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Attorneys for Plaintiff and
Counterclaim-Defendant APPLE INC.

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

| | |
|---|---|
| APPLE INC., a California corporation, | Case No. 11-cv-01846-LHK (PSG) |
| Plaintiff, | **REPLY DECLARATION OF JOHN R. HAUSER IN SUPPORT OF APPLE'S MOTION FOR A PERMANENT INJUNCTION** |
| v. | |
| SAMSUNG ELECTRONICS CO., LTD., a Korean corporation; SAMSUNG ELECTRONICS AMERICA, INC., a New York corporation; and SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, a Delaware limited liability company, | |
| Defendants. | |

I, John R. Hauser, hereby declare as follows:

1.    I am the Kirin Professor of Marketing at the MIT Sloan School of Management at the Massachusetts Institute of Technology ("MIT").  I have been retained as an independent expert witness in this case.  I previously submitted the Expert Report of John R. Hauser, March 22, 2012 (the "Hauser Report").  I have attached a copy of my Report as Exhibit A to this declaration.  My CV is attached as Exhibit A to the Hauser Report.

2.    I was asked by counsel for Apple to design and conduct two surveys—one for smartphones and one for tablets – to determine the price premium, if any, that Samsung consumers are willing to pay for the features associated with the patents at issue.[1]  My analysis shows that, for both smartphones and tablets, Samsung consumers are willing to pay a significant price premium for the tested features that are covered by the patents at issue.  These results demonstrate that there is substantial demand for these patented features.  The results were reported and admitted at trial as Plaintiff's Exhibit 30 as a part of my testimony.

3.    On October 19, 2012, Professor Tülin Erdem, Professor Yoram (Jerry) Wind, and Dr. R. Sukumar submitted expert declarations on behalf of Samsung.[2]  Counsel for Apple has asked me to respond to these declarations.  I provide no new opinions and do not expand the Hauser Report or my deposition or trial testimony in this declaration.  I provide this declaration to explain why the criticisms in these declarations are mistaken and inconsistent with work previously done by these individuals.  Exhibit B contains a list of materials upon which I have relied in coming up with my opinions in this declaration.

4.    For the purposes of my declaration, I have summarized the main criticisms of Professor Erdem, Professor Wind, and Dr. Sukumar into four categories.  These experts state erroneously: (1) that my conjoint surveys did not measure demand for the features associated with

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[1] The relevant patents are: US 7,844,915 ("'915 Patent"), US 7,469,381 ("'381 Patent"), and US 7,864,163 ("'163 Patent").

[2] Declaration of Tülin Erdem in Support of Samsung's Opposition to Apple's Motion for a Permanent Injunction, October 19, 2012 ("Erdem Report"); Declaration of Yoram (Jerry) Wind, October 19, 2012 ("Wind Report"); and Declaration of R. Sukumar in Support of Samsung's Opposition to Apple's Motion for a Permanent Injunction and for Damages Enhancements, October 19, 2012 ("Sukumar Report").

the infringed patents; (2) that conjoint surveys are hypothetical and do not accurately measure

what people are willing to pay in the real world; (3) that my surveys lead to unrealistic results

because my survey methodology is flawed; and, (4) that my survey design might have led to bias.

Below, I address each of these categories.

**(1) My surveys measure the extent to which demand is driven by features associated with the infringed patents.**

5.    My assignment was to measure the price premium that Samsung owners would be willing to pay for the patent-related features.  To do this, I used the widely known technique called conjoint analysis.  As Professor Wind has written, "[p]ut simply, conjoint is a method that lets us separate out the various features of a product to see how the consumer values each feature against the others."[3]

6.    Professor Wind and Dr. Sukumar assert that my conjoint study was not designed to measure consumer demand, but only to measure willingness to pay.[4]  This distinction has no basis because the very definition of consumer demand is based on the concept of willingness to pay.

7.    At his deposition, Professor Wind acknowledged that willingness to pay is directly related to consumer demand:

> "Q: How does the, how does measuring the willingness to pay for a product with these features relate to your question of determining whether it is a feature that makes a significant contribution to the purchaser's decision to purchase?
>
> A: Well, if the people would be willing to pay more for a product with the feature and actually buy a product at a higher price, then obviously it is indicated that this feature is important for them, and therefore, it affects their willingness to buy the product."[5]
>
> "Q: It is an accepted definition – in economic literature, one of the accepted definitions for demand is based on willingness to pay, correct?

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[3] Testimony of Yoram (Jerry) Wind before the Copyright Royalty Board, Library of Congress In the Matter of Adjustment of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services ("Wind Copyright Board Testimony"); available at: http://www.loc.gov/crb/proceedings/2006-1/soundex-wind.pdf.
[4] Sukumar Report ¶ 5, Wind Report ¶¶ 40–45.
[5] Deposition of Yoram (Jerry) Wind, November 7, 2012 ("Exhibit C"), at 20:9-19.

