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Submission Type	Conveyance T	~ · · · · · · · · · · · · · · · · · · ·
1100	Assignment	X Security Agreement
Resubmission (Non-Recordation) Document ID#	License	Change of Name
Correction of PTO Error Reel # Frame #	Merger Merger	Other
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Reel # Frame #	11	Departmental File Secret File
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Name (line 1) Zenith Electronic	es Corporation	Month Day 11 9
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Second Party		Execution Date Month Day
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Name (line 1) Citicorp North Am	nerica, Inc., as agent	If document to be r is an assignment a receiving party is n
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Address (line 1) 399 Park Avenue		of a domestic representative is at
L		(Designation must separate document
Address (line 2) 6th Floor, Zone 4	<u> </u>	Assignment.)
Address (line 3) New York	New York/USA State/Country	
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Public burden reporting for this collection of information is estimated to average approximately 30 minutes per Cover Sheet to be recorded, including time for reviewing the document and gathering the data needed to complete the Cover Sheet. Send comments regarding this burden estimate to the U.S. Patent and Trademark Office, Chief Information Officer, Washington, D.C. 20231 and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Paperwork Reduction Project (0651-0027), Washington, D.C. 20503. See OMB Information Collection Budget Package 0651-0027, Patent and Trademark Assignment Practice. DO NOT SEND REQUESTS TO RECORD ASSIGNMENT DOCUMENTS TO THIS ADDRESS.

Mail documents to be recorded with required cover sheet(s) information to: Commissioner of Patents and Trademarks, Box Assignments, Washington, D.C. 20231

FORM PTO-1619B Expires 06/30/99 OMB 0651-0027	Page 2	U.S. Department of Commerce Patent and Trademark Office PATENT
Correspondent Name and Address	S Area Code and Telephone Num	
Name LaShana C. Jimmar		
Address (line 1) Paul, Hastings, Jano	ofsky & Walker, LLP	
Address (line 2) 600 Peachtree Street	, N.E.	
Address (line 3) Suite 2400		•
Address (line 4) Atlanta, Georgia 30	308-2222	
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Application Number(s) or Patent N	<u> </u>	ark if additional numbers attached
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	8/066,123 4,317,227	
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Patent Cooperation Treaty (PCT)		
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LaShana C. Jimmar	Ja /mma	11/12/99
Name of Person Signing	Signature	Date

RECORDATION FORM COVER SHEET CONTINUATION PATENTS ONLY

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09/139,496	09/255,059	09/321,798	5,043,812	5,103,31	5,121,203
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09/330,769			5,136,375	5,161,015	
09/304,766			5,136,381	5,162,900	5,258,838
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			5,828,404	5,914,96	2 5,764,309
			5,675,283	5,905,73	2 5,841,820
			5,699,011	5,745,00	5,787,129
			5,675,284	5,940,86	3 5,692,010
			5,781,065	5,825,77	8 [5,847,585]

RECORDATION FORM COVER SHEET FORM PTO-1619C U.S. Department of Commerce Expires 06/30/99 OMB 0651-0027 CONTINUATION Patent and Trademark Office PATENTS ONLY PATENT Conveying Party(ies) Mark if additional names of conveying parties attached Enter additional Conveying Parties **Execution Date** Month Day Name (line 1) Name (line 2) **Execution Date** Month Day Year Name (line 1) Name (line 2) **Execution Date** Month Day Year Name (line 1) Name (line 2) Receiving Party(ies) Mark if additional names of receiving parties attached Enter additional Receiving Party(ies) Name (line 1) If document to be recorded is an assignment and the Name (line 2) receiving party is not domiciled in the United States, an appointment Address (line 1) of a domestic representative is attached. (Designation must be a separate Address (line 2) document from Assignment.) Address (line 3) City State/Country Zip Code Name (line 1) If document to be recorded is an assignment and the receiving party is not Name (line 2) domiciled in the United States, an appointment of a domestic representative is Address (line 1) attached. (Designation must Assignment.) Address (line 2)

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PATENT COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

This PATENT COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT (this "Assignment"), made as of this 9th day of November, 1999, by ZENITH ELECTRONICS CORPORATION, a Delaware corporation, having its chief executive office at 1000 Milwaukee Avenue, Glenview, Illinois 60025 ("Assignor") in favor of CITICORP NORTH AMERICA, INC., having an office located at 399 Park Avenue, 6th Floor Zone 4, New York, New York 10043, as Agent (the "Agent", and sometimes herein "Assignee") for the Issuing Bank (the "Issuing Bank") and the Lenders (the "Lenders") party to the Credit Agreement (as hereinafter defined).

