE WITNESS: Yeah, he does do this,<br/>16 doesn't he?<br/>17 The very first step is precisely what<br/>18 residual errors are you correlating, what actually<br/>19 is it. All right. And I don't know the answer to<br/>20 that.<br/>21 All you're telling me is that within a<br/>22 model of iPods, the mean residual error isn't<br/>23 zero. That's all you're telling me. You're not<br/>24 telling me anything else about why it might be<br/>25 different from zero.</p>                                                                                                                                                                                   |

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| <p>1 understand it.</p> <p>2 Q. Well, yeah, okay.</p> <p>3 MR. KIERNAN: Move to strike the last</p> <p>4 part.</p> <p>5 BY MR. KIERNAN:</p> <p>6 Q. So the new iPod owners includes both</p> <p>7 purchasers of iPods with 7.0 and iPods without 7.0?</p> <p>8 A. To differing degrees, yes.</p> <p>9 Q. Okay. And in the rest of the paragraph,</p> <p>10 you state that the "lock-in would not have affected</p> <p>11 the demand for subsequent iPods for a long period</p> <p>12 because these purchasers would not soon make</p> <p>13 repurchase decisions."</p> <p>14 What's the basis for that?</p> <p>15 A. That it's information we have about how</p> <p>16 long people own electronic devices. They don't buy</p> <p>17 a new electronic device with the same frequency they</p> <p>18 buy music.</p> <p>19 Q. And that's the 18-month to two-year period</p> <p>20 that you referred to in your initial merits report?</p> <p>21 A. I think that's those -- I don't remember</p> <p>22 from memory, but that sounds about right as to</p> <p>23 frequency of repurchase of iPods.</p> <p>24 Q. Okay.</p> <p>25 A. The mean frequency. Some are more, some</p>                                                                                                                                                                                       | <p>Page 49</p> | <p>1 are less. That's on average.</p> <p>2 Q. And then in the last sentence, you state</p> <p>3 that "for most of the damages period, the lock-in</p> <p>4 effect on new iPod purchasers would not be an</p> <p>5 important factor affecting iPod prices."</p> <p>6 On the new -- when you refer to "new iPod</p> <p>7 purchasers," are you referring to the new iPod</p> <p>8 purchasers that occurred in late 2006?</p> <p>9 A. I'm referring to people who bought -- what</p> <p>10 this means, is about, is people who bought their</p> <p>11 first iPod after -- in late 2006, yes.</p> <p>12 Q. Okay. And those purchasers, you're</p> <p>13 stating here, would not be an important factor</p> <p>14 affecting iPod prices during most of the damages</p> <p>15 period?</p> <p>16 A. That's right. Because they wouldn't buy</p> <p>17 another MP3 player until nearly the end of the</p> <p>18 damages period.</p> <p>19 Q. Okay. With respect to the lock-in theory,</p> <p>20 are there any iPod owners that would impact the</p> <p>21 demand for iPods during the damages period as a</p> <p>22 result of lock-in?</p> <p>23 MS. BERNAY: Objection. Vague and</p> <p>24 ambiguous.</p> <p>25 THE WITNESS: Yes. I mean, the people who</p> | <p>Page 50</p> |
| <p>1 are buying replacement iPods are the -- what this is</p> <p>2 about is the fact that it's mainly people who are</p> <p>3 buying replacement iPods that experience the</p> <p>4 immediate effect of lock-in. They are, to some</p> <p>5 degree, locked in. And the point of Harmony was to</p> <p>6 reduce the degree to which existing users of iPods</p> <p>7 were locked in.</p> <p>8 BY MR. KIERNAN:</p> <p>9 Q. Okay. And I think I'm following you now,</p> <p>10 Dr. Noll. When you're referring to "new iPod</p> <p>11 purchasers" in the last paragraph on page 27, you're</p> <p>12 referring to customers who did not own an iPod</p> <p>13 before that time?</p> <p>14 A. Yes. This is new purchasers. This is not</p> <p>15 replacement purchasers.</p> <p>16 Q. Okay. And for a new purchaser in late</p> <p>17 2006, your opinion is for most of the damages</p> <p>18 period, they would not be an important factor</p> <p>19 affecting iPod prices because they wouldn't purchase</p> <p>20 a replacement for the 18- to 24-month period?</p> <p>21 A. The -- yeah. Of course, it's not</p> <p>22 dichotomous, it's continuous. Their importance</p> <p>23 grows through time. But initially, it would not be</p> <p>24 important because you don't replace your iPod every</p> <p>25 month. All right. So it would take a while before</p> | <p>Page 51</p> | <p>1 you start to see an effect.</p> <p>2 There would be other things happening that</p> <p>3 would cause it to have some effect on demand, like</p> <p>4 multiple iPods within the same family unit that want</p> <p>5 access to the same music, things like that.</p> <p>6 But the main immediate effect of lock-in</p> <p>7 is the existing or established base. It's not the</p> <p>8 new people. And the new people would just gradually</p> <p>9 through time get added to the people who are</p> <p>10 affected by lock-in in terms of their effect on the</p> <p>11 demand for iPods.</p> <p>12 MR. KIERNAN: Let's just take a short</p> <p>13 break.</p> <p>14 THE VIDEOGRAPHER: Off the record at</p> <p>15 10:05.</p> <p>16 (A brief recess was taken.)</p> <p>17 THE VIDEOGRAPHER: On the record at 10:18.</p> <p>18 BY MR. KIERNAN:</p> <p>19 Q. In the regression that is in Exhibits 3A</p> <p>20 and 3B to Noll 10, you turn on the dummy variable</p> <p>21 for 7.0 at different times for different models; is</p> <p>22 that right?</p> <p>23 A. Well, the indicator is on for a model that</p> <p>24 has 7.0 on it. So anything that was released after</p> <p>25 the first date would have it, quote, turned on,</p>             | <p>Page 52</p> |



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1 unquote, after the September date when it was  
2 introduced. I don't fully understand what you mean  
3 beyond that.  
4 Q. Okay.



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1 I believe, is still on those things. It was in  
2 subsequent revisions that the mechanism that was  
3 used to block Harmony, you know, in subsequent  
4 versions of iTunes that were on that particular  
5 model remain there. That's my understanding.  
6 That's what I think the 7.0 means.  
7 But that's, again, derived from Apple  
8 information. So since that information changes  
9 periodically, it might change again, but I'm relying  
10 upon what I was told by Apple.



14 MS. BERNAY: Objection. argue.

15 THE WITNESS: It's intended to capture  
16 whatever the blocking mechanism is in an Apple that  
17 is not being contested in this case.

18 BY MR. KIERNAN:

19 Q. It's intended to capture the impact of 4.7  
20 on that model?

21 MS. BERNAY: Objection. Misstates prior  
22 testimony.


23 THE WITNESS: That's not what I said.

24 BY MR. KIERNAN:

25 Q. I didn't understand what you said.

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1 A. Well, what is there about it that you  
2 don't understand? I don't know how - I can repeat  
3 it.  
4 It is intended to capture whatever the  
5 blocking mechanism is that's not being challenged  
6 that initiates with 4.7 and is continued on in  
7 various models through time. And those aren't being  
8 challenged, so whatever it is that blocks  
9 imperfectly to some degree Harmony is still  
10 applying. So starting with 4.7 and continuing.  
11 The distinction is between those that are  
12 being challenged versus those that are not being  
13 challenged.



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1 happened to the entire equation, including the  
2 interaction variable, to answer that question.  
3 BY MR. KIERNAN:  
4 Q. Okay.  
5 A. The right way to think of the regression  
6 model is that it's based on differences in prices  
7 between two models. All right.  
8 And so the premise of the regression  
9 equation is essentially with some amendment, because  
10 there's differences in other independent variables,  
11 that what you're really looking at to determine  
12 damages is the price difference between those that  
13 were affected and those that were not.

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Page 65

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1 I mean, there could be differences owing  
2 to whatever remaining specification errors there  
3 are. But basically you would expect that the  
4 number – the aggregate number would be correct, but  
5 the allocation among models would be wrong.

6 Q. Okay. In your rebuttal report, Noll 10,  
7 you discuss the impact of what you refer to as the  
8 lock-out effect and that the effect on iPod prices  
9 would be immediate.

10 MS. BERNAY: Do you have a page reference  
11 for that?

12 MR. KIERNAN: I'm just going to – I'm not  
13 going to ask with the actual words.

14 BY MR. KIERNAN:

15 Q. Who specifically would be locked out under  
16 that theory, under your lock-out theory?

17 MS. BERNAY: Objection. Incomplete  
18 question, vague.

19 THE WITNESS: Lock-out arises because  
20 somebody who uses another device pays a higher  
21 switching cost to buy an Apple product. And so if  
22 somebody has used another device and has used that  
23 device to download audio and video files from  
24 RealNetworks, then they can't – the cost of  
25 switching to have their next MP3 player be an Apple

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| <p>Page 69</p> <p>1 goes up if they no longer – if the act of doing it<br/>2 would cause them no longer to be able to play<br/>3 whatever files they had downloaded from the<br/>4 RealNetworks site.<br/>5 Harmony allows people to switch from MP3<br/>6 players that access the RealNetworks site, that use<br/>7 the RealNetworks DRM system, to an Apple iPod. And<br/>8 if Harmony is disabled, then they can't have that<br/>9 switch.<br/>10 And so the extent of price competition<br/>11 between manufacturers of MP3 players that can be<br/>12 used for the Real – on the RealNetworks site and<br/>13 Apple MP3 players, the competition between them is<br/>14 reduced. Both sides experience a more inelastic<br/>15 demand curve instantaneously because of that effect.<br/>16 BY MR. KIERNAN:<br/>17 Q. For the owners of the non-iPods that you<br/>18 were just describing with RealNetworks music, your<br/>19 last point is that it would also impact the<br/>20 inelasticity of demand for non-iPods?<br/>21 A. That's the whole idea of lock-out. That's<br/>22 the whole idea of walled garden, is that you –<br/>23 Q. What impact on prices would that have on<br/>24 the non-iPods?<br/>25 A. It would go up. Well, except for the fact</p> | <p>Page 70</p> <p>1 that the others ones are competitive. So the fact<br/>2 that the market inelasticity and demand became more<br/>3 inelastic for other MP3 players wouldn't necessarily<br/>4 imply their price went up, because there's<br/>5 competition in devices that use other DRM systems,<br/>6 because there's multiple vendors of devices that can<br/>7 be used for other sites, but there's only one vendor<br/>8 that can be used for the Apple site.<br/>9 So the increase in the inelasticity of<br/>10 demand for MP3 players that can access RealNetworks<br/>11 is dissipated in price competition among those<br/>12 device manufacturers, but the increase in the<br/>13 inelasticity of demand for iPods does not face<br/>14 competition from other vendors of devices. And so<br/>15 that would lead to a price increase.<br/>16 Q. Okay. And with respect to – when you<br/>17 refer to MP3 players, you're referring to non-iPods?<br/>18 I just want to make sure we're using the same<br/>19 definitions here.<br/>20 A. MP3 players, I was making as the category,<br/>21 and then there are subsets depending on which site<br/>22 you can access. And general – you know, to be<br/>23 clear, you know, usually people refer to all<br/>24 portable digital media players as MP3 players,<br/>25 including an iPod.</p> |
| <p>Page 71</p> <p>1 But clearly an iPod is different because<br/>2 of its tetheredness to Apple, like Zune is tethered<br/>3 or was tethered to Microsoft.<br/>4 Q. I'll just use the word "non-iPods."<br/>5 A. Yeah, non-iPod MP3 players, and then<br/>6 there's iPods.<br/>7 Q. Fair enough.<br/>8 Looking at the non-iPod side, as a result<br/>9 of 7.0, your opinion is that certain consumers that<br/>10 have music from RealNetworks are now locked out of<br/>11 iPods?<br/>12 MS. BERNAY: Objection. Misstates prior<br/>13 testimony.<br/>14 THE WITNESS: Yeah, lock-out in the sense<br/>15 that they face a higher switching cost than they<br/>16 would have faced prior to the introduction of 7.0.<br/>17 BY MR. KIERNAN:<br/>18 Q. And does that depend on how much<br/>19 RealNetworks music they had?<br/>20 A. Yes.<br/>21 Q. What else would it depend on?<br/>22 A. Well, the pure lock-out effect is just<br/>23 that; it's the degree to which you contain a library<br/>24 of files that can't be played on the iPod.<br/>25 That's the – you know, there are other</p>                                                                                                                                                                      | <p>Page 72</p> <p>1 switching costs – normally we think of switching<br/>2 costs as costs you have to bear from using one<br/>3 device to using another. And the switching costs<br/>4 there have to do with learning how to use it,<br/>5 perhaps differences in – in prices of the things<br/>6 you use. So there's other things that affect<br/>7 switching costs.<br/>8 But lock-out refers to the component of<br/>9 switching costs that is due to incompatibility.<br/>10 Q. And how much RealNetworks music would a<br/>11 consumer need or have in its possession to be locked<br/>12 out of an iPod?<br/>13 MS. BERNAY: Objection. Vague.<br/>14 THE WITNESS: Well, the question presumes<br/>15 there's a dichotomous effect, and the whole point of<br/>16 the last answer was to say there wasn't.<br/>17 It depends on how much. It's just what<br/>18 the inelasticity of the demand curve looks like,<br/>19 that the – that the demand curve becomes more<br/>20 inelastic.<br/>21 But small changes in price still have an<br/>22 effect on quantity. And so what the demand curve<br/>23 tells you is the distribution of people in terms of<br/>24 the magnitude of the lock-out effect.<br/>25 ///</p>                                                                                                                              |

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| <p>1 BY MR. KIERNAN:</p> <p>2 Q. And do you have any estimate of the number</p> <p>3 of people, number of customers who were locked out</p> <p>4 from purchasing iPods as a result of 7.0?</p> <p>5 A. The number that faced higher switching</p> <p>6 costs would be the number of people who had</p> <p>7 libraries of files that used the DRM system of</p> <p>8 RealNetworks.</p> <p>9 Q. All people that had libraries regardless</p> <p>10 of size from RealNetworks?</p> <p>11 A. Yeah, the size determines the magnitude of</p> <p>12 the lock-out but not the existence. So the lock-out</p> <p>13 effect is translated into the demand curve. We said</p> <p>14 that the demand curve becomes more inelastic. We</p> <p>15 didn't say it becomes perfectly inelastic; we said</p> <p>16 it becomes more inelastic.</p> <p>17 At low prices, there are some people still</p> <p>18 with a low switching cost, and they'd be the ones</p> <p>19 who for small price differentials still might</p> <p>20 switch.</p> <p>21 But the increase in the extent to which</p> <p>22 the demand curve is inelastic reflects the</p> <p>23 distribution of people who use MP3 players for</p> <p>24 listening to RealNetworks DRM files. That</p> <p>25 distribution determines where they are on this new</p>                                                                                                                  | <p>Page 73</p> | <p>1 more inelastic demand curve. How many of these</p> <p>2 files they have determines where they are on that</p> <p>3 demand curve.</p> <p>4 Q. And do you have an estimation or – do you</p> <p>5 have an estimation of how many consumers that had</p> <p>6 RealNetworks music were locked out of purchasing an</p> <p>7 iPod because they deemed the switching costs to be</p> <p>8 too high?</p> <p>9 MS. BERNAY: Objection. Calls for</p> <p>10 speculation.</p> <p>11 THE WITNESS: First of all, "lock-out"</p> <p>12 refers to the switching cost itself. And the only</p> <p>13 way I can answer that is that there's no answer to</p> <p>14 the question because it's not a meaningful question.</p> <p>15 The demand curve becomes more inelastic.</p> <p>16 So the greater the price differential</p> <p>17 between an iPod and some other MP3 player, the fewer</p> <p>18 people there are who would be prevented from</p> <p>19 switching. All right.</p> <p>20 And the – where anybody is on that demand</p> <p>21 curve is determined by the switching cost, and then</p> <p>22 how many of them switch is determined by the</p> <p>23 relative prices of the MP3 players and the iPods.</p> <p>24 Remember that the other MP3 players also</p> <p>25 might have a price increase, or it might not,</p> | <p>Page 74</p> |
| <p>1 depending on the nature of competition among those</p> <p>2 devices.</p> <p>3 So – and it's the gap, it's the</p> <p>4 differential in the price that determines how many</p> <p>5 people would actually switch, and that – the bigger</p> <p>6 the gap, the more people would switch.</p> <p>7 And everybody is going to set the price of</p> <p>8 their player depending on two phenomenon, right?</p> <p>9 One is within technology competition, of which</p> <p>10 there's some for the other MP3 players and none for</p> <p>11 Apple; and the across technology, cross-elasticity</p> <p>12 of demand between the other players and Apple. And</p> <p>13 we're talking about the latter.</p> <p>14 So if we take an extreme assumption and</p> <p>15 assume that due to competition, 7.0 had no effect at</p> <p>16 all on other MP3 player prices and the sole effect</p> <p>17 was to raise the price of Apple, then they would</p> <p>18 raise the price up to the point at which the loss to</p> <p>19 them of losing switchers was exactly offset by the</p> <p>20 gains from charging the higher price.</p> <p>21 And I don't know how – what precise</p> <p>22 number of people that is, but the number of people</p> <p>23 who actually switched from others to Apple's was</p> <p>24 probably not very large because it would not be in</p> <p>25 Apple's interest to raise the price so high that it</p> | <p>Page 75</p> | <p>1 lost all possible switchers.</p> <p>2 BY MR. KIERNAN:</p> <p>3 Q. With respect to the non-iPods – excuse</p> <p>4 me.</p> <p>5 With respect to the non-iPods and the</p> <p>6 inelasticity of demand, did you do anything to</p> <p>7 determine or analyze whether 7.0 impacted the</p> <p>8 elasticity of demand for non-iPods?</p> <p>9 A. Well, that's what the coefficient tells</p> <p>10 you, right?</p> <p>11 Q. Which coefficient?</p> <p>12 A. The coefficient on 7.0 is positive only</p> <p>13 because the price went up, and the price went up</p> <p>14 only because the demand curve became more inelastic.</p> <p>15 All right.</p> <p>16 Q. The demand curve for non-iPods?</p> <p>17 A. Oh, excuse me. No, no, I did not</p> <p>18 examine – I thought you meant iPods. Again, I'll</p> <p>19 acknowledge –</p> <p>20 Q. Let me restate the question. Focusing</p> <p>21 just on non-iPods.</p> <p>22 A. Okay. I'm sorry. I didn't hear "non."</p> <p>23 Q. That's okay. Understood.</p> <p>24 Focusing on non-iPods, did you do anything</p> <p>25 to analyze whether 7.0 impacted the elasticity of</p>                                                                                                                                                                                          | <p>Page 76</p> |