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2          A: Yes."[6]

3          8.       It is a fundamental economic principle that demand is defined in terms of a

4  consumer's willingness to pay.  The following quotes from bestselling economics textbooks

5  explain the relationship between demand and willingness to pay:

6                  "[T]he height of the demand curve measures the value buyers place
                   on the good, as measured by their willingness to pay for it."[7]
7
                   "[Y]ou will sometimes find it useful to think of a demand curve as a
8                  curve that represents a consumer's 'willingness to pay' for a
                   good."[8]
9
                    "The demand curve reflects a consumer's marginal willingness to
10                 pay: the maximum amount a consumer will spend for an extra
                   unit." [9]
11
           9.       Measuring consumer preference lies at the heart of conjoint analysis.  As I
12
   explained in my Report, "[t]he general idea behind conjoint analysis is that consumers'
13
   preferences for a particular product are driven by features embodied in that product."[10]  I
14
   surveyed actual consumers of the Samsung smartphones and tablets that were accused in this case
15
   to ascertain how their preferences for product features of Samsung smartphones and tablets would
16
   inform their choices.  The price premiums that I calculated were derived from their choices and
17
   showed their willingness to pay—and hence demand—for the features I tested.
18
           10.      Professor Wind's assertion that I acknowledged my analysis did not show
19
   consumers bought Samsung smartphones or tablets because they were equipped with the patented
20
   features misconstrues my testimony.[11]  I stated only that I did not ask those taking the survey to
21
   compare Samsung smartphones and tablets with other devices.  Such a comparison is not
22
   necessary to measure the demand for the patented features in Samsung's smartphones and tablets.
23
   In fact, restricting respondents' choices to Samsung smartphones and tablets, and limiting the
24

25              [6] Exhibit C, at 117:5-8.
                [7] N. Gregory Mankiw, Principles of Economics, South-Western Cengage Learning, 6th
26  edition, 2012, p. 138.
                [8] David Besanko and Ronald R. Braeutigam, Microeconomics, John Wiley & Sons, 2nd
27  edition, 2005, p. 138.
                [9] Jeffrey M. Perloff, Microeconomics, Pearson Education, 5th edition, 2009, p. 271.
28              [10] Exhibit A ¶ 17.
                [11] Wind Report ¶ 14.

universe of respondents surveyed to those who recently purchased one of the smartphones or tablets accused in this case, results in the most directly relevant measure of demand for the patented features in the accused products.

11.     Notably, Dr. Sukumar's conjoint survey on behalf of Samsung also did not ask those surveyed to compare the surveyed product with other devices.[12]

**(2) Conjoint surveys accurately measure real world demand.**

12.     In his declaration, Professor Wind asserts that the price premiums measured by my surveys are not reliable due to the fact that "there are no actual consequences to purchasing more expensive products in a hypothetical survey."[13] In short, he suggests that the surveys are unreliable because actual dollars were not used.  This is mistaken, inconsistent with Professor Wind's own practice, and inconsistent with a large body of academic research in this area.  As explained in my Report, the conjoint surveys that I undertook are based on methodology commonly used in the field of marketing research.  Conjoint analysis was introduced to the field of marketing research in 1971 and is generally recognized by marketing science academics and industry practitioners to be the most widely studied and applied form of quantitative consumer preference measurement.

13.     Importantly, it has been shown to provide valid and reliable measures of consumer preferences, and these preferences have been shown to provide valid and reliable forecasts of what consumers will do (or would have done) under scenarios related to those measured.[14]  For example, under the auspices of MIT's Virtual Consumer Initiative, my colleagues and I undertook large-scale tests of the validity of Web-based conjoint analysis. Predictions were highly accurate, predicting future choices consumers would make in a subsequent test with real money at stake and predicting what would happen in the marketplace.  One of the scientific papers discussing the

[12] R. Sukumar, Report: Results from A Survey Measuring Use and Valuation of Four Patented Features (Patented Features: 460, 893, 711, 871) and A Survey of World Clock Patented Feature Usage (Patented Feature 055), March 22, 2012 ("Sukumar Survey Report"), Exhibit G: Screen Capture from On-line Survey.
[13] Wind Report p. 36.
[14] John R. Hauser and Vithala Rao, "Conjoint Analysis, Related Modeling, and Applications," Advances in Marketing Research: Progress and Prospects, Jerry Wind and Paul Green, Eds., (Kluwer Academic Publishers) 2004, pp. 141–168.