PRELIMINARY STATEMENTS.

- (1) Assignor, the Lenders, the Issuing Bank and the Agent have entered into that certain Credit Agreement, dated as of the date hereof (as the same may be amended, extended, restated, supplemented or otherwise modified or refinanced or refunded from time to time, the "Credit Agreement").
- (2) It is a condition precedent to the making of the initial Advance and the issuance of the initial Letter of Credit under the Credit Agreement that Assignor shall have assigned to the Agent, for its own benefit and for the benefit of the Issuing Bank and the Lenders, its patents, patent applications and patent or patent application licenses.

NOW, THEREFORE, in consideration of the premises set forth herein and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor agrees as follows:

- 1. <u>Incorporation of Credit Agreement</u>. The Credit Agreement and the terms and provisions thereof are hereby incorporated herein in their entirety by this reference thereto. Terms used herein which are defined in the Credit Agreement shall have the respective meanings set forth in the Credit Agreement unless otherwise defined herein.
- 2. Assignment and Grant of Security. To secure the complete and timely payment of all the Obligations of Assignor, now or hereafter existing from time to time, Assignor hereby pledges and collaterally assigns to Assignee, for its own benefit and for the benefit of the Issuing Bank and the Lenders, and hereby grants to Assignee, for its own benefit and for the benefit of the Issuing Bank and the Lenders, a security interest in, Assignor's entire right, title and interest in and to the Tuning Patents and the HDTV Patents (collectively, the "Patents"), including all proceeds thereof (such as, by way of example and not by way of limitation, Tuning Patent Royalties, license royalties and proceeds of infringement suits), the right (but not the obligation) to sue for past, present and future infringements in the name of Assignor or in the name of Assignee, all rights (but not obligations) corresponding thereto and all reissues, divisions, continuations, renewals, extensions

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and continuations-in-part thereof (it being understood and agreed that the Patents assigned hereby shall include, without limitation, rights and interests pursuant to licensing or other contracts (including, without limitation, the HDTV License Agreements and the License Agreements) in favor of Assignor pertaining to the Patents as set forth in the Security Agreement).

- 3. Representations and Warranties. Assignor covenants and warrants as follows:
- (a) A true and complete list of all Patents is set forth in <u>Schedule A</u> hereto.
- (b) The Patents are subsisting and have not been adjudged invalid or unenforceable and, except as set forth on Schedule B hereto, Assignor is not aware of any claim by any third party that the Patents are invalid or unenforceable.
- (c) To the best of Assignor's knowledge, each of the Patents is valid and enforceable.
- (d) No claim has been made that the practice of any of the Patents does or may violate the rights of any third person.
- (e) Assignor is the legal and beneficial owner of the Patents free and clear of any lien, security interest, charge or encumbrance, including, without limitation, pledges, assignments, licenses, shop rights and covenants by Assignor not to sue third persons, except for the security interest and assignment created by this Assignment and, with respect to the HDTV Patents and HDTV License Agreements only, the senior lien securing the LGE Exit Facility (the "LGE HDTV Lien") and except for the License Agreements set forth on Schedule C attached hereto (the "Existing License Agreements"). No effective financing statement or other instrument similar in effect covering all or any part of the Patents is on file in any recording office, except such as may have been filed in favor of Assignee relating to this Assignment or relating to the LGE HDTV Lien.
- (f) This Assignment shall create in favor of Assignee a valid and perfected first priority security interest in the Patents upon making the filings referred to in clause (g) below, free and clear of all Liens, other than Permitted Liens.
- (g) Except for the filing of Uniform Commercial Code financing statements with the Secretary of State of the State of Illinois and filings with the United States Patent and Trademark Office, no authorization, approval or other action by, and no notice to or filing with, any governmental authority or regulatory body is required either (i) for the grant by Assignor of the security interest granted hereby or for the execution, delivery or performance of this Assignment by Assignor or (ii) for the perfection of or the exercise

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by Assignee of its rights and remedies hereunder to the Patents in the United States of America.