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| <p>1 demand for non-iPods?</p> <p>2 A. No, I did not.</p> <p>3 Q. With respect to non-iPods, would you</p> <p>4 expect 7.0 to have any impact on the competition</p> <p>5 between manufacturers of non-iPods?</p> <p>6 MS. BERNAY: Calls for speculation.</p> <p>7 THE WITNESS: In the long run, no. In the</p> <p>8 short run, it might, because the competition between</p> <p>9 them and Apple had intensified with the introduction</p> <p>10 of Harmony, and that goes away. So there might be a</p> <p>11 short-run effect.</p> <p>12 But there's lots of producers of digital</p> <p>13 electronic devices, so I would not expect in the</p> <p>14 long run there would be a change in the intensity of</p> <p>15 competition in the non-iPod MP3 market.</p> <p>16 BY MR. KIERNAN:</p> <p>17 Q. And what impact on prices of non-iPods</p> <p>18 would you expect 7.0 to have?</p> <p>19 MS. BERNAY: Calls for speculation.</p> <p>20 THE WITNESS: Exactly as I just said. I</p> <p>21 would not expect in the long run there would be any</p> <p>22 price effect. Conceivably, there could have been</p> <p>23 one in the short run, but I doubt that that's true.</p> <p>24 I wouldn't expect to find it.</p> <p>25 If such a price increase did occur, that</p> | <p>Page 77</p> <p>1 would be another anticompetitive effect of 7.0</p> <p>2 because the consumers who bought those things were</p> <p>3 harmed. But I have basically assumed that's zero</p> <p>4 because I think the supply conditions in the MP3</p> <p>5 market would not make it possible for anybody to</p> <p>6 sustain a significant price increase in that market</p> <p>7 just because of 7.0.</p> <p>8 BY MR. KIERNAN:</p> <p>9 Q. Okay. And is your opinion, Dr. Noll, that</p> <p>10 the impact on prices caused by 7.0 would be</p> <p>11 immediate because of the lock-out effect?</p> <p>12 A. Yes.</p> <p>13 Q. Okay. And why is that? Why would it be</p> <p>14 immediate?</p> <p>15 A. Because there's this group of people,</p> <p>16 there's just a continuous flow of people who want to</p> <p>17 replace an MP3 player that were available to Apple</p> <p>18 before 7.0 was introduced and for at least some</p> <p>19 models are not available to them afterwards.</p> <p>20 Q. And can you cite to me any evidence in the</p> <p>21 case record in the case where Apple considered what</p> <p>22 you just described as the lock-out effect in</p> <p>23 determining the prices of any iPods that were sold</p> <p>24 with iTunes 7.0?</p> <p>25 MS. BERNAY: Objection. Vague and</p> |
| <p>Page 79</p> <p>1 ambiguous.</p> <p>2 THE WITNESS: I'm not aware of any</p> <p>3 documents that directly address the relationship</p> <p>4 between lock-in and price.</p> <p>5 BY MR. KIERNAN:</p> <p>6 Q. I asked about lock-out. Let's talk about</p> <p>7 that.</p> <p>8 A. Lock-out. They're the same thing. I</p> <p>9 mean, one side being locked in is the other side</p> <p>10 being locked out.</p> <p>11 So I'm not aware of any documents that</p> <p>12 explicitly analyze lock-in and lock-out.</p> <p>13 Q. Okay. So what are you relying on for the</p> <p>14 basis of your opinion that the impact on price would</p> <p>15 be immediate due to lock-in or lock-out as a result</p> <p>16 of 7.0?</p> <p>17 A. It would – why a demand curve becomes</p> <p>18 more inelastic is not really relevant to the</p> <p>19 question of what is an increase in the degree of</p> <p>20 inelasticity of the demand curve on price. There's</p> <p>21 no – it doesn't matter what the cause is. If the</p> <p>22 demand curve becomes more inelastic, the profit</p> <p>23 maximizing price goes up.</p> <p>24 (Reporter inquires.)</p> <p>25 THE WITNESS: The profit maximizing price</p>                                                                       | <p>Page 80</p> <p>1 goes up.</p> <p>2 And so the basis for it is the economic</p> <p>3 theory of lock-in, the optimal pricing of a firm</p> <p>4 that has a product with lock-in and other switching</p> <p>5 costs, and then the empirical test of whether that</p> <p>6 theory predicts what actually happened.</p> <p>7 BY MR. KIERNAN:</p> <div data-bbox="894 1287 1370 1570" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>REDACTED</p> </div> <p>17 MS. BERNAY: Objection. Vague.</p> <p>18 THE WITNESS: No. But I know that – I</p> <p>19 know that Apple is aware of the economic</p> <p>20 consequences of closed systems.</p> <p>21 BY MR. KIERNAN:</p> <p>22 Q. What are you relying on for that?</p> <p>23 A. Statements, you know, in other contexts.</p> <p>24 I mean, long before I knew anything about this case,</p> <p>25 I knew the strategies of Microsoft and Apple in the</p>                                                                                                                                                                                                                                                                                                                                                                                      |

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1 information technology space. And then there's  
 2 discussions of this in Jobs' biography.  
 3 So, I mean, I'm not relying on it in this  
 4 case, but I know that Apple is aware of the  
 5 advantages and disadvantages of having a closed  
 6 system. And they have – they have had the strategy  
 7 for a long time, since the 1990s, that for them, the  
 8 benefits of a closed system outweigh the costs.  
 9 So I view what's going on in the iPods as  
 10 simply a continuation of a policy that they  
 11 understood and thought was in their interests.

REDACTED

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1 Q. Okay. Anything other than theory and the  
 2 empirical test set forth in Exhibits 3A and 3B to  
 3 Noll 10 that you're relying on for the opinion that  
 4 the immediate effect of 7.0 was to impact the  
 5 elasticity of demand of iPods?  
 6 A. Yes, every other report that I've ever  
 7 written that does any empirical analysis. Other  
 8 than theory and fact, I have no evidence in support  
 9 of this proposition.  
 10 Q. Other than the theory and the regression  
 11 set forth in Exhibits 3A and 3B or other regressions  
 12 that you've run, do you have any evidence that 7.0  
 13 impacted the prices of iPods?  
 14 MS. BERNAY: Objection. Asked and  
 15 answered.  
 16 THE WITNESS: The regression analysis is  
 17 the evidence that it affected – not only in this  
 18 report but in prior reports.  
 19 And, you know, it goes all the way back to  
 20 class certification. I've been writing reports on  
 21 this issue since July of 2008, so – and I  
 22 haven't – I haven't attempted to memorize every  
 23 single one of them in preparation for this  
 24 deposition because I thought this deposition was  
 25 about this report.

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REDACTED

5 BY MR. KIERNAN:  
 6 Q. And, Dr. Noll, what evidence are you  
 7 relying on for your opinion that 7.0 had an  
 8 immediate impact on the elasticity of demand for  
 9 iPods?  
 10 MS. BERNAY: Objection. Asked and  
 11 answered.  
 12 THE WITNESS: There's a theory, and  
 13 there's an empirical test of the theory, and it's  
 14 confirmed. So that's what we economists do.  
 15 BY MR. KIERNAN:  
 16 Q. And what's the empirical test that you're  
 17 relying on?  
 18 A. That the price went up.  
 19 Q. Is that –  
 20 A. The optimal price went up.  
 21 Q. Do you mean the regression in Exhibits 3  
 22 and A?  
 23 A. Yes.  
 24 Q. 3A and 3B?  
 25 A. Yes.

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1 But whatever evidence is in all those  
 2 reports would be what I'm relying on.  
 3 BY MR. KIERNAN:  
 4 Q. Dr. Noll, I'm asking about Exhibits 3A and  
 5 3B, with all due respect. You were talking about  
 6 other reports.  
 7 A. You asked me what other evidence I have  
 8 besides 3A and 3B, and I'm telling you it would be  
 9 in other reports. It would be regressions in other  
 10 reports and the data –  
 11 Q. And you're relying on those regressions  
 12 for your opinions in this matter?  
 13 MS. BERNAY: Objection. Misstates the  
 14 prior testimony.  
 15 BY MR. KIERNAN:  
 16 Q. Well, I want to know.  
 17 A. I am relying –  
 18 Q. You brought it up, not me.  
 19 MS. BERNAY: Is that a question?  
 20 MR. KIERNAN: Yeah.  
 21 THE WITNESS: This is a reply to your  
 22 expert reports. Obviously, whatever is in the  
 23 merits report also addresses the issue of did 7.0  
 24 cause the price to go up.  
 25 Likewise, other reports are about whether,



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| <p>1 in general, creating incompatibilities caused prices<br/>2 to go up. And there's evidence in all those reports<br/>3 that the creation of incompatibility causes prices<br/>4 to go up, which is only true if it makes demand<br/>5 curves more inelastic.<br/>6 So anything in any report that discusses<br/>7 the relationship between lock-in and prices is<br/>8 evidence in support that 7.0 did, in fact, cause the<br/>9 demand to become more inelastic.<br/>10 BY MR. KIERNAN:<br/>11 Q. With respect to the impact on prices on<br/>12 iPods as a result of the lock-out effect, would you<br/>13 expect the impact to be the same throughout the –<br/>14 well, would you expect the impact on prices to<br/>15 remain the same, to remain constant?<br/>16 MS. BERNAY: Objection. Calls for<br/>17 speculation.<br/>18 THE WITNESS: I would expect it to be,<br/>19 yeah, mostly constant through time, although toward<br/>20 the end of the period, it might become worse.<br/>21 But on the other hand, there are other<br/>22 things in the model that would offset that, such as<br/>23 the move to DRM-free files by competitors of the<br/>24 iTunes Store.<br/>25 ///</p> | Page 85 | <p>1 BY MR. KIERNAN:<br/>2 Q. If there are consumers who are no longer<br/>3 locked out from purchasing an iPod because the music<br/>4 that they purchase from a vendor is now<br/>5 interoperable with an iPod, how would you expect<br/>6 that to impact iPod prices?<br/>7 MS. BERNAY: Objection. Calls for<br/>8 speculation.<br/>9 THE WITNESS: I'm sorry, I didn't follow<br/>10 the question. Try it again.<br/>11 BY MR. KIERNAN:<br/>12 Q. If there are consumers who are no longer<br/>13 locked out from purchasing an iPod because the music<br/>14 they purchase from a vendor is interoperable with an<br/>15 iPod, how would you expect that to impact iPod<br/>16 prices?<br/>17 MS. BERNAY: Same objection.<br/>18 THE WITNESS: That's what I said. That's<br/>19 exactly what I was referring to in the last answer,<br/>20 is that when other sites adopt DRM-free music files,<br/>21 that should increase the competition between Apple<br/>22 and other manufacturers of MP3.<br/>23 On the other hand, offsetting that is the<br/>24 increased inventory of DRM-protected files that have<br/>25 been downloaded from the iTunes Store.</p> | Page 86 |
| <p>1 So the net effect of those two things<br/>2 would be something in the middle. One makes things<br/>3 worse for people who own iPods, and one makes things<br/>4 better.<br/>5 And the demand curve, the replacement<br/>6 demand curve for people who already own iPods would<br/>7 become more inelastic, and the replacement demand<br/>8 curve for people who own other MP3s would become<br/>9 more elastic. The net effect on that, on the demand<br/>10 for iPods is – I don't know.<br/>11 BY MR. KIERNAN:<br/>12 Q. So your opinion is that 7.0 locked out a<br/>13 certain number of customers. What effect would that<br/>14 have on iPod sales?<br/>15 MS. BERNAY: Objection. Vague and<br/>16 ambiguous.<br/>17 THE WITNESS: The all-else-equal effect<br/>18 would be less.<br/><div data-bbox="248 1638 747 1764" style="border: 1px solid black; padding: 5px; margin: 10px 0;">REDACTED</div><p>23 And then there are other things going on<br/>24 that cause sales to go up. In general, you know, in<br/>25 the time frame at the beginning of the damages</p> </p>                                                                                                         | Page 87 | <p>1 period, MP3 sales are going up, and they stopped<br/>2 going up roughly at the end of the damage period. I<br/>3 mean, the rate at which they increase declines<br/>4 towards the end of the damage period.<br/>5 BY MR. KIERNAN:<br/>6 Q. One potential impact of 7.0 was to reduce<br/>7 the profitability of iPod, the sale of iPods,<br/>8 because they locked out a certain segment of<br/>9 customers; isn't that true?<br/>10 MS. BERNAY: Objection. Vague and<br/>11 ambiguous.<br/>12 THE WITNESS: No, they wouldn't raise the<br/>13 price to cause the profit to go down. The profit<br/>14 goes up but the sales goes down. In other words,<br/>15 the point of the price increase is to raise the<br/>16 profit per unit, knowing that it's going to cause<br/>17 less in the way of sales. All right.<br/>18 BY MR. KIERNAN:<br/>19 Q. Let's say they don't make any changes to<br/>20 price. All else is equal.<br/>21 A. That's right.<br/>22 Q. The effect of the lock-out would reduce<br/>23 profits?<br/>24 A. At any given price, they have fewer<br/>25 people, that's right, buying it.</p>                                             | Page 88 |

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| <p>Page 89</p> <p>1 Q. Right.</p> <p>2 A. And then the off -- the offsetting</p> <p>3 advantage is that you get a higher profit per unit</p> <p>4 because you can raise price. So that's the reason</p> <p>5 you do it.</p> <p>6 The reason you would create an</p> <p>7 incompatibility is because you thought the price</p> <p>8 effect exceeded the lock-out effect.</p> <p>9 Q. And is it your opinion that's what Apple</p> <p>10 decided with respect to 7.0?</p> <p>11 A. My opinion is that Apple's behavior is</p> <p>12 consistent with the economic theory of lock-in;</p> <p>13 that, in fact, the profitability per unit of iPods</p> <p>14 went up. That's what the coefficient in the</p> <p>15 regression measures.</p> <p>16 So, yes, the behavior of Apple is</p> <p>17 consistent with the theory.</p> <p>18 Q. What would Apple have to look at to</p> <p>19 conduct the analysis that you just described where</p> <p>20 you're looking at the number of people that you're</p> <p>21 going to lose to non-iPods as a result of the</p> <p>22 lock-out and how to adjust the price with respect to</p> <p>23 iPod sales to counteract that impact?</p> <p>24 MS. BERNAY: Objection. Compound.</p> <p>25 ///</p>                                                                                                                                    | <p>Page 90</p> <p>1 BY MR. KIERNAN:</p> <p>2 Q. What would they look at?</p> <p>3 MS. BERNAY: Calls for speculation.</p> <p>4 THE WITNESS: They would -- what companies</p> <p>5 do is gather information from their salespeople</p> <p>6 about what's going on in the market and how</p> <p>7 sensitive they perceive the market to price and</p> <p>8 factor that into their pricing decisions.</p> <p>9 They would look at the prices of other</p> <p>10 products. They'd look at the degree to which they</p> <p>11 were winning or losing sales from other people,</p> <p>12 things like that.</p> <p>13 BY MR. KIERNAN:</p> <p>14 Q. Would they look at how many people would</p> <p>15 be locked out?</p> <p>16 A. Yeah, one of the reasons that it's in the</p> <p>17 interest of somebody with a 70 percent market share</p> <p>18 to engage in lock-in is because it preserves that</p> <p>19 market share. So that's why it's an interesting</p> <p>20 contrast between Apple and Microsoft.</p> <p>21 Microsoft was really foolish to lock</p> <p>22 people in to the Zune because their market share was</p> <p>23 so small; it was 1 or 2. So they were giving up</p> <p>24 98 percent of the market in order to lock in</p> <p>25 2 percent. That was a bad decision, and we know</p> |
| <p>Page 91</p> <p>1 that it was a bad decision because they left the</p> <p>2 market.</p> <p>3 The larger your market share, the bigger</p> <p>4 the benefits and the lower the costs from engaging</p> <p>5 in a lock-in strategy.</p> <p>6 So normally we would find lock-in strategy</p> <p>7 only among firms with relatively large market</p> <p>8 shares. And we would normally not observe a lock-in</p> <p>9 strategy in a structurally competitive industry</p> <p>10 because you're giving up too much when you do that.</p> <p>11 Q. Wouldn't you also normally see in the</p> <p>12 lock-in strategy a firm charging lower prices to</p> <p>13 attract consumers into that ecosystem?</p> <p>14 A. Well, the degree to which you use price to</p> <p>15 attract customers is different in a system with</p> <p>16 lock-in and lock-out than a system without it.</p> <p>17 Yes, of course, one thing you always</p> <p>18 consider on setting a price is your ability to</p> <p>19 attract customers from others. But if there are</p> <p>20 fewer others, that's less of a concern to you. So</p> <p>21 the cost in that dimension is lower, of engaging in</p> <p>22 lock-in.</p> <p>23 So, yes, price competition still is a</p> <p>24 relevant fact; it's just a less important fact when</p> <p>25 there's lock-in. And it's a less important fact</p> | <p>Page 92</p> <p>1 when you have a higher market share.</p> <p>2 MR. KIERNAN: Why don't we take one more</p> <p>3 break just so I can go through my notes.</p> <p>4 MS. BERNAY: Absolutely.</p> <p>5 THE VIDEOGRAPHER: Off the record at</p> <p>6 11:10.</p> <p>7 (A brief recess was taken.)</p> <p>8 THE VIDEOGRAPHER: This is the end of</p> <p>9 disc 1. Off the record at 11:14.</p> <p>10 (A brief recess was taken.)</p> <p>11 THE VIDEOGRAPHER: This is disc 2. On the</p> <p>12 record at 11:24.</p> <p>13 BY MR. KIERNAN:</p> <p>14 Q. With respect to your regression analysis</p> <p>15 set forth in Exhibits 3A and 3B, describe for me</p> <p>16 what the but-for world is.</p> <p>17 MS. BERNAY: Objection. Vague and</p> <p>18 ambiguous.</p> <p>19 THE WITNESS: One in which 7.0 doesn't</p> <p>20 exist.</p> <p>21 BY MR. KIERNAN:</p> <p>22 Q. And is it also a world in which the</p> <p>23 technology in 4.7 still exists?</p> <p>24 A. Well, whatever technologies are around and</p> <p>25 then are captured in the model would be whatever</p>                                                                                                                                                                                                                              |