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2   validity test received two awards as the best paper in the marketing sciences literature for 2003

3   (awarded in 2004) and for the best paper based on a dissertation (awarded in June 2005).[15]

4         14.      Professor Wind's own testimony and academic writings contradict his criticism.

5   At his deposition, Professor Wind admitted that in over 40 years of experience with conjoint

6   analyses, he can recall only one study in which consumers used actual dollars:

7            "Q: You can't remember even one that you've ever done – out of
             all the conjoint analyses that you've done, you can't remember even
8            one, sitting here today, where the consumers used actual dollars?

9             A: Actually I can remember one.

10            Q: One.  In how many years you've been doing this, 35, 40?

11            A: Since 1970."[16]

12            "Q: And, in fact, you're not alone in this.  It's not as though you're
              the only person out there who is not using actual dollars.  In fact,
13            it's extremely rare for anybody to use actual dollars in a conjoint
              analysis, right?

14            A: Correct."[17]

15         15.      Further, Professor Wind stated that the use of hypothetical dollars does not impact

16   the accuracy or reliability of a conjoint analysis.

17            "Q.  Right. And the fact that real dollars are not used is not
              something that impacts the accuracy or reliability of the study?
18

19            A. Correct. Real dollars is not the factor.  The real factor is the
              realism of the framing of the questions." [18]
20
           16.      Notwithstanding the fact that they do not use actual dollars, conjoint analyses are
21
     acknowledged as accurately reflecting consumer preferences, and have been relied upon for
22
     making real-life marketing decisions for decades.  Professor Wind acknowledged this in
23
     testimony he gave to the Copyright Royalty Board of the Library of Congress:
24
              [C]onjoint analysis is a fixture in the commercial world.  Thousands
25            of conjoint studies have been administered in the 35 years since the

26         [15] Olivier Toubia, Duncan I. Simester, John R. Hauser, and Ely Dahan, "Fast Polyhedral
     Adaptive Conjoint Estimation," Marketing Science, 22, 3, (Summer) 2003, pp. 273–303.
27         [16] Exhibit C, at 55:6-13.
           [17] Exhibit C, at 56:8-13.
28         [18] Exhibit C, at 56:23-57:3.

technique was first introduced to marketing.  Conjoint analysis underlies innumerable corporate decisions regarding product design, pricing, positioning, and segmentation decisions where millions and even billions of dollars are at stake."[19]

…

At least as critical as the widespread use of the conjoint methodology is its validation. The continued and repeated use of conjoint analysis by industry is the best indication of its proven validity. In addition, conjoint analysis has been validated by studies that compare different research methods.[20]

…

Since its introduction, businesses and governments and numerous academic researchers, consulting firms, and marketing research firms have embraced conjoint analysis as a reliable and valid method of analyzing consumer preferences when introducing new products or studying markets.  Indeed, businesses and governments regularly make billions of dollars of decisions based on the results of conjoint analyses.[21]

17.     Not surprisingly, the conjoint survey conducted by Dr. Sukumar that Samsung submitted in this case was also a hypothetical survey that did not use real dollars.[22]

**(3) My survey methods were appropriate and the results are valid.**

18.     In my conjoint study, as set forth in my Report and in my deposition testimony, I performed numerous sensitivity analyses and statistical tests.  For example, I calculated market premiums using two related methodologies, showing that they yielded similar results; I checked the sensitivity of my results, finding them robust to a number of potential variations to the model;[23] I undertook multiple tests of internal validity;[24] and I tested for demand artifacts and consumer heuristics.[25]  These tests confirmed that it is appropriate to use the results to estimate the price premiums of the patented features.

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[19] Wind Copyright Board Testimony, p. 13.
[20] Wind Copyright Board Testimony, Appendix H at 2.
[21] Wind Copyright Board Testimony, Appendix H at 3.
[22] Sukumar Survey Report.
[23] Exhibit A ¶¶ 96–109. See also Hauser Production April 25, 2012 for an analysis showing that my results are robust to reweighting the survey data as suggested by Dr. Sukumar.
[24] Exhibit A ¶¶ 82–90.
[25] Exhibit A ¶¶ 19, 36, 42, 47; Hauser Production April 25, 2012; Deposition of John Hauser, April 27, 2012 ("Exhibit D"), at 244:16–245:5.

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2
### (a) Professor Wind's criticisms

3       19.      Professor Wind claims my conjoint surveys yield irrational results.  More

4 specifically, he uses a statistical model to predict that when faced with two identical but

5 differently priced items, a number of consumers will choose the more expensive one; or that

6 when faced with two identically priced items in which one is objectively better than the other

7 (e.g., all their features are the same, but one has 16 GB of memory while the other has 32 GB of

8 memory), a number of consumers will choose the objectively less attractive item.[26]  These claims

9 are based on predictions that Professor Wind makes and not on any irrational choices actually

10 found in the surveys.  Professor Wind admitted that his results were based on predictions rather

11 than actual choices and that he would have corrected his report to make that clear.[27]  Further, the

12 approach is flawed.