- (h) The chief executive office of Assignor is located at the address set forth above for Assignor.
- (i) None of Assignor's Affiliates or Subsidiaries has any right, title or interest in any Patents (except for the senior security interest of LGE in connection with the LGE HDTV Lien).
- 4. New Patents and Applications. If, at any time during the term of the Credit Agreement, Assignor shall become entitled to the benefit of any patent application or patent for any reissue, division, continuation, renewal, extension or continuation-in-part of any Patent or any improvement on any Patent, the provisions of this Assignment shall automatically apply thereto. With respect to all of the foregoing rights or benefits, Assignor shall give to Assignee prompt notice thereof in writing.
- 5. Assignor's Covenants. On a continuing basis, Assignor shall make, execute, acknowledge and deliver, and file and record in the proper filing and recording places, all such instruments, including, without limitation, appropriate financing and continuation statements and security agreements, and take all such action as may reasonably be deemed necessary or advisable by Assignee to carry out the intent and purposes of this Assignment, or for assuring and confirming to Assignee the grant or perfection of a security interest in all Patents. Without limiting the generality of the foregoing sentence, Assignor (i) shall not enter into any agreement that would materially impair or conflict with Assignor's obligations hereunder without Assignee's prior written consent (which consent shall not be unreasonably withheld); (ii) upon the written request of Assignee, shall use reasonable efforts to obtain any necessary consents of third parties to the grant or perfection of a security interest to Assignee with respect to the Patents; (iii) shall, from time to time, upon Assignee's reasonable request, cause its books and records to be marked with such legends or segregated in such manner as Assignee may reasonably specify, and take or cause to be taken such other action and adopt such procedures as Assignee may reasonably specify to give notice of or to perfect the security interest in the Patents intended to be created hereby; (iv) shall at all times keep at least one complete set of its records concerning substantially all of the Patents at its chief executive office or principal place of business as set forth above and shall not change the location of its chief executive office or such records without giving Assignee at least thirty (30) days' prior written notice thereof; (v) shall promptly, following its becoming aware thereof, notify Assignee of the institution of, or any adverse determination in, any proceeding in the United States Patent and Trademark Office or any United States or foreign court regarding Assignee's claim of ownership in any of the Patents; (vi) shall not permit the inclusion in any contract to which it becomes a party of any provisions that would impair or prevent the creation of a security interest in Assignor's rights and interest acquired under such contracts in any property included within the definition of the Patents; (vii) shall properly maintain and care for the Patents; (viii) shall not grant

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any security interest in any Patent except in the name of Assignee and except for the LGE HDTV Lien; (ix) except as permitted under the Credit Agreement, shall not sell or contract for sale or otherwise dispose of any Patent; (x) except in the ordinary course of Assignor's business or as contemplated in Assignor's business plan delivered to Assignee, shall not license any Patent other than pursuant to the Existing License Agreements without the consent of the Assignee, which consent shall not be unreasonably withheld; (xi) upon any officer of Assignor obtaining knowledge thereof, shall promptly notify Assignee of any event which materially adversely affects the value of any Patent, the ability of Assignor or Assignee to dispose of any of the Patents or the rights and remedies of Assignee in relation thereto including, without limitation, the levy of any legal process against any of the Patents; (xii) until Assignee exercises its rights to make collection, shall diligently keep reasonable records respecting the Patents; (xiii) shall promptly notify Assignee of any suspected infringement of any of the Patents by any third party and of all steps, including the commencement and course of litigation, taken to remedy such infringement; (xiv) shall apply proper statutory patent notice to all products covered by the Patents, and (xv) shall not terminate any Existing License Agreement or amend, modify or waive any provision of any Existing License Agreement in any manner that could reasonably be deemed to be materially adverse to the interests of Assignee, without the prior written consent of the Assignee.

- 6. Amounts Payable in Respect of the Patents. Except as otherwise provided in this Section 6 or in the Credit Agreement, Assignor shall continue to collect, at its own expense, all amounts due or to become due to Assignor in respect of the Patents as provided in the License Agreements, the HDTV License Agreements, and any other license agreement. Upon the occurrence and during the continuance of an Event of Default, and, in connection with the HDTV Patents and the HDTV License Agreements only, subject to the superior rights of the holder of the LGE HDTV Lien, Assignee is hereby given full power and authority, without notice or demand, (i) to notify any and all obligors with respect to any Patent which Assignor, except for the execution hereof, could ask for, and (ii) to demand, take, collect, sue for and receive for its own use all amounts due or to become due Assignor in respect of the Patents, and in connection therewith to enforce all rights and remedies with respect to any Patent which Assignor could enforce if this Assignment had not been made; and Assignor hereby ratifies any action which Assignee shall lawfully take to enforce Assignee's rights hereunder. Whether or not Assignee shall have so notified any obligors, Assignor shall at its expense render all reasonable assistance to Assignee in enforcing claims against such obligors.
- 7. Power of Attorney. Assignor hereby authorizes and empowers Assignee, upon the occurrence and during the continuance of an Event of Default, and, in connection with the HDTV Patents and the HDTV License Agreements only, subject to the superior rights of the holder of the LGE HDTV Lien, to make, constitute and appoint any officer or agent of Assignee as Assignor's true and lawful attorney-in-fact, with power (i) to endorse Assignor's name on all applications, documents, papers and instruments necessary or desirable for Assignee in the use or maintenance of the Patents, (ii) to take any other actions with respect to the Patents including, without limitation, commencement or continuation of any litigation or administrative proceeding, as Assignee deems

