

1 Juanita R. Brooks (SBN 75934), [brooks@fr.com](mailto:brooks@fr.com)  
2 Lara S. Garner (SBN 234701), [lgarner@fr.com](mailto:lgarner@fr.com)  
3 Justin M. Barnes (SBN 217517), [barnes@fr.com](mailto:barnes@fr.com)  
4 Fish & Richardson P.C.  
5 12390 El Camino Real  
6 San Diego, CA 92130  
7 Telephone: (858) 678-5070  
8 Facsimile: (858) 678-5099

9 Kelly C. Hunsaker (SBN 168307), [hunsaker@fr.com](mailto:hunsaker@fr.com)  
10 Fish & Richardson P.C.  
11 500 Arguello Street, Suite 500  
12 Redwood City, CA 94063  
13 Telephone: (650) 839-5070  
14 Facsimile: (650) 839-5071

15 Attorneys for Defendant, Apple Inc.

16 UNITED STATES DISTRICT COURT  
17 SOUTHERN DISTRICT OF CALIFORNIA

18 MULTIMEDIA PATENT TRUST,

19 Plaintiff,

20 v.

21 APPLE INC.; CANON, INC.; CANON U.S.A.,  
22 INC.; LG ELECTRONICS, INC.; LG  
23 ELECTRONICS U.S.A., INC.; LG  
24 ELECTRONICS MIBILECOMM U.S.A., INC.;  
25 TIVO, INC.,

26 Defendants,

Case No. 10-CV-2618 H (CAB)

**ANSWER**

**JURY TRIAL DEMANDED**

Hon. Marilyn L. Huff

1 **ANSWER TO COMPLAINT**

2 Defendant Apple Inc. ("Apple") hereby responds to Plaintiff Multimedia Patent Trust's  
3 Complaint filed December 20, 2010, as follows:

4 **Jurisdiction and Venue**

5 1. Apple admits that this Court has jurisdiction over the subject matter of this action  
6 under 28 U.S.C. §§ 1331 and 1338(a) to the extent that Multimedia Patent Trust ("MPT") is able  
7 to demonstrate a proper claim for patent infringement.

8 2. Apple admits that venue in this District is proper under 28 U.S.C. §§ 1391(c) and  
9 1400(b), but denies that venue is convenient for this case.

10 **Nature of the Action**

11 3. Apple admits that that MPT alleges infringement of United States Patent Nos.  
12 4,958,226; 5,136,377; 5,227,878 and 5,500,678 and purports to base this action on the Patent  
13 Laws of the United States, 35 U.S.C. § 1 *et seq.* Apple denies that MPT has alleged that Apple  
14 infringes United States Patent No. 4 5,500,678.

15 **Parties**

16 4. Apple denies that that MPT is a valid Delaware Statutory Trust under the Delaware  
17 Statutory Trust Act (12 Del. C. §§ 3801 *et seq.*) or any other applicable laws of the State of  
18 Delaware.

19 5. Apple admits that it is incorporated under the laws of the state of California and has  
20 a place of business at 1 Infinite Loop, Cupertino, California 95014. Apple admits that it sells and  
21 has sold products in this and other judicial districts. Apple admits that it sells its products in this  
22 District through its retail stores, online stores, and/or direct sales force and third-party cellular  
23 network carriers, wholesalers, retailers, and/or value-added resellers.

24 6. Apple lacks knowledge or information sufficient to form a belief as to the truth of  
25 the allegations contained in Paragraph 6 of the Complaint, and therefore denies them.

26 7. Apple lacks knowledge or information sufficient to form a belief as to the truth of  
27 the allegations contained in Paragraph 7 of the Complaint, and therefore denies them.

28

1 8. Apple lacks knowledge or information sufficient to form a belief as to the truth of  
2 the allegations contained in Paragraph 8 of the Complaint, and therefore denies them.

3 9. Apple lacks knowledge or information sufficient to form a belief as to the truth of  
4 the allegations contained in Paragraph 9 of the Complaint, and therefore denies them.

5 10. Apple lacks knowledge or information sufficient to form a belief as to the truth of  
6 the allegations contained in Paragraph 10 of the Complaint, and therefore denies them.

7 11. Apple lacks knowledge or information sufficient to form a belief as to the truth of  
8 the allegations contained in Paragraph 11 of the Complaint, and therefore denies them.

9 12. Apple lacks knowledge or information sufficient to form a belief as to the truth of  
10 the allegations contained in Paragraph 12 of the Complaint, and therefore denies them.

11 13. Apple lacks knowledge or information sufficient to form a belief as to the truth of  
12 the allegations contained in Paragraph 13 of the Complaint, and therefore denies them.

13 **Background Facts and the Patents-in-Suit**

14 14. MPT's general characterizations of the patents-in-suit do not constitute facts  
15 requiring a response by Apple. To the extent that Paragraph 14 is deemed to require a response,  
16 Apple denies the allegations of Paragraph 14.

17 15. MPT's characterizations regarding video compression techniques do not constitute  
18 facts requiring a response by Apple. To the extent that Paragraph 15 is deemed to require a  
19 response, Apple denies the allegations of Paragraph 15.

20 16. MPT's characterizations regarding of video compression do not constitute facts  
21 requiring a response by Apple. To the extent that Paragraph 16 is deemed to require a response,  
22 Apple denies the allegations of Paragraph 16.

23 17. MPT's characterizations regarding the benefits of video compression do not  
24 constitute facts requiring a response by Apple. To the extent that Paragraph 17 is deemed to  
25 require a response, Apple denies the allegations of Paragraph 17.

26 18. MPT's characterizations regarding video signal encoding do not constitute facts  
27 requiring a response by Apple. To the extent that Paragraph 18 is deemed to require a response,  
28 Apple denies the allegations of Paragraph 18.

1 19. Apple denies the allegations contained in Paragraph 19 of the Complaint.

2 20. Apple admits that a copy of U.S. Patent No. 4,958,226 (the "Haskell '226 Patent")  
3 and an Ex Parte Reexamination Certificate were attached as Exhibit A to the Complaint. Apple  
4 further admits that U.S. Patent No. 4,958,226 states on its face that: (a) it is entitled "Conditional  
5 Motion Compensated Interpolation of Digital Motion Video;" (b) it was issued on September 18,  
6 1990; and (c) Barin Haskell and Atul Puri are named as inventors. Apple admits that the Ex Parte  
7 Reexamination Certificate states on its face that the patentability of claim 12 was confirmed and  
8 claims 1-11 were not reexamined. Except as expressly admitted herein, Apple lacks knowledge or  
9 information sufficient to form a belief as to the truth of the remaining allegations contained in  
10 paragraph 20 of the Complaint, and therefore denies them.

11 21. Apple admits that a copy of U.S. Patent No. 5,136,377 (the "Johnston '377 Patent")  
12 was attached as Exhibit B to the Complaint. Apple further admits that this copy states on its face  
13 that: (a) it is entitled "Adaptive Non-Linear Quantizer"; (b) it was issued on August 4, 1992; and  
14 (c) Johnston et al. are named as inventors. Except as expressly admitted herein, Apple lacks  
15 knowledge or information sufficient to form a belief as to the truth of the remaining allegations  
16 contained in Paragraph 21 of the Complaint, and therefore denies them.

17 22. Apple admits that a copy of U.S. Patent No. 5,227,878 (the "Puri '878 Patent") and  
18 a Certificate of Correction of the Puri '878 Patent were attached as Exhibit C to the Complaint.  
19 Apple further admits that the Puri '878 Patent states on its face that: (a) it is entitled "Adaptive  
20 Coding and Decoding of Frames and Fields of Video;" (b) it was issued on July 13, 1993; and (c)  
21 Atul Puri and Rangarajan Aravind are named as inventors. Except as expressly admitted herein,  
22 Apple lacks knowledge or information sufficient to form a belief as to the truth of the remaining  
23 allegations contained in paragraph 22 of the Complaint, and therefore denies them.

24 23. Apple admits that a copy of U.S. Patent No. 5,500,678 (the "Puri '678 Patent") and  
25 a Certificate of Correction of the Puri '678 Patent were attached as Exhibit D to the Complaint.  
26 Apple further admits that Puri '678 Patent states on its face that: (a) it is entitled "Optimized  
27 Scanning of Transform Coefficients in Video Coding"; (b) it was issued on March 19, 1996; and  
28 (c) Puri is named as inventor. Except as expressly admitted herein, Apple lacks knowledge or

1 information sufficient to form a belief as to the truth of the remaining allegations contained in  
2 Paragraph 23 of the Complaint, and therefore denies them.

3 **COUNT I**

4 **(Patent Infringement Against Apple)**

5 24. Apple incorporates its responses to the allegations of Paragraphs 1 through 23 set  
6 forth above as if fully set forth herein.

7 25. Apple admits that it sells, and offers for sale in the United States products that are  
8 capable of encoding and decoding digital video but Apple denies that it has infringed any valid,  
9 enforceable claim of any of the patents identified in the Complaint. Except as so admitted, Apple  
10 denies the remaining allegations of Paragraph 25 of the Complaint.

11 26. Apple admits that some Apple products encode and/or decode video in compliance  
12 with some industry standards but Apple denies that it has infringed any valid, enforceable claim of  
13 any of the patents identified in the Complaint. Except as so admitted, Apple denies the remaining  
14 allegations of Paragraph 26 of the Complaint.

15 27. Apple denies the allegations contained in Paragraph 27 of the Complaint.

16 28. Apple denies the allegations contained in Paragraph 28 of the Complaint.

17 29. Apple denies the allegations contained in Paragraph 29 of the Complaint.

18 30. Apple denies the allegations contained in Paragraph 30 of the Complaint.

19 31. Apple denies the allegations contained in Paragraph 31 of the Complaint.

20 32. Apple denies the allegations contained in Paragraph 32 of the Complaint.

21 33. Apple admits that at some point after March 15, 2007 it received correspondence  
22 from MPT dated March 15, 2007. Except as so admitted, Apple denies the remaining allegations  
23 of Paragraph 33 of the Complaint.

24 **COUNT II**

25 **(Patent Infringement Against Cannon)**

26 34. Apple incorporates its responses to the allegations of Paragraphs 1 through 23 set  
27 forth above as if fully set forth herein.

28

1 35. Paragraph 35 does not require a response by Apple. To the extent that Paragraph  
2 35 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
3 allegations of Paragraph 35 and therefore denies the same.

4 36. Paragraph 36 does not require a response by Apple. To the extent that Paragraph  
5 36 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
6 allegations of Paragraph 36 and therefore denies the same.

7 37. Paragraph 37 does not require a response by Apple. To the extent that Paragraph  
8 37 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
9 allegations of Paragraph 37 and therefore denies the same.

10 38. Paragraph 38 does not require a response by Apple. To the extent that Paragraph  
11 38 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
12 allegations of Paragraph 38 and therefore denies the same.

13 39. Paragraph 39 does not require a response by Apple. To the extent that Paragraph  
14 39 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
15 allegations of Paragraph 39 and therefore denies the same.

16 40. Paragraph 40 does not require a response by Apple. To the extent that Paragraph  
17 40 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
18 allegations of Paragraph 40 and therefore denies the same.

19 41. Paragraph 41 does not require a response by Apple. To the extent that Paragraph  
20 41 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
21 allegations of Paragraph 41 and therefore denies the same.

22 42. Paragraph 42 does not require a response by Apple. To the extent that Paragraph  
23 6426 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
24 allegations of Paragraph 42 and therefore denies the same.

25 43. Paragraph 43 does not require a response by Apple. To the extent that Paragraph  
26 43 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
27 allegations of Paragraph 43 and therefore denies the same.

28

**COUNT III**

**(Patent Infringement Against LG)**

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2  
3 44. Apple incorporates its responses to the allegations of Paragraphs 1 through 23 set  
4 forth above as if fully set forth herein.

5 45. Paragraph 45 does not require a response by Apple. To the extent that Paragraph  
6 45 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
7 allegations of Paragraph 45 and therefore denies the same.

8 46. Paragraph 46 does not require a response by Apple. To the extent that Paragraph  
9 46 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
10 allegations of Paragraph 46 and therefore denies the same.

11 47. Paragraph 47 does not require a response by Apple. To the extent that Paragraph  
12 47 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
13 allegations of Paragraph 47 and therefore denies the same.

14 48. Paragraph 48 does not require a response by Apple. To the extent that Paragraph  
15 48 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
16 allegations of Paragraph 48 and therefore denies the same.

