

EXHIBIT 54

1 UNITED STATES DISTRICT COURT
2 NORTHERN DISTRICT OF CALIFORNIA
3 SAN JOSE DIVISION
4

5 APPLE INC., a California
6 corporation,

7 Plaintiff,

8 vs.

CASE NO. 11-cv-01846-LHK

9 SAMSUNG ELECTRONICS CO.,
10 LTD., a Korean business
11 entity; SAMSUNG ELECTRONICS
12 AMERICA, INC., a New York
13 corporation; SAMSUNG
14 TELECOMMUNICATIONS AMERICA,
15 LLC, a Delaware limited
16 liability company,
17 Defendants.

18 _____/

19 H I G H L Y C O N F I D E N T I A L
20 A T T O R N E Y S ' E Y E S O N L Y

21 VIDEOTAPED DEPOSITION OF FLETCHER ROTHKOPF
22 REDWOOD SHORES, CALIFORNIA
23 WEDNESDAY, FEBRUARY 29, 2012

24 BY: ANDREA M. IGNACIO HOWARD, CSR, RPR, CCRR, CLR
25 CSR LICENSE NO. 9830
JOB NO. 46055

1 having on iPhones during the development phase. I 09:29

2 won't be able to remember them all. Developing a 09:29

3 product, there's hundreds of issues, so -- 09:29

4 Q As you sit here, do you -- do you remember 09:29
5 any of those issues? 09:29

6 A Sure. 09:29

7 Is there a specific type of technical issue 09:29
8 that you're -- you want me to try to remember or -- 09:30

9 Q No. I'm just -- 09:30

10 A -- relating to any particular aspects? 09:30
11 Because, like I said, there are hundreds. 09:30

12 Q As you sit here, do you -- do you recall -- 09:30
13 are there categories of issues that you -- that you 09:30
14 recall? 09:30

15 A Sure. 09:30

16 Q What -- what are those categories of issues? 09:30

17 A Cosmetic issues; manufacturing issues; design 09:30
18 issues; and related to manufacturing issues, cost -- 09:30
19 cost control issues; and then -- and then issues that 09:30
20 are brought about trying to meet the industrial 09:30
21 design. It kind of goes into the cosmetic issues 09:30
22 category. 09:30

23 Q With respect to any version of the iPhone, 09:31
24 what issues do you recall having been brought about by 09:31
25 trying to meet the industrial design? 09:31

1 A Doing the white version of the iPhone was 09:31
2 challenging. We had to pioneer a lot of -- a lot of 09:31
3 new things we weren't expecting that would be 09:31
4 difficult to make that product white. 09:31

5 More issues around the home button. That's a 09:31
6 really big, big detail to our ID team, so getting that 09:31
7 perfect is -- is always tricky. 09:31

8 Issues around the detail, the finishing of 09:31
9 the bottom housings and the -- the cosmetic and 09:31
10 structural parts for the -- for the phone. 09:31

11 Q Anything else? 09:32

12 A Like I said, there are -- there are hundreds 09:32
13 of different individual issues. Those are the main 09:32
14 ones that come to mind as far as things that were 09:32
15 truly challenging and/or were being talked about a lot 09:32
16 and took a lot of research just to solve. 09:32

17 Q Any others that come to mind as you sit here? 09:33

18 A No. Those are the big ones. 09:33

19 Q Any -- any smaller ones that come to mind as 09:33
20 you sit here? 09:33

21 A Tiny details around how to finish the screws 09:33
22 on the outside of the product. There are two screws 09:33
23 on the -- that the user can see on the outside of the 09:33
24 product. Those were, again, a detail that the ID team 09:33
25 wanted to pay a lot of attention to. And to an 09:33

1 engineer, a screw is normally just a screw. But in 09:33
2 this case they were really tricky, expensive, 09:33
3 laborious. 09:33

4 Q Anything else? 09:33

5 A Small, small design details. There were 09:34
6 issues on the phone. That's all that comes to mind. 09:34

7 Q Is there a white version of the iPod Touch? 09:34

8 A There is. 09:34

9 Q And did you encounter the same problems with 09:34
10 the white version of the iPod Touch that were 09:34
11 encountered with the white version of the iPhone? 09:34

12 A Many of them. 09:34

13 Q And what -- what were the -- what were the 09:34
14 challenges that you referred to doing the -- the white 09:34
15 version of the iPhone? 09:34

16 A The main ones are making the -- the white ink 09:34
17 on the back of the glass opaque enough that light 09:35
18 doesn't shine through where you don't want it to shine 09:35
19 through, and making the sensors, particularly the 09:35
20 light-related sensors, like the ambient light sensor, 09:35
21 work properly, even though you have a much more 09:35
22 reflective surface around it than you did when you had 09:35
23 a black -- black ink. 09:35