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in the best interests of the Issuing Bank and the Lenders, (iii) to grant or issue licenses to the Patents to anyone on terms which Assignee in its reasonable judgment deems commercially reasonable, or (iv) to assign, pledge, convey or otherwise transfer title in or dispose of the Patents to anyone on terms which Assignee in its reasonable judgment deems commercially reasonable.

8. Patent Applications; Maintenance and Litigation.

- Assignor shall have the duty to preserve and maintain all Patents as to which a security interest has been granted pursuant to this Assignment. Any expenses incurred in connection with such an application, or in protecting, maintaining or preserving the Patents, shall be borne by Assignor.
- Notwithstanding anything to the contrary in Section 2 hereof. (b) Assignor shall have the right and obligation to commence and diligently prosecute in its own name, as real party in interest, for its own benefit and at its own expense, such suits, proceedings or other actions for infringement, or other damage or reexamination or reissue proceedings as are reasonable to protect any of the Patents. However, no such suit, proceeding or other action shall be settled or voluntarily dismissed, nor shall any party be released or excused of any claims of, or liability for, infringement without the prior written consent of Assignee, which consent shall not be unreasonably withheld. Assignee shall provide all reasonable and necessary cooperation in connection with any such suit, proceeding or action, including, without limitation, joining as a necessary party.
- Assignor hereby agrees to indemnify and hold harmless Assignee for (c) any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements (including reasonable attorneys' fees) of any kind whatsoever which may be imposed on, incurred by or asserted against Assignee in connection with or in any way rising out of any such suits, proceedings or other actions, or any other suits, proceedings or other actions relating to any or all of the Patents (including, without limitation, whether brought by Assignor or any other Person, suits, proceedings or other actions in which an allegation of liability, strict or otherwise, is or may be made by any Person who alleges or may allege having suffered damages as a consequence of alleged improper, imprudent, reckless, negligent, willful, faulty, defective or substandard design, testing, specification, manufacturing supervision, manufacturing defect, manufacturing deficiency, publicity or advertisement or improper use, howsoever arising or by whomsoever caused, of any inventions disclosed and claimed in the Patents or any of them); unless with respect to any of the above, the Assignee is judicially determined to have acted or failed to act with gross negligence or wilful misconduct. The indemnification in this paragraph shall survive the termination of this Agreement.
- 9. Amendments, etc. No amendment or waiver of any provision of this Assignment nor consent to any departure by Assignor herefrom, shall in any event be effective unless the same

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shall be in writing and signed by the parties hereto, and then such waiver or consent shall be effective only in the specific instance and for the specific purpose for which given, except as provided in Section 5 hereof, in which case the writing need only be signed by Assignee.

10. <u>Addresses for Notices</u>. All notices and other communications to any party provided for hereunder shall be in writing (including telecommunications) and shall be given in the form and manner, and shall be effective, as provided in Section 10.1 of the Credit Agreement.

11. Continuing Assignment; Transfers by Lenders.

- This Assignment shall create a continuing security interest and (a) collateral assignment of the Patents and shall (i) remain in full force and effect until the indefeasible payment in full of the Obligations and the termination of the Credit Agreement, (ii) be binding upon Assignor, its successors and assigns and (iii) inure to the benefit of Assignee, the Issuing Bank, the Lenders and their respective successors, transferees and assigns. Without limiting the generality of the foregoing clause (iii), any Lender may assign or otherwise transfer any Obligations held by it, and such other benefits in respect thereof granted to Assignee herein or otherwise, to any other Person, subject, however, to the provisions of Section 10.5 of the Credit Agreement. Upon the payment in full of the Obligations and the termination of the Credit Agreement, the assignment hereunder shall terminate and all rights to the Patents shall revert to the Assignor, subject to any disposition thereof which may have been made by Assignee pursuant hereto or pursuant to the Credit Agreement. Upon any such termination, Assignee shall, at Assignor's expense, execute and deliver to Assignor such documents as Assignor shall reasonably request to evidence such termination.
- (b) The Patents shall be subject to release from time to time in accordance with Section 9.15 of the Credit Agreement (the "Released Collateral"). The Liens under this Agreement shall terminate with respect to the Released Collateral upon such release, and upon the request of the Assignor, the Assignee shall execute and deliver such instrument or document as may be necessary to release the Liens granted hereunder; provided, however, that (i) the Assignee shall not be required to execute any such documents on terms which, in the Assignee's opinion, would expose the Assignee to liability and (ii) such release shall not in any manner discharge, affect or impair the Obligations of Assignor or any Liens on (or obligations of the Assignor in respect of) all interests retained by the Assignor, including without limitation, the proceeds of any sale, all of which shall continue to constitute part of the collateral covered by this Agreement.
- 12. <u>Cumulative Remedies</u>; <u>Power of Attorney</u>; <u>Effect on Credit Agreement</u>. All of Assignee's rights and remedies with respect to the Patents, whether established hereby, by the Credit Agreement, any other Loan Document, or by any other agreements or by law shall be cumulative and may be exercised singularly or concurrently. Assignor hereby acknowledges and agrees that this