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| <p>1 they are throughout time. Like, you know, there's<br/>2 still video capability, there's still this, that and<br/>3 the other thing.<br/>4 So it's not that technology stops<br/>5 progressing; it's just that the 7.0 blocking<br/>6 technology doesn't exist.<br/>7 Q. If we look at, for example, how you dealt<br/>8 with the shuffle in your regression reflected in<br/>9 Exh bits 3A and 3B, you do not turn on 7.0, and you<br/>10 leave the indicator variable for 4.7 on.<br/>11 A. Right.<br/>12 Q. What's the assumption for leaving 4.7 on?<br/>13 A. That the blocking technology that's<br/>14 embedded in 4.7 continued indefinitely but had<br/>15 become essentially irrelevant because it gets offset<br/>16 by the second-generation Harmony.<br/>17 Q. Okay. And with respect to the iPod nano<br/>18 second generation, you turn off 4.7 on the date that<br/>19 7.0 is introduced, correct?<br/>20 A. That's correct.<br/>21 Q. And I know what your report says, but<br/>22 explain to me why you turn off 4.7.<br/>23 A. Because it's not there anymore. It's not<br/>24 the blocking technology that's in there that's been<br/>25 offset by the Harmony variable.</p> | Page 93 | <p>1 Q. And it's been replaced by 7.0?<br/>2 A. That's correct.<br/>3 Q. In the but-for world in which 7.0 does not<br/>4 exist with respect to the iPod nano second<br/>5 generation, what technology would exist?<br/>6 A. I don't know. That's up to Apple to<br/>7 decide. It's like asking the question suppose they<br/>8 had not introduced the next generation of an iPod,<br/>9 what would have happened.<br/>10 There's a variable in there. It could be<br/>11 turned off, but they might have done something else.<br/>12 I don't know what it is. But what I'm just looking<br/>13 at is what's the impact of moving from 4.7 to 7.0.<br/>14 Q. The incremental impact?<br/>15 A. Yeah. Remember that we still have 4.7 on<br/>16 for these other guys, so this is the differential<br/>17 effect of 7.0 and 4.7.<br/>18 Q. And how does your regression capture the<br/>19 impact of the other technology that would exist if<br/>20 7.0 had not been released on the iPod nano second<br/>21 generation?<br/>22 MS. BERNAY: Objection. Vague and<br/>23 ambiguous.<br/>24 THE WITNESS: In principle, it can't,<br/>25 because we don't know what the technology would have</p> | Page 94 |
| <p>1 been. We don't know what they would have done had<br/>2 they never introduced 7.0.<br/>3 BY MR. KIERNAN:<br/>4 Q. Fair enough.<br/>5 If the technology – well, strike that.<br/>6 The feature of 7.0 that is at issue in<br/>7 this case was a change to the DRM; is that accurate?<br/>8 Is that what your understanding is?<br/>9 MS. BERNAY: Objection. Vague and<br/>10 ambiguous.<br/>11 THE WITNESS: Well, yes, the – yes, 7.0<br/>12 contains the new DRM system, yes.<br/>13 BY MR. KIERNAN:<br/>14 Q. And that replaced the DRM system that was<br/>15 first introduced with 4.7?<br/>16 A. That's my understanding, yes.<br/>17 Q. Okay. And assume that the DRM system that<br/>18 is in 4.7 is included on all iPods that do not<br/>19 contain 7.0.<br/>20 A. Assume the DRM system in 7.0 is –<br/>21 Q. No, no.<br/>22 Assume that on iPod models that did not<br/>23 include 7.0, they had the DRM system that was in<br/>24 place that was first introduced with 4.7.<br/>25 A. That's what the model assumes.</p>                                                                                                                                                             | Page 95 | <p>1 Q. That's what it assumes?<br/>2 A. Yeah.<br/>3 Q. Okay. So wouldn't that mean, then, that<br/>4 the but-for world is a world in which the DRM system<br/>5 that was first introduced by 4.7 would remain in<br/>6 existence but for 7.0?<br/>7 MS. BERNAY: Objection.<br/>8 THE WITNESS: Maybe. I don't know. I<br/>9 mean, the DRM – first of all, we're not talking<br/>10 about DRM. That's not what's being measured here.<br/>11 What's being measured is the blocking technology.<br/>12 BY MR. KIERNAN:<br/>13 Q. That is the DRM.<br/>14 A. No. Digitalized management is the<br/>15 encryption, the system itself, and a component of it<br/>16 is the – is the component that blocks Harmony, that<br/>17 tries to detect somebody who's trying – and it<br/>18 doesn't detect it in the sense of – it's not<br/>19 something about iTunes stuff. It's stuff about<br/>20 RealNetworks.<br/>21 Q. Right.<br/>22 A. All right. And so DRM within the Apple<br/>23 community is still there. The issue is what about<br/>24 the element of the DRM system that blocks<br/>25 RealNetworks.</p>                                                                                  | Page 96 |



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4 Q. That was added to the existing DRM  
5 technology that was first introduced in 4.7?  
6 A. You want to call it the DRM technology.  
7 It's not part of protecting files from the iTunes  
8 Store. That's not what its point is. Its point is  
9 to prevent people who own an iPod from buying things  
10 from RealNetworks. That's what the point of it is.  
11 Q. Okay.  
12 A. So it's not – it's really more about the  
13 RealNetworks DRM system than it is about the Apple  
14 DRM system. It's – it's – you know, it's not  
15 about protecting Apple.  
16 Q. But with respect to – well, strike that.

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22 Q. Okay. And –  
23 A. But I wouldn't call it the iTunes Store  
24 DRM system or the Apple DRM system. It was a  
25 mechanism to prevent Harmony from working on iPods.

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1 MS. BERNAY: Objection. Incomplete  
2 hypothetical.  
3 THE WITNESS: That's not what clustering  
4 is about, no.  
5 BY MR. KIERNAN:  
6 Q. Okay. If the – can you have an  
7 independence problem?  
8 A. No.  
9 MS. BERNAY: Objection.  
10 BY MR. KIERNAN:  
11 Q. Never?  
12 A. Never.  
13 (Reporter inquires.)  
14 MS. BERNAY: I've lost my mic.  
15 BY MR. KIERNAN:  
16 Q. And why are you so certain that you could  
17 not have an independence problem if you have the  
18 entire population and the one million transactions  
19 that you are studying all had the same price?  
20 MS. BERNAY: Objection. Asked and  
21 answered.  
22 THE WITNESS: Independence isn't about the  
23 value taken by the dependent variable. Independence  
24 is about the disturbance term in a regression  
25 equation.

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1 And that's not part of digital rights management for  
2 Apple, it's part of digital rights management as it  
3 applies to others.  
4 Q. What's the basis of that description?  
5 A. Because the issue here is RealNetworks  
6 wanting to have customers who own iPods. All right.  
7 And so it says, ah-hah, here's a mechanism that will  
8 cause your iPod to be able to read files from  
9 RealNetworks.  
10 Q. Right.  
11 A. That doesn't protect Apple's DRM. That  
12 is – what that does is overcome a potential use of  
13 RealNetworks' DRM.  
14 MR. KIERNAN: And so the record is  
15 accurate on this, when I'm saying "right," I don't  
16 mean I agree with Dr. Noll's description.  
17 THE WITNESS: You can just say wrong.  
18 MR. MITTELSTAEDT: That's not a bad idea.  
19 She ought to correct all the rights to wrongs.  
20 BY MR. KIERNAN:  
21 Q. If you have the entire population that's  
22 the dataset you're using in estimating the  
23 regression, and you have a million transactions that  
24 are all at one price, could you have a clustering  
25 problem?

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1 BY MR. KIERNAN:  
2 Q. Okay.  
3 A. You know, you would have – if there's  
4 zero variance, there's zero variance to the random  
5 error term. So it's not an independence problem.  
6 The only way – in a world in which  
7 everything is sold at exactly the same price and all  
8 products have exactly the same technical  
9 characteristics, the regression analysis has an  
10 R-squared of 1.0, and it perfectly predicts price,  
11 and all the residual errors are zero, and the value  
12 taken by the residual error in the regression is  
13 always zero; it has zero variance and means zero.  
14 The only way that you can introduce  
15 statistical variance and create something that you  
16 could estimate is if you had measurement error on  
17 either price, a dependent variable, or one of the  
18 independent variables. And then you would get some  
19 variation here.  
20 It's just a confusion to say that  
21 independence has anything to do with the magnitude  
22 of the dependent variable. What independence has to  
23 do with is the random shock to the deterministic  
24 system that explains price.  
25 And if the deterministic – that's why I

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| <p>Page 101</p> <p>1 put in the stuff about trying to measure the<br/>2 acceleration due to gravity. That you can have a<br/>3 world in which everything is perfectly<br/>4 deterministic, and if there's no measurement error,<br/>5 and you have all the right variables in the<br/>6 equation, and you have the equation specified<br/>7 perfectly, then the random disturbance term will<br/>8 have not only mean zero, it'll have variance zero.<br/>9 But it doesn't make the observations not<br/>10 independent.<br/>11 That's as clearly as I think I've ever<br/>12 explained it, by the way.<br/>13 MS. BERNAY: Maybe some people are better<br/>14 questioners.<br/>15 BY MR. KIERNAN:<br/>16 Q. Just so I'm clear about this, Dr. Noll –<br/>17 because this was the first time I had read your<br/>18 explication of the so-called lock-out effect on iPod<br/>19 prices – with respect to the lock-in effect, the<br/>20 lock-in effect that we've talked about over many,<br/>21 many reports, to what extent are you still relying<br/>22 upon the lock-in effect?<br/>23 A. The lock-in effect and the lock-out effect<br/>24 are just two sides of the same coin, and they've<br/>25 been in every report I've written. All the way back</p>                                                | <p>Page 102</p> <p>1 to the first class certification report, I've<br/>2 explained lock-in and lock-out.<br/>3 Q. And with respect to 7.0's impact on<br/>4 lock-in – we discussed this morning its impact on<br/>5 lock-out – the impact on lock-in, what is your<br/>6 opinion with respect to what impact it had on<br/>7 lock-in?<br/>8 MS. BERNAY: Objection. Compound.<br/>9 THE WITNESS: Lock-in and lock-out are the<br/>10 same thing. They're just – lock-in is about your<br/>11 own device, lock-out is about the other guy's<br/>12 device. But it's exactly the same phenomenon.<br/>13 Lock-in here and lock-out there is the<br/>14 same as lock-in there and lock-out here. They're<br/>15 the same phenomenon.<br/>16 BY MR. KIERNAN:<br/>17 Q. Do they have the same impact on price?<br/>18 A. The effect on price is the net effect of<br/>19 all – of both of them together. You can't have<br/>20 it – you can't have one without the other.<br/>21 Q. And can they move in different directions?<br/>22 That is, directionally, can they impact price in<br/>23 different directions?<br/>24 A. That's not a meaningful question because<br/>25 they happen simultaneously. And what they have is</p> |
| <p>Page 103</p> <p>1 an effect. You could – if the question is, is it<br/>2 possible for lock-in to cause prices to go down, in<br/>3 principle, it could for the guy who has a really low<br/>4 market share, because that person has a much bigger<br/>5 incentive to compete with the guy with the really<br/>6 big market share. All right.<br/>7 So it's conceivable that the creation of<br/>8 lock-out by the guy who has the big market share<br/>9 could reduce the prices of the guy who was locked<br/>10 out. It wouldn't necessarily happen that way, but<br/>11 it could.<br/>12 Most likely, it's going to have no effect.<br/>13 But in principle, you can construct a model in which<br/>14 other people's prices go down because the big guy<br/>15 engaged in a lock-in.<br/>16 Q. Do you have an opinion of whether 7.0<br/>17 increased the amount of lock-in, maintained the<br/>18 current levels of lock-in, reduced lock-in? What<br/>19 impact did 7.0 have on lock-in?<br/>20 MS. BERNAY: Objection. Compound.<br/>21 THE WITNESS: Again, lock-in being the<br/>22 combined effect of what happens to your own<br/>23 customers versus what happens to the other<br/>24 customers. You don't do it unless it causes the<br/>25 demand curve to become more inelastic and causes</p> | <p>Page 104</p> <p>1 your profits to go up.<br/>2 So it would never happen unless you<br/>3 expected it would be profitable to do so. So,<br/>4 therefore, it would cause prices to go up. That<br/>5 would always be the case. No rational company would<br/>6 ever create lock-in if it was unprofitable to do so.<br/>7 BY MR. KIERNAN:<br/>8 Q. Although – I'll push you on that a little<br/>9 bit – in your earlier reports, since you mentioned<br/>10 them, you explained that the lock-in effect, both –<br/>11 this is in your merits report – the lock-in effect<br/>12 occurred before 7.0 for the iPod side and for<br/>13 RealNetworks and Sony and Microsoft because of the<br/>14 obligations that were imposed upon them by the<br/>15 record labels; isn't that right?<br/>16 A. Well –<br/>17 MS. BERNAY: Can I interpose my objection<br/>18 that this deposition was supposed to just be on the<br/>19 new material in the report?<br/>20 MR. KIERNAN: And I'm focused on page –<br/>21 fair enough. And I agree with that. I'm focusing<br/>22 on now what's in 27 and trying to understand if<br/>23 anything has changed.<br/>24 MS. BERNAY: Got it.<br/>25 THE WITNESS: Nothing has changed. The</p> |

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1 way you asked the question isn't quite right,  
2 because the imposition of DRM didn't have to create  
3 lock-in effects if the record companies had done  
4 what they originally planned to do, which was  
5 develop their own system and have everybody use it.

6 In fact, that was – from the standpoint  
7 of the welfare – or the welfare of the record  
8 companies, they'd have been much better off if they  
9 would have developed a standard.

10 And that was the original intent. If you  
11 go back to the early 2000s – which is outside the  
12 case but the stuff I know just from knowing the  
13 industry. If you go back to the early 2000s, the  
14 original idea of the record company was to create a  
15 consortium to create its own DRM system because –  
16 and then the reason they ended up with multiple ones  
17 is that didn't really work.

18 And so they wanted to create – what they  
19 thought they were doing – which was stupid – was  
20 create competition between – among Microsoft,  
21 RealNetworks and Apple by having them all have  
22 different DRM systems.

23 But what that, in fact, did is create  
24 lock-in and transfer profits from the record  
25 companies to the people who sell digital downloads

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1 And then there's the new customers and the  
2 people who are customers that use other systems, all  
3 right. And the new customers obviously are not  
4 locked in. They're the ones that have freedom to  
5 choose the first day. Right. They can pick what  
6 system they're going to go into. And that – that  
7 is the most intensive competition that exists among  
8 the people who manufacture MP3 players and the  
9 people who have alternative digital download sites.  
10 And then there's the other folks who have  
11 gotten locked in to somebody else's system, all  
12 right. And there, the issue is how quickly they can  
13 switch themselves. All right.