17 49. Paragraph 49 does not require a response by Apple. To the extent that Paragraph  
18 49 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
19 allegations of Paragraph 49 and therefore denies the same.

20 50. Paragraph 50 does not require a response by Apple. To the extent that Paragraph  
21 50 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
22 allegations of Paragraph 50 and therefore denies the same.

**COUNT IV**

**(Patent Infringement Against TiVo)**

23  
24  
25 51. Apple incorporates its responses to the allegations of Paragraphs 1 through 23 set  
26 forth above as if fully set forth herein.

1           52. Paragraph 52 does not require a response by Apple. To the extent that Paragraph  
2 52 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
3 allegations of Paragraph 52 and therefore denies the same.

4           53. Paragraph 53 does not require a response by Apple. To the extent that Paragraph  
5 53 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
6 allegations of Paragraph 53 and therefore denies the same.

7           54. Paragraph 54 does not require a response by Apple. To the extent that Paragraph  
8 54 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
9 allegations of Paragraph 54 and therefore denies the same.

10          55. Paragraph 55 does not require a response by Apple. To the extent that Paragraph  
11 55 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
12 allegations of Paragraph 55 and therefore denies the same.

13          56. Paragraph 56 does not require a response by Apple. To the extent that Paragraph  
14 56 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
15 allegations of Paragraph 56 and therefore denies the same.

16          57. Paragraph 57 does not require a response by Apple. To the extent that Paragraph  
17 57 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
18 allegations of Paragraph 57 and therefore denies the same.

19          58. Paragraph 58 does not require a response by Apple. To the extent that Paragraph  
20 58 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
21 allegations of Paragraph 58 and therefore denies the same.

22          59. Paragraph 59 does not require a response by Apple. To the extent that Paragraph  
23 59 is deemed to require a response, Apple lacks knowledge sufficient to confirm or deny the  
24 allegations of Paragraph 59 and therefore denies the same.

25                           **RESPONSE TO MPT'S PRAYER FOR RELIEF**

26          60. Apple states that MPT's Prayer for Relief does not require a response.

27          61. Apple denies that MPT is entitled to any relief whatsoever from Apple, as prayed  
28 for or otherwise.



1 62. Apple denies each and every allegation of the Complaint not already admitted or  
2 denied and further denies that MPT is entitled to any relief whatsoever from Apple on the basis of  
3 any of the purported claims for relief contained in the Complaint.

4 **ADDITIONAL DEFENSES**

5 63. By way of further answer, Apple states as follows. By asserting these defenses,  
6 Apple does not assume any burden of proof for any stated defense or waive any unstated defenses.  
7 Apple expressly reserves the right to allege and assert further additional defenses. Apple also  
8 expressly incorporates by reference herein all defenses pled by co-defendants in this action in their  
9 respective Answers to MPT's Complaint.

10 **FIRST AFFIRMATIVE DEFENSE**

11 **(Invalidity of the Asserted Patents)**

12 64. Each purported claim of the Haskell '226, Johnston '377 and Puri '878 Patents ("the  
13 Asserted Patents") is invalid for failure to comply with one or more of the requirements of United  
14 States Code, Title 35, including without limitation, 35 U.S.C. §§ 101, 102, 103, and/or 112, and  
15 the rules, regulations, and laws pertaining thereto.

16 **SECOND AFFIRMATIVE DEFENSE**

17 **(Noninfringement of the Asserted Patents)**

18 65. Apple has not and does not infringe, contribute to the infringement of, or actively  
19 induce others to infringe any valid, enforceable claim of any of the Asserted Patents, either  
20 literally, or under the doctrine of equivalents.

21 **THIRD AFFIRMATIVE DEFENSE**

22 **(Issue Preclusion)**

23 66. MPT is precluded from re-litigating any issue on which there was a finding adverse  
24 to it in any prior litigation.

25 **FOURTH AFFIRMATIVE DEFENSE**

26 **(Prosecution History Estoppel)**

27 67. MPT is estopped, based on statements, representations, and admissions made  
28 during prosecution of the patent applications resulting in the Asserted Patents, from asserting any

1 interpretation of any valid, enforceable claims of the Asserted Patents that would be broad enough  
2 to cover any of Apple's products or services alleged to infringe the Asserted Patents, either  
3 literally or by application of the doctrine of equivalents.

4 **FIFTH AFFIRMATIVE DEFENSE**

5 **(Failure to Mark)**

6 68. On information and belief, MPT's purported claims for relief concerning the  
7 Asserted Patents are limited by failure to comply with the marking and notice requirements of  
8 35 U.S.C. § 287(a).

9 **SIXTH AFFIRMATIVE DEFENSE**

10 **(Waiver/Equitable Estoppel/Implied or Express License/Exhaustion)**

11 69. On information and belief, MPT is barred by the doctrines of waiver, equitable  
12 estoppel, implied or express license and/or exhaustion from enforcing the Asserted Patents against  
13 Apple.

14 **SEVENTH AFFIRMATIVE DEFENSE**

15 **(Laches and/or Estoppel)**

16 70. MPT's claim for damages for past patent infringement against Apple is limited  
17 under the doctrines of laches and/or estoppel.

18 **EIGHTH AFFIRMATIVE DEFENSE**

19 **(Limitation on Damages)**

20 71. MPT's recovery for alleged infringement of the Patents-in-Suit, if any, is limited to  
21 any alleged infringement committed no more than six years prior to the filing of its Complaint,  
22 pursuant to 35 U.S.C. § 286.

23 **NINTH AFFIRMATIVE DEFENSE**

24 **(Standing/Nonjoinder)**

25 72. MPT lacks sufficient substantial rights in the Patents-in-Suit to assert and maintain  
26 claims of patent infringement.

1 **TENTH AFFIRMATIVE DEFENSE**

2 **(License)**

3 73. On the basis of MPEG LA, LLC's conclusion that the Puri '878 Patent and Haskell  
4 '226 Patent are essential to the MPEG-2 Standard and/or MPT's assertion of the essentiality of one  
5 or more of the Puri '878 Patent, Johnston '377 Patent, or Haskell '226 Patent, MPT's claim for  
6 infringement of those patents is barred by a combination of (a) a Patent Portfolio License executed  
7 by MPEG LA, LLC with Apple and/or Apple's suppliers; (b) MPT's settlement with MPEG LA,  
8 MPT's execution of an MPEG LA Agreement Among Licensors and/or an MPEG LA License to  
9 the Licensing Administrator; and/or (c) Alcatel-Lucent's executed MPEG LA Agreement Among  
10 Licensors and/or MPEG LA License to the Licensing Administrator. These agreements are  
11 applicable to one or more of the Puri '878 Patent, Johnston '377 Patent, and Haskell '226 Patent  
12 and apply to the patents allegedly assigned to MPT, thereby extinguishing claims of patent  
13 infringement of one or more of the Puri '878 Patent, Johnston '377 Patent, and Haskell '226 Patent.

14 **ELEVENTH AFFIRMATIVE DEFENSE**

15 **(Violation of Reasonable and Non-Discriminatory Licensing Agreement)**

16 74. On information and belief, as a condition of its participation in MPEG LA, MPT or  
17 its predecessors-in-interest agreed to license some or all of the Patents-in-suit on Reasonable and  
18 Nondiscriminatory (RAND) terms. Accordingly MPT's damages are limited by that agreement.

19 **TWELFTH AFFIRMATIVE DEFENSE**

20 **(Estoppel/Waiver)**

21 75. By its conduct during meetings of standards-setting organizations, MPT has waived  
22 its right to assert one or more of the Asserted Patents and/or is estopped from asserting its rights to  
23 one or more of the Asserted Patents.

24 **THIRTEENTH AFFIRMATIVE DEFENSE**

25 **(Unenforceability of the Asserted Patents)**

26 76. The claims of the Asserted Patents are unenforceable as a result of inequitable  
27 conduct by the applicant(s), their attorney(s), and/or agent(s) and/or the person(s) involved in the  
28 preparation, filing, and/or prosecution of that patent.

**The Haskell '226 Patent**

1  
2 77. The Haskell '226 Patent is unenforceable and void due to inequitable conduct that  
3 occurred during the application for and prosecution of the Patent.

4 78. Individuals associated with the application for and prosecution of the Haskell '226  
5 Patent, including at least Barin G. Haskell, violated their duty of candor and good faith in dealing  
6 with the U.S. Patent and Trademark Office ("PTO") by intentionally and deceptively failing to  
7 disclose material information to the PTO.

8 79. The application for the Haskell '226 Patent was filed on September 27, 1989. Barin  
9 G. Haskell and Atul Puri were the named applicants for the Haskell '226 Patent and are the named  
10 inventors listed on the Patent.

11 80. Under Title 37, CFR § 1.56, "[e]ach individual associated with the filing and  
12 prosecution of a patent application has a duty of candor and good faith in dealing with the [PTO],  
13 which includes a duty to disclose to the [PTO] all information known to that individual to be  
14 material to patentability . . . ." On September 25, 1989, Mr. Haskell and Mr. Puri signed a sworn  
15 statement stating in pertinent part: "I believe I am an original, first and joint inventor of the subject  
16 matter which is claimed and for which a patent is sought on the invention entitled Conditional  
17 Motion Compensated Interpolation of Digital Motion Video the specification of which is attached  
18 hereto. . . . I acknowledge the duty to disclose information which is material to the examination of  
19 this application in accordance with Title 37, Code of Federal Regulations, 1.56(a)." At least Mr.  
20 Haskell did not perform his sworn duty to disclose information material to the examination of the  
21 application for the Haskell '226 Patent.

22 81. According to the Haskell '226 Patent's Background of the Invention section, motion  
23 compensated predictive coding was a prior-art technique for reducing the bandwidth of  
24 transmitting motion pictures. The Background section further identifies motion-compensated  
25 interpolation as a second prior-art technique for reducing the bandwidth of transmitting motion  
26 pictures, used in conjunction with motion-compensated predictive coding. The Background  
27 section explains that motion-compensated predictive coding of frames occasionally caused the  
28 encoder's buffer to overload, in which case those frames were not encoded or transmitted. The

1 Background section explains that motion-compensated interpolation of a frame that had not been  
2 encoded and transmitted was a known alternative to simply repeating the most recently available  
3 frame (i.e., "frame repeating").

4 82. According to the Haskell '226 Patent's Background section, motion-compensated  
5 interpolation suffered from the following problem:

6 [W]hen the images of successive blocks do not represent translational motion, the  
7 reproduced image may be worse than with frame repeating. Although it has been observed  
8 that this degradation is caused by a relatively few pels that do not conform to the  
9 assumption of translational motion, putting these pels in the wrong place creates highly  
10 visible artifacts.

11 83. The Haskell '226 Patent's Summary of the Invention section purports to disclose a  
12 novel solution to this purported problem with motion-compensated interpolation:

13 In accordance with the principles of this invention, pels that cause highly visible artifacts  
14 are detected, and corresponding correction information is transmitted to the decoder. The  
15 amount of correction information that must be sent is relatively  
16 small, and the improvement in picture quality is quite large.

17 Similarly, the Abstract for the Haskell '226 Patent describes the patented method and apparatus as  
18 follows:

19 In accordance with the method, selected frames of the video are interpolated in the decoder  
20 with the aid of interpolation correction codes that are generated in the encoder and sent to  
21 the decoder. In an encoder embodiment that interpolates half of the frames, every other  
22 frame is encoded and decoded within the encoder. The decoded versions of adjacent frames  
23 are appropriately combined and compared to the interleaved camera frame that is to be  
24 interpolated in the decoder. The differences, which correspond to "pels correction"  
25 information, are encoded and quantized. Those that exceed a predetermined threshold  
26 value are added to the encoder's output buffer. The inverse operation is carried out in the  
27 decoder. That is every pair of decoded frames is averaged and combined with the decoded  
28 "pels correction" information to form the interpolated frames.

29 In sum, the Haskell '226 Patent describes the generation of correction information to account for  
30 errors in interpolated frames that exceed a predetermined threshold as its purported point of  
31 novelty and technological benefit.