24 Those are the big ones, but that -- that -- 09:35
25 iPhone had paved the way, and those guys had resolved 09:35

1 most of the technical issues, so we could roll their 09:35
2 findings into the iPod Touch. 09:35

3 Q Do you recall -- so -- so the two issues that 09:35
4 you identified for me, using the white ink -- or 09:36
5 getting the white ink on the back of the glass opaque 09:36
6 enough so light didn't shine through where you didn't 09:36
7 want it to shine through, and then also the issue with 09:36
8 the ambient light sensors with the more reflective 09:36
9 surface, those are -- those are challenges that -- 09:36
10 that you had to deal with on the white version of the 09:36
11 iPod Touch? 09:36

12 A Yes. 09:36

13 Q Do you recall -- you had mentioned that 09:36
14 the -- a lot of the challenges had been addressed by 09:36
15 the folks doing the -- the white version of the 09:37
16 iPhone, and that they had paved the way for you. 09:37

17 Do you recall any of the challenges that the 09:37
18 folks doing the white version of the iPhone 09:37
19 challenged -- encountered -- I'm sorry -- encountered, 09:37
20 other than the two that you've just described for me? 09:37

21 A Yes. 09:37

22 Q What issues do you recall with respect to the 09:37
23 white version of the iPhone? 09:37

24 A Figuring out how to make the -- the white 09:37
25 plastic around the glass not stain. For example, inks 09:37

1 coming off of someone's clothes when the phone was in 09:37
2 their pocket staining the white plastic. 09:37

3 We don't have a proximity sensor on the iPod 09:37
4 Touch, but they do on the phones, and getting that to 09:37
5 work through the white was also a challenge. 09:37

6 The appearance of the home button again in 09:38
7 white was a challenge. 09:38

8 Those -- those are the ones I remember that 09:38
9 the product design team specifically had to deal with. 09:38

10 Q You referred to the -- the challenge of 09:38
11 getting the white ink on the back of the glass opaque 09:38
12 enough so that light didn't shine through where you 09:38
13 didn't want it to. 09:38

14 Where -- where is that -- where is that ink 09:39
15 on the back of the glass? Is there an area that 09:39
16 you're referring to? 09:39

17 A The ink is everywhere except for some 09:39
18 specific locations. One is where the screen is. The 09:39
19 screen doesn't shine through ink. And then there are 09:39
20 a few other discrete locations where there are no -- 09:39
21 there is no ink or there's different types of ink. 09:39
22 The ambient light sensor lives where the proximity 09:39
23 sensor lives. Obviously, there is no ink in the 09:39
24 receiver hole or the home button hole. 09:39

25 Q So other than those locations you described, 09:39

1 there's white -- white ink that's on the back of 09:39

2 the -- the glass cover of the iPhone? 09:39

3 A Right. When you see white on the front of 09:39

4 the iPhone, that's the ink on the back of the glass. 09:39

5 Q What's the purpose of that ink -- white ink 09:39

6 on the back of the glass? 09:39

7 A It's cosmetic. It stops you from seeing all 09:39

8 the -- all the guts, if you will, on the inside of the 09:39

9 phone. 09:40

10 Q So if that -- if that ink weren't there, you 09:40

11 would see the components on the inside of the phone? 09:40

12 A And you would see the glue on the back of the 09:40

13 glass that was holding it onto the product and the 09:40

14 not-pretty stuff. 09:40

15 Q So what was the -- the issue, as you recall 09:40

16 it, with getting the white ink opaque -- opaque enough 09:40

17 so that light didn't shine through? 09:40

18 A The issue was that a given layer of white ink 09:40

19 at a given thickness did not have the opacity of that 09:40

20 same thickness of black ink. 09:40

21 Q And why -- why was that an issue? 09:41

22 A It's an issue because there are light sources 09:41

23 inside the product besides the active area of the 09:41

24 display, and you don't want those to shine through the 09:41

25 ink. So the LEDs that light the back light for the 09:41

1 display, those leak some undesired light, and you 09:41
2 don't want to be able to see that from the outside of 09:41
3 the product. 09:41

4 Q So the -- the -- the -- what was it about the 09:41
5 white ink that made that more of a challenge than -- 09:41
6 than black -- the black ink -- 09:41

7 A It was -- 09:41

8 Q -- that was used on, I guess, the black 09:41
9 versions of the -- of the iPhone? 09:41

10 A -- it was the lower opacity. So for a given 09:42
11 intensity of stray light source, you'll be able to see 09:42
12 that more easily from the outside of the product with 09:42
13 a given thickness of white ink versus black ink. 09:42