REDACTED

21 And that's what gives them the incentive  
22 to invent Harmony, is to – instead of having access  
23 to 5 or 10 percent of the customer base, they can  
24 get access to 75 or 80 percent of the customer base  
25 with Harmony.

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1 and who manufacture MP3 players. So that was a bad  
2 decision on their part.

3 But, yes, it's true that the record  
4 companies were initially responsible for the fact  
5 that when the iTunes Music Store was first launched,  
6 it had a lock-in effect, because that technology was  
7 not available to anybody else who later got into the  
8 digital download business.

9 BY MR. KIERNAN:

10 Q. And the lock-in effect, as you referred to  
11 it, as a result of 7.0, does that level of lock-in  
12 increase over time?

13 MS. BERNAY: Objection. Asked and  
14 answered.

15 THE WITNESS: For the base of customers,  
16 the magnitude of the lock-in rises as they have more  
17 files.

18 And so there's two things happening. One  
19 is, as time progresses, you may care less about the  
20 older files, but then you're adding new ones. And  
21 so at some point you reach some sort of maximum  
22 degree of "locked-in"ness, so – but in general, the  
23 switching cost gets higher the more files you have  
24 in a proprietary technology. So that's what happens  
25 to the installed base.

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10 And the RealNetworks, what it does is  
11 reduce the lock-in effect for people who were using  
12 RealNetworks' system. And that's a loss for them,  
13 but it gives them access to this huge customer base,  
14 which is a gain for them.

15 So the economic incentive to RealNetworks  
16 to try to reduce lock-in is much more powerful than  
17 the economic incentive of Apple to reduce lock-in.

18 BY MR. KIERNAN:

19 Q. Going back to the installed base, you  
20 referred to sort of three segments. There was the  
21 installed – as of the time of 7.0, there's the  
22 installed base, the individuals that are new to  
23 iPods that are not locked in, and then the  
24 individuals that are locked into the non-iPods –

25 A. Yeah, the installed base of the other

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| <p>Page 109</p> <p>1 guys.</p> <p>2 Q. Right. Okay.</p> <p>3 (Reporter inquires.)</p> <p>4 THE WITNESS: The installed base of the</p> <p>5 other guys.</p> <p>6 BY MR. KIERNAN:</p> <p>7 Q. The installed base for the non-iPods?</p> <p>8 A. The non-iPods.</p> <p>9 Q. All right.</p> <p>10 So focusing on the installed base for</p> <p>11 iPods, would the impact of 7.0 on locking them into</p> <p>12 iPods or increasing the lock-in of those people on</p> <p>13 iPods, that would occur over time depending upon</p> <p>14 their future purchases, correct?</p> <p>15 A. Yeah. And it's not just that. As well,</p> <p>16 it's also -- it doesn't really happen until they buy</p> <p>17 their next device.</p> <p>18 So there's not going to be an</p> <p>19 instantaneous effect. It's going to be a longer</p> <p>20 term effect. It's the lack of competition for the</p> <p>21 other guys that is the principal short-term effect.</p> <p>22 Q. I've got to get one update.</p> <p>23 Since your last deposition, have you</p> <p>24 purchased any iPods?</p> <p>25 A. Probably not since my last one. I bought</p> | <p>Page 110</p> <p>1 my granddaughter a nano, but I think it was before</p> <p>2 the last deposition.</p> <p>3 Q. And do you recall where you purchased the</p> <p>4 nano from?</p> <p>5 A. Yes, I think.</p> <p>6 Q. Where was that?</p> <p>7 A. I think I got it from Best Buy.</p> <p>8 Q. And --</p> <p>9 A. Are you going to ask me if I've ever been</p> <p>10 in the Apple Store? The answer is, yes, I was in it</p> <p>11 two days ago.</p> <p>12 Q. Have you ever purchased an iPod from an</p> <p>13 Apple Store?</p> <p>14 A. I've never purchased an iPod from an Apple</p> <p>15 Store, but I've purchased other things from an Apple</p> <p>16 Store.</p> <p>17 Q. Did you pay the list price?</p> <p>18 MS. BERNAY: Objection --</p> <p>19 THE WITNESS: It depends on what it was.</p> <p>20 Sometimes I did, and sometimes I didn't.</p> <p>21 BY MR. KIERNAN:</p> <p>22 Q. At any time did you negotiate the price</p> <p>23 for --</p> <p>24 A. No, you don't negotiate. You either have</p> <p>25 a coupon or you don't.</p>                                                                                                      |
| <p>Page 111</p> <p>1 Q. Ever purchase a product from the iTunes --</p> <p>2 strike that.</p> <p>3 Did you ever purchase an iPod from the</p> <p>4 online Apple Store?</p> <p>5 A. No. I've never bought anything from the</p> <p>6 online Apple Store.</p> <p>7 MR. MITTELSTAEDT: I don't know how you</p> <p>8 can resist asking him what he bought at the Apple</p> <p>9 Store. He wants to tell you.</p> <p>10 THE WITNESS: Well, I'm just being</p> <p>11 truthful, revealing all the dark ghosts in my family</p> <p>12 here.</p> <p>13 BY MR. KIERNAN:</p> <p>14 Q. Now I'm curious. What did you purchase</p> <p>15 recently from the Apple Store?</p> <p>16 A. The soft case for the iPad mini, which</p> <p>17 is my granddaughter's Christmas present. Her</p> <p>18 parents are getting her the mini, and I'm getting</p> <p>19 her the case for it.</p> <p>20 (Sotto voce conversation.)</p> <p>21 MR. MITTELSTAEDT: Can I ask you something</p> <p>22 for old time's sake?</p> <p>23 THE WITNESS: For old time's sake.</p> <p>24 MR. MITTELSTAEDT: Have you bought any</p> <p>25 music from RealNetworks?</p>        | <p>Page 112</p> <p>1 THE WITNESS: I have never bought any</p> <p>2 music from any digital download site, but I've</p> <p>3 bought gift cards for my grandchildren.</p> <p>4 MR. MITTELSTAEDT: Fair enough.</p> <p>5 BY MR. KIERNAN:</p> <p>6 Q. This will be the last.</p> <p>7 A. I hope so.</p> <p>8 Q. Famous last words.</p> <p>9 Can you go to page 7 of Noll 10, your</p> <p>10 rebuttal report. And it says -- it's the second</p> <p>11 paragraph, Dr. Noll. It starts with "second."</p> <p>12 A. Mm-hmm.</p> <p>13 Q. And it says -- it's the sentence that</p> <p>14 starts with "While."</p> <p>15 "While the extent of lock-in does</p> <p>16 increase as a consumer buys more</p> <p>17 recordings that can be played only on</p> <p>18 iPods, this fact does not imply that, as a</p> <p>19 theoretical matter, the price differential</p> <p>20 would increase through time."</p> <p>21 Can you explain what you mean there?</p> <p>22 A. The next sentence: "The reason is..."</p> <p>23 Q. Before you get there, what I meant is I</p> <p>24 don't understand the sentence.</p> <p>25 So it states the price differential would</p> |

Roger Noll, Ph.D.

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| <p>Page 113</p> <p>1 increase – strike that.</p> <p>2 It says: "This fact does not imply that,</p> <p>3 as a theoretical matter, that the price differential</p> <p>4 would increase through time."</p> <p>5 Explain to me what – the price</p> <p>6 differential of what?</p> <p>7 A. Okay. The price increase due to lock-in</p> <p>8 would not necessarily be continuously increasing</p> <p>9 over time because a degree of lock-in was increasing</p> <p>10 over time.</p> <p>11 Q. Got it.</p> <p>12 MR. KIERNAN: That's all I have.</p> <p>13 MS. BERNAY: All done?</p> <p>14 MR. KIERNAN: We'll designate this</p> <p>15 "Attorney's Eyes Only" under the Protective Order.</p> <p>16 MS. BERNAY: I think we're all done.</p> <p>17 We'll read and sign.</p> <p>18 THE VIDEOGRAPHER: This is the end of</p> <p>19 disc 2 of Roger Noll, Ph.D.</p> <p>20 Off the record, 11:52.</p> <p>21 (Discussion off the record.)</p> <p>22 THE REPORTER: Would you like a rough</p> <p>23 draft?</p> <p>24 MR. KIERNAN: I definitely need a rough</p> <p>25 draft.</p> | <p>Page 114</p> <p>1 MS. BERNAY: You probably want to expedite</p> <p>2 it too?</p> <p>3 MR. KIERNAN: Yes.</p> <p>4 And then the final as soon as possible,</p> <p>5 please.</p> <p>6 MS. BERNAY: We'll take a rough and then</p> <p>7 just regular turnaround on the final.</p> <p>8 (Deposition concluded at 11:54 a.m.)</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>                                                                                                                                                                                                                                                                                                              |
| <p>Page 115</p> <p>1 DECLARATION UNDER PENALTY OF PERJURY</p> <p>2 Case Name: The Apple iPod iTunes Anti-Trust Litigation</p> <p>3 Date of Deposition: 12/18/2013</p> <p>4 Job No.: 10008944</p> <p>5</p> <p>6 I, ROGER G. NOLL, PH.D., the witness herein,</p> <p>7 declare under penalty of perjury that I have read the</p> <p>8 foregoing in its entirety; and that the testimony</p> <p>9 contained therein, as corrected by me, is a true and</p> <p>10 accurate transcription of my testimony elicited at said</p> <p>11 time and place.</p> <p>12</p> <p>13 Executed this _____ day of</p> <p>14 _____, 2013, at</p> <p>15 _____, California.</p> <p>16</p> <p>17</p> <p>18</p> <p>19 _____</p> <p>20 ROGER G. NOLL, PH.D.</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>                                                                                                                                                                                                                                                                            | <p>Page 116</p> <p>1 DEPOSITION ERRATA SHEET</p> <p>2 Page No. ____ Line No. ____</p> <p>3 Change: _____</p> <p>4 Reason for change: _____</p> <p>5 Page No. ____ Line No. ____</p> <p>6 Change: _____</p> <p>7 Reason for change: _____</p> <p>8 Page No. ____ Line No. ____</p> <p>9 Change: _____</p> <p>10 Reason for change: _____</p> <p>11 Page No. ____ Line No. ____</p> <p>12 Change: _____</p> <p>13 Reason for change: _____</p> <p>14 Page No. ____ Line No. ____</p> <p>15 Change: _____</p> <p>16 Reason for change: _____</p> <p>17 Page No. ____ Line No. ____</p> <p>18 Change: _____</p> <p>19 Reason for change: _____</p> <p>20 Page No. ____ Line No. ____</p> <p>21 Change: _____</p> <p>22 Reason for change: _____</p> <p>23</p> <p>24 _____</p> <p>25 ROGER G. NOLL, PH.D. Dated _____</p> |

\*APPLE'S (PROPOSED) REDACTIONS\*

EXHIBIT 51  
[Filed Under Seal]

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
OAKLAND DIVISION

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)  
)  
THE APPLE IPOD ITUNES ANTI-TRUST ) No. C-05-0037 YGR  
LITIGATION )  
)  
\_\_\_\_\_)

VIDEOTAPED DEPOSITION OF ROGER G. NOLL  
San Francisco, California  
Thursday, May 16, 2013  
Volume 1

Reported by:  
JENNIFER L. FURIA, RPR, CSR  
CA License No. 8394  
Job No. 1663538  
PAGES 1 - 262

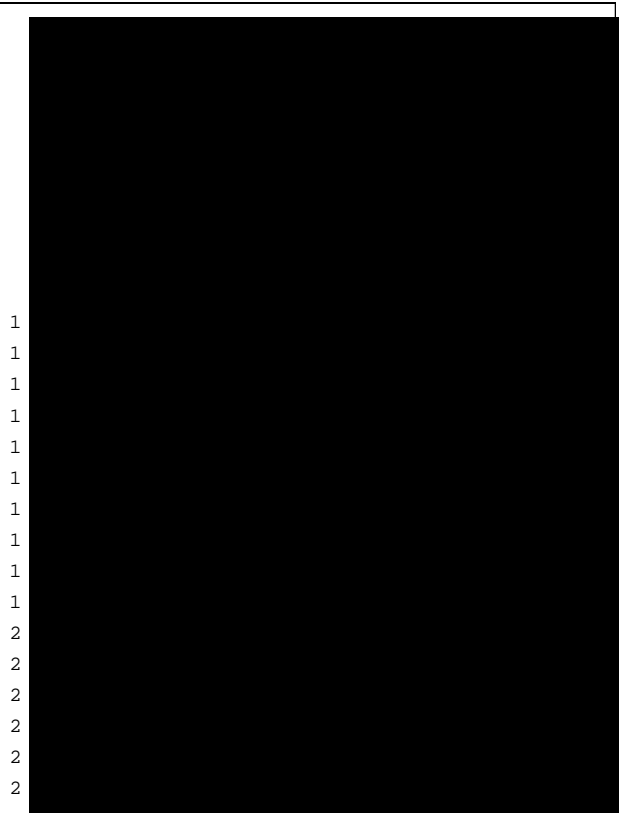
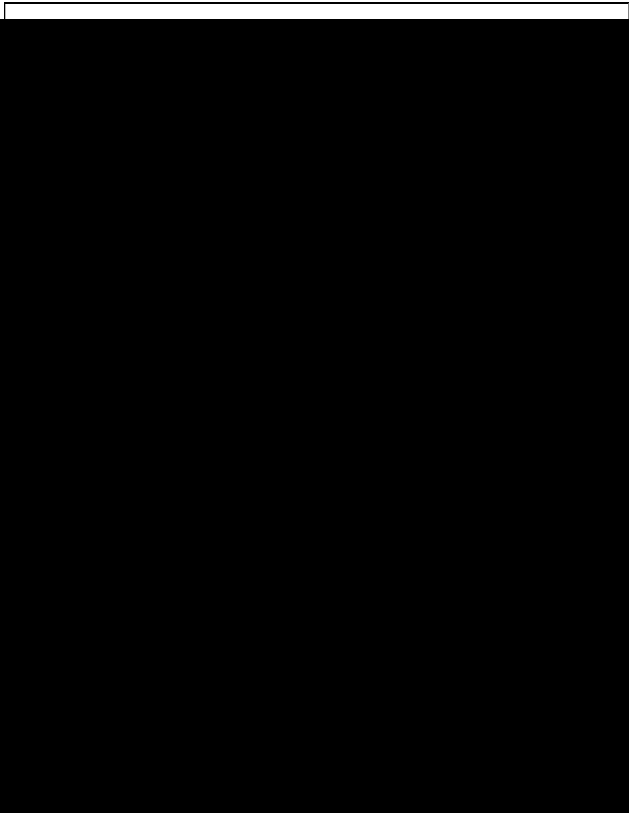


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| <p>1 UNITED STATES DISTRICT COURT<br/>2 NORTHERN DISTRICT OF CALIFORNIA<br/>3 OAKLAND DIVISION<br/>4<br/>5 _____<br/>6 )<br/>7 THE APPLE IPOD ITUNES ANTI-TRUST ) No C-05-0037 YGR<br/>LITIGATION )<br/>8 _____)<br/>9<br/>10<br/>11<br/>12 Videotaped Deposition of ROGER G NOLL, Volume<br/>13 1, taken on behalf of Defendant, at Jones Day, 555<br/>14 California Street, 26th Floor, San Francisco,<br/>15 California, beginning at 9:15 a m and ending at 4:37<br/>16 p m on Thursday, May 16, 2013, before JENNIFER L<br/>17 FURIA, Certified Shorthand Reporter No 8394<br/>18<br/>19<br/>20<br/>21<br/>22<br/>23<br/>24<br/>25</p> <p style="text-align: right;">Page 2</p> | <p>1 APPEARANCES (Continued):<br/>2<br/>3 Also present:<br/>4<br/>5 KYLE ANDEER<br/>6<br/>7<br/>8 Videographer:<br/>9<br/>10 ALEXEI DIAS<br/>11<br/>12<br/>13<br/>14<br/>15<br/>16<br/>17<br/>18<br/>19<br/>20<br/>21<br/>22<br/>23<br/>24<br/>25</p> <p style="text-align: right;">Page 4</p>                                                                      |
| <p>1 APPEARANCES:<br/>2<br/>3 For the Plaintiff:<br/>4<br/>5 ROBBINS GELLER RUDMAN &amp; DOWD LLP<br/>6 BY: BONNY E. SWEENEY, ESQ.<br/>7 655 West Broadway, Suite 1900<br/>8 San Diego, California 92101<br/>9 (619) 231-1058<br/>10 bsweeney@rgrdlaw.com<br/>11<br/>12<br/>13 For the Defendant<br/>14<br/>15 JONES DAY<br/>16 BY: ROBERT A. MITTELSTAEDT, ESQ.<br/>17 and DAVID C. KIERNAN, ESQ.<br/>18 555 California Street, 26th Floor<br/>19 San Francisco, California 94104<br/>20 (415) 626-3939<br/>21 ramittelstaedt@jonesday.com<br/>22 dkiernan@jonesday.com<br/>23<br/>24<br/>25</p> <p style="text-align: right;">Page 3</p>                                           | <p>1 INDEX<br/>2 WITNESS EXAMINATION<br/>3 ROGER G. NOLL<br/>4 Volume 1<br/>5<br/>6 BY MR. MITTELSTAEDT 7<br/>7<br/>8 EXHIBITS<br/>9 NUMBER DESCRIPTION PAGE<br/>10 Exhibit 1 Declaration of Roger G. Noll 22<br/>11<br/>12<br/>13<br/>14<br/>15<br/>16<br/>17<br/>18<br/>19<br/>20<br/>21<br/>22<br/>23<br/>24<br/>25</p> <p style="text-align: right;">Page 5</p> |