13                       *(1) Professor Wind's criticism is based on his predictive model and not any*

14                       *actual irrational answers in the survey.*

15       20.      Importantly, Professor Wind's claims are not based on any actual irrational

16 choices made by respondents.  In fact, Professor Wind failed to identify a single nonsensical

17 choice by a respondent who took the survey:

18              "Q: Okay.  So you're reporting predictions that you think are
               nonsensical, not actual results of the survey, not actual responses
19              from the people who took the survey?

20              A: Correct."[28]

21              "Q: My question is, you're not aware of any instance where even
               one person made the choice that you're predicting would occur in
22              actual fact?

23              A: I cannot answer it in terms of we were or not.  We didn't do the
               analysis.  There may be a lot of them.  We did not do this
24              analysis.[29]

25

26

_____

27       [26] Wind Report ¶¶ 46-51.
         [27] Exhibit C, at 91:7-92:1.
28       [28] Exhibit C, at 88:23-89:2.
         [29] Exhibit C, at 95:22-96:2.

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2   All of the raw survey data from my Report was made available to Samsung shortly after I signed

3   my Report in March 2012.  Professor Wind admits that these data were sufficient to have allowed

4   him to test for inconsistencies in the actual responses themselves but he did not do so.

5                                   (2) *Professor Wind's predictions are flawed.*

6          21.      Instead of testing the actual data for inconsistencies, Professor Wind made

7   selective predictions based on a statistical model.  Professor Wind's makes hypothetical

8   predictions by exploiting statistical noise in the model I use; his predictions do not correspond to

9   the actual choices respondents made.  By focusing on responses at the individual level (which

10  would emphasize statistical "noise") rather than responses at the aggregate level (which would

11  emphasize accuracy), his predictions pick up too much statistical noise, which increases the

12  probability of irrational responses. [30]  As I discussed in my report and deposition, the data as a

13  whole, which is made up of thousands of choices made by hundreds of respondents, allow for

14  very accurate estimations of market-level information, such as the average market premiums

15  consumers are willing to pay for certain features.[31]  Professor Wind's focus on exploiting

16  individual-level noise has no bearing on whether the market-level information is accurately

17  measured.

18         22.      Even at the individual level, Professor Wind's results are a statistical artifact.  In

19  my report I calculated my market premium estimates using two different methodologies, which

20  are known as "first choice" and "randomized first choice," that yielded largely similar results for

21  the question I was asking.[32]  In my survey, the two approaches agreed and thus reflect the robust

22  nature of the answers and the estimates.

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25         [30] For example, if I have a fair coin, and observe 1,000 flips of a coin from 500
    consumers, the probability of heads is very likely close to 50%.  If I try to make a prediction of
26  the fairness of the coin based only on observations from an individual consumer who flips the
    coin twice, that prediction is not likely to be accurate since, for example, that individual consumer
27  has a 25% probability of getting heads twice.  *See* Exhibit A ¶¶ 27–29.
         [31] Exhibit A ¶¶ 27–29; Exhibit D ¶¶ 234:12–15, 254:17–255:2.
28         [32] Exhibit A ¶ 99 and fn. 67.

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2    23.    Professor Wind uses only the second approach, known as "randomized first

3    choice," for his predictions and ignores the "first choice" approach.  In fact, for the question he

4    asks, it is "first choice" approach that is the justifiable approach.  "Randomized First Choice"

5    begins with the individual-level information that the model has estimated (which as I explained

6    earlier, is inherently less imprecise than aggregate-level information) but then adds a random

7    error term.  When used appropriately, the random error term accounts for imprecision and

8    enhances predictive accuracy.  But when misused, as in Professor Wind's analysis, the error term

9    forces a probability that any option, no matter how absurd, can be chosen as a respondent's first

10   choice.

11   24.    Therefore, if a person wishes to look solely at whether the data predicts irrational

12   choices at the individual level, it is not appropriate to add this random element.  Introducing the

13   random element artificially increases the likelihood of irrational choices at the individual level,

14   the level at which Professor Wind performs his analysis.  In contrast, the alternate methodology,

15   known as "first choice," does not introduce the random term described above and is more useful

16   to evaluate whether individuals are making irrational choices.  Professor Wind testified at his

17   deposition that he was unable to say whether the irrational results he predicts would disappear if

18   he used the "first choice" analysis because he had not done the work.[33]  I have done that work and

19   it predicts that all respondents would choose the expected product, as reflected in Exhibit E to this

20   declaration.  That is, using the "first choice" approach, the model does not predict irrational

21   choices.