32 84. Claim 1 of the Haskell '226 Patent recites a "circuit for encoding applied video  
33 signals that comprise successive frames, where each frame is divided into blocks" that comprises:

34 a first means for performing the function of "encoding the blocks of some of said frames by  
35 developing for each block of such frames (a) and [sic] approximated version of said block  
36 derived from an approximated version of said block developed for a previous frame, and  
37 (b) a code which represents the deviation of said block from said approximated version of  
38 said block";

1 a second means for performing the function of "approximating the blocks of those of said  
2 frames that are to be interpolated by combining approximated versions of said blocks in  
3 selected ones of the frames that are encoded in said first means"; and

4 a third means responsive to said second means and to said frames to be interpolated for  
5 performing the function of "developing a code that corresponds to those pels in blocks  
6 approximated by said second means that differ from corresponding pels in said frames to be  
7 interpolated by greater than a preselected threshold."

8 The functions performed by the first and second recited means correspond respectively to motion  
9 compensated predictive coding and motion-compensated interpolation. As the Haskell '226 Patent  
10 discloses, these functions were known in the prior art. The function performed by the third recited  
11 means corresponds to the Haskell '226 Patent's self-described point of novelty: generating  
12 correction information (i.e., "code") to account for errors in interpolated frames that exceed a  
13 predetermined threshold. The Haskell '226 Patent fails to disclose, however, that the generation of  
14 correction information to account for errors in interpolated frames that exceed a predetermined  
15 threshold was known in the prior art.

16 85. As one example, the book *Digital Pictures: Representation and Compression* (1<sup>st</sup>  
17 ed. 1988) ("*Digital Pictures*"), co-authored by Mr. Haskell, was published over a year prior to the  
18 filing date of the application for the Haskell '226 Patent. Under 35 U.S.C. § 102, *Digital Pictures*  
19 is prior art to the Haskell '226 Patent.

20 86. At least pages 301-03 and pages 469-73 of *Digital Pictures* are material to the  
21 patentability of the Haskell '226 Patent, including the patentability of claim 1 of the '226 Patent.  
22 For example, *Digital Pictures* discloses the following on pages 470-73:

23 An interpolative scheme that is commonly used in interframe coding is to drop alternative  
24 fields from transmission. . . . It has been used effectively in interframe coding during buffer  
25 overloads in order to reduce the data rate.

26 \* \* \*

27 Preliminary simulations indicate that under moderate motion, a 4:1 frame dropping (i.e.  
28 dropping 3 out of 4 frames) and motion adaptive interpolation often gives reasonable  
29 motion rendition. In this as well as other interpolation schemes, since at times the  
30 interpolation may be inaccurate, techniques have been devised where the quality of  
31 interpolation is checked at the transmitter, and if the interpolation error is larger than a  
32 threshold, side information is transmitted to the receiver. It appears that due to unavoidable  
33 inaccuracies of the displacement estimator (e.g. complex translational and rotational  
34 motion) and the segmentation process, such side information would be necessary to reduce  
35 artifacts that may otherwise be introduced due to faulty interpolation.

1 A person of ordinary skill in the art of the Haskell '226 Patent would understand the side  
2 information discussed in this excerpt to be "correction information," as that term is used in the '226  
3 Patent. Thus, *Digital Pictures* discloses the Haskell '226 Patent's purported point of novelty and  
4 technological benefit – the generation of correction information to account for errors in  
5 interpolated frames that exceed a predetermined threshold – and anticipates at least the function  
6 performed by the third means recited in claim 1 of the '226 Patent Haskell.

7 87. A person of ordinary skill in the art would recognize the materiality of pages 301-  
8 03 and pages 469-73 of *Digital Pictures* to the patentability of the Haskell '226 Patent, including  
9 claim 1 of the Patent.

10 88. During the reexamination of claim 12 of the Haskell '226 Patent, the PTO examiner  
11 noted that a reasonable examiner would consider *Digital Pictures* to be "highly material" prior art.  
12 As the examiner declared:

13 [C]hapter 5 of the *Digital Pictures* book describes predictive and interpolative/extrapolative  
14 coding and states that the latter is "heavily used for interframe systems in conjunction with  
15 predictive coding." *Digital Pictures* at 301, 303. *Digital Pictures* further teaches regarding  
16 interpolative coding, "techniques have been devised where the quality of interpolation is  
17 checked at the transmitter, and if the interpolation error is larger than a threshold, side  
18 information. It appears that due to unavoidable inaccuracies of the displacement estimator  
19 (e.g., complex translational and rotational motion) and the segmentation process, such side  
20 information would be necessary to reduce artifacts that may otherwise be introduced due to  
21 faulty interpolation." *Digital Pictures* at p. 473.

22 Upon this basis, the examiner issued a non-final rejection of claim 12 of the Haskell '226 Patent as  
23 anticipated by *Digital Pictures*. A person of ordinary skill in the art would recognize the  
24 materiality of pages 301-03 and pages 469-73 of *Digital Pictures* to the patentability of claim 12 of  
25 the '226 Patent.

26 89. The individuals involved in the application for and prosecution of the Haskell '226  
27 Patent did not disclose pages 301-03 and 469-73 of *Digital Pictures* to the PTO during the  
28 prosecution of the Patent. Mr. Haskell, in particular, did not disclose pages 301-03 and 469-73 of  
*Digital Pictures* to the PTO. Indeed, the individuals involved in the application for and  
prosecution of the Haskell '226 Patent did not disclose any art cumulative to the material  
disclosures on pages 301-03 and 469-73 of *Digital Pictures* during the prosecution of the Patent.



1           90.     At least Mr. Haskell, as the co-author of *Digital Pictures*, was aware of the material  
2 contents of pages 301-03 and 469-73 of *Digital Pictures*. Mr. Haskell recognized their materiality  
3 to the patentability of the Haskell '226 Patent, including the patentability of claims 1 and 12 of the  
4 '226 Patent.

5           91.     Mr. Puri was a co-worker of Mr. Haskell at AT&T Bell Laboratories. Mr. Puri,  
6 among other applicants for the '878 Patent, submitted pages 301-504 of *Digital Pictures* to the  
7 PTO in their application for the '878 Patent. Upon information and belief, Mr. Puri was aware of  
8 pages 301-03 and pages 469-73 of *Digital Pictures* during the prosecution of the Haskell '226  
9 Patent. Like Mr. Haskell, Mr. Puri would have recognized the materiality of pages 301-03 and  
10 469-73 of *Digital Pictures* to the patentability of the '226 Patent, including claims 1 and 12 of the  
11 Patent.

12           92.     At least Mr. Haskell intended to deceive the PTO by intentionally failing to  
13 disclose pages 301-03 and 469-73 of *Digital Pictures* in the application for the Haskell '226 Patent  
14 and throughout its prosecution. At least Mr. Haskell's intentional failure to disclose pages 301-03  
15 and 469-73 of *Digital Pictures* constitutes inequitable conduct that renders the Haskell '226 Patent  
16 void and unenforceable.

17           93.     As another example, a document entitled "Comments on Conditional Motion  
18 Compensated Frame Interpolation," and labeled "Document #81," was published no later than  
19 March 1986 at the Fifth Meeting of the CCITT Specialists Group on Coding for Visual Telephony  
20 ("CCITT Specialists Group"). Document #81 is available at [http://wftp3.itu.int/avarch/video-  
21 site/h261/H261\\_Specialists\\_Group/Contributions-/081.pdf](http://wftp3.itu.int/avarch/video-site/h261/H261_Specialists_Group/Contributions-/081.pdf). Under 35 U.S.C. § 102, Document  
22 #81 is prior art to the Haskell '226 Patent. Document #81 is available at [http://wftp3.itu.int/av-  
24 arch/video-site/h261/H261\\_-Specialists\\_Group/Contributions/081.pdf](http://wftp3.itu.int/av-<br/>23 arch/video-site/h261/H261_-Specialists_Group/Contributions/081.pdf)

25           94.     A person of ordinary skill in the art would have recognized the materiality of  
26 Document #81 to the patentability of the Haskell '226 Patent, including the patentability of claim 1  
of the Patent.

27           95.     Figure 1 of Document #81 is reproduced below.  
28



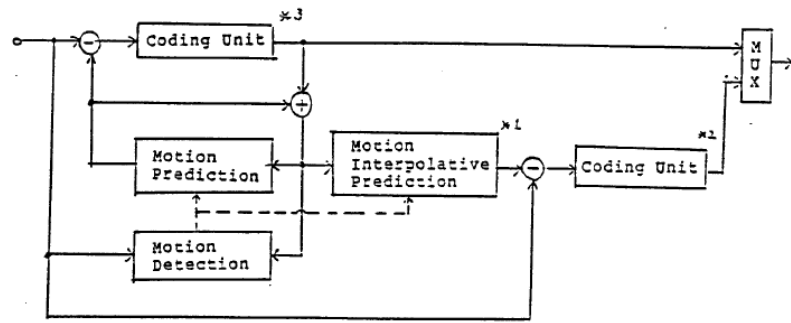


Fig. 1 Schematic diagram of CMI coder

96. Figure 1 of Document #81 displays a schematic diagram of an encoder. The encoder is capable of motion-compensated prediction. The function of motion-compensated prediction is performed by the box entitled "Motion Prediction," using information from the box entitled "Motion Detection." The encoder is also capable of motion-compensated interpolation. The function of motion-compensated interpolation is performed by the box entitled "Motion Interpolative Prediction," using information from the box entitled "Motion Detection." The encoder is also capable of generating correction information to account for errors in interpolated frames. The circle with a minus sign to the right of the box entitled "Motion Interpolative Prediction" performs the function of generating correction information to account for errors in interpolated frames.

97. Figure 1 of Document #81 anticipates the limitation "encoding the blocks of some of said frames by developing for each block of such frames (a) and [sic] approximated version of said block derived from an approximated version of said block developed for a previous frame, and (b) a code which represents the deviation of said block from said approximated version of said block" in claim 1 of the Haskell '226 Patent. Furthermore, Figure 1 of Document #81 anticipates the limitation "approximating the blocks of those of said frames that are to be interpolated by combining approximated versions of said blocks in selected ones of the frames that are encoded in said first means" in claim 1 of the Haskell '226 Patent. Furthermore, Figure 1 of Document #81 anticipates the limitation "developing a code that corresponds to those pels in blocks approximated by said second means that differ from corresponding pels in said frames to be interpolated by greater than a preselected threshold" in claim 1 of the Haskell '226 Patent. Thus, Figure 1 of Document #81 discloses the Haskell '226 Patent's purported point of novelty and

1 technological benefit – the generation of correction information to account for errors in  
2 interpolated frames that exceed a predetermined threshold.

3 98. A person of ordinary skill in the art would have recognized the materiality of  
4 Figure 1 of Document #81 to the patentability of the Haskell '226 Patent, including the  
5 patentability of claim 1 of the Patent.

6 99. Section 3(1) of Document #81 states: "[A] control mechanism would be necessary  
7 for changing over the 2 types of input signals to the encoder (extrapolative [sic] prediction error and  
8 interpolative prediction error) . . . ." Thus, Section 3(1) of Document #81 discloses the Haskell  
9 '226 Patent 's purported point of novelty and technological benefit – the generation of correction  
10 information to account for errors in interpolated frames that exceed a predetermined threshold.

11 100. A person of ordinary skill in the art would have recognized the materiality of  
12 Section 3(1) of Document #81 to the patentability of the Haskell '226 Patent, including the  
13 patentability of claim 1 of the Patent.

14 101. A person of ordinary skill in the art would have recognized the materiality of  
15 Document #81 as a whole to the patentability of the Haskell '226 Patent, including the  
16 patentability of claim 1 of the Patent.

17 102. According to the CCITT Specialist Group's Report of the Fifth Meeting in Tokyo  
18 (March 25-28, 1986) ("CCITT Specialist Group's Report"), Mr. Haskell attended the Fifth  
19 Meeting. The CCITT Specialist Group's Report is available at [http://wftp3.itu.int/av-arch/video-  
20 site/h261/H261\\_Specialists\\_Group/Report\\_of\\_-Specialists\\_Group/8603tok](http://wftp3.itu.int/av-arch/video-site/h261/H261_Specialists_Group/Report_of_-Specialists_Group/8603tok). According to the  
21 Report, Document #81 was discussed at the Fifth Meeting. Furthermore, according to the Report,  
22 a tape demonstration of source coding simulation results related to Document #81 took place at the  
23 Fifth Meeting. Mr. Haskell thus learned about the contents of Document #81 at the Fifth Meeting.

