UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

In the Matter of **CERTAIN FLAT PANEL DIGITAL TELEVISIONS AND COMPONENTS THEREOF**	**Investigation No. 337-TA-___**

COMPLAINT UNDER SECTION 337 OF THE TARIFF ACT OF 1930, AS AMENDED

Complainant:

Vizio, Inc.
39 Tesla
Irvine, CA 92618

Counsel For Complainant:

Blaney Harper
JONES DAY
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
Telephone: (202) 879-3939
Facsimile: (202) 626-1700

Proposed Respondents:

LG Electronics, Inc.
LG Twin Towers
20 Yoido-dong, Youngdungpo-Gu
Seoul, 150-721
South Korea
Telephone: 82-2-37771114
Facsimile: 82-2-37775304

LG Electronics U.S.A., Inc.
1000 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
Telephone: (201) 816-2000
Facsimile: (201) 816-0636

TABLE OF CONTENTS

TABLE OF CONTENTS

(continued)

Page

TABLE OF CONTENTS

(continued)

Page

LIST OF EXHIBITS

1. Non-exclusive List of Accused Products
2. Corporate Information for LG Electronics, Inc.
3. Corporate Information for LG Electronics USA, Inc.
4. United States Patent No. 5,233,629
5. Certified Copy of the Assignment for United States Patent No. 5,233,629
6. United States Patent No. 5,396,518
7. Certified Copy of the Assignment for United States Patent No. 5,396,518
8. United States Patent No. 5,511,082
9. Certified Copy of the Assignment for United States Patent No. 5,511,082
10. United States Patent No. 5,511,096
11. Certified Copy of the Assignment for United States Patent No. 5,511,096
12. United States Patent No. 5,621,761
13. Certified Copy of the Assignment for United States Patent No. 5,621,761
14. United States Patent No. 5,703,887
15. Certified Copy of the Assignment for United States Patent No. 5,703,887
16. United States Patent No. 5,745,522
17. Certified Copy of the Assignment for United States Patent No. 5,745,522
18. Infringement Claim Charts
19. Description of the 32LD350 Digital Television
20. Declaration Regarding Purchase of Digital Televisions
21. Photographs of the exterior of the 32LD350 Digital Television

LIST OF EXHIBITS (CONTINUED)

22. Photographs of the interior of the 32LD350 Digital Television

23. Description of the 32LD550 digital television

24. Photographs of the exterior of the 32LD550 Digital Television

25. Photographs of the interior of the 32LD550 Digital Television

26. Description of the BCM3549 SOC

27. Specification Sheet for the 32LD550 Digital Television

28. List of Licensees (CONFIDENTIAL)

29. Description of the E420VL Digital Television

30. User Manual for the E420VL Digital Television

31. Domestic Industry Claim Charts

32. Declaration Regarding Domestic Industry Investments (CONFIDENTIAL)

I. INTRODUCTION

1. Complainant Vizio, Inc. ("Vizio") respectfully requests that the United States International Trade Commission commence an investigation pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 C.F.R. § 1337, based upon the unlawful importation into the United States of certain flat panel digital televisions and components thereof that infringe one or more claims of each of United States Patent No. 5,511,096 ("the '096 patent"), United States Patent No. 5,621,761 ("the '761 patent"), United States Patent No. 5,703,887 ("the '887 patent"), United States Patent No. 5,745,522 ("the '522 patent"), United States Patent No. 5,511,082 ("the '082 patent"), United States Patent No. 5,396,518 ("the '518 patent"), and United States Patent No. 5,233,629 ("the '629 patent") (collectively, the "Asserted Patents").

2. The proposed Respondent, LG Electronics, Inc. ("LGE") manufactures and/or assembles digital flat panel televisions and components thereof, at least in Mexico. Proposed Respondent LG Electronics USA, Inc. ("LGE US") then imports those digital flat panel televisions and components thereof into the United States, and sells the same after importation. Both Respondents have engaged in unfair acts in violation of Section 337 through importation of infringing digital flat panel televisions and components thereof. Examples of the accused products include, but are not limited to, the LGE digital flat panel televisions identified in Exhibit 1.

3. A domestic industry as contemplated under Section 337(a)(2) and (3) exists or is in the process of being established with respect to products that are protected by one or more claims of each of the Asserted Patents.

4. Vizio seeks an order, pursuant to Section 337(d), excluding from entry into the United States certain flat panel digital televisions and components thereof. Vizio further seeks a cease and desist order pursuant to Section 337(f) compelling the proposed Respondents to stop the promotion, marketing, advertising, demonstrating, or warehousing of inventory of the infringing products for distribution and/or sale within the United States.

II. COMPLAINANT

5. Complainant Vizio, Inc. is corporation organized under the laws of the state of California, with its principal place of business at 39 Tesla, Irvine, California 92618.

6. Vizio is a leading seller of LCD television displays in the United States. In 2007, Vizio became the #1 selling brand of LCD flat panel high definition televisions (HDTV) in North America, and became the first American brand in over a decade to lead television sales in the United States. Since 2007, Vizio HDTV shipments remain in the top ranks in the United States and were again #1 in Q1, 2009 for the LCD flat panel HDTV market. Vizio has won numerous awards including a #1 ranking in the Inc. 500 for Top Companies in Computers and Electronics, Fast Company's 6th Most Innovative CE Company of 2009, and made the lists of Ad Age's Hottest Brands, Good Housekeeping's Best Big-Screens, CNET's Top 10 Holiday Gifts and PC World's Best Buy, among others.