14 Q And is -- is that -- well, could that issue 09:42
15 be resolved just by using more than one -- using 09:42
16 additional layers of the -- of the white ink? 09:42

17 A That's one of the ways that that's resolved. 09:42

18 Q How -- how was this issue resolved? 09:42

19 A A combination -- a combination of factors: 09:42
20 More white ink, as you said; printing different colors 09:42
21 of ink that were more opaque behind the white ink; and 09:43
22 I believe there was some amount of reformulation of 09:43
23 the white ink to make it more opaque for a given 09:43
24 thickness. I wasn't directly involved in that 09:43
25 chemistry. 09:43

1 Q Are there -- were there any manufacturing 09:43

2 issues surrounding the -- the use of the white ink? 09:43

3 A Yes. 09:43

4 Q What were the -- the manufacturing issues? 09:43

5 A The main one that my team was directly 09:44

6 dealing with -- and when I say "my team," I mean the 09:44

7 product design team -- is every time you print a layer 09:44

8 of ink, there's some fallout for that step. So the 09:44

9 more layers you add, the more fallout you have. So 09:44

10 it's a -- it's a yield-related process issue to print 09:44

11 more layers. 09:44

12 Q Any other manufacturing issues in connection 09:44

13 with using the white ink on the white version of the 09:44

14 iPhone? 09:44

15 A Yes. 09:44

16 Q What -- what other manufacturing issues? 09:44

17 A Laminating a touch sensor to the -- to the 09:44

18 back of the glass is more challenging when the ink is 09:44

19 thicker. 09:44

20 Q Any others? 09:45

21 A Not that I can think of directly relating to 09:45

22 the -- the white ink. 09:45

23 Q You mentioned that one of the manufacturing 09:45

24 issues with the white ink used on the white iPhone -- 09:45

25 and, I take it, also on the white iPod Touch; is that 09:45

1 correct? 09:45

2 A Which one are you talking about? 09:45

3 Q Well, I'm sorry. That's not a good question. 09:45

4 Let me rephrase. 09:45

5 One of the manufacturing issues that you 09:45

6 mentioned about -- mentioned concerning the white ink 09:45

7 that's used with the white version of the iPhone, is 09:46

8 that the more layers you print, the more fallout there 09:46

9 is. 09:46

10 What do you mean by -- by "fallout"? 09:46

11 A Something that causes you to throw a piece of 09:46

12 glass away in the factory. 09:46

13 Q And so when you -- when you said "yield 09:46

14 issue," that means -- that's -- that's the same issue? 09:46

15 A Yes. 09:46

16 Q Yield -- well -- 09:46

17 A 1 over yield equals fallout. 09:46

18 Q I'm sorry. What over yield equals fallout? 09:46

19 A I guess 1 minus yield equals fallout. So if 09:46

20 you have 40 percent yield, then you have 60 percent 09:46

21 fallout. If you have 25 percent yield, then you have 09:46

22 75 percent fallout. They're just the inverse of each 09:46

23 other. 09:46

24 Q Got it. 09:46

25 And so in the manufacturing of the white 09:46

1 version of the iPhone and -- and the white version of 09:47
2 the iPod Touch, was there more fallout with the cover 09:47
3 glass? 09:47

4 A In the development phase, yes. I don't know 09:47
5 what the production numbers are. 09:47

6 Q And -- and so do you know if in the 09:47
7 production process that fallout issue with the glass, 09:47
8 with the white ink was -- was addressed or resolved? 09:47

9 A I don't know. 09:47

10 Q One of the other manufacturing issues that 09:48
11 you mentioned with respect to the white ink that's 09:48
12 used on the white version of the iPhone is that 09:48
13 laminating the touch sensor to the back of the glass 09:48
14 became more challenging; is that right? 09:48

15 A Correct. 09:48

16 Q And do you know how that issue was -- was 09:48
17 addressed? 09:48

18 A Yes, yes. 09:48

19 Q How was that issue addressed? 09:48

20 A Changing the type of adhesive that's used and 09:48
21 the process that's used to laminate the touch sensor 09:48
22 to the glass. 09:48

23 Q Were there any cost control issues related to 09:49
24 the white iPhone compared to the black version of the 09:49
25 iPhone? 09:49