22   25.    Professor Wind also criticizes the survey for coming up with willingness to pay

23   estimates in the smartphone survey that are "comparable to (or greater than) the average price

24   respondents actually paid for their Samsung smartphones."[34]  This criticism is invalid.  First, the

25   sum of the willingness to pay of the patented features associated with the three patents that were

26   tested is less than what respondents reported that they had paid for their phones.  Second, the

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[33] Exhibit C, at 102:2–11.
[34] Wind Report at ¶ 69.

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2   retail price of the phone fails to account for the true cost of ownership, which often includes a

3   two-year service contract and can exceed $2,000.  This was also discussed in my trial testimony.[35]

4                    **(b) Dr. Sukumar's criticisms**

5          26.     Dr. Sukumar's assertion that my willingness to pay estimates for certain features

6   such as memory and number of apps are low and not realistic[36] is conceptually flawed.  It is

7   conceptually flawed because Dr. Sukumar did not take into account that the market premiums

8   calculated are averaged over all respondents.  Thus, he asserts that Samsung charges $100 to

9   double the storage capacity of one of its tablets,[37] but he misses the point that Samsung offers the

10  tablet both with and without the double capacity.  Thus, some consumers who are willing to pay

11  the $100 and others are not.  As a result, the average willingness to pay is likely to be below the

12  $100 price Samsung charges to double memory capacity.

13         27.     The survey data reflect these differences in individuals' preferences. In the survey,

14  7% of smartphone respondents value going from 16 to 32 GB of memory by more than the $100

15  market price and 11% value going from 16 to 64 GB of memory by more than the $200 market

16  price.[38]  This supports the validity of my surveys' findings.

17         28.     In addition to the conceptual flaw in Dr. Sukumar's argument, he relies on a

18  selective reading of my analysis.  He relies on a robustness check that I undertook and reported in

19  a footnote of the Hauser Report[39] and ignores the central results that I discussed at length in my

20  report.[40]  The central results, referred to as the "market simulation approach," provide different

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23         [35] Tr. at 1942:23-1943:9.
            [36] Sukumar Report ¶¶ 16–18.
            [37] Sukumar Report at ¶ 17.
24         [38] Comparing two otherwise identical smartphones, one of which has 16 GB of memory
    and costs $199 and another which has 32 GB and costs $299, 7% of consumers choose the latter
25  under a first choice simulation. Comparing two otherwise identical smartphones, one of which
    has 16 GB of memory and costs $99 and another which has 64 GB and costs $299, 11% of
26  consumers choose the latter under a first choice simulation.
            [39] Exhibit A, fn. 72. This analysis tests whether my estimates of the market premiums
27  associated with the patented features are sensitive to how I aggregate the individual-level
    information to calculate the market-level information within the data. I find that my touchscreen
28  results are not sensitive.
            [40] Exhibit A ¶¶ 96–105.

average willingness to pay estimates for the distraction features that are reasonable, even under Dr. Sukumar's construction.

29. For example, Dr. Sukumar estimates price premiums for 16, 32, and 64 GB of memory to range from $0.04 to $24 for smartphones and from $10 to $57 for tablets. Using the primary methodology in my report instead, the average price premiums range from $16 to $28 for smartphones and from $26 to $51 for tablets. These estimates are reasonable for the average consumer, given that some consumers may value these features highly while others may not. Similarly, Dr. Sukumar finds premiums below $0.05 for different levels of the number of apps feature, but using the primary methodology in my report yields premiums of $6 to $13. These estimates are reasonable in light of other information that reflects diminishing returns to the number of apps.[41]

**(4) There is no evidence that my survey design created survey bias.**

30. Professor Wind and Dr. Sukumar make a number of assertions regarding the "design flaws" in my surveys and conclude that this may have resulted in survey bias. As a threshold matter, these assertions are speculative. Neither Professor Wind nor Dr. Sukumar has presented any results that show actual bias. If Samsung believed that my survey design caused bias, it could have obtained evidence to support that claim by conducting a modified version of my surveys to prove this. More than sufficient time existed to do so since March of 2012 when I provided my data and report. In his deposition, Professor Wind acknowledged that it could have been done in the two months after his engagement but he was personally too busy to do so:

> "Q: You point out in your report that, in your opinion, there are a
> number of design flaws with Dr. Hauser's survey. Did you
> consider doing another survey in revising some of those flaws to
> see what would happen?