7. Vizio has made and continues to make significant employment of labor and capital, and substantial investments in the exploitation of the Asserted Patents, including after-market customer service and technical support.

III. PROPOSED RESPONDENTS

A. LG Electronics, Inc.

8. Upon information and belief, LGE is a corporation organized under the laws of the Republic of Korea, with its principal place of business at LG Twin Towers, 20 Yoido-dong, Youngdungpo-Gu, Seoul, 150-721, Republic of Korea. Upon information and belief, LGE manufactures and assembles, and/or has manufactured and assembled, digital televisions and components thereof that are imported into the United States and/or sold for importation into the United States. Further information regarding LGE may be found in Exhibit 2.

B. LG Electronics USA, Inc.

9. LGE US is a corporation organized under the laws of the state of Delaware, with its principal place of business at 1000 Sylvan Avenue, Englewood Cliffs, New Jersey, 07632. Upon information and belief, LGE US imports and sells after importation into the United States

infringing digital televisions made by LGE overseas and assembled at least in Mexico. Further information regarding LGE US may be found in Exhibit 3.

IV. The Patented Technology and Products At Issue

10. The general technology at issue in this case involves the transmission and reception of digital television ("TV") signals via cable delivery systems. More specifically, all of the Asserted Patents relate to the decoding and demodulation of digital TV signals transmitted via digital cable TV delivery system to a TV receiver.

11. A digital TV signal is a highly compressed stream of digital data containing video, audio and various types of signaling and control information for a TV that is carried over a radio frequency (RF) modulated broadcast signal. An RF modulated broadcast signal incorporates frequency related phase and amplitude components that are used to transmit the digital data. The digital data stream consists of literally millions of bits (0's or 1's) per second. The broadcast signal carrying the digital data stream may be sent over a cable connection (*e.g.*, wire) connected to a TV receiver.

12. At millions of bits per second, the transmission of a digital TV data stream must be extremely fast. One technique for efficiently transmitting such a high data rate broadcast over a carrier wave on cable is known as Quadrature Amplitude Modulation ("QAM"), described further below. In addition to being fast, the digital TV data stream must also have an extremely low error rate to produce a high quality TV display. This low error rate must be achieved even though the act of transmitting the data introduces errors into the digital data. To achieve the low error rate (well below parts per million), information is added (*i.e.*, coded) into the transmitted digital data stream that permits the TV receiver to accurately reconstruct the originally transmitted data even if errors have been introduced during transmission.

13. The Asserted Patents in this case all involve various techniques for reception of digital cable TV signals that is fast and has low error, which includes using QAM as implemented in all digital cable TV delivery systems throughout the United States.

V. The Asserted Patents

14. At issue in this Complaint is the proposed Respondents' infringement of seven United States Patents: the '629, '518, '082, '096, '761, '887, and '522 patents. Each patent is described below.

A. The '629 Patent

1. Identification and Ownership

15. The '629 patent is entitled "Method and Apparatus for Communicating Digital Data Using Trellis Coded QAM." The '629 patent duly and legally issued on August 3, 1993, in the names of Woo H. Paik, Scott A. Lery, and Chris Heegard, based on Application No. 736,738 filed on July 26, 1991. Pursuant to Commission Rule 210.12(a)(9)(i), a certified copy of the '629 patent is attached hereto as Exhibit 4.

16. Vizio is the owner by assignment of all rights, title, and interest in the '629 patent. Pursuant to Commission Rule 210.12(a)(9)(ii), a certified copy of the assignment of the '629 patent to Vizio is attached hereto as Exhibit 5.

17. Pursuant to Commission Rule 210.12(c)(1) and (2), a certified copy and three additional copies of the prosecution history of the '629 patent, and four copies of each reference cited therein, are attached hereto as Appendices A and B, respectively.

2. Non-Technical Description of the Patented Invention[1]

18. The '629 patent generally discloses methods and apparatus for transmitting and receiving digital television signals. The '629 patent teaches using a trellis coder and a trellis decoder in a system implementing QAM.

19. QAM is a technique for modulating a signal, such as a digital television video signal, by breaking the signal into "in phase" (I) and "quadrature phase" (Q) components. These components can be transmitted simultaneously, then reconstituted at a receiver to recover the original data. QAM can be represented conceptually using a four-quadrant graph, or QAM

[1] The non-technical descriptions of the inventions for all the patents asserted herein are presented to give a general background of those inventions. None of these statements is, or is intended to be, used for purposes of patent claim interpretation. Vizio presents these statements subject to and without waiver of its right to explain and otherwise argue that claim terms should be construed in accordance with record evidence and applicable authority.

constellation, having an I-axis and Q-axis (instead of the conventional mathematical labels x and y for axes). QAM symbols, representing a set of bits to be transmitted, are placed evenly onto quadrants of the QAM constellation. A transmitter then selects the QAM symbol that corresponds to the bits to be transmitted. The QAM symbol's placement in the constellation (its coordinates) determine the amplitude of the I and Q signals the transmitter transmits. A receiver takes the received I signal and Q signal and makes determinations as to which QAM symbol was likely sent. Since various noise elements typically distort some of the signals during transmission, a receiver must be designed to correct for such errors.