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Assignment is not intended to limit or restrict in any way the rights and remedies of Assignee, the Issuing Bank or the Lenders under the Credit Agreement, but rather is intended to facilitate the exercise of such rights and remedies. The Agent shall have, upon the occurrence and during the continuation of an Event of Default, in addition to all other rights and remedies given it by this Assignment and the Loan Documents, those rights and remedies allowed by law and the rights and remedies of a secured party on default under the UCC as enacted in the State of New York at that time.

- 13. <u>Counterparts</u>. This Assignment may be executed in any number of counterparts, each of which shall be deemed to be an original, but all such separate counterparts shall together constitute but one and the same instrument.
- 14. <u>Severability</u>. Any provision of this Assignment which is prohibited or unenforceable shall be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions hereof in that jurisdiction or affecting the validity or enforceability of such provision in any other jurisdiction.
- 15. <u>Governing Law</u>. THIS ASSIGNMENT SHALL BE CONSTRUED IN ACCORDANCE WITH AND GOVERNED BY THE LAWS OF THE STATE OF NEW YORK.

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IN WITNESS WHEREOF, the parties hereto have caused this Assignment to be executed by their respective officers thereunder duly authorized, as of the date first above written.

ZENITH ELECTRONICS CORPORATION

By:____

Name: Michael J.

Title:

Agreed and Accepted as of this day of November, 1999.

CITICORP NORTH AMERICA, INC., as Agent and

Assignee

Name:

Title: THOMAS M. HALSCH VICE PRESIDENT

PATENT SECURITY AGREEMENT

STATE OF Illenois)
C 1) ss.:
COUNTY OF Corl)

The foregoing Patent Collateral Assignment and Security Agreement was executed and acknowledged before me this Zul day of humber, 1999, by Michael Summer's personally known to me to be the Treasurer of Zenith Electronics Corporation, a Delaware corporation, on behalf of such corporation.

(SEAL)

Notary Public

My Commission expires:

"OFFICIAL SEAL"
JOAN ISTRATE
Notary Public, State of Illinois
My Commission Expires Feb. 5, 2000

STATE OF	Illenvis)
COUNTY (F Conh) ss.:)

The foregoing Patent Collateral Assignment and Security Agreement was executed and acknowledged before me this and day of homeown, 1999, by Thomas M. Halsch personally known to me to be the Vice President of Citicorp North America, Inc., a Delaware corporation, on behalf of such corporation.

(SEAL)

Notary Public

My Commission expires:

"OFFICIAL SEAL"
JOAN ISTRATE

Notary Public, State of Illians My Commission Expires Feb. 5, 2011

Schedule C Existing Licenses

See attached

1:\ELECTRO\Exit Facility Schedules\LGE Credit Agreement\Patent Agreement\c.wpd

ZENITH LICENSES

Patent

DescriptionTuner

Licensee

Pioneer(USA) JVC(US)

Technol Ace

Toshiba Corp Proton

Samsung Samsung

Sanyo Mfg (US) Sharp Corp

Aiwa

Mitsubishi Electric

Sony Corp (Japan)

Orion Funai

Sony Elec. (US)

Sanyo Jaya (Indones)

Shintom Daewoo

Korea Electronics

Sharp Mfg of America

LGE Alabama

Aiwa

Funai

LG Electronics

Matsushita Ele.Ind.

Mitsubishi Ele. Corp.

Orion

PT Kotobuki

Samsung

Samsung

Sanyo Mfg.

PT Sanyo Jaya (Indo)

Sharp Corp.

Sharp Mfg.