24 103. The CCITT Specialist Group's Report states:

25 5.10 Motion-compensated Interpolation (#81, #83, #87)

26 Since motion-compensated interpolation at the decoder alone is a kind of postprocessing  
27 and does not affect the compatibility, conditional motion-compensated interpolation (CMI)  
was discussed where interpolation error is transmitted.

28 The reference to "#81" in the excerpt above is a reference to Document #81. This excerpt of the

1 CCITT Specialist Group's Report discloses the Haskell '226 Patent's purported point of novelty and  
2 technological benefit – the generation of correction information to account for errors in  
3 interpolated frames that exceed a predetermined threshold. As stated in the CCITT Specialist  
4 Group's Report, the discussions at the Fifth Meeting disclosed the idea of generating correction  
5 information to account for errors in interpolated frames as well.

6 104. A person of ordinary skill in the art would have recognized the materiality of the  
7 CCITT Specialist Group's Report to the patentability of the Haskell '226 Patent, including the  
8 patentability of claim 1 of the Patent.

9 105. Furthermore, a person of ordinary skill in the art would have recognized the  
10 materiality of the discussions at the Fifth Meeting regarding conditional motion-compensated  
11 interpolation, including the generation and transmission of correction information to account for  
12 errors in interpolated frames.

13 106. Under 35 U.S.C. § 102, the CCITT Specialist Group's Report is prior art to the  
14 Haskell '226 Patent. In addition, under 35 U.S.C. § 102, the oral presentations at the Fifth Meeting  
15 are prior art to the Haskell '226 Patent.

16 107. The individuals involved in the application for and prosecution of the Haskell '226  
17 Patent did not disclose Document #81 to the PTO during the prosecution of the Patent. Mr.  
18 Haskell, in particular, did not disclose Document #81 to the PTO. Indeed, the individuals involved  
19 in the application for and prosecution of the Haskell '226 Patent did not disclose any art  
20 cumulative to the material disclosures in Document #81 during the prosecution of the Patent.

21 108. At least Mr. Haskell was aware of the material contents of Document #81. In  
22 addition, Mr. Haskell recognized the materiality of Document #81 to the patentability of the  
23 Haskell '226 Patent, including the patentability of claim 1 of the Haskell '226 Patent.

24 109. At least Mr. Haskell intended to deceive the PTO by intentionally failing to  
25 disclose Document #81 in the application for the Haskell '226 Patent and throughout its  
26 prosecution. At least Mr. Haskell's intentional failure to disclose Document #81 constitutes  
27 inequitable conduct that renders the Haskell '226 Patent void and unenforceable.  
28

1 110. In addition, at least Mr. Haskell was aware of the material contents of the CCITT  
2 Specialist Group's Report. In addition, Mr. Haskell recognized the materiality of the CCITT  
3 Specialist Group's Report to the patentability of the Haskell '226 Patent, including the patentability  
4 of claim 1 of the Haskell '226 Patent.

5 111. At least Mr. Haskell intended to deceive the PTO by intentionally failing to  
6 disclose the CCITT Specialist Group's Report in the application for the Haskell '226 Patent and  
7 throughout its prosecution. At least Mr. Haskell's intentional failure to disclose the CCITT  
8 Specialist Group's Report constitutes inequitable conduct that renders the Haskell '226 Patent void  
9 and unenforceable.

10 112. In addition, at least Mr. Haskell was aware of the material contents of the oral  
11 presentations at the CCITT Specialist Group's Fifth Meeting regarding conditional motion  
12 compensated interpolation. In addition, Mr. Haskell recognized the materiality of the oral  
13 presentations at the CCITT Specialist Group's Fifth Meeting to the patentability of the Haskell  
14 '226 Patent, including the patentability of claim 1 of the Haskell '226 Patent.

15 113. At least Mr. Haskell intended to deceive the PTO by intentionally failing to  
16 disclose the oral presentations at the CCITT Specialist Group's Fifth Meeting regarding  
17 conditional motion-compensated interpolation in the application for the Haskell '226 Patent and  
18 throughout its prosecution. At least Mr. Haskell's intentional failure to disclose the oral  
19 presentations at the CCITT Specialist Group's Fifth Meeting regarding conditional motion-  
20 compensated interpolation constitutes inequitable conduct that renders the Haskell '226 Patent  
21 void and unenforceable.

22 **The '878 Puri Patent**

23 114. The Puri '878 Patent is unenforceable and void due to inequitable conduct that  
24 occurred during the application for and prosecution of the Patent.

25 115. Individuals associated with the application for and prosecution of the Puri '878  
26 Patent, including at least Atul Puri and Rangarajan Aravind, violated their duty of candor and  
27 good faith in dealing with the PTO by intentionally and deceptively failing to disclose material  
28 information to the PTO.

1           116. The application for the Puri '878 Patent was filed on November 15, 1991. Atul Puri  
2 and Rangarajan Aravind were the named applicants for the Puri '878 Patent and are the named  
3 inventors listed on the Patent.

4           117. Under Title 37, CFR § 1.56, "[e]ach individual associated with the filing and  
5 prosecution of a patent application has a duty of candor and good faith in dealing with the [PTO],  
6 which includes a duty to disclose to the [PTO] all information known to that individual to be  
7 material to patentability . . . ." On February 28, 1992, Atul Puri and Rangarajan Aravind signed a  
8 sworn statement stating in pertinent part: "I believe I am an original, first and joint inventor of the  
9 subject matter which is claimed and for which a patent is sought on the invention entitled  
10 Adaptive Coding And Decoding Of Frame and Fields Of Video Signals the specification of which  
11 was filed on November 15, 1991 . . . . I acknowledge the duty to disclose information which is  
12 material to the examination of this application in accordance with Title 37, Code of Federal  
13 Regulations, 1.56(a)." At least Mr. Puri and Mr. Aravind did not perform their sworn duty to  
14 disclose information material to the examination of the application for the Puri '878 Patent.

15           118. The Puri '878 Patent is entitled "Adaptive Coding and Decoding of Frame and  
16 Fields of Video Signals." According to the Summary of the Invention section of the Puri '878  
17 Patent, the purported invention achieves improved compression of video data by using an adaptive  
18 video frame/field encoder and decoder. As the Summary of the Invention section explains, "[t]his  
19 adaptive behavior involves changing between a process of coding and decoding information from  
20 a frame of video or coding and decoding information from a field of video."

21           119. In a September 22, 1992 Office Action, the PTO rejected several claims of the Puri  
22 '878 Patent as anticipated by United States Patent No. 5,091,782 to Krause ("Krause").

23           120. In a December 22, 1992 response to the PTO's September 22, 1992 Office Action,  
24 the applicants for the Puri '878 Patent attempted to distinguish Krause from the claimed invention.  
25 They argued as follows:

26           Both field coding and frame coding occur at the same time during the operation of the  
27 apparatus shown in the Krause patent in contrast to the invention defined in claim 1  
28 involving a selective one, but not both, of frame coding or field coding. Clearly, the  
claimed invention avoids the necessity of doing two coding operations as in the Krause  
patent. The § 102 rejection of claims 1 and 2, therefore, ought to be withdrawn.

1 121. In response to the applicants' argument, the Examiner issued a Notice of  
2 Allowability on January 26, 1993 that allowed claims 1-33 of the Puri '878 Patent.

3 122. Claim 1 of the Puri '878 Patent recites, inter alia, the limitation "a means responsive  
4 to the digital video input signal for producing a field frame coding type signal which directs a  
5 selected one, but not both, of the frame coding means or the field coding means to code the digital  
6 video input signal." This limitation corresponds to the purported distinction drawn by the  
7 applicants to the Puri '878 Patent between Krause and the claimed invention. The applicants for  
8 the Puri '878 Patent failed to disclose to the PTO during the prosecution of the Patent that  
9 producing a field frame coding type signal which directs a selected one, but not both, of the frame  
10 coding means or the field coding means to code the digital video input signal was known in the  
11 prior art. Moreover, the applicants for the Puri '878 Patent failed to disclose to the PTO that  
12 adaptive coding of frame and fields of video signals known in the prior art.

13 123. For example, a journal article entitled "Fixed and Adaptive Predictors for Hybrid  
14 Predictive/Transform Coding," written by Staffan Ericsson, was published in IEEE Transactions  
15 on Communications, vol. Com-33, no. 12 (Dec. 1985). Under 35 U.S.C. § 102, the Ericsson  
16 article ("Ericsson") is prior art to the Puri '878 Patent. Ericsson discloses adaptive coding of  
17 frames and fields of video signals. The Abstract of Ericsson states: "Field coding with a switched  
18 predictor using previous field in moving areas is an interesting alternative to frame coding with  
19 frame difference prediction." A person of skill in the art would understand that this sentence of  
20 the Abstract of Ericsson discloses adaptive coding of frames and fields of video signals. In  
21 addition, a section of Ericsson entitled "Switched Prediction" states the following:

22  
23 In this section we propose an adaptive predictor which switches between frame difference  
24 prediction and a predictor more suitable for moving areas. . . . Table II shows prediction  
25 gain in moving areas for different predictors. It is found that the average of the horizontal  
26 and vertical neighbors in the previous field (predictor 2) gives 3 dB better prediction gain  
27 compared to frame difference prediction. . . . A candidate for further study is a predictor  
28 which switches between previous frame and previous field prediction, i.e., between  
predictors 1 and 2 in Table II.

A person of skill in the art would recognize that this excerpted passage discloses adaptive coding  
of frames and fields of video signals.

1           124. As discussed above, the PTO allowed the Puri '878 Patent, including claim 1 of the  
2 Patent, to issue over Krause based upon the applicants' argument that Krause did not disclose  
3 adaptive coding of frames and fields of video signals. Thus, Ericsson's disclosure of adaptive  
4 coding of frames and fields of video signals was material to the patentability of the Puri '878  
5 Patent, including the patentability of claim 1 of the Patent. A person of ordinary skill in the art  
6 would have recognized the materiality of Ericsson to the patentability of the Puri '878 Patent,  
7 including the patentability of claim 1 of the Patent.

8           125. Individuals involved in the prosecution of the Puri '878 Patent, including at least  
9 Atul Puri, were aware of Ericsson's disclosure of adaptive coding of frames and fields of video  
10 signals during the prosecution of the Patent. Mr. Puri, in particular, was familiar with Ericsson's  
11 disclosure of adaptive coding of frames and fields of video signals during the prosecution of the  
12 Puri '878 Patent. Mr. Puri had previously cited Ericsson in his doctoral thesis. At least the  
13 Abstract of Ericsson would have alerted Mr. Puri to Ericsson's disclosure of adaptive coding of  
14 frames and fields of video signals. Mr. Puri was aware of Ericsson's materiality to the  
15 patentability of the Puri '878 Patent, including the patentability of claim 1 of the Patent.

16           126. Neither Mr. Puri nor any other individual involved in the application for and  
17 prosecution of the Puri '878 Patent disclosed Ericsson to the PTO. Indeed, the individuals  
18 involved in the application for and prosecution of the Puri '878 Patent failed to disclose any art  
19 cumulative to the material disclosures in Ericsson during the prosecution of the Patent.

20           127. At least Mr. Puri intended to deceive the PTO by intentionally failing to disclose  
21 Ericsson in the application for the Puri '878 Patent and throughout its prosecution (e.g., in the  
22 applicants' December 22, 1992 response to the PTO's September 22, 1992 Office Action).

23           128. At least Mr. Puri's intentional failure to disclose Ericsson constitutes inequitable  
24 conduct that renders the Puri '878 Patent void and unenforceable.

25           129. As another example, a journal article entitled "Movement Compensated Frame-  
26 Frequency Conversion of Television Signals," written by Hirohisa Yamaguchi, Takehiko Sugi,  
27 and Kouji Kinuhata, was published in IEEE Transactions on Communication, vol. Com-35, no. 1  
28 (Oct. 1987). Under 35 U.S.C. § 102, this article ("Yamaguchi") is prior art to the Puri '878 Patent.



1 130. Pages 1079-81 of Yamaguchi disclose adaptive coding of frames and fields of  
2 video signals. For example, page 1980 states:

3 [T]he following adaptive interpolation algorithm has been simulated.

- 4 1) For the estimated movement, the corresponding value of a is examined.  
5 2) When the value of a is less than a threshold T1, the movement-compensated interframe  
6 interpolation is applied.  
7 3) When the value of a is between T1 and a larger threshold T2, the movement-  
8 compensated interfield interpolation is applied.  
9 4) When the value of a exceeds the threshold T2, the temporal interpolation is applied.