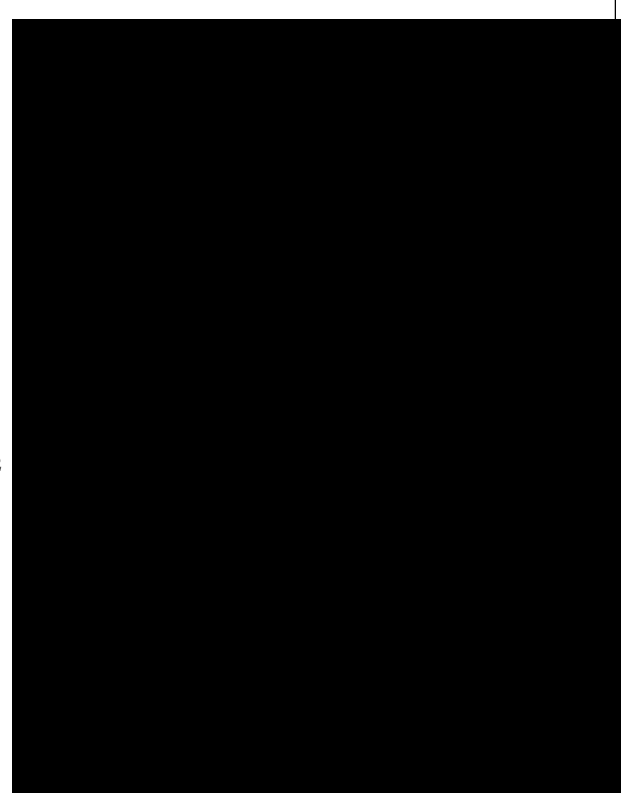
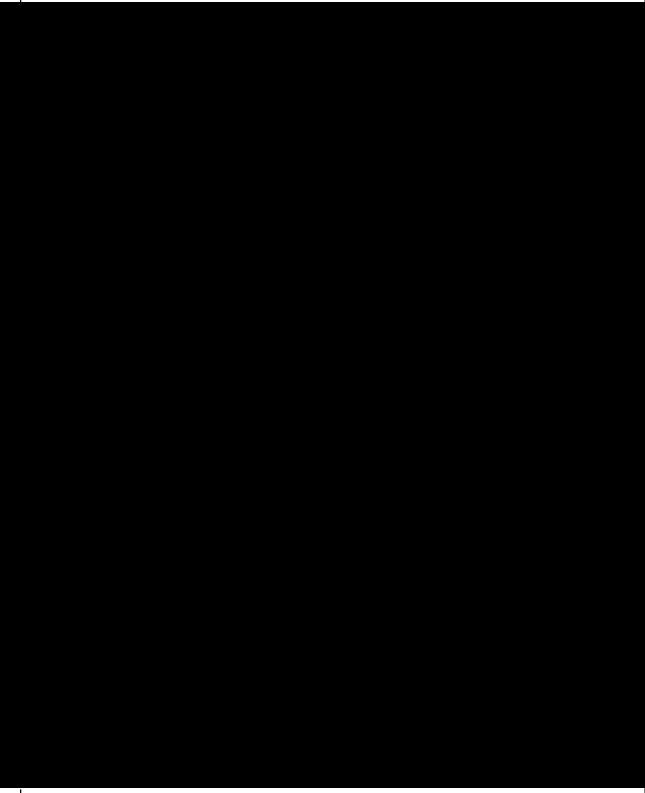
Pages 2 to 5



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| <p>1       <b>Q I'm asking you more in theory at this point.</b></p> <p>2       <b>If 7.0 did something more than what you've just</b></p> <p>3       <b>described --</b></p> <p>4       A Like, for example?</p> <p>5       <b>Q -- and it's not captured in one of these</b>       09:52:43</p> <p>6       <b>variables that you just referred to, capacity, whether</b></p> <p>7       <b>it's photo or video or the size or the cost,</b></p> <p>8       <b>then -- then the coefficient for 7.0 would pick up that,</b></p> <p>9       <b>right?</b></p> <p>10      A Like what? I mean, I don't understand what       09:53:05</p> <p>11      the -- what the 7.0 in principle could do. What is it</p> <p>12      in principle it could do?</p> <p>13      <b>Q Anything that's not captured by one of your</b></p> <p>14      <b>other variables. The effect of that would be captured</b></p> <p>15      <b>in your 7.0 variable, correct? By definition.</b>       09:53:22</p> <p>16      A So if you lick your iPod it tastes like wine?</p> <p>17      Is that what 7.0 does, something like that?</p> <p>18      I'm just -- I have no clue what you're talking</p> <p>19      about, what it might be. If there's some wonderful</p> <p>20      attribute of iPods that cannot be obtained in any way       09:53:40</p> <p>21      other than 7.0 and that component is in there, sure, it</p> <p>22      would affect the price. It would make the -- it would</p> <p>23      make it more valuable, assuming it's unique, a unique</p> <p>24      attribute that wasn't otherwise included, but I don't</p> <p>25      know what it is and I've never seen anybody describe       09:53:57</p> <p style="text-align: right;">Page 34</p> | <p>1       <b>Q And for purposes of your analysis were you</b></p> <p>2       <b>assuming that any market or monopoly power enjoyed by</b></p> <p>3       <b>Apple in any relevant market before September 12, 2006</b></p> <p>4       <b>was lawful and not anticompetitive?</b></p> <p>5       MS. SWEENEY: Objection, to the extent it's       09:55:46</p> <p>6       asking for a legal conclusion.</p> <p>7       THE WITNESS: I have assumed for the purpose</p> <p>8       of analysis that Apple's activities prior to the release</p> <p>9       of 7.0 were legal. I have also assumed for the purpose</p> <p>10      of analysis that Apple does have a certain degree of       09:56:12</p> <p>11      market power that is achieved for reasons other than</p> <p>12      anticompetitive acts. So other than -- I don't know how</p> <p>13      to answer the question other than that.</p> <p>14      BY MR. MITTELSTAEDT:</p> <p>15      <b>Q Well, are you assuming that -- and the date I</b>       09:56:31</p> <p>16      <b>want to focus on is December -- or, excuse me, September</b></p> <p>17      <b>12, 2006.</b></p> <p>18      <b>Are you assuming for purposes of your analysis</b></p> <p>19      <b>that any market or monopoly power Apple may have had as</b></p> <p>20      <b>of that date was lawful?</b>       09:56:47</p> <p>21      A Well, I'm assuming it's not part of the case.</p> <p>22      I'm not -- I'm not making -- I don't know whether it's</p> <p>23      lawful or not. In this case, I know that the only issue</p> <p>24      is 7.0. Whether the -- whether activities prior to</p> <p>25      that, either that used to be part of this case, or that       09:57:07</p> <p style="text-align: right;">Page 36</p> |
| <p>1      anything like is that.</p> <p>2      <b>Q And -- this is the point of my question. The</b></p> <p>3      <b>effect of that other attribute would be included in your</b></p> <p>4      <b>7.0 variable, correct?</b></p> <p>5      A If there was one, yes.       09:54:11</p> <p>6      <b>Q And what did you do, if anything, to determine</b></p> <p>7      <b>what 7.0 did over and above, as you put it, create the</b></p> <p>8      <b>incompatibility with Harmony?</b></p> <p>9      A I've read the technical expert's --</p> <p>10      MS. SWEENEY: Objection, asked and answered.       09:54:29</p> <p>11      THE WITNESS: I'm not the technical expert</p> <p>12      about what's in 7.0. I'm not neither your expert nor</p> <p>13      the plaintiff's expert. I relied upon their reports.</p> <p>14      BY MR. MITTELSTAEDT:</p> <p>15      <b>Q Did you read Apple's press release for 7.0?</b>       09:54:38</p> <p>16      A Oh, at some point I've read it, yes.</p> <p>17      <b>Q And did it say -- do you remember anything it</b></p> <p>18      <b>said on this topic?</b></p> <p>19      A Not sitting here, no.</p> <p>20      <b>Q Is it accurate to say that your task was to</b>       09:54:52</p> <p>21      <b>opine on whether 7.0 harmed competition in a market for</b></p> <p>22      <b>portable digital players and, if so, to opine on the</b></p> <p>23      <b>amount of damages to iPod purchasers from September 12,</b></p> <p>24      <b>2006 to March 31, 2009?</b></p> <p>25      A I was asked to do that, yes.       09:55:23</p> <p style="text-align: right;">Page 35</p>                                                                                                            | <p>1      never were part of this case, are or are not lawful, is</p> <p>2      a legal question that I'm not competent to answer.</p> <p>3      <b>Q Are you assuming for purposes of this case</b></p> <p>4      <b>that anything Apple did before the launch of 7.0 was</b></p> <p>5      <b>anticompetitive?</b>       09:57:25</p> <p>6      A No. I'm not assuming whether it's</p> <p>7      anticompetitive or procompetitive. I'm just accepting</p> <p>8      the status quo ante, as of September 11, 2006 and saying</p> <p>9      all I'm interested in is the incremental market power</p> <p>10     that occurs after that date.       09:57:39</p> <p>11     <b>Q And you're not assessing damages against Apple</b></p> <p>12     <b>for anything done before September 12, 2006, correct?</b></p> <p>13     A Of course.</p> <p>14     <b>Q How do you use the term market power</b></p> <p>15     <b>differently from monopoly power?</b>       09:57:57</p> <p>16     MS. SWEENEY: You mean in his report?</p> <p>17     MR. MITTELSTAEDT: Yes.</p> <p>18     THE WITNESS: This is always a tough question</p> <p>19     for economists, because economists tend to think of</p> <p>20     market power as a continuous variable and lawyers tend       09:58:15</p> <p>21     to think of it as two categories, market and monopoly.</p> <p>22     Monopoly power hinges on unilateral activity.</p> <p>23     That is to say, an individual firm has sufficient market</p> <p>24     power that they, all by themselves, can affect price and</p> <p>25     quantity and product quality in the market through their       09:58:46</p> <p style="text-align: right;">Page 37</p>                                                                           |



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| <p>1 consumers' heads is whether it's going to be disabled<br/>2 again, all right. And so it could -- it could have a<br/>3 less than a full effect, a full offset effect.<br/>4 You -- this is something that only the data<br/>5 can answer. There's no -- there's no theoretically 10:50:28<br/>6 correct answer to whether Harmony's relaunch would fully<br/>7 offset the effect of 4.7.<br/>8 You -- what it does is how consumers respond<br/>9 and behave. And if they don't trust that Harmony is<br/>10 going to be permanently around, and if they believe that 10:50:44<br/>11 eventually Apple will -- will become incompatible again<br/>12 with it, and so they'll lose all the songs that they<br/>13 bought from RealNetworks, then it would still have an<br/>14 effect, even if that expectation weren't true.<br/>15 So it's just not a theoretical question. It's 10:51:02<br/>16 an empirical question. And it's basically a boring<br/>17 empirical question, because 4.7 isn't in the case<br/>18 anymore. So what we get in the 4.7 coefficient is some<br/>19 sort of an average at best.<br/>20 <b>Q But what you're giving -- I -- I understand 10:51:21</b><br/>21 <b>when you say it's an empirical question. But what</b><br/>22 <b>you're giving me would be the theoretical reason to</b><br/>23 <b>explain why you might see a continuing effect from 4.7</b><br/>24 <b>even after the launch of Harmony --</b><br/>25 A Right. 10:51:41</p> <p style="text-align: right;">Page 66</p> | <p>1 effect.<br/>2 <b>Q And what I'm asking is why would there --</b><br/>3 <b>under what circumstances, precisely as you can, would</b><br/>4 <b>you expect to see a continuing effect of 4.7 even after</b><br/>5 <b>Harmony's relaunched? 10:53:16</b><br/>6 MS. SWEENEY: Objection, vague and ambiguous.<br/>7 THE WITNESS: Consumer expectations about the<br/>8 durability of the relaunch. About whether if I -- if I<br/>9 actually use Harmony and buy a bunch of songs from<br/>10 RealNetworks, from Rhapsody, am I going to be stuck six 10:53:30<br/>11 months from now with them not working because it will be<br/>12 disabled again.<br/>13 BY MR. MITTELSTAEDT:<br/>14 <b>Q And could that consumer expectation continue</b><br/>15 <b>even after 7.0 is issued? 10:53:42</b><br/>16 A Exactly, it could. And that's -- that's<br/>17 precisely right. 7.0, you know, could -- could, in<br/>18 fact, have, you know, a similar story to it. But, in<br/>19 fact, 7.0 was never undone, so we can't test that<br/>20 hypothesis. 10:54:04<br/>21 <b>Q What I mean is could the consumer expectation</b><br/>22 <b>created by 4.7 continue after 7.0 is issued?</b><br/>23 A It could in principle, yes.<br/>24 <b>Q And under what circumstance would you expect</b><br/>25 <b>to see a continuing expectation created by 4.7 after 7.0 10:54:19</b></p> <p style="text-align: right;">Page 68</p>                                                                                          |
| <p>1 <b>Q -- relaunch of Harmony.</b><br/>2 A Right<br/>3 <b>Q And so just focus on the consumer that you</b><br/>4 <b>have in mind. That consumer would think -- he knows</b><br/>5 <b>about 4.7, he knows that that made it so he couldn't use 10:51:54</b><br/>6 <b>Harmony music on an iPod, and that may have some</b><br/>7 <b>lingering effect on his purchase decisions regardless of</b><br/>8 <b>whether Harmony is ever relaunched.</b><br/>9 A Well, in principle it might You can't tell<br/>10 There's no theoretical reason to come to a conclusion on 10:52:18<br/>11 the magnitude of that effect<br/>12 If you -- if we -- if 4 7 were still in the<br/>13 case, then we would have a serious issue here about how<br/>14 exactly to measure the effect of Harmony and how it<br/>15 would be different in different periods 10:52:36<br/>16 The reason I haven't focused on that is<br/>17 because by the time I got around to doing these<br/>18 regressions 4 7 wasn't around anymore<br/>19 So yes, there is a whole series of issues<br/>20 about how would we actually tease out what the effect of 10:52:47<br/>21 4 7 was And I would expect the effect of it would be<br/>22 greater during the period it worked than in the period<br/>23 after Harmony was relaunched to offset it to some<br/>24 degree<br/>25 So, yes, there would be a differential 10:53:03</p> <p style="text-align: right;">Page 67</p>                                                                               | <p>1 <b>is issued?</b><br/>2 A It would -- well, the effect of 7.0 is going<br/>3 to be what was it like before 7.0 was -- 7.0 was<br/>4 launched and what is it like afterwards, okay. And so,<br/>5 again, it's an empirical question whether -- what 10:54:45<br/>6 people's state of mind was prior to the launch of 7.0.<br/>7 I don't --<br/>8 <b>Q Well, what I'm asking is if you -- if you did</b><br/>9 <b>the test, the regression, and you saw there was a</b><br/>10 <b>continuing effect of 4.7 after 7.0, what theory would 10:54:58</b><br/>11 <b>explain that? The same one we've been talking about,</b><br/>12 <b>consumer expectation?</b><br/>13 A Yeah. I mean the issue is how are people's<br/>14 attitudes about Har -- remember, it's important to keep<br/>15 our eye on the ball. What we're interested in is what's 10:55:30<br/>16 happening to the market for iPods. And the market for<br/>17 iPods is going to be enhanced regardless if there<br/>18 were -- was anybody out there using Harmony and all of a<br/>19 sudden they can't, all right. That -- that market<br/>20 effect is still going to be there regardless of what 10:55:49<br/>21 expectations were.<br/>22 The way expectations work here is whether<br/>23 someone would want to actually -- would actually buy an<br/>24 iPod with the expectation they were going to be able to<br/>25 use Harmony indefinitely on iPods. And if they had that 10:56:05</p> <p style="text-align: right;">Page 69</p> |