1 that you're aware of that the white version of the 09:51

2 iPhone costs more than the black version? 09:51

3 A Not that I can think of. I think that the 09:51

4 other changes that we made aren't necessarily big cost 09:51

5 drivers, but I'm -- I'm not totally sure. 09:51

6 Q So the main cost driver that you're aware of 09:51

7 is the -- the requirement to have more -- more ink 09:51

8 layers for the white ink than the black ink? 09:51

9 A Correct. 09:52

10 Q And does it cost more to make the white 09:52

11 version of the iPod Touch than the black version, for 09:52

12 these same reasons? 09:52

13 A Yes, for -- specifically for the reason that 09:52

14 there are more layers of ink. That's one of them, 09:52

15 yeah, the only one I'm really sure about. 09:52

16 Q And do you know how much more it costs to 09:52

17 make a white version of the iPod Touch than a black 09:52

18 version? 09:52

19 A I don't know exactly how much. 09:52

20 Q Have you seen any documents that indicate 09:52

21 what the cost difference is between making a white 09:52

22 version of the iPod Touch than a black version? 09:52

23 A Yes. 09:52

24 Q And what -- what documents are those? 09:52

25 A I don't remember the specific document 09:52

1 that -- that has that, but I have seen that -- 09:53

2 estimates of that price delta before. 09:53

3 Q Do you recall any -- any of the documents 09:53
4 you've seen that estimate that price delta? 09:53

5 A I don't recall which specific documents. 09:53

6 Q So we had started down this path of 09:53
7 questioning when I'd asked you about technical issues 09:54
8 regarding the -- the iPhone that you were aware of. 09:54

9 And you listed for me a number of categories 09:54
10 of -- of those issues, and one of those categories was 09:54
11 issues brought about by trying to meet the -- the 09:54
12 industrial design. 09:54

13 And within that category, you mentioned a 09:54
14 couple of things, and one of them was the challenges 09:54
15 surrounding the white version of the iPhone, and 09:54
16 that's what we've -- we've just talked about. 09:54

17 One of the other issues in that category 09:54
18 was -- that you mentioned was issues around the home 09:54
19 button; do you recall that? 09:54

20 A Yep. 09:54

21 Q And what issue -- what issues around the home 09:54
22 button do you -- do you recall with respect to the 09:55
23 iPhone? 09:55

24 A This is going to be boring, but white is less 09:55
25 opaque than black, and so you can see a shadow through 09:55

1 the -- if we make a white button exactly the same way 09:55
2 we make the black button, in some cases you see a 09:55
3 shadow line through the -- through the button. So we 09:55
4 changed the structure of the button slightly to 09:55
5 address that. 09:55

6 Q And why did you need to -- so this is a -- 09:55
7 this is a white version of the iPhone versus black 09:55
8 version of the iPhone issue as well? 09:55

9 A Yes. Specifically, my knowledge relates to 09:55
10 the white and black iPod Touch. 09:56

11 Q Okay. And so for the iPod Touch -- the white 09:56
12 version of the iPod Touch, to address the opacity 09:56
13 issue with respect to the white ink, you needed to 09:56
14 make some structural changes to -- to the home button; 09:56
15 is that correct? 09:56

16 A Yes. 09:56

17 Q And that's because you needed more layers 09:56
18 of -- of white ink on the home button area? 09:56

19 A It's actually white plastic for the home 09:56
20 button, but we needed to keep the white plastic at 09:56
21 a -- at a minimum thickness. 09:56

22 And there are some -- some other cosmetic -- 09:56
23 cosmetic issues related to having white parts, again, 09:56
24 like staining and -- it's easier to pick stuff out 09:56
25 with your eyes on a white better than it is on a black 09:56

1 Q And how was that challenge addressed or 10:37
2 resolved? 10:37

3 A By alloy selection. 10:37

4 Q And what was the -- the alloy selection? 10:37

5 A I can't remember the specific alloy. It's 10:37
6 just one of the many stainless steel alloys. 10:38

7 Q Does -- does the bezel on the iPhone 3G and 10:38
8 3GS tie the housing together with the cover glass? 10:38

9 A No. 10:38

10 Q How -- how is the bezel on the iPhone 3G and 10:38
11 3GS different from the bezel on the original iPod 10:38
12 Touch in that respect? 10:39

13 A On the original iPod Touch, the glass is 10:39
14 adhered to the bezel, and then the bezel is snapped 10:39
15 into the bottom housing. The bezel is made out of 10:39
16 aluminum. 10:39

17 On the -- on the 3GS, the bezel and the 10:39
18 housing are glued together before the glass is 10:39
19 installed. Then the glass is not adhered directly to 10:39
20 the bezel. 10:39

21 Q On -- on the iPhone 3G and 3GS, does the 10:39
22 bezel help keep the glass in place? 10:39

23 A I can imagine some situations where it 10:39
24 would. I wouldn't say it's specifically designed to 10:39
25 do that. 10:39