20. A trellis coder (*e.g.*, located at a transmitter) and a trellis decoder (*e.g.*, located at a receiver) are parts of a system that uses trellis coded modulation ("TCM"). TCM or trellis coding is a way to code digital bits (*i.e.*, 1's and 0's) to improve transmission and reception. The term "trellis" is derived from state transition diagrams, which are graphical representations of various states, which are interconnected to other possible states, forming what looks like a lattice. The basic principle of this type of coding is that a coder or decoder uses information from prior transmitted bits to help determine the desired current bits. The result is more accurate decoding, much in the same way that grammar in spoken languages allows easier understanding.

21. The '629 patent describes an efficient system for transmitting and receiving digital TV signals using TCM. In particular, the trellis coder and trellis decoder in the '629 patent each include an uncoded path and a coded path using characteristics of QAM. The uncoded path includes bits of data that contain information for further processing of a digital TV signal (such as MPEG decoding), while the coded path includes bits designated to help determine which group of symbols that a received symbol corresponds to so that the decoder can select with more accuracy which group of bits are the correct bits for further processing of a digital TV signal. In the way described, the '629 patent provides a high data rate and reliability and with minimal bandwidth occupancy.

3. Foreign Counterparts

22. The following patents claim priority to the '629 patent: US 5321725, AU 646619 (B2), AU 662540 (B2), CA 2074549 (C), CA 2074553 (C), EP 0524625 (B1), EP 0525641 (B1),

JP 3230766 (B2), JP 3230767 (B2), KR 960016660 (B1), KR 970002702 (B1), NO 309069 (B1) and NO 309070 (B1).

23. The following published patent applications claim priority to the '629 patent: AT 176566 (T), AT 196706 (T), AU 2052292 (A), AU 2052392 (A), CA 2074549 (A1), CA 2074553 (A1), DE 69228341 (T2), DE 69231480 (T2), EP 0524625 (A2), EP 0524625 (A3), EP 0525641 (A2), EP 0525641 (A3), IE 922389 (A1), IE 922390 (A1), JP 5327787 (A), JP 6181567 (A), NO 922927 (A) and NO 922926 (A).

24. Other than those listed above, there are no foreign patents or patent applications that correspond to the '629 patent that have been filed, abandoned, withdrawn, or rejected.

B. The '518 Patent

1. Identification and Ownership

25. The '518 patent is entitled "Method and Apparatus for Communicating Digital Data Using Trellis Coding with Punctured Convolutional Codes." The '518 patent duly and legally issued on March 7, 1995, in the name of Stephen K. How, based on Application No. 54,642 filed on May 5, 1993. Pursuant to Commission Rule 210.12(a)(9)(i), a certified copy of the '518 patent is attached hereto as Exhibit 6.

26. Vizio is the owner by assignment of all rights, title, and interest in the '518 patent. Pursuant to Commission Rule 210.12(a)(9)(ii), a certified copy of the assignment of the '518 patent to Vizio is attached hereto as Exhibit 7.

27. Pursuant to Commission Rule 210.12(c)(1) and (2), a certified copy and three additional copies of the prosecution history of the '518 patent, and four copies of each reference cited therein, are attached hereto as Appendices C and D, respectively.

2. Non-Technical Description of the Patented Invention

28. The '518 patent generally discloses methods and apparatus for transmitting and receiving digital television signals. The '518 patent relates to using a trellis decoder in a TV receiver implementing reception of digital TV signals, similar to the above description concerning the '629 patent. In addition, in the '518 patent, the trellis decoder each implements puncturing of convolutional codes to achieve desired coding rates for improved performance.

29. A convolutional code is a type of code used in a trellis coder or decoder. It uses a memory that holds the most recently inputted bit, as well as some number of previous bits. With each bit input, one previous bit is dropped from the memory. The output is a predetermined mathematical combination of the bits currently in the memory.

30. A convolutional code has a certain rate that corresponds to the number of bits input relative to the number of bits output. An example of a convolutional code rate is ½, where two bits are output for every one bit that is input.

31. Puncturing means deleting some of the output bits of a lower rate convolutional code, resulting in a higher rate code. For example, if a convolutional code has a rate ½, it could be punctured to a greater rate such as a rate 4/5. In this example, 4 uncoded bits inputted would result in 5 coded bits outputted, instead of the 8 bits had the code not been punctured. This means that instead of the output stream being 200% the size of the input stream, this punctured code output is only 125% the size of the input stream, thus using less bandwidth than its non-punctured counterpart. Since digital TV signals require high bandwidth, the '518 patent describes using a punctured convolutional code in a system similar to the above description concerning the '629 patent in order to meet this demand for bandwidth in an efficient and accurate manner.

3. Foreign Counterparts

32. The following patents claim priority to the '518 patent: AU 672486 (B2), CA 2122753 (C), EP 0624019 (B1), ES 2211872 (T3) and NO 311158 (B1).

33. The following published patent applications claim priority to the '518 patent: AT 256362 (T), AU 6186194 (A), CA 2122753 (A1), DE 69433397 (T2), DK 624019 (T3), EP 0624019 (A2), EP 0624019 (A3), JP 8051464 (A) and NO 941641 (A).