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[41] Randall Stross, "Microsoft + Nokia = a Challenge for Apple," New York Times, 4/2/11 ("What is often missed is the diminishing returns after 1,000 applications," says Thomas R. Eisenmann, a professor at the Harvard Business School. "If a platform attracts the thousand-most-popular apps, then it provides almost anything a reasonable person would want to do with a smartphone.") available at http://www.nytimes.com/2011/04/03/business/03digi.html.

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2      A: No. We didn't have time. This was very, you know, time-
       compressed. And there was no way I could have designed a survey
3      in this time period."[42]

4      "Q: Okay. So if you didn't have anything else on your plate, sounds
       like you could have done it. It would have been tight, but you could
5      have done it?...In the time you were approached by Samsung.

6      A:  Yeah.  I was not asked to do the design, nor did I propose it
       because I basically had many other commitments and could not
7      have done it."[43]

8      **(a) My survey included an appropriate number of features and distraction features.**

9          31.      In addition to the patented features, my survey included several distraction features

10   to make the choice task more realistic and to avoid demand artifacts.  My conjoint survey had five

11   distraction features, including features deemed important by Professor Wind, such as camera,

12   connectivity, and size and weight.[44]  Professor Wind nevertheless asserts that my conjoint survey

13   omits relevant features and thus may be biased.[45]  I do not agree with that assertion.

14         32.      At the outset, I note that Dr. Sukumar designed a conjoint survey in this litigation

15   where he included only four smartphone features, excluding price.[46]  He included no distraction

16   features and omitted essentially all of the smartphone and tablet features that Professor Wind

17   asserts are important.[47]

18         33.      An effort to include all features of a product, especially a complex product, would

19   render the results of a conjoint survey unreliable.  Therefore, conjoint surveys typically include a

20   limited number of features, usually eight or fewer.[48]  Professor Wind has himself conducted

21   conjoint surveys where he has used a limited number of features.  For example, in a conjoint

22   study of referral decisions of obstetricians, Professor Wind only included seven factors and

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24   ─────────────────────

25      [42] Exhibit C, at 27:16–23.
       [43] Exhibit C, at 28:8–18.
       [44] Wind Report ¶¶ 70–72.
26      [45] Wind Report ¶¶ 70–72, Erdem Report ¶¶ 37–49.
       [46]  Sukumar Survey Report, p. 3.
27      [47]  Wind Report ¶¶ 70–72.
       [48]  Bryan K. Orme,  *Getting Started with Conjoint Analysis: Strategies for Product Design
28   and Pricing Research*, Research Publishers, 2nd edition, 2010, p. 51. ("Typical full-profile
     conjoint studies in practice involve about eight or fewer attributes….").

excluded several others, although they were considered important.[49] Similarly, in a litigation study of dental lab technicians conducted by Professor Wind, he only included two factors – price and distribution mode.[50] Consistent with Professor Wind's papers, I included six features in addition to price in my conjoint survey of smartphone users.

34. Although I excluded certain features from my conjoint survey, I instructed the respondents to assume that all those excluded features are the same across all smartphones. This instruction ensured that features that were not included would not affect respondents' choices. This is a standard assumption made by survey designers. Indeed, Dr. Sukumar made the same assumption in his conjoint survey of smartphone users; he instructed respondents to "[a]ssume that all other features of the iPhone 4 not shown to you are the same."[51]

**(b) I used animations where appropriate.**

35. Dr. Sukumar and Professor Wind each assert that the partworths of some of the features (touchscreen, camera, and connectivity) may have been inflated because of the survey design. I disagree.

36. First, Professor Wind's exhibits are not sufficient to demonstrate bias toward the animated features as he claims. They are equally consistent with the conclusion that the features that were animated – camera , connectivity and touchscreen – have higher willingness to pay estimates because consumers, in fact, are willing to pay higher price premiums for them.

37. Second, the estimated willingness to pay for the animated features is not uniformly higher in my surveys than the willingness to pay for features that were not animated. In contrast with Professor Wind's Exhibit 21 for smartphones, Exhibit 26 provides a different picture for tablets. Levels for certain features that were not animated such as storage/memory and size/weight have greater partworths than some of the touchscreen feature levels that were

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[49] Douglas K. Richardson, Steven G. Gabbe, and Yoram Wind, "Decision Analysis of High-Risk Patient Referral," Obstetrics and Gynecology, Vol. 63, No. 4, April 1984, pp. 496-501.
[50] Expert Report of Jerry Wind, United States of America v. Dentsply International, Inc., June 14, 2000.
[51] Sukumar Survey Report, Exhibit G: Screen Capture from Online Survey.

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2   animated.  This is consistent with the conclusion that consumers taking the survey were valuing

3   the features themselves, not merely biased by the fact that some of the features were animated.