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| <p>1 expectation then 4.7 would have gone away entirely<br/>2 within shortly after Harmony was relaunched. If they<br/>3 didn't believe that, then it wouldn't -- it wouldn't<br/>4 have all completely gone away and it would have had some<br/>5 residual effect at the time that 7.0 was launched. 10:56:27</p> <p>6 <b>Q And under that approach how long would that</b><br/>7 <b>residual effect last after 7.0, residual effect from</b><br/>8 <b>4.7?</b></p> <p>9 MS. SWEENEY: Objection, vague and ambiguous<br/>10 and incomplete. 10:56:38</p> <p>11 THE WITNESS: Again, there's no way to know<br/>12 except empirically to find out.</p> <p>13 BY MR. MITTELSTAEDT:</p> <p>14 <b>Q What would be the theory that would explain</b><br/>15 <b>that; just what you gave?</b> 10:56:45</p> <p>16 A Yeah.</p> <p>17 <b>Q The consumer expectation point?</b></p> <p>18 A Is it okay if I take a two-minute break? Just<br/>19 one sec, I'll be right back.</p> <p>20 <b>Q Yes, sir.</b> 10:56:53</p> <p>21 <b>Off the record.</b></p> <p>22 THE VIDEOGRAPHER: Off the record 10:57 a.m.<br/>23 (Recess.)</p> <p>24 BY MR. MITTELSTAEDT:</p> <p>25 <b>Q Okay. Just to complete that, what I asked</b> 10:59:00</p> <p style="text-align: right;">Page 70</p> | <p>1 <b>Q Okay. Competitors DRM-Free, what date did you</b><br/>2 <b>turn that on?</b></p> <p>3 A Well, it's in the report. Again, it's -- it's<br/>4 when -- it's when the all four -- I didn't do it on the<br/>5 EMI, E-M-I, decision to do it all DRM-Free. I did it in 11:01:55<br/>6 the dates. I think it's either December of 2007 or<br/>7 January 2008, but it's -- it's the date at which all of<br/>8 the major distribution companies allow the competitors<br/>9 to be DRM-Free.</p> <p>10 <b>Q Okay. Do you think that the announcement of</b> 11:02:11<br/>11 <b>that event which preceded the actual event could have</b><br/>12 <b>had an impact on iPod demand?</b></p> <p>13 A Well, I suppose -- yeah, first of all, I did<br/>14 look at the announcement dates, they weren't that far in<br/>15 advance. It was like a month, even less than a month, 11:02:32<br/>16 so.</p> <p>17 <b>Q Would it have been just as fair to use the</b><br/>18 <b>announcement date as the actual event date?</b></p> <p>19 MS. SWEENEY: Objection to form.</p> <p>20 THE WITNESS: I -- I think I -- the actual 11:02:52<br/>21 launch date's better, because I don't think that the<br/>22 vast majority of people read the trade press about<br/>23 electronics, consumer electronics. So my expectation<br/>24 would be that relatively few people knew about it until<br/>25 it happened, but -- so I would, without more information 11:03:08</p> <p style="text-align: right;">Page 72</p> |
| <p>1 <b>just before the break was you described why there could</b><br/>2 <b>be a, theoretically, a lingering effect from 4.7 after</b><br/>3 <b>7.0. You explained it and I said that's the consumer</b><br/>4 <b>expectation point, correct?</b></p> <p>5 A Well -- 11:00:28</p> <p>6 MS. SWEENEY: I'm going to object and to<br/>7 the --</p> <p>8 Maybe the court reporter could read back the<br/>9 last Q and A.</p> <p>10 THE REPORTER: Certainly. You mean before we 11:00:33<br/>11 went on the break?</p> <p>12 MS. SWEENEY: Yes, please.<br/>13 (Record read.)</p> <p>14 THE WITNESS: Yes. The issue is whether<br/>15 consumers expect in the future that they will be locked 11:01:01<br/>16 in.</p> <p>17 BY MR. MITTELSTAEDT:</p> <p>18 <b>Q On 13.2 going down the -- the variables. If</b><br/>19 <b>you wanted to test what the effect of Harmony relaunch</b><br/>20 <b>was -- I think this is an obvious question -- you would</b> 11:01:22<br/>21 <b>include a variable for the Harmony relaunch, correct?</b></p> <p>22 A Hm-m, that's correct.</p> <p>23 <b>Q And you'd turn it on as of the date of the</b><br/>24 <b>Harmony relaunch?</b></p> <p>25 A Right. 11:01:35</p> <p style="text-align: right;">Page 71</p>                        | <p>1 I think I would prefer the launch date as opposed to the<br/>2 announcement date</p> <p>3 BY MR. MITTELSTAEDT:</p> <p>4 <b>Q Okay. But if the announcement date had an</b><br/>5 <b>impact on iPod demand you'd want to use the announcement</b> 11:03:19<br/>6 <b>date, by definition?</b></p> <p>7 A Well, it -- you know, I -- I understand the<br/>8 argument for using it I don't think it's the right<br/>9 thing to do But, yes, if you want to use it, go ahead,<br/>10 see what happens 11:03:39</p> <p>11 <b>Q What's the argument for using it? The best</b><br/>12 <b>argument for using it.</b></p> <p>13 A The best argument for using it would be that<br/>14 consumers' plans about the portable digital media player<br/>15 they are currently buying are affected by what's going 11:03:51<br/>16 to be happening in the future And they have perfect<br/>17 rationale expectations about what's going to happen in<br/>18 the future So once the announcement is made, the fact<br/>19 that they can't get things DRM-Free today won't dissuade<br/>20 them because three weeks from now they will be able to 11:04:09<br/>21 get them DRM-Free</p> <p>22 <b>Q Would you think that Apple would be aware of</b><br/>23 <b>the announcement?</b></p> <p>24 A Of course Apple --</p> <p>25 MS. SWEENEY: Objection, calls for 11:04:26</p> <p style="text-align: right;">Page 73</p>                                                                                               |

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| <p>1 speculation.</p> <p>2 THE WITNESS: I would expect Apple knew</p> <p>3 that -- I'm not sure the announcement mattered to Apple.</p> <p>4 I suspect Apple was negotiating DRM-Free with these guys</p> <p>5 as well, so it may well have known before the 11:04:39</p> <p>6 announcement date.</p> <p>7 BY MR. MITTELSTAEDT:</p> <p>8 <b>Q But if --</b></p> <p>9 A But I don't know when Apple knew.</p> <p>10 <b>Q Okay. But if under your theory the -- the 11:04:43</b></p> <p>11 <b>availability of DRM-Free in December 2007 or January</b></p> <p>12 <b>2008 had an impact on iPod demand such that it should be</b></p> <p>13 <b>included in your regression, would you expect the</b></p> <p>14 <b>announcement of that event to have some impact on</b></p> <p>15 <b>Apple's pricing decisions? 11:05:03</b></p> <p>16 A Well, if your first assumption is true then it</p> <p>17 would -- you know, if the demand for iPods has shifted,</p> <p>18 because of the announcement effect, then obviously Apple</p> <p>19 would take that into account in doing pricing. But</p> <p>20 you're just assuming the answer. 11:05:17</p> <p>21 Obviously, Apple's pricing decisions are based</p> <p>22 upon demand. And they're not going to -- they're not</p> <p>23 going to cut the price of iPods until -- until they have</p> <p>24 to. And so it -- it all gets back to what is it that</p> <p>25 consumers know and -- and how -- what is -- what are 11:05:33</p> <p style="text-align: right;">Page 74</p>                | <p>1 <b>Q Okay. Why didn't you have a variable for when</b></p> <p>2 <b>EMI went DRM-Free?</b></p> <p>3 A Because it's unimportant.</p> <p>4 <b>Q Why is it unimportant?</b></p> <p>5 A It's a small fraction of the market. 11:06:53</p> <p>6 <b>Q Unimportant to iPod demand?</b></p> <p>7 A Relatively unimportant. It's -- EMI at this</p> <p>8 point in time is on the order of 10 percent of the</p> <p>9 market.</p> <p>10 <b>Q And you consider that relatively unimportant 11:07:05</b></p> <p>11 <b>compared to Harmony?</b></p> <p>12 A No. The -- the -- EMI is not sufficiently</p> <p>13 important in the recorded music business, that -- EMI</p> <p>14 doing it by itself is going to have much of an effect on</p> <p>15 consumers, because their portfolio of recorded music is 11:07:29</p> <p>16 going to have a fairly small fraction of EMI in it and</p> <p>17 hence the degree to which they're locked into a</p> <p>18 DRM-based system is not affected by -- by EMI's</p> <p>19 decision.</p> <p>20 They have -- you know, they're going to have 11:07:48</p> <p>21 roughly 70 to 80 percent or more of their recorded music</p> <p>22 is going to be DRM protected. And that's going to lock</p> <p>23 them in. So EMI all by itself is not affecting the</p> <p>24 degree of lock-in of these consumers.</p> <p>25 What -- what does affect the degree of lock-in 11:08:10</p> <p style="text-align: right;">Page 76</p>     |
| <p>1 the -- what are the factors they take into account when</p> <p>2 making a purchase</p> <p>3 <b>Q Actually, I'm not assuming anything. I'm --</b></p> <p>4 <b>what I was trying to ask was, your regression is based</b></p> <p>5 <b>on the assumption that the availability of DRM-Free from 11:05:48</b></p> <p>6 <b>competitors had some impact on iPod demand. Correct so</b></p> <p>7 <b>far?</b></p> <p>8 A On testing the hypothesis that it did and my</p> <p>9 expectation is that it would and the coefficient</p> <p>10 indicates that it did have an effect on iPods 11:06:03</p> <p>11 <b>Q Did you test the hypothesis that the</b></p> <p>12 <b>announcement also had an effect?</b></p> <p>13 A No I didn't test it, because it doesn't seem</p> <p>14 to be plausible, but if you want to go ahead and test</p> <p>15 it, go ahead and do it 11:06:15</p> <p>16 <b>Q And you said it's not plausible in part</b></p> <p>17 <b>because you don't know that many consumers would know</b></p> <p>18 <b>about it. I'm asking, you agree that Apple would know</b></p> <p>19 <b>about it?</b></p> <p>20 A But that -- what matters is when you have to 11:06:29</p> <p>21 cut the price in order to be competitive and when you --</p> <p>22 so what Apple knows is irrelevant What -- what --</p> <p>23 what's accepted so far is they know something about</p> <p>24 consumers And the issue is when did the -- when did</p> <p>25 the consumer behavior change 11:06:45</p> <p style="text-align: right;">Page 75</p> | <p>1 in consumers is when everybody goes DRM-Free, because</p> <p>2 then no matter what they buy they can play it on</p> <p>3 anything</p> <p>4 <b>Q Okay, but so you think that EMI going DRM-Free</b></p> <p>5 <b>has less of an impact on iPod demand than RealNetwork 11:08:24</b></p> <p>6 <b>making its music available to play on an iPod?</b></p> <p>7 A Yes, because the difference is that Harmony</p> <p>8 applies to all DRM protected products, not just one</p> <p>9 label's worth If Harmony had only worked for EMI I</p> <p>10 would not have anticipated it would have had any 11:08:44</p> <p>11 effect</p> <p>12 <b>Q Okay. What was -- isn't the relative effect</b></p> <p>13 <b>of Harmony versus EMI going DRM-Free an empirical</b></p> <p>14 <b>question?</b></p> <p>15 A Yeah, it is, of course, an empirical question, 11:08:59</p> <p>16 but I'm just saying that if you start with the theory of</p> <p>17 lock-in, Harmony unlocks everybody EMI doesn't unlock</p> <p>18 anyone, unless there -- unless there's a customer out</p> <p>19 there who only buys EMI music and that's extremely</p> <p>20 unlikely 11:09:21</p> <p>21 <b>Q What did you do to test?</b></p> <p>22 A I didn't test it I just think it's</p> <p>23 implausible, all right</p> <p>24 <b>Q Does RealNetworks market share at any point in</b></p> <p>25 <b>time affect your analysis? 11:09:31</b></p> <p style="text-align: right;">Page 77</p> |

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1 A Not really, no.  
2 Q Does it affect your view on the plausibility  
3 of -- of Harmony or 7.0 having an effect on iPod  
4 demand?

5 A The magnitude of Harmony's effect on the 11:09:47  
6 demand elasticity of iPods depends on their market  
7 share, but it's again a continuous thing. The -- the --  
8 what -- what Harmony does is make the demand more  
9 elastic, all right. And so, again, it's an empirical  
10 question, how much more elastic it made it. 11:10:07

11 Q DRM-Free music also makes the demand less  
12 elastic, correct?

13 A That's exactly right. And so when everybody  
14 goes DRM-Free that should have the same effect of making  
15 the demand more elastic. 11:10:19

16 The reason EMI -- the parallel you're trying  
17 to draw between EMI and Harmony isn't valid, because  
18 Harmony applies to everything. And there's a subset of  
19 consumers who become not locked in. And then the  
20 effect -- and then they have a more elastic demand. EMI 11:10:34  
21 by itself does not make the demand for iPods more  
22 elastic, because it's too small. It doesn't end the  
23 lock-in, because most of people's portfolio of sound  
24 recordings are not EMI, the vast majority of it.

25 Q Most people's sound recordings do not come 11:10:52  
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1 from RealNetwork, correct?

2 A That's correct

3 Q Okay.

4 A But among those who did buy from RealNetworks,  
5 they were no longer locked in, so that -- the aggregate 11:11:01  
6 demand curve for iPods became less elastic to buy -- buy  
7 share of -- of Rhapsody's market share

8 Q And if -- well, not Rhapsody, right? You know  
9 what Rhapsody is?

10 A Well, Rhapsody Music Store 11:11:19

11 Q What's that?

12 A It's where Rhap -- it's where you buy songs  
13 from other than if you -- it's the RMS is the  
14 counterpart to ITS for Rhapsody

15 Q For RealNetwork? 11:11:38

16 A For RealNetworks, yeah

17 Q And what was the -- do you know at some point  
18 Rhapsody was subscription?

19 A Yes

6  
7 share, would you expect that to have some impact on the  
8 degree to which it impacted iPod demand under your  
9 theory if there was any impact at all?

10 A If there was an impact it is the fraction of 11:13:38  
11 people who used Harmony to play stuff on an iPod.  
12 They're the ones whose demand became elastic.

13 Q And then your next variable, going back to  
14 13.2, is ITMS all DRM-Free. Why did you include that  
15 variable? 11:14:04

16 A Well, because the -- the main vehicle for the  
17 lock-in effect on the Apple side is using Fair Play and  
18 when Apple stops using Fair Play on ITS, then anything  
19 you buy from ITS from that point on can play on  
20 anything. So you're no longer locked into an iPod if 11:14:27  
21 you buy your music from ITS, so that -- that strikes me  
22 as a big deal. A very important deal.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <p>1 the interesting question The interesting question is</p> <p>2 had the price been higher would they have switched</p> <p>3 BY MR MITTELSTAEDT:</p> <p>4 <b>Q But, for example, if -- if you take somebody</b></p> <p>5 <b>who says I'm never going to buy anything other than 11:58:31</b></p> <p>6 <b>iPod, no matter what, no matter what the price is.</b></p> <p>7 A They are the beneficiaries of competition</p> <p>8 among those who would switch Those who have extremely</p> <p>9 high willingness to pay for any particular brand name</p> <p>10 are the beneficiaries of competition for the people who 11:58:47</p> <p>11 are willing to shop</p> <p>12 <b>Q No, but what I'm -- what I'm trying to focus</b></p> <p>13 <b>on is people whose demand is at the margin and who make</b></p> <p>14 <b>a difference because of 7.0. You know, what's the</b></p> <p>15 <b>profile of -- of those people where there's an 11:59:03</b></p> <p>16 <b>incremental impact where they decide -- their switching</b></p> <p>17 <b>costs are such that they buy an iPod where they would</b></p> <p>18 <b>have preferred to buy something else. And if what I'm</b></p> <p>19 <b>positing is, you can't include in that group people who</b></p> <p>20 <b>were going to buy an iPod no matter what. 11:59:24</b></p> <p>21 MS SWEENEY: Objection --</p> <p>22 BY MR MITTELSTAEDT:</p> <p>23 <b>Q You have to include only the people who</b></p> <p>24 <b>decided to buy an iPod instead of something else,</b></p> <p>25 <b>because of their switching costs caused incrementally 11:59:32</b></p> <p style="text-align: right;">Page 106</p> | <p>1 of -- a fairly small increase in price, three-to-six</p> <p>2 percent, okay And so what that basically means is it's</p> <p>3 a few percentage points of people went from the category</p> <p>4 of moveable to not moveable</p> <p>5 <b>Q So how many people? 12:00:52</b></p> <p>6 A I don't know how many people</p> <p>7 MS SWEENEY: Objection, asked and answered</p> <p>8 BY MR MITTELSTAEDT:</p> <p>9 <b>Q Well, when you say a few percentage points</b></p> <p>10 <b>what do you mean? A few percentage points of what? 12:00:58</b></p> <p>11 A A few percentage points of sales were at</p> <p>12 stake For -- in order for it to make sense, to be</p> <p>13 profit maximizing for Apple to raise its price by three</p> <p>14 percent, all right, it has to be the case that the</p> <p>15 number of people who switch out used to be too many and 12:01:13</p> <p>16 now it's not -- not too many to make that a profitable</p> <p>17 price increase, okay</p> <p>18 So, normally, in the case of, you know, if --</p> <p>19 if Apple is going to increase price three percent, it</p> <p>20 better have the effect on sales be less than three 12:01:31</p> <p>21 percent So we move from a world in which the effect</p> <p>22 might have been three-and-a-half percent to a world in</p> <p>23 which it now is two-and-a-half percent So it made</p> <p>24 sense to raise the price by three percent after the fact</p> <p>25 and it didn't make sense before the fact 12:01:48</p> <p style="text-align: right;">Page 108</p>                         |
| <p>1 <b>after 7.0?</b></p> <p>2 MS. SWEENEY: Objection to form, vague and</p> <p>3 ambiguous, compound.</p> <p>4 THE WITNESS: I have no idea what you're --</p> <p>5 what you're talking about. 11:59:43</p> <p>6 Yes, there are people who are willing to pay a</p> <p>7 premium for an iPod and switching costs are one reason</p> <p>8 why they might be willing to pay a premium. Just being</p> <p>9 in love with Apple is another reason. And then there</p> <p>10 are other people who are at the margin, who plus or 11:59:54</p> <p>11 minus ten percent in price, can affect their decision.</p> <p>12 And it's the latter that determine pricing and the</p> <p>13 extent of competition among brands of portable digital</p> <p>14 media players.</p> <p>15 BY MR. MITTELSTAEDT: 12:00:10</p> <p>16 <b>Q Okay. And how many people fit that profile of</b></p> <p>17 <b>being at the margin where their purchase decision</b></p> <p>18 <b>changed from a non-iPod to an iPod because of 7.0? How</b></p> <p>19 <b>many people are in that category?</b></p> <p>20 A We have no way of knowing that. 12:00:24</p> <p>21 <b>Q Is it -- is it ten people or 10,000?</b></p> <p>22 A We have no way of knowing what the number is.</p> <p>23 All we observe is the actual pricing behavior and the</p> <p>24 implicit change in the elasticity of demand.</p> <p>25 We're talking about a fairly small fraction 12:00:36</p> <p style="text-align: right;">Page 107</p>                                                                                                                                                                     | <p>1 And that's the -- the issue of how many are</p> <p>2 there is -- is indeterminate. It's just -- it used to</p> <p>3 be profitable to have the price be three percent lower</p> <p>4 and now it's profitable to have it be three percent</p> <p>5 higher. And that's because the number of customers you 12:02:07</p> <p>6 lose by raising the price has gone down by enough to</p> <p>7 make the net revenue be positive instead of negative.</p> <p>8 <b>Q Okay.</b></p> <p>9 A And it could be three people. I mean if you</p> <p>10 were close enough to the margin, the mag -- the number 12:02:18</p> <p>11 of people is not what matters. The -- what matters is</p> <p>12 why didn't you raise the price by three percent</p> <p>13 anyway.</p> <p>14 <b>Q Okay.</b></p> <p>15 A And the answer must be because you expected 12:02:29</p> <p>16 sales to go down by -- enough to -- that the higher</p> <p>17 price times the lower sales would be less profitable.</p> <p>18 Now it's more. So it could be a very small number of</p> <p>19 people, just -- less than a percent, as the difference</p> <p>20 in sales before and after 7.0 that caused the price 12:02:47</p> <p>21 increase to be profitable, when you're talking about a</p> <p>22 price increase that's this small.</p> <p>23 <b>Q Okay. So are you saying that it could take</b></p> <p>24 <b>only three people buying an iPod instead of a non-iPod</b></p> <p>25 <b>as a result of 7.0 to have the price effect that you are 12:03:05</b></p> <p style="text-align: right;">Page 109</p> |