34. Other than those listed above, there are no foreign patents or patent applications that correspond to the '518 patent that have been filed, abandoned, withdrawn, or rejected.

C. The '082 Patent

1. Identification and Ownership

35. The '082 patent is entitled "Punctured Convolutional Decoder." The '082 patent duly and legally issued on April 23, 1996, in the names of Stephen K. How and Chris Heegard,

based on Application No. 240,232 filed on May 10, 1994. Pursuant to Commission Rule 210.12(a)(9)(i), a certified copy of the '082 patent is attached hereto as Exhibit 8.

36. Vizio is the owner by assignment of all rights, title, and interest in the '082 patent. Pursuant to Commission Rule 210.12(a)(9)(ii), a certified copy of the assignment of the '082 patent to Vizio is attached hereto as Exhibit 9.

37. Pursuant to Commission Rule 210.12(c)(1) and (2), a certified copy and three additional copies of the prosecution history of the '082 patent, and four copies of each reference cited therein, are attached hereto as Appendices E and F, respectively.

2. Non-Technical Description of the Patented Invention

38. The '082 patent generally discloses methods and apparatus for transmitting and receiving digital television signals. The '082 patent teaches using particular punctured convolutional codes which have improved signal-to-noise ratios. These codes have a given number of states, a particular rate, and a certain puncture map that results in reduced error when compared with other codes that were conventionally considered to be more optimal.

39. A puncture map is a representation of the bit to be punctured (*i.e.* deleted), for example, as described above regarding the '518 patent. Similarly, the codes included in the '082 patent could be implemented in the system described above concerning the '518 patent. One of the convolutional codes is implemented in an encoder at a receiver to assist with decoding of digital television signals. For example, in a system such as described in the '518 patent, the receiver uses an encoder in a coded path to provide an additional coding process for improved error correction. This encoders can implement the codes provided in the '082 patent for improved signal-to-noise ratios.

3. Foreign Counterparts

40. The following patents claim priority to the '082 patent: AU 681768 (B2), CA 2147816 (C), EP 0682415 (B1), ES 2139771 (T3), JP 3544033 (B2) and NO 314919 (B1).

41. The following published patent applications claim priority to the '082 patent: AT 187587 (T), AU 1790695 (A), CA 2147816 (A1), DE 69513720 (T2), EP 0682415 (A1), JP 7321672 (A) and NO 951817 (A).

42. Other than those listed above, there are no foreign patents or patent applications that correspond to the '082 patent that have been filed, abandoned, withdrawn, or rejected.

D. The '096 Patent

1. Identification and Ownership

43. The '096 patent is entitled "Quadrature Amplitude Modulated Data for Standard Bandwidth Television Channel." The '096 patent duly and legally issued on April 23, 1996, in the names of Zheng Huang and Chris Heegard, based on Application No. 184,499 filed on January 18, 1994. Pursuant to Commission Rule 210.12(a)(9)(i), a certified copy of the '096 patent is attached hereto as Exhibit 10.

44. Vizio is the owner by assignment of all rights, title, and interest in the '096 patent. Pursuant to Commission Rule 210.12(a)(9)(ii), a certified copy of the assignment of the '096 patent to Vizio is attached hereto as Exhibit 11.

45. Pursuant to Commission Rule 210.12(c)(1) and (2), a certified copy and three additional copies of the prosecution history of the '096 patent, and four copies of each reference cited therein, are attached hereto as Appendices G and H, respectively.

2. Non-Technical Description of the Patented Invention

46. The '096 patent generally discloses methods and apparatus for transmitting and receiving digital television signals. The '096 patent discloses using a trellis coder and a trellis decoder in a system implementing QAM, similar to that described above in the '629 patent and the '518 patent, combined with an outer encoder and an outer decoder to form a concatenated coding system.

47. The concatenated, or nested, coding provides high coding gain with a small transmission overhead. This generally means that a digital TV signal can be transmitted faster with reduced error using the '096 patent. The outer encoder and outer decoder may include block codes, while the inner trellis coder and inner trellis decoder may include convolutional codes, as described above. Generally speaking, block codes accept a block of bits input, and output a different block of bits using a translation table or some set formula. One conventional example of a block code is referred to as a Reed-Solomon code. Trellis coding and block coding

both have qualities that thwart the introduction of certain types of errors. The combination of the two as provided in the '096 patent permits the system to employ the positive qualities of both types, resulting in a very low bit error rate at the output.

3. Foreign Counterparts

48. The following patents claim priority to the '096 patent: AU 679591 (B1), CA 2140484 (C), EP 0663775 (B1), ES 2156591 (T3), JP 3119290 (B2) and NO 315020 (B1).

49. The following published patent applications claim priority to the '096 patent: AT 200721 (T), AU 1026895 (A), CA 2140484 (A1), DE 69520696 (T2), EP 0663775 (A2), EP 0663775 (A3), JP 7288556 (A), MX 9500541 (A) and NO 950190 (A).

50. Other than those listed above, there are no foreign patents or patent applications that correspond to the '096 patent that have been filed, abandoned, withdrawn, or rejected.

E. The '761 Patent

1. Identification and Ownership

51. The '761 is entitled "Rotationally Invariant Trellis Coding Incorporating Transparent Binary Codes." The '761 patent duly and legally issued April 15, 1997, in the name of Chris Heegard, based on Application No. 353,064 filed on Dec. 9, 1994. Pursuant to Commission Rule 210.12(a)(9)(i), a certified copy of the '761 patent is attached hereto as Exhibit 12.