Shintom

Victor

Samsung

JVC Ind.

American Kotobuki

Pioneer (US)

Matsushita (US)

Technol Ace

Pioneer (US)

Technol Ace

Sanyo Mfg. (US)

Toshiba Corp.

Aiwa

Funai

Page 1

PATENT

Sheet9

LGE

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Sharp Corp

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Sharp Mfg.

Daewoo

Korea Elec.

Daewoo

Proton

LGE

Pioneer

Technol Ace

Sharp Mfg.

Proton

Aiwa

Funai

Matsushita

Mitsubishi

Orion

Samsung

Sharp Corp

Shintom

Victor of Japan

PT Kotobuki

Sony

LGE

US JVC

US JVC

Am Kotokubi

Sanyo Mfg.

Samsung

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Description

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Other Patent EloTou

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Medtek

Crest

Sheet9

Trademark

Licensee

Circuit City

SDI LGE

LGE Canada

Sears Woods

Total

T.Mark Total

Patent TTL

Schedule A Patents

See attached

ELECTRO\Exit Facility Schedules\Citi Credit Agreement\Patent Security Agreement\A.wpd

Tuning Patents

Zenith Electronics Corporation

- 1. U.S. Patent No. 4,002,986
- 2. U.S. Patent No. 4,317,227
- 3. U.S. Patent No. 4,516,170
- 4. U.S. Patent No. 4,598,425

ID	DF Number	Serial No	Filing Date	Patent No	Description
	5872	201,137		4,907,069	Two channel ATV
2	5984	298394		4941049	Reverse scan to minimize ghost visibility
3	6022	298081		4951146	Directionally controlled dispersive filtering
4	9809	453525		5016100	Hybrid with adaptive delta modulation
5	5892	281156		5027163	High level wideband RF mixer
9	5930	239155		5029002	787.5 line progressive display
7	5779CIP5	408158		5040063	Hybrid
∞	5779CIP2	370222		5043805	HDTV transmission on "taboo" channel
6	5779CIPFWC	566784	-	5043812	Hybrid
01	6298	573436		5049992	HDTV receiver operable at different resolutions
11	6314	618188		5060067	Alternately inverted field sync for reducing DC offset in equalizer
12	6228/6331	601169		5086340	Precoder, NTSC rejection comb & digital postcoder
13	6364	611236		5087975	Digital VSB & comb filtering (replaced by Reissue)
14	6045	458929		5103312	Time variable dispersive filter
15	6254	551696		5107348	Compression with block dither
16	5779CIP2D	673444		5111287	HDTV transmission on "taboo" channel
17	6393	653560		5113256	Perceptual video model with C's separated in H, V, & D regions
18	6376	636303		5115315	Reversable dispersive filters
19	6342	600458		5121203	QAM implementation of precode/comb filter
70	6274	600457		5121208	Reverse hybrid
21	6247	539770		5128757	2D compressor with perceptual modelling
22	6328	600469		5132797	Comb plus intersymbol interference filter

<u>Q1</u>	DF Number	Serial No	Filing Date	Patent No	Description
23	6192	553822		5136375	Entropy encoding
24	5779CIP4	407596		5136381	Hybrid
25	5779CIP3	408152		5144431	Hybrid
26	6305	209960		5151785	Cochannel reduction with prefilter & inverse postfilter
27	6477	734841		5153723	Audio sampling rate = 3H (48 Khz adopted)
28	6367CIP	877879		5161015	Video peaking based on image classification
29	6328CIP	784334		5162900	Controllable comb & intersymbol interference filter
30	3145	99373		4263616	Signal peaking
31	6323	629523		5173774	Receiver for 525 line NTSC & 7876.5 line HDTV
32	6382	667153		5181112	Selectively offsetting symbols to generate pilot
33	6382CIP	926008		5241385	=
34	6342C	802153		5258838	QAM implementation of precode/comb filter
35	6413ACIP	893486		5260793	Select comb/digital postcoder based on interference present
36	5779CIP6C	908772		5270816	Hybrid
37	6522	815711		5270824	AGC for double conversion tuner
38	5892CIP2	746387		5280648	Double balanced RF mixer
39	6402CIP2	894388		5416524	Data segment sync & use for sampling data
40	6413CIP2	204972		5598220	Field sync detection
41	6520	936144		5392315	FIR filter coefficient updating
42	6510	815721		5420646	Bandswithed LO for double conversion synthesizer
43	6209	865407		5291291	Complementary transmit & receive filters for reducing cochannel
44	6482	887624		5283653	Carrier regeneration in dual NTSC/HDTV receiver