10 A person of ordinary skill in the art would recognize that this excerpt of Yamaguchi discloses  
11 adaptive coding of frames and fields of video signals.

12 131. As discussed above, the PTO allowed the Puri '878 Patent, including claim 1 of the  
13 Patent, to issue over Krause based upon the applicants' argument that Krause did not disclose  
14 adaptive coding of frames and fields of video signals. Thus, Yamaguchi's disclosure of adaptive  
15 coding of frames and fields of video signals was material to the patentability of the Puri '878  
16 Patent, including the patentability of claim 1 of the Patent. Moreover, a person of ordinary skill in  
17 the art would recognize the materiality of Yamaguchi to the patentability of the Puri '878 Patent,  
18 including the patentability of claim 1 of the Patent.

19 132. Individuals involved in the prosecution of the Puri '878 Patent, including at least  
20 Atul Puri, were aware of Yamaguchi's disclosure of adaptive coding of frame and fields of video  
21 signals during the prosecution of the Patent. Mr. Puri, in particular, was familiar with  
22 Yamaguchi's disclosure of adaptive coding of frames and fields of video signals during the  
23 prosecution of the Puri '878 Patent. Mr. Puri, along with Barin G. Haskell, had previously cited  
24 Yamaguchi as a reference in the application for the Haskell '226 Patent. Mr. Puri was aware of  
25 Yamaguchi's materiality to the patentability of the Puri '878 Patent, including the patentability of  
26 claim 1 of the Patent.

27 133. Neither Mr. Puri nor any other individual involved in the application for and  
28 prosecution of the Puri '878 Patent disclosed Yamaguchi to the PTO. Indeed, the individuals  
involved in the application for and prosecution of the Puri '878 Patent failed to disclose any art  
cumulative to the material disclosures in Yamaguchi during the prosecution of the Patent.



1 134. In addition, at least Mr. Puri intended to deceive the PTO by intentionally failing to  
2 disclose Yamaguchi in the application for the Puri '878 Patent and throughout its prosecution (e.g.,  
3 in the applicants' December 22, 1992 response to the PTO's September 22, 1992 Office Action).

4 135. At least Mr. Puri's intentional failure to disclose Yamaguchi constitutes inequitable  
5 conduct that renders the Puri '878 Patent void and unenforceable.

6 136. As yet another example, the International Organization for Standardization held a  
7 conference in Santa Clara, California in August 1991 relating to the development of the MPEG-2  
8 standard. According to the conference's attendance list (MPEG91/180), Atul Puri attended that  
9 conference. At the conference, Atul Puri learned even more about adaptive coding of frame and  
10 fields of video signals.

11 137. A team from Columbia University presented a paper entitled "Technical Input to  
12 MPEG-2 Video Coding" at the Santa Clara conference. The Columbia University paper was  
13 published with the identifier MPEG 91/131. Under 35 U.S.C. § 102, the Columbia University  
14 paper is prior art to the Puri '878 Patent. In addition, under 35 U.S.C. § 102, the presentation of  
15 the Columbia University paper at the Santa Clara conference is prior art to the Puri '878 Patent.

16 138. The Columbia University paper discloses adaptive coding of frame and fields of  
17 video signals. For example, the Introduction to the Columbia University paper states, in its  
18 entirety:

19 Hierarchical pyramidal coding provides convenient multiresolution coding, but the  
20 performance at the highest resolution is reduced, as was shown e.g., in the JPEG standard.  
21 For example, given an interlaced freeze-frame of a moving object, it makes sense to  
22 compress the first field and then the second field based on the reconstructed values of the  
23 first field (see, e. g., [4]). However, if the frame contains no moving objects, the coding  
24 performance of the final result will be compromised by this two-stage approach. It is then  
25 preferable to code the fields jointly, because they are properly aligned. Similarly, in motion  
26 compensated predictive video coding, if an object has uniform motion, the error image  
27 contains properly aligned fields, and it may be preferable to compress them jointly. This is  
28 not the case, however, when the object is accelerating, or at the critical areas around the  
edges of moving objects. Accordingly, the decision on whether to code the fields  
separately or jointly must be taken on macroblock-by-macroblock basis.

A person of ordinary skill in the art would understand that the phrase "code the fields . . . jointly,"  
as used in this excerpt, refers to coding of frames. Thus, a person of ordinary skill in the art would  
recognize that the Columbia University paper discloses adaptive coding of frame and fields of  
video signals. In addition, a person of ordinary skill in the art would recognize the materiality of

1 the Columbia University paper to the patentability of the Puri '878 Patent, including the  
2 patentability of claim 1 of the Patent.

3 139. Individuals involved in the prosecution of the Puri '878 Patent, including at least  
4 Atul Puri, were aware of the Columbia University paper's disclosure of adaptive coding of frame  
5 and fields of video signals during the prosecution of the Patent. Mr. Puri, in particular, was  
6 familiar with the Columbia University paper's disclosure of adaptive coding of frames and fields  
7 of video signals during the prosecution of the Puri '878 Patent, as he had learned about the  
8 contents of the paper at the Santa Clara conference. Mr. Puri was aware of the materiality of the  
9 Columbia University paper to the patentability of the Puri '878 Patent, including the patentability  
10 of claim 1 of the Patent. In addition, Mr. Puri was aware of the materiality of the presentation  
11 Columbia University paper at the Santa Clara conference to the patentability of the Puri '878  
12 Patent, including the patentability of claim 1 of the Patent.

13 140. In prior litigation involving the Puri '878 Patent, MPT has contended that Mr. Puri  
14 and Mr. Aravind conceived of the invention claimed in the Puri '878 Patent on a date prior to the  
15 Santa Clara conference. In ostensible support of that contention, MPT submitted to this Court in  
16 Case No. 06-CV-0684-H (CAB) a declaration of Atul Puri, which attaches five exhibits. (D.I.  
17 226.) None of the exhibits dated earlier than the Santa Clara conference discloses the following  
18 point of purported distinction between Krause and claim 1 of the Puri '878 Patent made by the  
19 applicants for the Patent during its prosecution: "Both field coding and frame coding occur at the  
20 same time during the operation of the apparatus shown in the Krause patent in contrast to the  
21 invention defined in claim 1 involving a selective one, but not both, of frame coding or field  
22 coding." Exhibit A to the Puri declaration is dated after the Santa Clara conference. Exhibit B to  
23 the Puri declaration fails to disclose a selective one, but not both, of frame coding or field coding.  
24 Exhibit C to the Puri declaration fails to disclose a selective one, but not both, of frame coding or  
25 field coding. Exhibit D to the Puri declaration fails to disclose a selective one, but not both, of  
26 frame coding or field coding. Exhibit E to the Puri declaration fails to disclose a selective one, but  
27 not both, of frame coding or field coding.

28

1           141.    Regardless of whether Mr. Puri and Mr. Aravind conceived of the alleged invention  
2 claimed by the Puri '878 Patent prior to the Santa Clara conference, Mr. Puri had a duty to disclose  
3 the Columbia University paper to the PTO. In addition, Mr. Puri had a duty to disclose the  
4 presentation of the Columbia University paper at the Santa Clara conference to the PTO.

5           142.    The applicants for the Puri '878 Patent did not allege during the prosecution of the  
6 Patent that it was entitled to a priority date earlier than the Santa Clara conference. Moreover, the  
7 examiner lacked evidence sufficient to determine that the Puri '878 Patent is entitled to a priority  
8 date earlier than the Santa Clara conference. Lacking evidence sufficient to determine that the  
9 Puri '878 Patent is entitled to a priority date earlier than the Santa Clara conference, a reasonable  
10 examiner would have deemed the Columbia University paper to be prior art to the Puri '878  
11 Patent. In addition, lacking evidence sufficient to determine that the Puri '878 Patent is entitled to  
12 a priority date earlier than the Santa Clara conference, a reasonable examiner would have deemed  
13 the presentation of the Columbia University paper at the Santa Clara conference to be prior art to  
14 the Puri '878 Patent.

15           143.    Furthermore, lacking evidence sufficient to determine that the Puri '878 Patent is  
16 entitled to a priority date earlier than the Santa Clara conference, a reasonable examiner would  
17 have been substantially likely to consider the Columbia University paper important in deciding  
18 whether to issue the Puri '878 Patent, including claim 1 of the Patent. In addition, lacking  
19 evidence sufficient to determine that the Puri '878 Patent is entitled to a priority date earlier than  
20 the Santa Clara conference, a reasonable examiner would have been substantially likely to  
21 consider the presentation of the Columbia University paper at the Santa Clara conference  
22 important in deciding whether to issue the Puri '878 Patent, including claim 1 of the Patent.

23           144.    The individuals involved in the application for and prosecution of the Puri '878  
24 Patent did not disclose either the Columbia University paper or its presentation at the Santa Clara  
25 conference to the PTO. Indeed, the individuals involved in the application for and prosecution of  
26 the Puri '878 Patent failed to disclose any art cumulative to either the material disclosures in the  
27 Columbia University paper or its presentation at the Santa Clara conference during the prosecution  
28 of the Patent.

1           145. At least Mr. Puri intended to deceive the PTO by intentionally failing to disclose  
2 the Columbia University paper and its presentation at the Santa Clara conference in the application  
3 for the Puri '878 Patent and throughout its prosecution (e.g., in the applicants' December 22, 1992  
4 response to the PTO's September 22, 1992 Office Action).

5           146. At least Mr. Puri's intentional failure to disclose the Columbia University paper and  
6 its presentation at the Santa Clara conference constitutes inequitable conduct that renders the Puri  
7 '878 Patent void and unenforceable.

8           147. Claim 32 of the Puri '878 Patent claims: "An apparatus for encoding digital video  
9 signals, comprising:

10           a means for receiving digital video input signals; and  
11           a means for performing variable word length encoding adaptively in response to the video  
            input signals."

12           148. Receiving digital video input signals was known in the prior art to the Puri '878  
13 Patent. For example, a person of ordinary skill in the art would know that digital video decoders  
14 in the prior art received digital video input signals. The applicants for the Puri '878 Patent failed  
15 to inform the PTO that performing variable word length encoding selectively in response to video  
16 input signals was known in the prior art as well.

17           149. For example, the article "A Perceptually Tuned Sub-Band Image Coder with Image  
18 Dependent Quantization and Post Quantization Data Compression," published in the Proceedings  
19 of the 1989 IEEE International Conference on Acoustics, Speech, and Signal Processing and  
20 authored by Robert J. Safranek and James D. Johnston, discloses performing variable word length  
21 encoding selectively in response to video input signals. The article ("Safranek/Johnston Article")  
22 is prior art to the Puri '878 Patent under 35 U.S.C. § 102. Mr. Safranek and Mr. Johnston were  
23 colleagues of Mr. Puri and Mr. Aravind at AT&T Bell Laboratories.

24           150. The Abstract of the Safranek/Johnston Article states:

25           One set of codebooks consisting of less than 100000 entries is used for all images, while  
26           the codebook subset used for any given image is dependent on the distribution of the  
            quantizer outputs for that image.

27 A person of skill in the art would recognize that the term "codebook," as used in the Abstract of the  
28 Safranek/Johnston Article, refers to a codebook used in variable word length encoding. A person

1 of skill in the art would recognize that the Abstract of the Safranek/Johnston Article discloses  
2 performing variable word length encoding selectively in response to image input signals.

3 151. Section 5 of the Safranek/Johnston Article states:

4 Each non-zero block is encoded using one two or four dimensional Huffman codebooks.  
5 The codebook with the highest dimensionality that will fit the rate (i.e. lowest potential  
6 rate) is used for each block. The dimensionality of the codebook for each block is  
7 combined with the block activity information and transmitted for each sub-band that is not  
8 all zeros. The four dimensional codebook operates on 2x2 codeword blocks where each  
9 codeword has an absolute value of less than 4. The two dimensional codebook operates on  
10 2x1 codeword blocks where each codeword has an absolute value of less than 26. Likewise  
11 the one dimensional codebook operates on individual codewords of any size required to  
12 meet the perceptual threshold.

9 A person of ordinary skill in the art would recognize that Huffman coding is a type of variable  
10 word-length encoding. A person of ordinary skill in the art would recognize that Section 5 of the  
11 Safranek/Johnston Article discloses the function of performing variable word length encoding  
12 selectively in response to image input signals.