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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div data-bbox="193 149 852 239" data-label="Image"></div> <p>3 <b>Q Okay. And did it cause iPod prices to go down</b><br/> 4 <b>immediately upon the launch of the iTunes Music Store</b><br/> 5 <b>going all DRM-Free? 11:15:06</b><br/> 6 A This is -- this is the -- this is the effect<br/> 7 over the period afterwards in the dataset. I think it<br/> 8 probably had a fairly dramatic immediate effect, yes,<br/> 9 but you know, that's the number. It's six percent in<br/> 10 this regression and seven percent in the other. 11:15:23<br/> 11 <b>Q Have you made any analysis of what you would</b><br/> 12 <b>say the price change was the first month or the second</b><br/> 13 <b>month or the third month. This is -- or is this just an</b><br/> 14 <b>average over the -- the whole three-year period?</b><br/> 15 A This is -- well, it's two years. We only have 11:15:37<br/> 16 two years of data, I believe, beyond, don't we? What<br/> 17 is -- when does the data period end? What's the end of<br/> 18 the data period? I can find it. March 26, 2011, so<br/> 19 it's two years.<br/> 20 <b>Q March 26, 2000 and -- 11:16:00</b><br/> 21 A '11 is end of the data period, I believe.<br/> 22 Isn't it?<br/> 23 <b>Q But what's the end of the period for which you</b><br/> 24 <b>are measuring what you assert are damages?</b><br/> 25 A ITMS becomes DRM-Free on April 1st, 2009, so 11:16:12<br/> Page 82</p> | <p>1 portable digital media players.<br/> 2 <b>Q Okay. The next variable you use is -- is</b><br/> 3 <b>Classic and then Mini, Nano and Shuffle. Your variable</b><br/> 4 <b>for Classic or your coefficient for Classic variable is</b><br/> 5 <b>positive and it's negative for Mini, Nano and Shuffle. 11:18:01</b><br/> 6 A Remember that the actual effect of a model<br/> 7 that's in the equation is the different -- is the<br/> 8 combination of the intercept plus that -- the<br/> 9 intercept is essentially the Touch. And then these are<br/> 10 adjustments to the Touch effect from -- due to other 11:18:22<br/> 11 models.<br/> 12 <b>Q Okay.</b><br/> 13 A And so these coefficients are what you would<br/> 14 expect if your theory was right?<br/> 15 MS. SWEENEY: Objection, vague and 11:18:36<br/> 16 ambiguous.<br/> 17 THE WITNESS: I have no idea what that<br/> 18 question means.<br/> 19 BY MR. MITTELSTAEDT:<br/> 20 <b>Q Okay. Do you see anything anomolous in these 11:18:41</b><br/> 21 <b>coefficients?</b><br/> 22 A No, not at all. It just -- it tells you that<br/> 23 cheaper products have lower -- have a lower intercept<br/> 24 term in the regression.<br/> 25 Remember you want to subtract each one of 11:18:54<br/> Page 84</p>                                                                                                                                                              |
| <p>1 it's about two years worth of DRM-Free data for --<br/> 2 for -- in the dataset.<br/> 3 <b>Q But my -- my question is different. It's what</b><br/> 4 <b>the end of the period for which you were measuring what</b><br/> 5 <b>you claim are damages? 11:16:30</b><br/> 6 A April 1st. That's it. The damages stop at<br/> 7 when ITMS goes DRM-Free.<br/> 8 <b>Q Why would you expect there to be a dramatic</b><br/> 9 <b>immediate impact on iPod prices from the music store</b><br/> 10 <b>going DRM-Free? 11:16:50</b><br/> 11 A Well, first of all, there was a transition,<br/> 12 but no, it's because that it's the end of the lock-in.<br/> 13 And looking forward, consumers are not going to be<br/> 14 locked in.<br/> 15 And so, you know, what, something like half of 11:17:02<br/> 16 iPod sales are original sales. And so for them going<br/> 17 forward, none of those customers are going to be locked<br/> 18 in.<br/> 19 And then among the customers who are buying a<br/> 20 replacement iPod, their new music is not always -- is 11:17:17<br/> 21 going to be subject to the lock-in. And they can, if<br/> 22 they want to, get the DRM-Free version of what they<br/> 23 have, so -- for the things they want to keep. So it's<br/> 24 my expectation that it's a big deal to go DRM-Free.<br/> 25 That that basically ends the problem of lock-in in 11:17:36<br/> Page 83</p>                             | <p>1 these from the intercept, so what you got is sort of a<br/> 2 baseline price before you do anything else. And all<br/> 3 this is telling you is that cheaper ones have lower<br/> 4 intercepts, which is the average price over the whole<br/> 5 period of a more expensive model is going to be higher. 11:19:11<br/> 6 That's all that it tells you.<br/> 7 <b>Q For this variable, the Classic variable, how</b><br/> 8 <b>do you determine when to turn that on and when to turn</b><br/> 9 <b>that off?</b><br/> 10 A When it's a Classic that's in the transaction. 11:19:23<br/> 11 When the transaction is a Classic.<br/> 12 <b>Q Okay. And so for the Shuffle, when you say</b><br/> 13 <b>you've asked Econ, Inc. to run the regression turning</b><br/> 14 <b>the Shuffle off --</b><br/> 15 A No, that's not what I said. I said you've 11:19:38<br/> 16 turned -- you turn the 7.0 variable off for Shuffles.<br/> 17 <b>Q Okay. And how do you do that?</b><br/> 18 A You just -- you just run exactly the same<br/> 19 regression except an observation for a Shuffle never has<br/> 20 7.0 turned on, even if it's in the damages period. 11:19:55<br/> 21 <b>Q But I thought the 7.0 variable was either on</b><br/> 22 <b>or off?</b><br/> 23 A It's on --<br/> 24 <b>Q Excuse me. Depending on the time period. So</b><br/> 25 <b>as of September 12, 2006 you turned it on and gave it 11:20:10</b><br/> Page 85</p> |

\*APPLE'S (PROPOSED) REDACTIONS\*

EXHIBIT 52  
[Filed Under Seal]

# **The Apple iPod iTunes Anti-Trust Litigation**

**Videotaped Deposition of**

**ROBERT TOPEL, PH.D.**

**January 08, 2014**

**\*\*\*CONFIDENTIAL\*\*\***

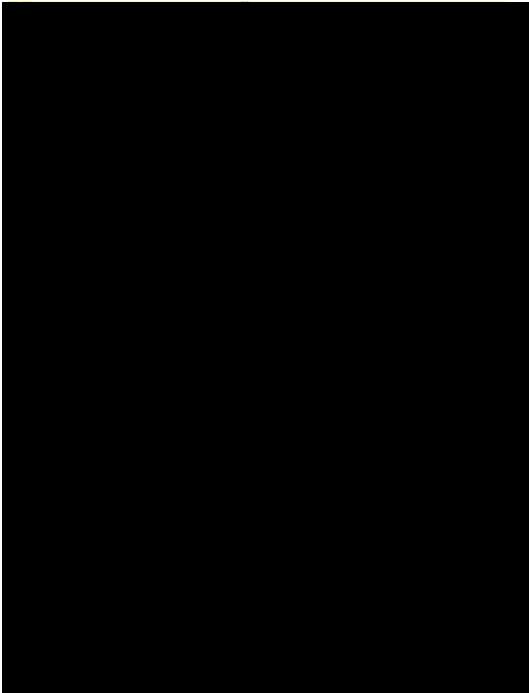
**Volume II**

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| 23 | Cathy A. Miccolis                                |          |
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| 1  | A P P E A R A N C E S                       | Page 195 |
| 2  |                                             |          |
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| 18 | dkiernan@jonesday.com                       |          |
| 19 |                                             |          |
| 20 | Also Present: Thomas C. Tracy, videographer |          |
| 21 |                                             |          |
| 22 |                                             |          |
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| 1  | THE VIDEOTAPED DEPOSITION OF ROBERT TOPEL,                | Page 197 |
| 2  | Ph.D., VOLUME II, was continued on January 8, 2014,       |          |
| 3  | commencing at 12:56 p.m. at the offices of BONNETT,       |          |
| 4  | FAIRBOURN, FRIEDMAN & BALINT, P.C., 2325 East Camelback   |          |
| 5  | Road, Suite 300, Phoenix, Arizona, before CATHY MICCOLIS, |          |
| 6  | a Certified Reporter in the State of Arizona.             |          |
| 7  |                                                           |          |
| 8  | THE VIDEOGRAPHER: We are now on the record.               |          |
| 9  | The time is approximately 12:56 p.m. Today's date is      |          |
| 10 | January 8, 2014. My name is Tom Tracy of Aptus Court      |          |
| 11 | Reporting. The court reporter is Cathy Miccolis of Aptus  |          |
| 12 | Court Reporting, located at 600 West Broadway, Suite 300, |          |
| 13 | San Diego, California 92101.                              |          |
| 14 | This begins the videotaped deposition of Robert           |          |
| 15 | Topel, Volume II, testifying in the matter of the Apple   |          |
| 16 | iPod iTunes Antitrust Litigation pending in the District  |          |
| 17 | Court of California, Division of Oakland, Case Number C   |          |
| 18 | 05-00037 YGR, taken at 2325 East Camelback, Suite 300,    |          |
| 19 | Phoenix, Arizona 85016.                                   |          |
| 20 | Counsel, will you please identify yourself and            |          |
| 21 | whom you represent for the record at this time, starting  |          |
| 22 | with the plaintiffs' counsel.                             |          |
| 23 | MS. SWEENEY: Bonny Sweeney for the plaintiffs.            |          |
| 24 | MR. KIERNAN: David Kiernan for Apple.                     |          |
| 25 | THE VIDEOGRAPHER: Thank you, Counsel. The                 |          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |
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| <p>1 as true? Because I think I said, you know, it could have<br/>2 been that I did something like that, but it's been months<br/>3 and I can't remember.<br/>4 BY MS. SWEENEY:<br/>5 Q. Well, it may have been months, but you just<br/>6 submitted a report on December 20th with these regressions<br/>7 and these additional variables, and I want to know how you<br/>8 picked those variables.<br/>9 MR. KIERNAN: Argumentative.<br/>10 THE WITNESS: They are the same ones that we<br/>11 used in the last round. We didn't change anything.<br/>12 BY MS. SWEENEY:<br/>13 Q. Okay. So my question is, you didn't -- so I<br/>14 will represent to you, and you can go back and check it --<br/>15 A. Okay.<br/>16 Q. -- that you took some variables that were in<br/>17 the dataset that were not used by Noll and put them in the<br/>18 regression, but not all of them, and then in addition you<br/>19 took some variables that were not in the dataset and added<br/>20 them. So I'm trying to figure out how you made the<br/>21 determination about which variables to add to the<br/>22 regressions.<br/>23 MR. KIERNAN: Asked and answered.<br/>24 THE WITNESS: It's been months. You know, if<br/>25 you asked me which one, I couldn't tell you. It's been,</p>                                                                                                                            | Page 218 | <p>1 you know, it's been more than months. It's been a really<br/>2 long time.<br/>3 BY MS. SWEENEY:<br/>4 Q. Other than what you alluded to earlier, that<br/>5 is, the regression output, are there standard tests that<br/>6 economists use to determine whether variables are<br/>7 correlated?<br/>8 MR. KIERNAN: Object to form.<br/>9 THE WITNESS: Sure.<br/>10 BY MS. SWEENEY:<br/>11 Q. Can you give me some examples?<br/>12 A. Well, since you're talking about<br/>13 multicollinearity, if I had some variable, call it Z, and<br/>14 I could -- if it's a problem of multicollinearity you're<br/>15 concerned with, you could regress Z on all the other Xs<br/>16 and see how much residual variation there is in Z, that<br/>17 is, how much -- what's the coefficient of multiple<br/>18 determination for Z regressed in all the other Xs.<br/>19 Q. Is there a name for that?<br/>20 A. Regression. (Laughter.)<br/>21 That's -- you know, it's -- you're finding the<br/>22 multiple correlation coefficient between Z and the other<br/>23 stuff.<br/>24 Q. And did you do that in this case on your added<br/>25 variables?</p> | Page 219 |
| <p>1 A. Well, implicitly, yes, because as I said<br/>2 before, the way the regression coefficient is calculated<br/>3 formally is it's using that part of -- I was using the<br/>4 term Z, so I will say Z -- that part of Z that's not<br/>5 correlated, not predictable from the other Xs, and it's<br/>6 using that variation to identify the coefficient on Z in<br/>7 that regression. So the fact that -- as I said before,<br/>8 the fact that that residual correlation, the stuff that's<br/>9 not correlated with the other stuff, can identify a<br/>10 statistically significant coefficient means that the<br/>11 collinearity between Z and the other Xs isn't so large<br/>12 that you're not able to identify a statistically<br/>13 significant effect.<br/>14 Q. Did you compute a variance inflation factor for<br/>15 each of the additional variables that you used?<br/>16 A. I don't know what you mean by a variance<br/>17 inflation factor for each variable.<br/>18 Q. Do you have any understanding of what a<br/>19 variation -- did I say that wrong? A variance inflation<br/>20 factor, do you know what that is?<br/>21 A. I assume the context in which you're using it<br/>22 is to something to inflate the variance, but no.<br/>23 Q. Do you know what a condition number is?<br/>24 A. A condition number? Not in the context in<br/>25 which we are using it here.</p> | Page 220 | <p>1 Q. Now, you keep referring back to the results of<br/>2 the regression. Did you add in the variables separately<br/>3 and see what the results were, or did you just conduct the<br/>4 regression where you added in all your additional<br/>5 variables and then ran the regression?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Page 221 |

\*APPLE'S (PROPOSED) REDACTIONS\*

EXHIBIT 53  
[Filed Under Seal]

# **The Apple iPod iTunes Anti-Trust Litigation**

**Videotaped Deposition of  
KEVIN MURPHY, PH.D.**

**January 08, 2014**

**\*\*\*CONFIDENTIAL\*\*\***

**Volume II**



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| 23 | Cathy A. Miccolis                                |          |
| 24 | RPR, CRR, CSR No. 50068                          |          |
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|----|---------------------------------------------|----------|
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| 17 | 415.626.3939                                |          |
| 18 | dkiernan@jonesday.com                       |          |
| 19 |                                             |          |
| 20 | Also Present: Thomas C. Tracy, videographer |          |
| 21 |                                             |          |
| 22 |                                             |          |
| 23 |                                             |          |
| 24 |                                             |          |
| 25 |                                             |          |