4          38.     Dr. Sukumar makes a separate assertion that the design of my survey differentiated

5   the touchscreen feature from other features in other ways.  In particular, he asserts that the

6   touchscreen feature was differently depicted in the survey, among other ways, through the choice

7   of background colors and how touchscreen levels were crossed out when moving from one level

8   to another.[52]  Again, Dr. Sukumar does not provide any proof that this differentiation resulted in

9   bias.  He also could have tested my survey for design bias in any of these areas but failed to do so.

10         39.     Further, such differentiation also applied to features other than the patented

11  features.   My survey has six features in addition to price.  The six features are not identical; the

12  descriptions were designed appropriately for the features.  For example, the memory feature

13  shows images associated with memory and the apps features shows images associated with apps.

14  Rather than cherry-pick some differences, Dr. Sukumar could also have argued, albeit

15  erroneously, that there were biases because the memory feature is the only one with the color blue,

16  while the number of apps feature is the only one that shows a phone.  Dr. Sukumar fails to explain

17  why small differences in the presentation of the patented features led to bias but similar

18  differences in the presentation of the other features did not.  Finally, I pretested my survey for

19  such potential biases.  None were found.[53]

20         **(c) An "outside option" was not necessary and its inclusion may have created bias.**

21         40.     Professor Wind asserts that not allowing respondents to choose an "outside option"

22  (that is, to choose not to purchase the phone or tablet at all) may lead to an inflated willingness to

23  pay for the features that are tested in the conjoint survey.  As a threshold matter, the inclusion of

24  an outside option may be necessary when calculating "primary demand" – whether users would

25  purchase a smartphone as opposed to a basic phone.  But inclusion of an outside option is

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28         [52] Sukumar Report ¶¶ 14–15.
           [53] Exhibit A ¶ 47.

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2      unnecessary to determine the extent to which the patented features drive Samsung consumers'

3      demand for the accused Samsung products.

4              41.     At his deposition, Professor Wind admitted that the literature on the topic of the

5      "outside option" is split on whether it introduces its own bias.

6                       "Q: Now, Professor Wind, you know that in the literature there are
                        many articles that debate whether including an outside option can
7                       bias – including outside option can bias the survey and distort the
                        results in some circumstances, right?
8
                        A:  I think there is mixed messages, if you want to, in the
9                       literature." [54]

10             42.     Even the publication Professor Wind relies for the assertion that an "outside

11     option" enhances the realism of the survey acknowledges that inclusion of an "outside option"

12     raises concerns, including the creation of bias.[55]

13             43.     Professor Wind has himself designed conjoint studies without an "outside" option.

14     For example, in one study respondents were asked to allocate 100 points over various alternatives

15     and they could not choose 0 for all alternatives.[56]  In other words, an outside option of not

16     choosing any of the alternatives was not provided to respondents.  In another litigation-based

17     study of travel agents conducted by Professor Wind, respondents were asked to choose from

18     American Airlines flights or Continental flights.[57]  Respondents could not select an outside option

19     of not choosing either of the airlines.  Similarly, the conjoint survey of smartphone users designed

20     by Dr. Sukumar in this litigation does not offer an outside option to respondents.  Dr. Sukumar's

21     survey instructed respondents to "[a]ssume that the three products shown below are the only

22     iPhone 4 products you can choose from."[58]

23

24             [54] Exhibit C, at 130:5-12.
               [55] Jeff D. Brazell, Christopher G. Diener Ekaterina Karniouchina, William L.
25     Moore,Válerie Séverin and Pierre-Francois Uldry, "The no-choice option and dual response
       choice designs," Marketing Letters, Vol. 17, No. 4, December 2006, p. 256.
26             [56] Expert Report of Jerry Wind, United States of America v. Dentsply International, Inc.,
       June 14, 2000, Appendix E, Instructions for Responding to Materials in Envelope B.
27             [57] Yoram (Jerry) Wind, Abba M. Krieger, and Paul E. Green, "Applying Conjoint
       Analysis to Legal Disputes: A Case Study," Wharton School, University of Pennsylvania, January
28     2002, p. 5.
               [58] Sukumar Survey Report, Exhibit G: Screen Capture from Online Survey.

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### (d)  My survey did include noninfringing alternatives.

3       44.     Professor Wind and Professor Erdem assert that my conjoint survey did not take

4   into account the noninfringing alternatives that Samsung had for each of the patented features.[59]

5   They claim that I compared the availability of a patented feature with the non-availability of the

6   patented feature, instead of comparing the patented feature with its noninfringing alternative.  As

7   a result, they claim, my willingness to pay estimates are overstated.  Their assertions are factually

8   incorrect.