13 152. A person of ordinary skill in the art would recognize that the Safranek/Johnston  
14 Article's disclosure of performing variable word length encoding selectively in response to image  
15 input signals is applicable in response to video input signals as well, since video input signals are  
16 composed in part of image input signals. For example, in a subsequent article entitled "A  
17 Perceptually Tuned Sub-Band Image Coder," Mr. Safranek and Mr. Johnston declare:

18 The motivation for this work has been to develop an image coder that will give nearly  
19 perceptually lossless coding of arbitrary input at as low a bitrate as possible. With the  
20 predicted availability of moderate rate (64-128kbps) switched data networks, there will be  
21 increasing demand for transmission services utilizing high quality image transmission. Two  
22 examples of these services are remote slideshows and video catalogs.

21 Proc. SPIE Symp. Human Vision & Elec. Imaging: Models, Methods & Apps., Santa Clara, CA  
22 (Feb. 1990). As another example, an article entitled "Interframe Coding with Variable Block-Size  
23 Motion Compensation," on which Atul Puri is the lead author, states that the disclosures in the  
24 Safranek/Johnston Article "significantly reduce[] the bits required for inter-frame video encoding."  
25 Proc. IEEE Global Comm. Conf., §§ 2.7.1-2.7.5 (Tokyo, Nov. 1987). As yet another example, in  
26 an article entitled "Motion-Compensated Video Coding with Adaptive Perceptual Quantization,"  
27 Mr. Puri and Mr. Aravind cite the Safranek/Johnston Article as a relevant "scheme[] for image and  
28 video compression." IEEE Trans. on Circuits and Sys. for Video Tech., vol. 1, No. 4, pp. 351-361

1 (Dec. 1991).

2 153. A person of ordinary skill in the art would further recognize that the selective  
3 performance of variable word length encoding taught in the Safranek/Johnston Article could be  
4 made adaptive to the mode of motion compensation used in producing an estimate of a video  
5 signal.

6 154. The Abstract of the Safranek/Johnston Article, combined with the knowledge of a  
7 person of ordinary skill in the art, renders obvious the limitation "performing variable word length  
8 encoding adaptively in response to the video input signals" of claim 32. In addition, Section 5 of  
9 the Safranek/Johnston Article, combined with the knowledge of a person of ordinary skill in the  
10 art, renders obvious the limitation "performing variable word length encoding adaptively in  
11 response to the video input signals" of claim 32.

12 155. A person of ordinary skill in the art would recognize that claim 32 of the Puri '878  
13 Patent is obvious in view of the Safranek/Johnston Article and the knowledge of an ordinary  
14 person of skill in the art.

15 156. A person of ordinary skill in the art would recognize the materiality of the Abstract  
16 of the Safranek/Johnston Article to the patentability of the Puri '878 Patent, including the  
17 patentability of claim 32 of the Patent. In addition, a person of skill in the art would recognize the  
18 materiality of Section 5 of the Safranek/Johnston Article to the patentability of the Puri '878  
19 Patent, including the patentability of claim 32 of the Patent.

20 157. The individuals involved in the application for and prosecution of the Puri '878  
21 Patent did not disclose the Safranek/Johnston Article to the PTO. Indeed, the individuals involved  
22 in the application for and prosecution of the Puri '878 Patent did not disclose any art cumulative to  
23 the material disclosures in the Safranek/Johnston Article during the prosecution of the Patent.

24 158. As noted above, both Mr. Puri and Mr. Aravind were aware of the  
25 Safranek/Johnston Article. For example, Mr. Puri and Mr. Aravind cited the Safranek/Johnston  
26 Article in an article they authored that was published a month after the filing date of the Puri '878  
27 Patent. At least the Abstract of the Safranek/Johnston Article would have alerted Mr. Puri and Mr.  
28 Aravind to the Safranek/Johnston Article's disclosure of the selective performance of variable

1 word length encoding in response to image input signals. Furthermore, Mr. Puri and Mr. Aravind  
2 were aware of the materiality of the Safranek/Johnston Article to the patentability of the Puri '878  
3 Patent, including the patentability of claim 32 of the Patent.

4 159. At least Mr. Puri intended to deceive the PTO by intentionally failing to disclose  
5 the Safranek/Johnston Article in the application for the and throughout its prosecution. In  
6 addition, at least Mr. Aravind intended to deceive the PTO by intentionally failing to disclose the  
7 Safranek/Johnston Article in the application for the Puri '878 Patent and throughout its  
8 prosecution.

9 160. At least Mr. Puri's intentional failure to disclose the Safranek/Johnston Article  
10 constitutes inequitable conduct that renders the Puri '878 Patent void and unenforceable. In  
11 addition, at least Mr. Aravind's intentional failure to disclose the Safranek/Johnston Article  
12 constitutes inequitable conduct that renders the Puri '878 Patent void and unenforceable.

13 **The Johnston '377 Patent**

14 161. The Johnston '377 Patent is unenforceable and void due to inequitable conduct that  
15 occurred during the application for and prosecution of the Patent.

16 162. Individuals associated with the application for and prosecution of the Johnston  
17 '377 Patent, including at least Peter H. Westerink, Arun N. Netravali, Robert J. Safranek, and  
18 James D. Johnston violated their duty of candor and good faith in dealing with the PTO by  
19 intentionally and deceptively failing to disclose material information to the PTO.

20 163. The application for the Johnston '377 Patent was filed on December 11, 1990. Mr.  
21 Westerink, Mr. Netravali, Mr. Safranek, and Mr. Johnston were among the applicants for the  
22 Patent and are named as co-inventors on the Patent.

23 164. Under Title 37, CFR § 1.56, "[e]ach individual associated with the filing and  
24 prosecution of a patent application has a duty of candor and good faith in dealing with the [PTO],  
25 which includes a duty to disclose to the [PTO] all information known to that individual to be  
26 material to patentability . . . ." In February 1991, Mr. Netravali, Mr. Westerink, Mr. Safranek, and  
27 Mr. Johnston signed a sworn statement stating in pertinent part: "I believe I am an original, first  
28 and joint inventor of the subject matter which is claimed and for which a patent is sought on the



1 invention entitled Adaptive Non-Linear Quantizer the specification of which was filed on  
2 December 11, 1990 . . . . I acknowledge the duty to disclose information which is material to the  
3 examination of this application in accordance with Title 37, Code of Federal Regulations, 1.56(a)."  
4 At least Mr. Netravali, Mr. Westerink, Mr. Safranek, and Mr. Johnston did not perform their  
5 sworn duty to disclose information material to the examination of the application for the Johnston  
6 '377 Patent.

7 165. Claim 1 of the Johnston '377 Patent claims: "An encoder including a coder for  
8 developing encoder output signals from frame difference signals, prediction means responsive to  
9 said encoder output signals for predicting a next frame's signals, and means for developing said  
10 frame difference signals from applied next frame signals of an image frame and from output  
11 signals of said prediction means, the improvement comprising:

12 said coder including controllable quantizer means that quantizes said difference signals in  
13 accordance with a quantization schema that varies with the dictates of a control signal; and  
14 said coder including means, responsive to said applied next frame signals, to develop said  
15 control signal, which control signal varies throughout said applied next frame with changes  
16 in at least one selected characteristic of said applied next frame signals.

17 166. In a September 13, 1991 office action, the PTO rejected claims 1, 8, 9, and 11 of  
18 the Johnston '377 Patent as being anticipated by any one of five prior art references. For example,  
19 with respect to one of the references ("Hoelzlwimmer"), the examiner stated the following:

20 In considering claim 1, Hoelzlwimmer discloses that 1) the claimed coder is met by the  
21 entropy device, 2) the claimed prediction means is met by the adder and memory, 3) the  
22 claimed means for developing is met by the subtractor, 4) the claimed controllable  
quantizer means is met by the quantizer and 5) the claimed means to develop said control  
signal is met by the buffer control means.

23 167. In a January 17, 1992 response to the September 13, 1991 office action, the  
24 applicants for the Johnston '377 Patent purported to distinguish Hoelzlwimmer and the other four  
25 prior art references. For example, the applicants stated the following:

26 Hoelzlwimmer's buffer control means is responsive to the output buffer. It is an "after-the-  
27 fact" arrangement. It is a feedback arrangement where the output of the buffer control  
28 means affects future input signals of the quantizer. In contradistinction, claim 1 defines



1 ...means, responsive to said applied next frame signals, to develop said control signal,  
2 which control signal varies throughout said applied next frame with changes in at least one  
selected characteristic of said applied next frame signals (emphasis supplied).

3 This means, as defined in claim 1, is nothing like the buffer control means described by  
4 Hoelzlwimmer et al. It is forward looking, and it changes throughout the next frame with  
changes in at least one selected characteristic of the next frame signals.

5 168. Forward-looking quantizer-control means that change throughout the next frame  
6 with changes in at least one selected characteristic of the next frame signals – the Johnston '377  
7 Patent applicants' purported point of distinction between the claimed invention and the prior art –  
8 were known in the prior art. The applicants for the Johnston '377 Patent failed to inform the PTO  
9 of that fact. Moreover, the quantization of difference signals in accordance with a quantization  
10 schema that varies with the dictates of a control signal, wherein the control signal varies  
11 throughout an applied next frame with changes in at least one selected characteristic of the applied  
12 next frame signals, as recited by the functional limitations of claim 1 of the Patent, was known in  
13 the prior art. The applicants for the Johnston '377 Patent failed to inform the PTO of that fact.

14 169. As one example, pages 521-26 of Digital Pictures (discussed above with respect to  
15 the '226 Patent) disclose the quantization of difference signals in accordance with a quantization  
16 schema that varies with the dictates of a control signal, wherein the control signal varies  
17 throughout an applied next frame with changes in at least one selected characteristic of the applied  
18 next frame signals. Under 35 U.S.C. § 102, Digital Pictures is prior art to the Johnston '377 Patent.

19 170. Pages 521-26 of *Digital Pictures* disclose an adaptive quantization scheme. The  
20 adaptive quantization scheme disclosed in pages 521-26 of *Digital Pictures* is expressly designed  
21 to have an overall average bit-rate of 2.0 bits/pel. In the scheme, blocks of DCT-transformed field  
22 differentials for luminance are divided into sub-blocks. The system determines whether each sub-  
23 block should be deemed temporally active with respect to luminance. If a sub-block is not deemed  
24 temporally active, the system examines the spatial activity of the sub-block with respect to  
25 luminance. The selected quantization scheme then varies depending on the spatial activity  $S_i$  of  
26 the sub-block with respect to luminance. Blocks that are more spatially active with respect to  
27 luminance are encoded with more bits.

28

1           171. A person of skill in the art would recognize that the spatial activities Si disclosed in  
2 pages 521-26 of *Digital Pictures* constitute a control signal for the adaptive quantizer. In addition,  
3 a person of skill in the art would recognize that pages 521-26 of *Digital Pictures* disclose the  
4 quantization of difference signals in accordance with a quantization schema that varies with the  
5 dictates of a control signal, wherein the control signal varies throughout an applied next frame  
6 with changes in at least one selected characteristic of the applied next frame signals.

7           172. A person of ordinary skill in the art would recognize that at least pages 521-26 of  
8 *Digital Pictures* are material to the patentability of the Johnston '377 Patent, including the  
9 patentability of claim 1 of the Patent. Indeed, pages 521-26 of *Digital Pictures* disclose the  
10 Johnston '377 Patent applicants' purported point of distinction between the claimed invention and  
11 the prior art.

12           173. The individuals involved in the application for and prosecution of the Johnston '377  
13 Patent did not disclose pages 521-26 of *Digital Pictures* to the PTO during the prosecution of the  
14 Patent. Mr. Netravali, in particular, did not disclose pages 521-26 of *Digital Pictures* to the PTO.  
15 Indeed, the individuals involved in the application for and prosecution of the Johnston '377 Patent  
16 did not disclose any art cumulative to the material disclosures on pages 521-26 of *Digital Pictures*  
17 during the prosecution of the Patent.

18           174. In the Background of the Invention section of the Johnston '377 Patent, the  
19 applicants for the Johnston '377 Patent instead referred the examiner to pages 537 et seq. of *Digital*  
20 *Pictures*:

21           In "Design of Statistically Based Buffer Control Policies for Compressed Digital Video,"  
22 Zdepski et al., an IEEE conference, 1989, pg. 1343-1349, describe an approach where the  
23 quantizer in the DPCM loop interacts with an adaptive mode control circuit. The circuit  
24 measures the number of bits generated by the quantizer and, based on preselected  
25 thresholds, decides for the next frame on one of eight possible quantizer step sizes. The  
26 selected step size is employed for the next frame. A similar approach is described in  
27 "Digital Pictures" by A. N. Netravali and B. G. Haskell, Plenum Press, 1988, pg. 537 et  
28 seq.