1 Q Is -- is the -- is the bezel that's used with 10:39
2 the iPhone 3G and 3GS different from the bezel used on 10:39
3 the original iPhone? 10:39

4 A It's different. 10:40

5 Q How is it different? 10:40

6 A Honestly, I'm not familiar enough with the 10:40
7 part -- I'm not familiar enough with the part to 10:40
8 answer that question in detail. I know it is a 10:40
9 different part. I don't even know if it's the same 10:40
10 alloy or a different alloy. I know they're both 10:40
11 steel. 10:40

12 Q Does the bezel on the iPhone 3G and 3GS help 10:40
13 prevent the edge of the cover glass from -- from 10:40
14 getting chipped? 10:40

15 A I can imagine some situations in which it 10:40
16 would help. 10:40

17 Q What situations would that be? 10:40

18 A Were you to drop the phone at such an angle 10:40
19 that it impacted the bezel instead of the glass. 10:40

20 Q Any other situations where that would be 10:41
21 true? 10:41

22 A There are other things you could do to your 10:41
23 phone besides drop it where you would impact the bezel 10:41
24 before impacting the glass, and that would help reduce 10:41
25 chipping. 10:41

1 Q Does the bezel on the iPhone 3G and 3GS help 10:41
2 protect the -- the device from -- from impacts? 10:41

3 A That's a -- that's a difficult question to 10:42
4 answer because inherently, anything on the outside of 10:42
5 the device could help protect the inside of the 10:42
6 device. Whether the bezel specifically helps and in 10:42
7 which situations, I don't know. 10:42

8 Maybe you can be more specific about what 10:42
9 helps to protect means. Are we talking about drop? 10:42
10 Are we talking about rain? Are we talking about -- 10:42
11 there's a lot of different protection -- types of 10:42
12 protection. 10:42

13 Q Protection from -- from the phone if it were 10:42
14 to be dropped or, you know, inadvertent -- you know, 10:42
15 some sort of inadvertent blow. 10:42

16 A Again, situations where the bezel ends up 10:42
17 between the -- some foreign object and the glass would 10:42
18 be situations where it was protecting, you could say. 10:43

19 Q Can you think of instances where the bezel 10:43
20 would provide that kind of protection? 10:43

21 A The -- the drop instance that I mentioned 10:43
22 before where you drop at such an angle that you impact 10:43
23 the bezel before the glass. 10:43

24 Maybe if you had the -- the phone in your 10:43
25 purse with a sharp object, like keys, and they hit the 10:43

1 bezel before they hit the glass. 10:43

2 Q What about if you, like, inadvertently bang 10:43
3 the phone against some sort of, you know, solid 10:43
4 object? 10:43

5 A Yes, however you -- I mean, whether you're 10:43
6 dropping the phone or something is coming toward it, 10:43
7 if the bezel gets between the glass and that object, 10:43
8 it could serve as protecting. 10:43

9 Q You said that the -- the bezel on the 10:44
10 iPhone 3G and 3GS has both -- both has -- strike that. 10:44

11 You said that the bezel on the iPhone 3G and 10:44
12 3GS has both a cosmetic and a functional part. 10:44
13 What -- what did you mean by that? 10:44

14 A The cosmetic part means the part that the 10:44
15 user sees from the outside of the phone. And the 10:44
16 functional part means things like screw holes or 10:44
17 brackets or flanges that serve to keep the bezel 10:44
18 connected to the rest of the -- the rest of the phone. 10:44

19 Q Does the bezel on the iPhone 3G and 3GS 10:45
20 provide structural support for the -- for the device? 10:45

21 MR. OVERSON: Objection; vague; foundation. 10:46

22 THE WITNESS: When you say "structural 10:46
23 support," what -- what do you mean, structural 10:46
24 support? 10:46

25 MR. KIDMAN: Q. Is that -- is that -- you 10:46

1 know, is that a term that you're familiar with? 10:46

2 A Yes, but -- yeah, it is. 10:46

3 Q What -- what's -- what's your understanding 10:46
4 of the term structural support when it's used in 10:46
5 connection with a device like -- like the iPhone? 10:46

6 A Something that would, for example, protect 10:46
7 the display from deflection during a drop event, like 10:46
8 a frame. 10:46

9 Q And -- and using that definition of the term 10:46
10 structural support, does the bezel on the iPhone 3G 10:46
11 and 3GS provide structural support for the device? 10:46

12 A I don't think it protects the display from -- 10:46
13 from deflection during drop. It is a stiff part, so 10:46
14 it will contribute to the overall rigidity and 10:47
15 stiffness of the device. 10:47

16 Q Is there some -- some level of stiffness or 10:47
17 rigidity that -- that you want to achieve with a 10:47
18 device like the -- like the iPhone? 10:47