QI	DF Number	Serial No	Filing Date	Patent No	Description
45	6481	08/907,233	26/9/8	8/6/97 5,938,763	.Data transposition (eg for interleaving)
46	6400CIPFWC	67408		5285276	Bi-rate
47	6072FWC	967957		5329319	PLL & SAW resonator on common substrate
48	6047	887723		5461674	HDTV signal playback control
49	5892CIP2	746387		5280648	Double balanced mixer
50	6682	88285		5461619	Mutiplexed transmission of compressed video & aux data
51	6999	14889		5406587	Phase noise tracking loop
53	6614	931.172		5311318	Both osc's of double conv tuner digitally controlled by micro
54	6604	947024	-	5301019	Data compression with perceptually weighted motion vectors
55	6592	931177		5438369	Vertically correllating symbols of data segments
56	6591	931176		5410569	Slicer with soft & hard stages
57	6571A	18658		5563920	Processing variable size blocks
58	6571	18668		5424733	Processing variable length encoded signals
61	6753	175333		5410368	Switched oscillator for carrier acquisition (also cap coupling to AD)
63	6738	175070		5631645	Symbol to byte converter
99	6717	175014		5452009	Lower VSB modes for higher frequency channels
29	6726	221133		5475438	Five field motion detector for scan line doubler
69	6767CIP	225201		5508748	Data level selection for multilevel VSB
2	6829	259284		5475714	Feedback circuit for removing DC from demodulated signal
71	6732	272181		5583889	MI.S decder with linear (comb) filter
72	6732A	272357		5629958	Last 12 symbols of field copied to next field sync segment
73	6770	301931		5642154	Cable maintenance responsive to field sync

1	DF Number	Cours No	Eiling Date	Datent No.	Description
74	6823	335603	3 9	5565932	A GC controlled in reconnect or received days
	790				troc controlled in tesponse to received data
75	6811CIP	315153		5572532	Convolutional deinterleaver (CIP of 6727)
76	6754CIP	320362		5546138	Dual mode AGC
77	6413C	324054		5534938	Digital transmission system with field & data segment sync
78	6810	303989		5574509	Orienting HDTV antenna
79	6669CIPA	366656		5533070	Phase tracking loop improvements
08	6669CIPB	366844		5533071	Phase tracking loop improvements
81	6771CIP	354408		5627604	Bi-phase stable FPLL with pilot augmentation
82	858	386589	-	5602583	NTSC rejection filter with switched Tomlinson precoder
83	G553D	345886		5638140	AFC filter for FPLL
84	6812	411000		5563884	Reducing multiplex jitter in ATM/MPEG system
85	6737CIP	417581		5677911	Integral number of data bytes & RS blocks for all VSB modes
98	6874	481664		5619269	Field sync with middle 63 PN sequence alternately inverted
87	6929	475713		5594496	Field comb used to determine switching for NTSC rejection filter
888	6873CIP	479428		5602595	Use of segment sync instead of MPEG sync in 207 byte blocks
68	6875	474049		5574496	Optimal offset NTSC/ATV & ATV/ATV
8	3139DC	493129		4449145	Claim9 = equalizer implementation (FIR filters used for CCD)
91	6755C	500272		5621483	FPLL polarity selector operated in response to segment sync
92	6904	501966		5745528	VSB mode selection system
94	6613	516031		5752179	Selective RF circuit for high quality tuner
95	5895	539155		5684827	Equalizer controlled by DC variation of received signal
96	6919	539149		5572547	Equalizer controlled by differences in received FSYNC

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2	DE Nimber				
	Dr Ivaliber	Serial No	Filing Date	Patent No	Description
97	6926	569975		5778028	CIP of 6789, plus using DC to control eq & inversion
86	6894CIP	575008		5821988	Replacement Cip of 6894
66	6732D	586441		2,000677	Trellis modulator design for terrestial VSB
100	6917	610171		5764701	VSB modulation using digital and analog techniques
101	6732C	593733		5636251	Receiver for trellis coded ATV signal
102	6921	627826		5923711	Slice points predicted by lowest path metric
103	6957	645175		5668498	Pilot used to determine FPLL polarity and use of input inverter
104	2969	661241		5828404	VSB mode detector
105	1969	691656	-	5675283	Recover pilot by subt DC of demod output with & without pilot
106	6962	691480		5699011	Determining DC offsets under zero carrier condition
107	6957CIP	691657		5675284	Frequencl lock detector responsive to zero crossings
108	6949	696427		5781065	Slip phase FPLL
109	6893	671464		5,914,962	MPEG transport MUX for independently clocked transport streams
110	9269	697544		5905732	Transport Mux with PCR restamper
111	6944	678902		5745004	FPLL with relocated 3rd multipier
112	1269	08/687,866	7/26/96 5940863	5940863	Data de-rotator and de-interleaver
113	6993	725870		5825778	SMPTE VSB input interface
114	6969	08/726,498	10/7/96		Adjustment of sync levels in multi-mode VSB signal
115	9969	726597		5764309	Adjustment of sync levels in an AGC system
116	Y9969	726501		5841820	Smaller of 1st & 3rd compared samples generates AGC signal
117	6954	729611		5787129	1st & 2nd filters for contrillably reducing cochannel & noise
118	6934	583733		5692010	Adaptive equalizer with impulse noise protection