52. Vizio is the owner by assignment of all rights, title, and interest in the '761 patent. Pursuant to Commission Rule 210.12(a)(9)(ii), a certified copy of the assignment of the '761 patent to Vizio is attached hereto as Exhibit 13.

53. Pursuant to Commission Rule 210.12(c)(1) and (2), a certified copy and three additional copies of the prosecution history of the '761 patent, and four copies of each reference cited therein, are attached hereto as Appendices I and J, respectively.

2. Non-Technical Description of the Patented Invention

54. The '761 patent generally discloses methods and apparatus for transmitting and receiving digital television signals. The '761 patent teaches using particular precoder and postcoder implementing certain algorithms to correct for possible phase variations caused

between the transmitter and receiver. The combination of precoder at the transmitter and postcoder at the receiver correct the phase of the received signal to reduce errors.

55. When decoding a trellis coded modulated signal, it is important to reproduce an accurate replica of the RF carrier wave phase angle so that the in-phase (I) and quadrature (Q) components can be correctly separated. In general, the phase angle of the transmitted carrier is unknown at the receiver and must be estimated. Even in the absence of noise there is typically a phase ambiguity – that is, to a receiver, the I signal looks like the Q signal, which follows by 90°, and the Q signal looks like an inverted I signal, which follows by 90°. Moreover, the carrier recovered at the receiver is not perfect since the channel (*i.e.* the cable wire over which the signal is sent) introduces impairments. Because of these uncertainties, the receiver may mistake an I signal for a Q signal, obscuring the correct detection of the QAM symbol.

56. The '761 patent relates to how to overcome phase ambiguity for trellis coded QAM modulation. At the transmitter, a precoder notes the least significant bits of the QAM symbol's I and Q coordinates, and then determines the "difference" between this pair of bits and the corresponding bits for the previous symbol transmitted. Instead of transmitting the pair of bits with the rest of the QAM symbol however, the transmitter transmits this difference instead. At the receiver, a postcoder receives this difference, and adds it to the least significant I and Q bits from the previous received symbol, thus reconstituting the current symbol. Because this difference is not dependent on a known reference such as the phase angle, the result is that the signal can now be recovered regardless of whether the receiver correctly identified the I and Q signals. Together with the transparency of the binary convolutional coder, this allows the receiver to recover the I and Q signals without regard to their phase.

3. Foreign Counterparts

57. The following patents claim priority to the '761 patent: CA 2164174 (C), CN 1106102 (C) and JP 3685269 (B2).

58. The following published patent applications claim priority to the '761 patent: CA 2164174 (A1), CN 1139319 (A), EP 0716529 (A2), EP 0716529 (A3) and JP 8265386 (A).

59. Other than those listed above, there are no foreign patents or patent applications that correspond to the '761 patent that have been filed, abandoned, withdrawn, or rejected.

F. The '887 Patent

1. Identification and Ownership

60. The '887 patent is entitled "Synchronization and Error Detection in a Packetized Data Stream." The '887 patent duly and legally issued on December 30, 1997, in the name of Chris Heegard, Andrew J. King, Sydney Lovely, and Thomas J. Kolze, based on Application No. 363,252 filed on December 23, 1994. Pursuant to Commission Rule 210.12(a)(9)(i), a certified copy of the '887 patent is attached hereto as Exhibit 14.

61. Vizio is the owner by assignment of all rights, title, and interest in the '887 patent. Pursuant to Commission Rule 210.12(a)(9)(ii), a certified copy of the assignment of the '887 patent to Vizio is attached hereto as Exhibit 15.

62. Pursuant to Commission Rule 210.12(c)(1) and (2), a certified copy and three additional copies of the prosecution history of the '887 patent, and four copies of each reference cited therein, are attached hereto as Appendices K and L, respectively.

2. Non-Technical Description of the Patented Invention

63. The '887 patent generally discloses methods and apparatus for transmitting and receiving digital television signals. The '887 patent provides for the synchronization of a signal to be transmitted from a transmitter to a receiver, and further provides for error detection at the receiver. The stream of 1's and 0's in a digital TV broadcast signal is grouped in many packets that have a format consistent with the Motion Picture Experts Group (MPEG)-2 standard. The MPEG-2 standard identifies the various functions to which the bits in the stream correspond. The '887 patent modifies the data in the packets such that a synchronization portion, or sync byte, of an MPEG-2 packet is replaced with a parity byte that is computed from the information bits in the packet. After synchronization and error detection are achieved at a receiver, the sync byte is re-inserted in the MPEG-2 packet in place of the parity byte for further processing.

64. In the '887 patent, when the receiver is acquiring the digital data stream, the receiver searches for the code word boundaries by inspecting a group of k+r contiguous bits to

see if the last r bits contain the correct parity bits for the preceding k bits. At the transmitter, a block code of length k + r bits is generated by repeating the k bits of a given frame and computing from these bits an r-bit parity word to be sent in place of the synchronization word (which is also r bits) in the next frame. At the receiver, the k+r bits are inspected by sliding along the bit stream until a block of k+ r bits with the correct parity bits is found. At this point, the receiver has achieved frame synchronization. Subsequently, during the tracking mode, the receiver inspects each successive block of k+r bits, computing the parity bits of that block. If the computed parity bits are found, the block is error free and the sync word is inserted back in place of the parity bits. If the computed parity bits are not found, the receiver signals that this frame contains errors. Also, if after a sufficient number of frames for which the parity bits are not found in the expected location, the receiver returns to the function of acquiring the digital data stream.