19 A Sometimes you want it to be stiff and 10:47
20 sometimes you don't. 10:47

21 Q What -- what do you mean by that? 10:47

22 A There are different events that the phone 10:47
23 will experience in the field where stiffness will be 10:47
24 either advantageous or disadvantageous. 10:47

25 Q What are events where it would be 10:48

1 have a kind of black stripe on the top and the bottom, 11:58
2 and that bottom black stripe is where the home button 11:58
3 sits. 11:58

4 Some of the designs didn't have that black 11:58
5 stripe. So it was mostly screen with no border on the 11:58
6 top and bottom, less border on the top than bottom. 11:58
7 No home button at all. 11:58

8 Q When you say some of these designs had no 11:58
9 black strip on the top or the bottom, when you say 11:58
10 black strip, is that sometimes what's called, at least 11:58
11 with respect to the iPhone, the black mask? 11:58

12 A Yes, and I don't mean to say there was no 11:58
13 black mask at all, but there wasn't that kind of 11:58
14 thicker black mask at the top and the bottom. 11:58

15 Q The black mask at the -- at the top and the 11:58
16 bottom was narrower than the black mask on the -- the 11:59
17 product that shipped? 11:59

18 A Correct. Narrower and more close in width to 11:59
19 the left and right sides. 11:59

20 Q Any -- any other differences between the 11:59
21 design explorations you saw and the -- the design of 11:59
22 the device as it shipped, industrial design? 11:59

23 A No. 11:59

24 Q On those design explorations that you saw 11:59
25 where the black mask was narrower at the -- at the -- 11:59

1 at the top and at the bottom, in those design 12:00

2 explorations, was the -- was the screen larger to -- 12:00

3 to fill that area? 12:00

4 A I would say actually that the product was 12:00

5 shorter as opposed to the screen getting larger, so it 12:00

6 maintained that rectangular aspect ratio. Just bring 12:00

7 in the whole product to make that black mass smaller. 12:00

8 Q Have you -- have you seen any design 12:00

9 explorations for any version of the -- the iPod Touch 12:00

10 where the screen runs all the way to the -- to the 12:00

11 edge of the -- the -- the front glass? 12:00

12 A Industrial designs? 12:00

13 Q Yeah. Let's -- let's start with -- let's 12:01

14 start with that. 12:01

15 A The reason I'm distinguishing between them is 12:01

16 because there are things that they ask for that are 12:01

17 industrial designs that I've never seen a mechanical 12:01

18 design for, because sometimes they ask for certain 12:01

19 things we just don't know how to do the mechanical 12:01

20 design for. 12:01

21 Q Okay. But fair -- that's a fair distinction. 12:01

22 Have -- have you seen any industrial designs 12:01

23 of any version of the iPod Touch where the screen ran 12:01

24 all the way to the edge of -- of the top glass? 12:01

25 A Yes. 12:01

1 Q Have you seen any mechanical designs where 12:01
2 the screen ran all the way to the edge of the top 12:01
3 glass? 12:01

4 A No, not mature kind of shippable mechanical 12:01
5 designs, only crazy brainstorm ideas. Nothing I would 12:01
6 call a design, really. 12:01

7 Q Okay. And are you aware of any reason why 12:01
8 those industrial designs where the screen ran all the 12:02
9 way to the edge of the top glass were not adopted? 12:02

10 A Yes. 12:02

11 Q And what are those reasons? 12:02

12 A There's a -- with current display technology, 12:02
13 there is necessarily a border between where the active 12:02
14 region of the display ends and where the glass that 12:02
15 makes up the display ends. 12:02

16 So there's a dead zone, if you will, a border 12:02
17 around the display itself, and that's there because 12:02
18 there are a bunch of electrical traces running from 12:02
19 the top to the bottom. 12:02

20 The display is made of two pieces of glass 12:02
21 that need to be sealed together hermetically in order 12:02
22 for a normal LCD display to function properly, and so 12:02
23 there's some sort of overhead there that necessarily 12:02
24 creates a border so that the screen can actually run 12:02
25 to the very edge of the product. 12:02

1 Q And this border where the active region of 12:04
2 the display ends and where the glass that makes up the 12:04
3 display ends, is -- is there a name for that that -- 12:04
4 that you've used or heard? 12:04

5 A Actually, the border. Yep, we call -- we 12:04
6 refer to them as border rules or border design rules, 12:05
7 and that every time we do a display, we look at how 12:05
8 much length will there be. How much distance will 12:05
9 there be between the end of the active area and the 12:05
10 end of the physical display, the glass. 12:05