10	DF Number	Serial No	Filing Date	Patent No	Description
119	6994	734224		5847585	Stabilizing IF in HDTV modulator
120	6946	08/751,895	11/18/96		Two step field sync identification system
121	6269	713778		5802107	Rotating data symbols to maintain proper decoding sequence
123	7018	815560		5923221	Improved oscillator for ATV tuner
124	7017	815561		5917386	Hybrid transformer for ATV tuner mixer
125	7016	815559		5834988	Pin diode attenuator for ATV AGC circuit
126	6983	08/791,521	12/30/97	12/30/97 5,949,834	Symbol synch recovery
127	6974	08/735,855	10/22/96		Horiz synch separator for multi-standard synchs
128	6975	735615	-	5844626	HDTV compatible vertical synch separator
129	7046	08/933,744	9/23/97		Testing arrangement for MPEG decoders
130	7049	08/951,269	10/17/97		Frame to field converter for MPEG data
131	7038	08/943,916	10/3/97		Double conv tuner with adjacent channel rejection
132	6904C	08/971,746	11/17/97		VSB mode selection signal
133	7074	09/066,123	4/24/98		Comb filter selection using equalized data
134	7056	09/020,274	2/6/98		VSB remodulator
135	7019	09/023,153	2/12/98		Digital control for HDTV tuner
136	7079	09/092,519	86/5/9		High frequency antenna for HDTV signals
137	7065	09/106,367	86/67/9		Down converting frame/field DTV to lower resolution field DTV
138	7907	09/139,496	8/22/88		Offset QAM generated VSB signal
139	C 28669	08/745,549	11/12/96		Non-linear precorrection for ATV transmitter
140	7089	09/220,785	12/23/98		FPLL with relocated 3rd multiplier
141	6534	89320		5847750	Video on demand server

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	DE Number	Serial No	Filing Date	Patent No	Description
	Dr Muniba	09/027.688	3/98		Tuner with switched analog and digital demodulators
	300	09/152 399	9/14/98		Tuner with switched analog and digital demodulators
143	/068CIF		00/11/1		EDI I with handwidth stabilized PLI.
144	7057	09/255,059	66 177 17		
145	7102	09/236,994	1/26/99		Cochannel comb for 8 Mhz channel
146	7095	09/276,065	3/25/99		Adaptive indoor antenna
147	7104	09/315,448	5/20/99		Dual mode VSB/NTSC receiver with switched IF
148	7056CIP	09/300,299	4/27/99		CIP of VSB Remodulator
149	7105	09/321,798	5/27/99	6	Data frame for 8 MHz channel
150	7113	09/321,392	5/27/99	6	TCM Encoder for 8 MHz channel
151	7114	09/321,294	5/27/99	6	VSB Mode Decoder for 8 MHz channel
152	7115	09/321,462	5/27/99	6	TCM Decoder for 8 MHz channel
153	7081	69/330,769	6/11/9	6	MPEG on screen display coder for DTV interfaces
2	Q8669	09/304,766	5/4/99	61	Non Linear Amplitude Precorrection for HDTV Transmitter
155	7096	09/276,066	3/25/99	61	Printed Circuit Doubly Balanced Mixer for Upconverter
45.	7126	09/388,327	9/1/99	66	Reference Generator for Demodulator Calibration
157	7121	09/388,047	66/1/6	66	Self Calibrating Demodulator System
			and the state of t		

Schedule B

Patent Collateral Assignment and Security Agreement

Funai Electric Co., Ltd. v. Zenith Electronics Corporation, U.S. District Court for the Central District of California, Case No. CV98-4908 TJH (SHx), filed June 1998. Funai seeks a declaratory judgement that the Company's tuner patents are invalid and/or not infringed by its current product designs.

RECORDED: 11/12/1999