29           But unlike the adaptive quantization scheme described on pages 537 et seq., the adaptive  
30 quantization scheme described on pages 521-26 of *Digital Pictures* does not determine the  
31 quantizer step size for the next frame based on the number of bits generated by the quantizer in a  
32 previous frame. Furthermore, unlike the adaptive quantization scheme described on pages 537 et

1 seq., the adaptive quantization scheme described on pages 521-26 of *Digital Pictures* involves  
2 quantizing difference signals in accordance with a quantization schema that varies with the dictates  
3 of a control signal, wherein the control signal varies throughout an applied next frame with  
4 changes in at least one selected characteristic of the applied next frame signals.

5 The Johnston '377 Patent applicants' failure to cite the more relevant section of *Digital Pictures*  
6 during the prosecution of the Patent was intentionally misleading and deceptive.

7 175. At least Mr. Netravali, as the co-author of *Digital Pictures*, was aware of the  
8 contents of pages 521-26 of *Digital Pictures*. At least Mr. Netravali was aware of the materiality  
9 of pages 521-26 of *Digital Pictures* to the patentability of the Johnston '377 Patent, including the  
10 patentability of claim 1 of the Patent.

11 176. At least Mr. Netravali's intentional failure to disclose pages 521-26 of *Digital*  
12 *Pictures* constitutes inequitable conduct that renders the Johnston '377 Patent void and  
13 unenforceable.

14 177. As a second example, an article in the Proceedings of the IEEE, vol. 73, No. 4  
15 (April 1985) entitled "Advances in Picture Coding," authored by Hans Musmann, Peter Pirsch,  
16 and Hans-Joachim Grallert, discloses the function of quantizing difference signals in accordance  
17 with a quantization schema that varies with the dictates of a control signal, wherein the control  
18 signal varies throughout an applied next frame with changes in at least one selected characteristic  
19 of the applied next frame signals. Under 35 U.S.C. § 102, the article ("Musmann Article") is prior  
20 art to the Johnston '377 Patent. The Introduction to the Musmann Article declares that the authors  
21 had found an improved adaptive quantizer. The Introduction goes on to state:

22 Advances in transform coding are presented in Section IV. To optimize the quantization of  
23 the spectral coefficients the mean-square quantization error has been used as an  
24 optimization criterion in the past. New approaches try to control the quantization by the  
local picture content and to adapt the quantization to the characteristics of the human visual  
perception.

25 Pages 532-33 of the Musmann Article state:

26 [A] picture can be divided into several segments which are quantized differently. . . . An  
27 adaptive quantizer can be realized by a set of L separate quantizers which are switched on  
by the activity value [determined for each segment of the picture].

28 Pages 532-33 of the Musmann Article disclose that the activity values may be based on

1 characteristics of a frame signal, such as the brightness differences between neighboring pels.

2 178. A person of skill in the art would recognize that the "activity values" referenced in  
3 the above-excerpted passage of the Musmann Article are a control signal for the adaptive  
4 quantizer. In addition, a person of skill in the art would recognize that pages 532-33 of the  
5 Musmann Article disclose the quantization of difference signals in accordance with a quantization  
6 schema that varies with the dictates of a control signal, wherein the control signal varies  
7 throughout an applied next frame with changes in at least one selected characteristic of the applied  
8 next frame signals.

9 179. For these reasons, a person of ordinary skill in the art would recognize that at least  
10 pages 532-33 of the Musmann Article are material to the patentability of the Johnston '377 Patent,  
11 including claim 1 of the Patent. Indeed, pages 532-33 of the Musmann Article disclose the  
12 Johnston '377 Patent applicants' purported point of distinction between the claimed invention and  
13 the prior art.

14 180. At least Mr. Netravali and Mr. Westerink were aware of the material contents of the  
15 Musmann Article, including its disclosure of an improved adaptive quantizer. Figure 5.6.4 on  
16 page 473 of Digital Pictures, which Mr. Netravali coauthored, is taken directly from Figure 37 of  
17 the Musmann Article. At least the Introduction of the Musmann Article would have alerted Mr.  
18 Netravali to the Musmann Article's disclosure of the quantization of difference signals in  
19 accordance with a quantization schema that varies with the dictates of a control signal, wherein the  
20 control signal varies throughout an applied next frame with changes in at least one selected  
21 characteristic of the applied next frame signals. As another example, Mr. Westerink was the lead  
22 author of an article entitled "Subband Coding of Images Sequences at Low Bit Rates," in which he  
23 cited the entire Musmann Article as a reference. Signal Processing: Image Comm., vol. 2, issue 4,  
24 pp. 441-48 (Dec. 1990). At least the Introduction of the Musmann Article would have alerted Mr.  
25 Westerink to the Musmann Article's disclosure of the quantization of difference signals in  
26 accordance with a quantization schema that varies with the dictates of a control signal, wherein the  
27 control signal varies throughout an applied next frame with changes in at least one selected  
28 characteristic of the applied next frame signals.

1 181. The individuals involved in the application for and prosecution of the Johnston '377  
2 Patent, including Mr. Netravali and Mr. Westerink, did not disclose the Musmann Article to the  
3 PTO during the prosecution of the Patent. In addition, the individuals involved in the application  
4 for and prosecution of the Johnston '377 Patent did not disclose any prior art cumulative to the  
5 material disclosures in the Musmann Article during the prosecution of the Patent.

6 182. At least Mr. Netravali was aware of the materiality of the Musmann Article to the  
7 patentability of the Johnston '377 Patent, including the patentability of claim 1 of the Patent. In  
8 addition, at least Mr. Westerink was aware of the materiality of the Musmann Article to the  
9 patentability of the Johnston '377 Patent, including the patentability of claim 1 of the Patent.

10 183. At least Mr. Netravali's intentional failure to disclose the Musmann Article  
11 constitutes inequitable conduct that renders the Johnston '377 Patent void and unenforceable. In  
12 addition, at least Mr. Westerink's intentional failure to disclose the Musmann Article constitutes  
13 inequitable conduct that renders the Johnston '377 Patent void and unenforceable.

14 184. As a third example, Section 4 of the Safranek/Johnston Article (first discussed  
15 above with respect to the '878 Patent) states:

16 Each sub-band is coded using a DPCM coder with a variable uniform mid-riser quantizer. It  
17 uses a three point predictor optimized for each sub-band. The predictor coefficients are  
18 quantized to 5 bit accuracy and set as side information. The quantizer step size is adjusted  
19 to ensure that the perceptual criterion is just met at most critical point in the sub-band. This  
20 ensures that every point in the subband receives a sufficiently high level of coding without  
overcoding the most sensitive position. Due to the wide dynamic range of the perceptual  
threshold values, adaptation of the quantizer step size will be advantageous. However, we  
have just begun testing a modified step-size algorithm that responds within each sub-band  
to the image texture information.

21 A person of ordinary skill in the art would recognize that a quantization schema involving  
22 adaptation of the quantizer step size in response to the image texture information within each  
23 subband would inherently require a control signal.

24 185. Section 3 of the Safranek/Johnston Article describes a perceptual masking model  
25 including sensitivity adjustment for brightness and texture masking adjustment. In conjunction  
26 with Section 3, Section 4 of the Safranek/Johnston Article discloses to a person of skill in the art a  
27 quantization schema that varies with the dictates of a control signal, wherein the control signal  
28 varies throughout an image with changes in at least one selected characteristic of the image.

1 186. A person of skill in the art would recognize that the Safranek/Johnston Article's  
2 disclosure of a quantization schema that varies with the dictates of a control signal, wherein the  
3 control signal varies throughout an image with changes in at least one selected characteristic of the  
4 image is applicable to applied video signals as well, since video input signals are composed in part  
5 of image input signals. For example, in a subsequent article entitled "A Perceptually Tuned Sub-  
6 Band Image Coder," Mr. Safranek and Mr. Johnston declare:

7 The motivation for this work has been to develop an image coder that will give nearly  
8 perceptually lossless coding of arbitrary input at as low a bitrate as possible. With the  
9 predicted availability of moderate rate (64-128kbps) switched data networks, there will be  
increasing demand for transmission services utilizing high quality image transmission. Two  
examples of these services are remote slideshows and video catalogs.

10 Proc. SPIE Symp. Human Vision & Elec. Imaging: Models, Methods & Apps., Santa Clara, CA  
11 (Feb. 1990).

12 187. For these reasons, a person of ordinary skill in the art would recognize that at least  
13 Sections 3 and 4 of the Safranek/Johnston Article are material to the patentability of the Johnston  
14 '377 Patent, including claim 1 of the Patent. Indeed, Sections 3 and 4 of the Safranek/Johnston  
15 Article disclose the Johnston '377 Patent applicants' purported point of distinction between the  
16 claimed invention and the prior art.

17 188. The individuals involved in the application for and prosecution of the Johnston '377  
18 Patent did not disclose the Safranek/Johnston Article to the PTO during the prosecution of the  
19 Patent. Mr. Safranek and Mr. Johnston, in particular, did not disclose the Safranek/Johnston  
20 Article to the PTO. Indeed, the individuals involved in the application for and prosecution of the  
21 Johnston '377 Patent did not disclose any art cumulative to the material disclosures in the  
22 Safranek/Johnston Article during the prosecution of the Patent.

23 189. At least Mr. Safranek and Mr. Johnston, as the co-authors of the Safranek/Johnston  
24 Article, were aware of its material contents. In addition, at least Mr. Safranek and Mr. Johnston  
25 were aware of the Safranek/Johnston Article's materiality to the patentability of the Johnston '377  
26 Patent, including the patentability of claim 1 of the Patent.

27 190. At least Mr. Safranek intended to deceive the PTO by intentionally failing to  
28 disclose the Safranek/Johnston Article in the application for the Johnston '377 Patent and

1 throughout its prosecution. In addition, at least Mr. Johnston intended to deceive the PTO by  
2 intentionally failing to disclose the Safranek/Johnston Article in the application for the Johnston  
3 '377 Patent and throughout its prosecution.

4 191. At least Mr. Safranek's intentional failure to disclose the Safranek/Johnston Article  
5 constitutes inequitable conduct that renders the Johnston '377 Patent void and unenforceable. In  
6 addition, at least Mr. Johnston's intentional failure to disclose the Safranek/Johnston Article  
7 constitutes inequitable conduct that renders the Johnston '377 Patent void and unenforceable.

8 **FOURTEENTH AFFIRMATIVE DEFENSE**

9 **(Patent Misuse)**

10 192. MPT's purported claims against Apple are barred by the doctrine of patent misuse.

11 193. Apple incorporates by reference Paragraphs 76-191, supra, as if fully stated herein.

12 **FIFTEENTH AFFIRMATIVE DEFENSE**

13 **(Unclean Hands)**

14 194. MPT's purported claims against Apple are barred by the doctrine of unclean hands.

15 195. Apple incorporates by reference Paragraphs 76-191, supra, as if fully stated herein.

16 196. Apple incorporates and realleges Paragraph 73, as though set forth in full herein,  
17 related to Apple's claim of violation of the license agreement of MPT's predecessors-in-interest.

18 197. Apple incorporates and realleges Paragraph 74, as though set forth in full herein,  
19 related to Apple's claim of MPT's violation of its RAND agreement.

20 **SIXTEENTH ADDITIONAL DEFENSE**

21 **(Limitation on Recovery of Costs)**

22 198. MPT is precluded from seeking recovery of costs by 35 U.S.C. § 278.

23 **SEVENTEENTH AFFIRMATIVE DEFENSE**

24 **(No Right to Injunctive Relief)**

25 199. MPT is not entitled to injunctive relief because any injury to it is not immediate or  
26 irreparable, and MPT has an adequate remedy at law for any claims it can prove.

**EIGHTEENTH AFFIRMATIVE DEFENSE**

**(Improper Joinder)**

200. MPT's claims against Apple are improperly joined with those against the other Defendants to this action within the meaning of Rule 20 of the Federal Rules of Civil Procedure because they do not arise out of the same transaction, occurrence, or series of transactions or occurrences and/or do not involve questions of law or fact common to all defendants.