11 Q And what's -- what's the size of that border 12:05
12 on the -- on the original iPod Touch? 12:05

13 A Oh, I can't remember the exact number. On 12:05
14 the order of 2 millimeters-ish. 12:05

15 Q So is that border, that region where the 12:05
16 active region of the display ends and where the glass 12:05
17 of the display ends, is that different from the -- 12:05
18 what we refer to as the "black mask"? 12:05

19 A It is different from the black mask, yes. 12:05

20 Q And in that border where the active region of 12:05
21 the display ends and where the glass makes up where 12:06
22 the display ends, is that sometimes called the "dead 12:06
23 pixel zone"? 12:06

24 A That -- that's different. 12:06

25 So the dead pixels, also known as the 12:06

1 viewable but not active area, make up part of the 12:06
2 border region. 12:06

3 Q And what's the rest of that border region 12:06
4 made up of? 12:06

5 A Metal traces that are right angles from the 12:06
6 top and bottom of the display, some glue area that 12:06
7 fills the two pieces of glass and the display are made 12:06
8 out of together, and some overhead to allow for the 12:06
9 manufacturing tolerance of cutting a piece of glass. 12:06

10 There may be some other things in there too. 12:06
11 Those are the big ones that I know about. Excuse me. 12:06

12 Q Other than what you've just described for me, 12:07
13 are you aware of any other reasons why any of these 12:07
14 industrial design explorations where the -- where the 12:07
15 display runs all the way to the edge of the glass were 12:07
16 -- were not adopted? 12:07

17 A There will also be challenges around 12:07
18 protecting the display. Even if the glass of the 12:07
19 display stopped right at the edge of the active area 12:08
20 of the display, the display glass is not very strong, 12:08
21 so you wouldn't want to expose that to the outside 12:08
22 world. You need to build some kind of cage around it. 12:08

23 Q And in the original iPod Touch that was 12:08
24 shipped, how would you describe that cage that's built 12:08
25 around the display? 12:08

1 A It's a -- there are a couple of aspects that 12:08
2 make up that cage. One of them is a metal frame that 12:08
3 kind of cradles the entire display and protects it 12:08
4 when the things are shifting around inside the product 12:08
5 in a catastrophic event, like a drop. And then the -- 12:09
6 the housing creates part of that cage and it's 12:09
7 always -- always a challenge to try to use, you know, 12:09
8 the -- that does not -- the industrial design network, 12:09
9 we're kind of forced to be using it in a way that 12:09
10 will -- that we can take advantage of and actually 12:09
11 protect stuff that's inside the product. 12:09

12 So that would be part of the overall cage 12:09
13 around the display. 12:09

14 Q And on the original iPod Touch that shipped, 12:10
15 that -- that -- what you described, the cage, is -- is 12:10
16 that the area that would be below the -- what we've 12:10
17 called the "black mask"? 12:10

18 A Yes. 12:10

19 All of that cage area would be below the 12:10
20 black mask because the display is underneath the 12:10
21 covered glass. And so anything that's around the 12:10
22 display is -- has to be under the black mask. 12:10

23 Q And so that -- that cage that's -- that's 12:10
24 built around the display is -- if I'm holding the 12:10
25 phone and looking at the front face, I would not see 12:10

1 that cage, because it's concealed by the black mask? 12:10

2 A Correct. 12:10

3 You wouldn't see that, that cage, because 12:10
4 it's concealed by the black mask from the top, and the 12:10
5 rest of the cosmetic part of enclosure from the -- 12:10
6 from the sides and bottom. 12:10

7 Q You said that some of the design explorations 12:11
8 that you saw for the original iPad Touch were thicker 12:11
9 than the version that actually shipped; correct? 12:11

10 A Yes. 12:11

11 Q And do you -- do you know why those thicker 12:11
12 design explorations were not adopted? 12:12

13 A I know one of the reasons. One of them is 12:12
14 that we were considering putting a component inside 12:12
15 the iPod Touch that required more space. We decided 12:12
16 not to put that component inside the iPod Touch. 12:12
17 That's one thing that enabled us to make it thinner. 12:12

18 Q What was that component? 12:12

19 A A hard drive. 12:12

20 Q And so because that component was not used, 12:12
21 you were able to make the form factor of the version 12:12
22 that shipped thinner? 12:13

23 A Correct. 12:13

24 Q Why didn't -- why didn't you just keep the 12:13
25 same thickness? Even though -- even though that 12:13

1 component wasn't used, why didn't you just keep it -- 12:13
2 keep it the same thickness? 12:13

3 A Because it -- because it looks nicer when 12:13
4 it's thinner. So in general, the industrial design 12:13
5 team will push us to make products as thin as 12:13
6 possible, even though there are some exceptions to 12:13
7 that. 12:13