65. The '887 patent permits the bits in the byte allocated for frame synchronization to be used not only for frame synchronization but also to detect the presence of errors in the frame. Although applicable to MPEG-2 frames, the technique can be used for any frame carrying k information bits and r synchronization bits.

3. Foreign Counterparts

66. The following patent claims priority to the '887 patent: CA 2165604 (C).

67. The following published patent applications claim priority to the '887 patent: CA 2165604 (A1), JP 8256336 (A) and MX 9505284 (A).

68. Other than those listed above, there are no foreign patents or patent applications that correspond to the '887 patent that have been filed, abandoned, withdrawn, or rejected.

G. The '522 Patent

1. Identification and Ownership

69. The '522 patent is entitled "Randomizer for Byte-Wise Scrambling of Data." The '522 patent duly and legally issued on April 28, 1998, in the name of Chris Heegard, based on Application No. 556,415 filed on November 9, 1995. Pursuant to Commission Rule 210.12(a)(9)(i), a certified copy of the '522 patent is attached hereto as Exhibit 16.

70. Vizio is the owner by assignment of all rights, title, and interest in the '522 patent. Pursuant to Commission Rule 210.12(a)(9)(ii), a certified copy of the assignment of the '522 patent to Vizio is attached hereto as Exhibit 17.

71. Pursuant to Commission Rule 210.12(c)(1) and (2), a certified copy and three additional copies of the prosecution history of the '522 patent, and four copies of each reference cited therein, are attached hereto as Appendices M and N, respectively.

2. Non-Technical Description of the Patented Invention

72. The '522 patent generally discloses methods and apparatus for transmitting and receiving digital television signals. The '522 patent teaches use of a derandomizer to be used at the receiver to provide a pseudo-random sequence scrambling of the signal. The derandomizer provides improved transmission characteristics by preventing long sequences of "1" and "0".

73. The '522 patent discloses a technique for processing N-bit bytes of data so as to randomize the bits; that is, randomly change about half of the bits from the "one" state to the "zero" state, and vice versa. The sequence is pseudo-random in that is has the appearance of being random, but in fact it is a very long, known sequence. This achieves the objective of ensuring that points in the signal constellation are used with approximately the same frequency, thereby facilitating synchronization at the receiver. The same equipment that is used to achieve randomization at the transmitter is used at the receiver to de-randomize. Thus, as stated in the patent, a randomizer is also a de-randomizer.

74. In a preferred embodiment of the '522 patent, linear feedback shift registers (LFSRs) are used. An LFSR contains some number of coupled serial shift register stages. The bit currently at the output from the last stage is algebraically processed with the bits appearing at selected stages within the shift register. The resulting bit is fed back to one or more prior stages of the shift register. The bits produced at the output will appear to be randomly generated, but, in fact, they are pseudo randomly generated since, after some period of time dependent on the shift register length and algebraic operations chosen, the output bits repeat.

75. Rather than using shift registers in which a single bit is stored in each stage, the LFSR in a preferred embodiment of the '522 patent stores a byte of data per stage, where a byte

is defined as including N bits. This approach has the advantage of allowing high speed bit streams to be randomized/derandomized with relatively lower rate digital electronics. In this embodiment, a maximal length pseudo-random sequence produced by an LFSR will have a repeat length of $2^{N*M} - 1$, where M is the number of stages in the shift register, and N is the bit width of each stage.

3. Foreign Counterparts

76. There are no foreign patents or patent applications that correspond to the '522 patent.

VI. UNLAWFUL AND UNFAIR ACTS OF PROPOSED RESPONDENTS

77. Upon information and belief, the proposed Respondents' accused products directly infringe, contributorily infringe, and/or induce the infringement of at least: claims 22-25 of the '096 patent; claim 11 of the '761 patent; claims 15-23 of the '887 patent; claims 1, 5, 12 and 13 of the '522 patent; claim 1 of the '082 patent; claims 11-14 of the '518 patent; and claims 10 and 12-17 of the '629 patent. Upon information and belief, components of those same products and products containing the same (*e.g.* the proposed Respondents' accused products) also directly infringe, contributorily infringe, and/or induce the infringement of those same claims.

78. As shown in paragraph 104, *infra*, the proposed Respondents have been aware of the Asserted Patents since at least June 5, 2009.

B. Infringement of the '096 Patent

79. On information and belief, and by way of example, the proposed Respondents' 32LD350 digital television product directly infringes, contributorily infringes, and/or induces the infringement of claims 22-25 of the '096 patent.

80. A claim chart demonstrating how the exemplar 32LD350 digital television product infringes the asserted independent claim 22 of the '096 patent is attached to this Complaint as Exhibit 18.

C. Infringement of the '761 Patent

81. On information and belief, and by way of example, the proposed Respondents' 32LD350 model directly infringes, contributorily infringes, and/or induces the infringement of claim 11 of the '761 patent.