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|----|-----------------------------------------------------------|----------|
| 1  | THE VIDEOTAPED DEPOSITION OF KEVIN M. MURPHY,             | Page 236 |
| 2  | Ph.D., VOLUME II, was continued on January 8, 2014,       |          |
| 3  | commencing at 9:11 a.m. at the offices of BONNETT,        |          |
| 4  | FAIRBOURN, FRIEDMAN & BALINT, P.C., 2325 East Camelback   |          |
| 5  | Road, Suite 300, Phoenix, Arizona, before CATHY MICCOLIS, |          |
| 6  | a Certified Reporter in the State of Arizona.             |          |
| 7  |                                                           |          |
| 8  | THE VIDEOGRAPHER: The time on the record is               |          |
| 9  | 9:11 a.m. Today's date is January 8, 2014. My name is     |          |
| 10 | Tom Tracy of Aptus Court Reporting. The court reporter is |          |
| 11 | Cathy Miccolis of Aptus Court Reporting located at 600    |          |
| 12 | West Broadway, Suite 300, San Diego, California 92101.    |          |
| 13 | This begins the videotaped deposition of Kevin            |          |
| 14 | Murphy, Volume II, testifying in the matter of the Apple  |          |
| 15 | iPod iTunes Trust (sic) Litigation, pending in the        |          |
| 16 | District Court of California, Oakland Division, Case      |          |
| 17 | Number C 05-00037 YGR. This deposition is taking place at |          |
| 18 | 2325 East Camelback, Suite 300, Phoenix, Arizona 85016.   |          |
| 19 | Will counsel please identify themselves,                  |          |
| 20 | starting with the plaintiffs' counsel.                    |          |
| 21 | MS. SWEENEY: Bonny Sweeney for the plaintiffs.            |          |
| 22 | MR. KIERNAN: David Kiernan for Defendant                  |          |
| 23 | Apple, and Scott Murray, in-house counsel from Apple, may |          |
| 24 | be on the phone.                                          |          |
| 25 | Scott, are you on the phone?                              |          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |
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| <p>1 it's always going to be a judgment. You always have to<br/>2 use some judgment. You're not going to write down some<br/>3 set of rules because there is going to be a circumstance<br/>4 that satisfy those rules, and you'd say no, that doesn't<br/>5 make any sense in that context. I think you have to use<br/>6 your judgment.<br/>7 BY MS. SWEENEY:<br/>8 Q. When you use your judgment, what other<br/>9 considerations are you taking account of that might lead<br/>10 you in your judgment to exclude certain product<br/>11 characteristics from your regression?<br/>12 A. I guess we have to look at it case-by-case<br/>13 basis. I don't see any of the problems with these<br/>14 characteristics that would lead me to exclude them. You<br/>15 know, I gave you the example of occupation. That would be<br/>16 one that I definitely would exclude from an<br/>17 education/earnings relationship because that --<br/>18 controlling for that is going to miss a substantial impact<br/>19 of education, which it works through changing your<br/>20 occupation. So again, you could say, well, economics says<br/>21 occupation should matter for earnings, but it's not<br/>22 something in general you'd want to hold constant.<br/>23 Q. Did you conduct any analyses to see whether any<br/>24 of these additional variables that you added to the<br/>25 regression are collinear with variables already in</p>    | Page 293 | <p>1 Professor Noll's regression?<br/>2 A. Yes, I did. And the easiest way to see that is<br/>3 to evaluate the effect it has on the standard errors of<br/>4 the other variables. If they were highly collinear with<br/>5 those other variables, that will generally show up as a<br/>6 large increase in the standard error of the other<br/>7 variables in the regression</p> <p>[REDACTED]</p> <p>16 Q. Now, so you --<br/>17 A. I didn't even pause that time; correct?<br/>18 Q. I thought you had, but go ahead.<br/>19 A. I don't think my mouth even closed.<br/>20 Q. I have asked you to continue your response.<br/>21 Please do so.<br/>22 A. I have lost my train of thought. I'm sorry.<br/>23 Q. Other than the effect on the standard errors,<br/>24 did you conduct -- or strike that.<br/>25 So you said that because the results of your</p>                                                                                                                                                                                                                                                                                                                                                                                                      | Page 294 |
| <p>1 regression show that you don't have a collinearity problem<br/>2 because of otherwise you would see it in the standard<br/>3 errors, are there any other tests that one could conduct<br/>4 to determine whether the product characteristic variables<br/>5 that you added to the regression are collinear with<br/>6 variables already in Professor Noll's regression?<br/>7 MR. KIERNAN: Objection; argumentative.<br/>8 THE WITNESS: There are, but I think you could<br/>9 basically back those out from the standard errors because<br/>10 the other primary test that people do is kind of an<br/>11 auxiliary regression test where you look at the R-squared<br/>12 from regressing that variable on the other included<br/>13 variables in the regression. But you can actually back<br/>14 that out from the change in the standard errors and the<br/>15 change in the residual variance of the equation. So they<br/>16 amount to almost the same thing. That's something else<br/>17 you can look at.<br/>18 BY MS. SWEENEY:<br/>19 Q. Did you do that here?<br/>20 A. No, because you can really -- you can see<br/>21 what's going on with one from looking at the other. They<br/>22 are essentially capturing the same phenomena.<br/>23 Q. So other than looking at the standard errors<br/>24 and conducting what you called an auxiliary regression<br/>25 test, are there any other tests that one could conduct to</p> | Page 295 | <p>1 determine whether the variables that you added to the<br/>2 regression were collinear with variables already in the<br/>3 model?<br/>4 MR. KIERNAN: Object to form.<br/>5 THE WITNESS: You could. I mean, I assume you<br/>6 could do other things. Those are the two primary ones<br/>7 that people use.<br/>8 BY MS. SWEENEY:<br/>9 Q. Well, can you give me some specific examples of<br/>10 other kinds of tests you could conduct?<br/>11 A. I mean, it would all amount to essentially the<br/>12 same thing because you're trying to evaluate the extent to<br/>13 which this variable is a linear combination of the other<br/>14 variables that are in the regression, so I think anything<br/>15 else you do would be very similar.<br/>16 Q. So, but you can't give me any names of specific<br/>17 kinds of statistical tests you could conduct?<br/>18 A. I wouldn't recall the names, but they would<br/>19 be -- they would essentially amount to looking at the same<br/>20 types of things.<br/>21 Q. Well, what is a variance inflation factor?<br/>22 A. That's looking essentially at how much the<br/>23 standard errors go up when you include the additional<br/>24 variable.<br/>25 Q. So did you compute a variance inflation factor</p> | Page 296 |

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| <p>1 for each of the variables that you added to the<br/>2 regression?<br/>3 A. I did not specifically calculate it that way.<br/>4 I mean, you can calculate it from what we did. We have<br/>5 the variance inflation here that you could calculate by<br/>6 comparing the standard errors you get in the two different<br/>7 ways of calculating the model with or without those<br/>8 additional variables.<br/>9 Q. But -- so I'm not understanding. So you said,<br/>10 "I did not specifically calculate it that way." So is<br/>11 your testimony that you can do that and you can back it<br/>12 out, but you didn't go through that extra step?<br/>13 A. Yeah, because I didn't like take the ratio of<br/>14 the two numbers and square them. You could do that if you<br/>15 wanted.<br/>16 Q. What about, what is a condition number?<br/>17 A. A condition number is a characteristic of the<br/>18 matrix used to calculate the standard errors. I don't<br/>19 recall the specifics of how it's calculated. But again,<br/>20 it's looking at much of the same concept as you're looking<br/>21 at here in terms of the variance inflation factor or the<br/>22 ratio of the standard errors. All those things are<br/>23 looking at the same basic concept.<br/>24 Q. So in other words, you can use a condition<br/>25 number to check whether there is collinearity between</p>                                                           | Page 297 | <p>1 variables that you've added and variables that were<br/>2 already in the regression?<br/>3 A. I presume you could. I have never done it that<br/>4 way. But that would be one thing that would presumably<br/>5 reflect the impact. I think the bottom-line impact that<br/>6 you care most about is what happens to the standard errors<br/>7 because that is the bottom-line concern. That's why I<br/>8 think that's the most direct and easiest to understand<br/>9 approach.<br/>10 Q. And so going back to the condition number, you<br/>11 didn't use a condition number to check whether there was<br/>12 high collinearity between variables that you added and<br/>13 variables already in the model; correct?<br/>14 A. I did not specifically do that.<br/>15 Q. Let's assume that the variables that you added<br/>16 are highly collinear with the model in Professor Noll's<br/>17 model. If that's true, what is the added value of<br/>18 including them?<br/>19 A. Well, you can see it -- in terms of explanatory<br/>20 power, you can see it in the results on the table. And we<br/>21 talk about this in the report. I mean, if you look at the<br/>22 fraction of the remaining variance that's explained, you<br/>23 could compare, for example, you know, column -- column one<br/>24 and column two. You can see that adding those<br/>25 characteristics explain almost half of the remaining</p> | Page 298 |
| <p>1 variance, which is the standard one generally uses when<br/>2 thinking about adding variables.<br/>3 If you're worried about collinearity, you<br/>4 realize that, for example, in JT-6a that actually the<br/>5 standard error, the precision with which according to<br/>6 Professor Noll's analysis you can estimate the iTunes 7<br/>7 coefficient actually is improved, not reduced. So the<br/>8 problem you're worried about under collinearity of making<br/>9 it much more difficult to identify the existing variables,<br/>10 at least as far as it goes for Professor Noll's iTunes 7<br/>11 variable, doesn't happen.<br/>12 Q. So is it your opinion then that all of the<br/>13 added value of adding these variables is reflected in the<br/>14 regression output that's in your tables? I guess what I'm<br/>15 trying to get at is, is there anything else? I mean, I<br/>16 asked you, what is the added value of adding these<br/>17 variables if there is collinearity, and you responded by<br/>18 pointing to the regression output. Other than the<br/>19 regression output, can you identify for me any added value<br/>20 of adding variables to your regression?<br/>21 A. I think that --<br/>22 MR. KIERNAN: Objection; argumentative and to<br/>23 the extent it misstates his prior testimony.<br/>24 THE WITNESS: I think there is some added value<br/>25 that's also -- it is reflected in the tables, but I would</p> | Page 299 | <p>1 say something we haven't talked about yet is that adding<br/>2 those coefficients makes a substantial difference to his<br/>3 estimated coefficients, for example --<br/>4 (Reporter clarification.)<br/>5 A. Adding those variables has a substantial effect<br/>6 on his estimated coefficients, which underscores what we<br/>7 have talked about numerous times, which is his problem or<br/>8 potential problem with omitted variables. These are just<br/>9 some potential variables you could think about bringing<br/>10 into the analysis, and just including these made a<br/>11 dramatic difference to his results.<br/>12 BY MS. SWEENEY:<br/>13 Q. Are you suggesting that there are other<br/>14 variables that you could add to the regression?<br/>15 A. I don't know if they are ones that we have, but<br/>16 it makes the point that his analysis is sensitive to the<br/>17 existence of omitted variables and, you know, I don't<br/>18 think -- we kind of know we don't have everything that<br/>19 would determine pricing, and that makes us worried that<br/>20 other variables could cause his coefficients to change<br/>21 even more.<br/>22 Q. So if you add variables to your regression that<br/>23 are highly collinear with variables that are already in<br/>24 the model, can one effect be to reduce the reliability of<br/>25 the model?</p>                                            | Page 300 |

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| <p>Page 301</p> <p>1 MR. KIERNAN: Object to form. Vague.<br/>2 THE WITNESS: If in fact they were highly<br/>3 collinear, you could have that problem, but generally that<br/>4 will be reflected in the standard errors, and the impact<br/>5 it has is going to depend on the other variable you're<br/>6 concerned about. If I introduce a variable that's highly<br/>7 correlated with variable A, but it's not highly correlated<br/>8 in a multi-varied sense with variable B, it may affect the<br/>9 precision which I can affect -- estimate the coefficient<br/>10 on A, but it may not have much effect at all --<br/>11 (Reporter clarification.)<br/>12 A. -- the precision with which I can estimate the<br/>13 coefficient on the variable where it has a strong<br/>14 relationship, but often won't have an impact on my<br/>15 precision of estimating the other variable. And so you<br/>16 don't want to like have this blanket statement across the<br/>17 regression.<br/>18 And what's key here is that the precision with<br/>19 which I can estimate the iTunes 7 variable, which is I<br/>20 think the primary variable of interest here, is not<br/>21 reduced substantially by and in some cases actually<br/>22 increased by adding these additional variables.<br/>23 BY MS. SWEENEY:<br/>24 Q. So looking at Exhibit JT-1a, which is the --<br/>25 this reflects at least in the right-hand columns when you</p> | <p>Page 302</p> <p>1 added in the additional characteristics; correct?<br/>2 A. Yes.<br/>3 Q. And did you do any analysis whereby you just<br/>4 added these additional variables one at a time? Is that<br/>5 reflected anywhere in your report or in the exhibits?<br/>6 MR. KIERNAN: Object to form.<br/>7 THE WITNESS: It's not reflected in the<br/>8 exhibits. I don't recall whether we did that or not.<br/>9 BY MS. SWEENEY:<br/>10 Q. I had -- let's see. Strike that.<br/>11 You talk in your report about additional<br/>12 characteristics that you have added having joint<br/>13 significance. What do you mean by that?<br/>14 A. That is, you're asking how much do they add to<br/>15 the explanatory power on a combined basis, not on a<br/>16 one-off basis. You're asking -- joint significance says<br/>17 formally if you're thinking about a statistical test,<br/>18 you're testing the hypothesis that the coefficients on all<br/>19 the variables are zero, that the true model is zero<br/>20 coefficient on all the variables. You're not testing<br/>21 whether any one of them is zero. You're testing whether<br/>22 they are all jointly equal to zero. That's the hypothesis<br/>23 being tested in that joint test.<br/>24 Q. Can you have joint significance in a regression<br/>25 that also exhibits high multicollinearity?</p>                    |
| <p>Page 303</p> <p>1 MR. KIERNAN: Object to form. Vague.<br/>2 THE WITNESS: You could in principle, but the<br/>3 evidences in this case is there isn't high degree of<br/>4 multicollinearity between that and the other variables of<br/>5 interest in his regression, which is what really matters<br/>6 for the purpose of our analysis.<br/>7 BY MS. SWEENEY:<br/>8 Q. Is there high collinearity between that and<br/>9 variables other than the variables of interest?<br/>10 MR. KIERNAN: Object to form.<br/>11 THE WITNESS: I don't know about high. I --<br/>12 there -- there are going to be varying degrees to which<br/>13 they are correlated with other variables in the<br/>14 regression. But the impact of that is primarily going to<br/>15 be on the coefficients of those variables, not on the<br/>16 coefficients of the variables that continue to have<br/>17 substantial amounts of independent variation.<br/>18 BY MS. SWEENEY:<br/>19 Q. You say in your report that the additional<br/>20 characteristics that you've added, the additional<br/>21 variables, increases the R-squared of the regressions.<br/>22 Can a regression that exhibits high multicollinearity have<br/>23 a high R-squared?<br/>24 MR. KIERNAN: Object to form. Vague.<br/>25 THE WITNESS: Yeah, you could have a high</p>                                                                                                            | <p>Page 304</p> <p>1 R-squared with high multicollinearity, but if they were<br/>2 really -- but that's kind of like orthogonal to what we<br/>3 are talking about here. The key here is that adding these<br/>4 variables added to the explanatory power of the regression<br/>5 substantially. In the limit if these things were just<br/>6 multicollinearity with what you already had, they wouldn't<br/>7 add anything. And they are not reducing the precision<br/>8 with which I can estimate the other coefficients.<br/>9 That's -- and particularly the coefficient of interest.<br/>10 That's the key question about whether you have an issue<br/>11 here with multicollinearity.<br/>12 BY MS. SWEENEY:<br/>13 Q. Did you look at the extent to which the<br/>14 additional characteristics that you added are correlated<br/>15 with particular iPod models or families?<br/>16 MR. KIERNAN: Object to form.<br/>17 THE WITNESS: My suspicion is they would be<br/>18 correlated. In some sense that's why you're controlling<br/>19 for them. One of the major reasons you control for<br/>20 variables is that they are correlated with other aspects<br/>21 of the model you have.<br/>22 BY MS. SWEENEY:<br/>23 Q. And in some cases isn't it true that some of<br/>24 these characteristics are probably 100 percent correlated<br/>25 with a particular iPod model?</p> |

\*APPLE'S (PROPOSED) REDACTIONS\*

EXHIBIT 62  
[Filed Under Seal]

1 UNITED STATES DISTRICT COURT  
2 NORTHERN DISTRICT OF CALIFORNIA  
3 SAN JOSE DIVISION

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5 THE APPLE iPOD iTUNES  
6 ANTITRUST LITIGATION

7 No. C-05-00037-JW(RS)

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12 VIDEOTAPED DEPOSITION OF ROGER G. NOLL

13 VOLUME I

14 (Pages 1 to 215)

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16 Taken before ERIN F. ROBINSON

17 CSR NO. 12199

18 April 7, 2011

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6 MR. MEDICI: Object to form.

7 THE WITNESS: If they assume that it.

8 BY MR. MITTELSTAEDT:

9 Q. -- then they wouldn't change prices?

10 A. Then they wouldn't change prices.

11 MR. MITTELSTAEDT: Okay. Why don't we stop  
12 there for the day.

13 THE WITNESS: Okay.

14 THE VIDEOGRAPHER: This concludes Volume 1 of  
15 Dr. Roger Noll. We are off the record at 3:38.

16 (Whereupon, the deposition was adjourned at  
17 3:38 p.m.)

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SIGNATURE OF WITNESS