9       45.     My survey included noninfringing alternatives for each of the three alternatives.

10  These non-infringing alternatives were animated and shown at the outset of the survey when the

11  different touchscreen choices were explained to the survey respondents.  In his deposition,

12  Professor Wind admitted it was an "oversight" that his report did not acknowledge that the

13  noninfringing alternatives were presented in the animations.[60]  A copy of the touchscreen

14  animations that were included in the smartphone survey is attached to this declaration as Exhibit

15  F.  Very similar animations were presented for the tablet survey, although using a tablet instead of

16  a smartphone.  Thus, survey respondents were asked only to compare the relative value of the

17  patented features with noninfringing alternatives, not the value of the patented features with no

18  comparable feature at all.

19      46.     Although his declaration states to the contrary, Professor Wind acknowledged in

20  his deposition that my surveys did include these noninfringing alternatives and that they were

21  presented in animated form.[61]  While he now seeks to claim that a respondent may not have

22  understood the noninfringing alternative, this criticism rests on a fundamentally false premise.  I

23  intentionally designed my surveys to present reasonable noninfringing alternatives, which were

24  chosen based on consultation with the technical experts in this case.

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[59] Wind Report ¶¶ 61–65, Erdem Report ¶¶ 59–62.

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[60] Exhibit C, at 80:7-81:8.
[61] Exhibit C, at 76:14-77:2.

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### (5) Other criticisms by Samsung's experts.

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47.     Professor Erdem and Dr. Sukumar also assert that the patented features are

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unlikely to be driving demand.[62]   Neither Professor Erdem nor Dr. Sukumar has provided any

5
sort of scientific analysis that would justify their conclusions.  Professor Erdem admitted in her

6
deposition that she did not conduct any empirical research at all.[63]  She also testified that she

7
could not think of any patented feature that would drive smartphone demand.[64]  As Professor

8
Wind explained in his deposition, the decision to purchase any type of product is typically driven

9
by multiple factors, and it is rare that any one factor would be the sole determinant of demand.

10
"Q. But if the test for whether something were driving consumer
demand is whether that was the sole determinant of the reason to

11
purchase the product, that test could almost never be met in your
experience?

12

13
A. I would find it kind of strange to find a factor that is a sole
determinant.  Perhaps with the exception I mentioned before of a
brand name, that a brand name represents a totality of images,

14
associations, perceptions of a consumer of the brand; and a
consumer may decide, you know, BMW is such a terrific

15
brand…;[65]

16
48.     Professor Erdem also asserts that consumers do not choose as they do in the

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surveys I designed, but use heuristics.[66]  Accordingly, in the purchase of a smartphone or tablet,

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consumers "do not separately evaluate each sub-feature."  Her assertions are problematic for a

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number of reasons.  First, Professor Erdem shows no actual evidence that smartphone or tablet

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consumers use heuristics (and what sorts of heuristics) when making choices.  Second, the use of

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heuristics can be tested.  Accordingly, it would have been entirely possible for Professor Erdem to

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survey Samsung consumers to test whether they use heuristics.  This, she has not done.  Third,

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unlike Professor Erdem, I actually tested for the presence of heuristic-based choices – in

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[62] Erdem Report ¶¶ 51–58, Sukumar Report ¶ 10.
[63] Deposition of Tülin Erdem, November 7, 2012 ("Exhibit G"), at 22:4-10; 34:17-35:11;
76:3-8; 165:19-23.

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[64] Exhibit G, at 26:7-19.

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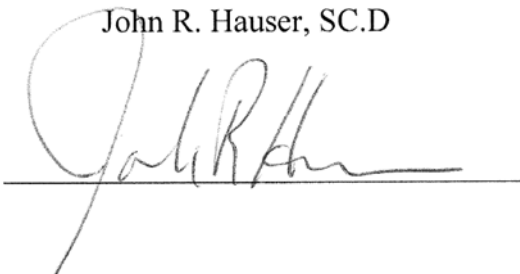[65] Exhibit C, at 26:9-27:2; *see also id.* at 12:14-13:15.
[66] Erdem Report ¶¶ 47–50.

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2   particular, the lexicographic heuristic – and found that surveyed respondents did not exhibit such

3   behavior.[67]

4       I declare under penalty of perjury that the foregoing is true and correct and that this

5   Declaration was executed this 9th day of November 2012, at Cambridge, Massachusetts.

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7                           John R. Hauser, SC.D

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27       [67] The lexicographic heuristic is one where, faced with varying levels of features A and B,
a consumer has an infinite preference for feature A. In other words, she would always choose
28   (even the smallest additional amount of) feature A regardless of the amount of feature B. *See also*
Exhibit D, at 244:16–245:12.