82. A claim chart demonstrating how the exemplar 32LD350 digital television product infringes the asserted independent claim 11 of the '761 patent is attached to this Complaint as Exhibit 18.

D. Infringement of the '887 Patent

83. On information and belief, and by way of example, the proposed Respondents' 32LD350 model directly infringes, contributorily infringes, and/or induces the infringement of claims 15-23 of the '887 patent.

84. A claim chart demonstrating how the exemplar 32LD350 digital television product infringes the asserted independent claims 15 and 22 of the '887 patent is attached to this Complaint as Exhibit 18.

E. Infringement of the '522 Patent

85. On information and belief, and by way of example, the proposed Respondents' 32LD350 model directly infringes, contributorily infringes, and/or induces the infringement of claims 1, 5, 12 and 13 of the '522 patent.

86. A claim chart demonstrating how the exemplar 32LD350 digital television product infringes the asserted independent claims 1 and 12 of the '522 patent is attached to this Complaint as Exhibit 18.

F. Infringement of the '082 Patent

87. On information and belief, and by way of example, the proposed Respondents' 32LD350 model directly infringes, contributorily infringes, and/or induces the infringement of claim 1 of the '082 patent.

88. A claim chart demonstrating how the exemplar 32LD350 digital television product infringes the asserted independent claim 1 of the '082 patent is attached to this Complaint as Exhibit 18.

G. Infringement of the '518 Patent

89. On information and belief, and by way of example, the proposed Respondents' 32LD350 model directly infringes, contributorily infringes, and/or induces the infringement of claims 11-14 of the '518 patent.

90. A claim chart demonstrating how the exemplar 32LD350 digital television product infringes the asserted independent claim 11 of the '518 patent is attached to this Complaint as Exhibit 18.

H. Infringement of the '629 Patent

91. On information and belief, and by way of example, the proposed Respondents' 32LD350 model directly infringes, contributorily infringes, and/or induces the infringement of 10 and 12-17 of the '629 patent.

92. A claim chart demonstrating how the representative 32LD350 digital television infringes the asserted independent claim 10 of the '629 patent is attached to this Complaint as Exhibit 18.

VII. SPECIFIC INSTANCES OF UNFAIR IMPORTATION AND SALE

93. Upon information and belief, the proposed Respondents' digital television products are manufactured, assembled, and/or packaged and tested overseas, at least in Mexico. Those same products are then imported into the United States, sold for importation into the United States, or sold after importation into the United States by the proposed Respondents.

94. For example, attached Exhibit 19 is a description of the representative 32LD350 digital television found on the website http://www.lg.com/us/, which is controlled by the proposed Respondents. The webpage includes a "Where to Buy" link, which indicates where a user may purchase the 32LD350 in the United States.

95. On June 6, 2010, Vizio purchased a 32LD350 digital television in the United States. *See* Exhibit 20. Labels on the packaging and the body of the 32LD350 indicate that it was assembled in Mexico. *See* Exhibit 21. An inspection of the 32LD350's mainboard reveals that it incorporates a LGDT3305 QAM decoder. *See* Exhibit 22. As set forth above, the 32LD350 infringes each asserted claim of each Asserted Patent.

96. By way of further example, attached Exhibit 23 is a description of the representative 32LD550 digital television found on the website http://www.lg.com/us/, which is controlled by the proposed Respondents. The webpage includes a "Where to Buy" link, which indicates where a user my purchase the 32LD550 in the United States.

97. On June 6, 2010, Vizio purchased a 32LD550 digital television in the United States. *See* Exhibit 20. Labels on the packaging and the body of the 32LD550 indicate that it was assembled in Mexico. *See* Exhibit 24. An inspection of the 32LD550's mainboard reveals that it incorporates a Broadcom Corporation ("Broadcom") BCM3549 System-on-Chip ("SOC"). *See* Exhibit 25. According to Broadcom's website, the BCM3549 SOC includes a "a cable/terrestrial 4/1024-QAM... receiver." *See* Exhibit 26. In addition, the specification sheet for the 32LD550 identifies a built-in QAM tuner. *See* Exhibit 27. As set forth above, the 32LD550 infringes each asserted claim of each Asserted Patent.

98. Upon information and belief, the accused products fall within at least the following classifications of the Harmonized Tariff Schedules of the United States: 8528.72.7210 and 8528.72.7250. These classifications are intended for illustrative purposes only and are not intended to restrict the scope or type of accused product.

VIII. LICENSEES

99. A list of licensees to the Asserted Patents is attached to the Complaint as Confidential Exhibit 28.

IX. DOMESTIC INDUSTRY

100. A domestic industry exists as defined by 19 U.S.C. §§ 1337(a)(3)(B) and (C) relating to the significant employment of labor and capital, and the substantial investment in the exploitation of the Asserted Patents, including after-market customer service and technical support for Vizio's digital television. Vizio's domestic industry products covered by the claims of the Asserted Patents include Vizio's digital televisions.

A. Technical Prong

101. Vizio sells in the United States digital televisions that practice at least one claim of each of the Asserted Patents. For example, the Vizio E420VL is covered by at least one claim

of each of the Asserted Patents. The Vizio E420VL is manufactured in China and sold after importation into the United States. Attached as Exhibit 29 is an image from the website http://www.vizio.com, which is controlled by Vizio, that shows the Vizio E420VL and its offer for sale in the United States. A copy of the user manual for the Vizio E420VL is attached as Exhibit 30. Claim charts demonstrating how the Vizio E420VL practices the asserted patents are attached as Exhibit 31.