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1 **COUNTERCLAIMS OF APPLE AGAINST MPT**

2 The following are counterclaims for a declaratory judgment of non-infringement,  
3 invalidity, and/or unenforceability of each of the Asserted Patents (U.S. Patent No. 4,958,226 (the  
4 "Haskell '226 Patent"), U.S. Patent No. 5,227,878 (the "Puri '878 Patent"), and U.S. Patent No.  
5 5,136,377 (the "Johnston '377 Patent"). Apple, for its counterclaims herein, alleges as follows:

6 **JURISDICTION AND VENUE**

7 1. Apple specifically realleges and incorporates herein by reference each and every  
8 allegation contained Apple's Answer, *supra*, as if set forth fully herein.

9 2. These counterclaims seek declaratory and injunctive relief under the Declaratory  
10 Judgment Act, 28 U.S.C. §§ 2201 & 2202. The Court thus has subject matter jurisdiction of such  
11 claims pursuant to 28 U.S.C. § 1331 and 1338 as these counterclaims arise under the Patent Laws  
12 of the United States, set forth at 38 U.S.C. § 101 et seq.

13 3. This Court has personal jurisdiction over Counter-defendant MPT because MPT  
14 submitted to the jurisdiction of this Court by filing its Complaint against Apple.

15 4. Venue is proper in this judicial district because these claims are being brought as  
16 compulsory counterclaims pursuant to Fed. R. Civ. P. 13(a), and under 28 U.S.C. §§ 1391(b) and  
17 (c) and 1400(b) because the claims set forth herein involve federal questions of United States  
18 Patent Law.

19 **NATURE OF THE ACTION**

20 5. Each of the Asserted Patents is invalid for failure to meet one or more of the  
21 conditions for patentability specified in Title 35 of the United States Code, including, without  
22 limitation, Sections 101, 102, 103, 112, and 132, and the rules, regulations, and laws pertaining  
23 thereto; and/or the Patents-in-Suit have not been directly or indirectly infringed by Apple;  
24 moreover, Apple, its customers, and all others have the right to manufacture, have made, use, sell,  
25 offer to sell, and import all of Apple products and services accused of infringement by MPT,  
26 unhampered and unmolested by MPT.

27 **PARTIES**

28 6. Counter-claimant Apple is defined above.

1           7.       Counter-defendant MPT states in its Complaint that it is a Delaware Statutory Trust  
2 organized under the Delaware Statutory Trust Act, 12 Del. C. §§ 3801 *et seq.* On information and  
3 belief, MPT has as trustee Mr. Gerard A. deBlasi, an individual having a business address of 991  
4 Route 22 West, Bridgewater, NJ, 08807.

5                                                       **FIRST COUNTERCLAIM**

6       **(Declaratory Judgment of Non-Infringement and/or Invalidity of the Haskell '226 Patent)**

7           8.       Apple incorporates by reference the foregoing allegations, inclusive, as though set  
8 forth in full herein.

9           9.       On December 20, 2010, MPT filed a complaint against Apple, designated as Civil  
10 Action No. 10 CV 02618, alleging that by making, using, offering to sell, selling and/or importing  
11 within the United States products and/or services, Apple has infringed, directly and/or indirectly,  
12 the Haskell '226 Patent.

13           10.      Each claim of the Haskell '226 Patent is invalid for failure to comply with one or  
14 more of the requirements of United States Code, Title 35, including without limitation, 35 U.S.C.  
15 §§ 101, 102, 103, 112, and 132, and the rules, regulations, and laws pertaining thereto; and/or  
16 Apple has not infringed and is not now infringing any valid and enforceable claim of the Haskell  
17 '226 Patent, either directly, contributorily or through inducement, literally or by equivalents, and,  
18 moreover, Apple, its suppliers, its customers, and all others have the right to manufacture, have  
19 made, use, sell, offer to sell, and import any Apple products and services accused of infringement,  
20 unhampered and unmolested by MPT.

21           11.      Apple is informed and believes, and on that basis alleges, that MPT denies each of  
22 the foregoing contentions.

23           12.      Based on MPT's filing of this suit and Apple's Affirmative Defenses, a true, actual,  
24 and justiciable controversy has arisen and now exists between Apple and MPT regarding the  
25 alleged infringement and validity of the Haskell '226 Patent asserted by MPT against Apple.

26           13.      Pursuant to the Federal Declaratory Judgment Act, 28 U.S.C. § 2201 *et seq.*, Apple  
27 requests the declaration of the Court that Apple does not infringe and has not infringed any valid,  
28 enforceable claim of the Haskell '226 Patent and/or the Haskell '226 Patent is invalid.

1 14. Apple has no adequate remedy at law.

2 **SECOND COUNTERCLAIM**

3 **(Declaratory Judgment of Unenforceability of the Haskell '226 Patent**

4 **Due to Inequitable Conduct)**

5 15. Apple incorporates by reference the foregoing allegations, inclusive, as though set  
6 forth in full herein.

7 16. The Haskell '226 Patent is unenforceable and void due to inequitable conduct that  
8 occurred during the application for and prosecution of the Patent.

9 17. Apple incorporates by reference as if fully stated herein Paragraphs 76-113, supra.

10 18. An actual controversy exists between the Apple and MPT with respect to the  
11 enforceability of the Haskell '226 Patent. Apple therefore seeks a declaration that the Haskell '226  
12 Patent is unenforceable.

13 19. Apple has no adequate remedy at law.

14 20. Apple reserves the right to supplement and amend its inequitable conduct defenses  
15 in the event that it obtains additional information material to the unenforceability of the Haskell  
16 '226 Patent during the course of this litigation.

17 **THIRD COUNTERCLAIM**

18 **(Declaratory Judgment of Non-Infringement and/or Invalidity of the Puri '878 Patent)**

19 21. Apple incorporates by reference the foregoing allegations, inclusive, as though set  
20 forth in full herein.

21 22. On December 20, 2010, MPT filed a complaint against Apple, designated as Civil  
22 Action No. 10 CV 02618, alleging that by making, using, offering to sell, selling and/or importing  
23 within the United States products and/or services, Apple has infringed, directly and/or indirectly,  
24 the Puri '878 Patent.

25 23. Each claim of the Puri '878 Patent is invalid for failure to comply with one or more  
26 of the requirements of United States Code, Title 35, including without limitation, 35 U.S.C. §§  
27 101, 102, 103, 112, and 132, and the rules, regulations, and laws pertaining thereto; and/or Apple  
28 has not infringed and is not now infringing any valid and enforceable claim of the Puri '878 Patent,

1 either directly, contributorily or through inducement, literally or by equivalents, and, moreover,  
2 Apple, its suppliers, its customers, and all others have the right to manufacture, have made, use,  
3 sell, offer to sell, and import any Apple products and services accused of infringement,  
4 unhampered and unmolested by MPT.

5 24. Apple is informed and believes, and on that basis alleges, that MPT denies each of  
6 the foregoing contentions.

7 25. Based on MPT's filing of this suit and Apple's Affirmative Defenses, a true, actual,  
8 and justiciable controversy has arisen and now exists between Apple and MPT regarding the  
9 alleged infringement and validity of the Puri '878 Patent asserted by MPT against Apple.

10 26. Pursuant to the Federal Declaratory Judgment Act, 28 U.S.C. § 2201 *et seq.*, Apple  
11 requests the declaration of the Court that Apple does not infringe and has not infringed any claim  
12 of the Puri '878 Patent and/or the Puri '878 Patent is invalid.

13 27. Apple has no adequate remedy at law.

14 **FOURTH COUNTERCLAIM**

15 **(Declaratory Judgment of Unenforceability of the Puri '878 Patent**

16 **Due to Inequitable Conduct)**

17 28. Apple incorporates by reference the foregoing allegations, inclusive, as though set  
18 forth in full herein.

19 29. The Puri '878 Patent is unenforceable and void due to inequitable conduct that  
20 occurred during the application for and prosecution of the Patent.

21 30. Apple incorporates by reference as if fully stated herein Paragraphs 76, 114-160,  
22 *supra*.

23 31. An actual controversy exists between the Apple and MPT with respect to the  
24 enforceability of the Puri '878 Patent. Apple therefore seeks a declaration that the Puri '878 Patent  
25 is unenforceable.

26 32. Apple has no adequate remedy at law.

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1 33. Apple reserves the right to supplement and amend its inequitable conduct defenses  
2 in the event that it obtains additional information material to the unenforceability of the Puri '878  
3 Patent during the course of this litigation.

4 **FIFTH COUNTERCLAIM**

5 **(Declaratory Judgment of Non-Infringement and/or Invalidity of the Johnston '377 Patent)**

6 34. Apple incorporates by reference the foregoing allegations, inclusive, as though set  
7 forth in full herein.

8 35. On December 20, 2010, MPT filed a complaint against Apple, designated as Civil  
9 Action No. 10 CV 02618, alleging that by making, using, offering to sell, selling and/or importing  
10 within the United States products and/or services, Apple has infringed, directly and/or indirectly,  
11 the Johnston '377 Patent.

12 36. Each claim of the Johnston '377 Patent is invalid for failure to comply with one or  
13 more of the requirements of United States Code, Title 35, including without limitation, 35 U.S.C.  
14 §§ 101, 102, 103, 112, and 132, and the rules, regulations, and laws pertaining thereto; and/or  
15 APPLE has not infringed and is not now infringing any valid and enforceable claim of the  
16 Johnston '377 Patent, either directly, contributorily or through inducement, literally or by  
17 equivalents, and, moreover Apple, its suppliers, its customers, and all others have the right to  
18 manufacture, have made, use, sell, offer to sell, and import any Apple products and services  
19 accused of infringement, unhampered and unmolested by MPT.

20 37. Apple is informed and believes, and on that basis alleges, that MPT denies each of  
21 the foregoing contentions.

22 38. Based on MPT's filing of this suit and Apple's Affirmative Defenses, a true, actual,  
23 and justiciable controversy has arisen and now exists between Apple and MPT regarding the  
24 alleged infringement and validity of the Johnston '377 Patent asserted by MPT against Apple.

25 39. Pursuant to the Federal Declaratory Judgment Act, 28 U.S.C. § 2201 *et seq.*, Apple  
26 requests the declaration of the Court that Apple does not infringe and has not infringed any claim  
27 of the Johnston '377 Patent and/or the Johnston '377 Patent is invalid.

28 40. Apple has no adequate remedy at law.

**SIXTH COUNTERCLAIM**

**(Declaratory Judgment of Unenforceability of the Johnston '377 Patent**

**Due to Inequitable Conduct)**

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4 41. Apple incorporates by reference the foregoing allegations, inclusive, as though set  
5 forth in full herein.

6 42. The Johnston '377 Patent is unenforceable and void due to inequitable conduct that  
7 occurred during the application for and prosecution of the Patent.

8 43. Apple incorporates by reference as if fully stated herein Paragraphs 76, 161-191,  
9 supra.

10 44. An actual controversy exists between the Apple and MPT with respect to the  
11 enforceability of the Johnston '377 Patent. Apple therefore seeks a declaration that the Johnston  
12 '377 Patent is unenforceable.

13 45. Apple has no adequate remedy at law.

14 46. Apple reserves the right to supplement and amend its inequitable conduct defenses  
15 in the event that it obtains additional information material to the unenforceability of the Johnston  
16 '377 Patent during the course of this litigation.

17  
18 Dated: March 21, 2011

FISH & RICHARDSON P.C.

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21 By: /s/ Lara S. Garner

Lara S. Garner (SBN 234701)  
lgarner@fr.com

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23 Attorney for Defendant Apple Inc.  
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**JURY DEMAND**

Pursuant to Local Rule CV-38.1 and Fed. R. Civ. P. 38, defendant and counter-claimant APPLE hereby demands a trial by jury on all issues relating to MPT so triable in this action.

Dated: March 21, 2011

FISH & RICHARDSON P.C.

By: /s/ Lara S. Garner  
Lara S. Garner (SBN 234701)  
lgarner@fr.com

Attorney for Defendant Apple Inc.

**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served on March 21, 2011 to all counsel of record who are deemed to have consented to electronic service via the Court's CM/ECF system per Fed. R. Civ. P. 5(b)(3). Any other counsel of record will be served by electronic mail, facsimile and/or overnight delivery.

Dated: March 21, 2011

By: /s/ Lara S. Garner  
Lara S. Garner (SBN 234701)  
lgarner@fr.com

Attorney for Defendant Apple Inc.

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