8 Q What are -- what would those exceptions be? 12:13

9 A So having -- having rounded corners on the 12:13
10 top or having a curve on the bottom housing creates 12:13
11 challenges to making the product its absolute 12:13
12 thinnest. 12:13

13 So there are some tradeoffs there, and the 12:13
14 reason is that basically, all of the things that we're 12:13
15 trying to fit inside of these products are rectangles. 12:13
16 And fitting a bunch of rectangles inside a rectangle 12:13
17 is more efficient than -- than fitting a bunch of 12:13
18 rectangles inside an amorphous shape. 12:14

19 Think of it kind of like a Tetris game. If 12:14
20 you had some curved -- some curved outside instead of 12:14
21 a flat bottom, it would be much more difficult to pack 12:14
22 the pieces in efficiently. 12:14

23 So in the case of, you know, the iPod Touch, 12:14
24 the generation after that, it has a curved bottom, and 12:14
25 it's actually thicker, and that was a tradeoff. 12:14

1 Q Do you recall anything further that they said 14:40
2 in response to that design option? 14:40

3 A No. 14:40

4 Q Was it a short conversation? 14:40

5 A Yes. 14:40

6 Q Do you recall who expressed the view that it 14:40
7 didn't look or feel nice? 14:40

8 A I -- I don't recall exactly who said that, 14:40
9 no. 14:40

10 Q Was it more than one person who expressed 14:40
11 that view? 14:40

12 A I believe so, yes. It was pretty -- it was a 14:40
13 clear -- a clear "no" from the team -- the ID team. 14:40

14 Q And other than saying that they didn't like 14:40
15 the way that it looked -- well, other than saying that 14:40
16 it didn't look or feel nice, do you recall any -- in 14:40
17 any more detail what their reaction was? 14:40

18 A They're a very polite group of individuals, 14:41
19 and they probably thanked us for doing the work and 14:41
20 showing them the data. 14:41

21 Q Do you have any understanding as to what was 14:41
22 meant when they said it didn't feel nice? 14:41

23 A Yes. 14:41

24 Q And what's your understanding in that regard? 14:41

25 A When you run your finger over the transition 14:41

1 between the glass and the -- the housing or bezel or 14:41
2 bumper or whatever around it, that that didn't feel 14:41
3 nice. It didn't feel good. 14:41

4 Q Do you have any understanding one way or 14:41
5 another as to whether the design where the cover glass 14:41
6 was sub-flush to the edge of the device would be more 14:41
7 difficult to clean than design -- the design where the 14:42
8 cover glass was flush with the edge of the device? 14:42

9 A I don't specifically know that to be true, 14:42
10 but intuitively, I understand what you're suggesting. 14:42

11 Q What do you mean by that? 14:42

12 A I understand that it could be more difficult 14:42
13 to clean a device that had something set in from some 14:42
14 raised edges because you would collect stuff, 14:42
15 anything, in that -- in that corner created by the new 14:42
16 raised edge. 14:42

17 Q So intuitively, that makes some sense to you? 14:42

18 A Yes. 14:42

19 Q Have you seen any designs of any version of 14:42
20 the iPhone where the cover glass sat either proud to 14:42
21 the edge of the device or sub-flush to the edge of the 14:43
22 device? 14:43

23 A Yes. 14:43

24 Q And -- and in what context have you seen 14:43
25 those designs? 14:43

1 A Models in the industrial design studio, and 14:43
2 models that the PD team has created based off of those 14:43
3 designs from the industrial design team. 14:43

4 Q And are you aware of any drop testing that 14:43
5 was done on those designs of the iPhone where the 14:43
6 cover glass sat proud of the edge and sub-flush to the 14:43
7 edge of the device? 14:43

8 A Proud -- can you rephrase. Sorry. It can't 14:43
9 be proud and sub-flush. 14:43

10 Q Yeah, let me -- so to clarify, have you seen 14:43
11 design -- iPhone designs where the cover glass sat 14:44
12 proud to the edge of the device? 14:44

13 A Yes. 14:44

14 Q And have you also seen iPhone designs where 14:44
15 the cover glass sat sub-flush to the edge of the 14:44
16 device? 14:44

17 A No, I haven't seen designs like that. 14:44

18 Q Okay. Have you seen any drop testing for the 14:44
19 iPhone designs where the cover glass sat proud to the 14:44
20 edge of the device? 14:44

21 A Yes. 14:44

22 Q And have you had any involvement in those 14:44
23 drop tests? 14:44

24 A Yes. 14:44

25 Q And what was your involvement in those drop 14:44