B. Economic Prong

102. Vizio's significant employment of labor and capital, and its substantial investment in exploitation of the Asserted Patents, constitute a domestic industry under 19 U.S.C. §§ 1337(a)(3)(B) and (C).

103. For example, Vizio operates two call center facilities in the United States that provide after-market customer service and technical support for the Vizio domestic industry products. Vizio's facilities are located in Irvine, California and Dakota Dunes, South Dakota. Vizio personnel employed at these facilities field calls from Vizio's customers regarding all aspects of the Vizio domestic industry products, respond to customers' questions regarding the same, and perform over-the-phone troubleshooting and technical support. To the extent that physical repair of the Vizio domestic industry product is required, Vizio's call center employees coordinate that repair, such as connecting the customer with a third party repair center, scheduling an appointment, and ensuring that the customer is satisfied with the work once completed. Additional information regarding the investments in Vizio's Irvine and Dakota Dunes call centers can be found in Confidential Exhibit 32.

104. Vizio also contracts with a third party call center facility located in Utah. This third party call center is seamlessly integrated with Vizio's other facilities, and performs the same technical support functions as the Vizio-operated facilities. Additional information regarding Vizio's investments in the Utah facility can be found in Confidential Exhibit 32.

X. RELATED LITIGATION

105. Each of the Asserted Patents are the subject of litigation in the United States District Court for Maryland, styled *Vizio, Inc. vs. LG Electronics, Inc. and LG Electronics*

U.S.A., Inc., Case No. 09-cv-1481, filed on June 5, 2009. The case is currently in pretrial proceedings and no trial date has yet been set.

106. The Asserted Patents were the subject of litigation in the United States District Court for the Central District of California, styled *Vizio, Inc. v. Funai Electric Co., Ltd. and Funai Corp., Inc.*, Case 09-cv-05813, filed on May 20, 2009. The case has been settled.

107. The Asserted Patents were the subject of litigation in the United States District Court for the Southern District of California, styled Sony Corp. and Sony Electronics, Inc. v. Vizio, Inc., Case 09-cv-01043, filed on May 13, 2009. The case has been settled.

108. Vizio is currently unaware of any other litigations, judicial or administrative, concerning infringement of the Asserted Patents.

XI. REQUESTED RELIEF

WHEREFORE, pursuant to Commission Rule 210.12 (a)(10), 19 C.F.R. § 210.12 (a)(10), Vizio respectfully requests that the Commission:

(A) institute an immediate investigation pursuant to § 337 of the Tariff Act of 1930, as amended, into the proposed Respondents' unfair acts and methods of competition in the importation into the United States, sale for importation, and/or the sale within the United States after importation, of certain flat panel digital televisions and components thereof that infringe one or more of the claims of the Asserted Patents;

(B) schedule and conduct a hearing and, following said hearing, issue a determination of a violation of Section 337;

(C) issue a permanent exclusion order pursuant to 19 U.S.C. § 1337(d) excluding from entry into the United States digital flat panel televisions and components thereof, that are manufactured and/or assembled by or on behalf of the proposed Respondents that are covered by one or more of the claims of the Asserted Patents;

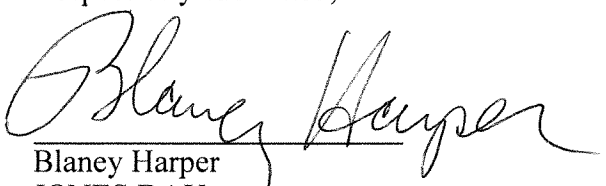
(D) issue an order or orders pursuant to 19 U.S.C. § 337 directing the proposed Respondents to cease and desist their unfair acts and methods of competition, including assembly, testing, marketing, distributing, offering for sale, selling, or otherwise transferring in the United States imported digital flat panel televisions and components thereof, that are

manufactured and/or assembled by or on behalf of the proposed Respondents that are covered by one or more of the claims of the Asserted Patents; and

(E) grant such other and further relief as the Commission finds appropriate and just under the law, based upon the facts complained of herein and determined in the investigation.

Dated: July 16, 2010

Respectfully submitted,



Blaney Harper
JONES DAY
51 Louisiana Avenue, N.W.
Washington, DC 20001
Telephone: (202) 879-3939
Facsimile: (202) 626-1700

Counsel to Complainant Vizio, Inc.

VERIFICATION

I, Rob Brinkman, for and on behalf of Complainant VIZIO, Inc. ("VIZIO"), declare as follows:

1. I am duly authorized to execute this Verification on behalf of VIZIO;

2. I have read this Complaint and am aware of its contents;

3. To the best of my knowledge, information, and belief, based upon a reasonable inquiry, the foregoing Complaint is well-founded in fact and is warranted by existing law or by a non-frivolous argument for the extension, modification, or reversal of existing law or the establishment of new law;

4. The allegations or other factual contentions therein have either evidentiary support or are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery, and;

5. This Complaint is not being filed for any improper purpose, such as to harass or cause unnecessary delay or needless increase in the cost of litigation.

Executed this 16th day of July, 2010.

Rob Brinkman
Chief Administrative Officer
VIZIO, Inc.