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REC 07-29-1998 HEET

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

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To the Honorable Commissioner of Pate ched original documents or copy thereof.

1. Name of conveying party(ies):

Zenith Electronics Corporation

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

2. Name and address of receiving party(ies)

Name: LG Electronics Inc.

Internal Address:

Street Address: 20 Yoido-dong,

Youngdungpo-ku

City: Seoul Country Korea ZIP: 150-721

Additional name(s) & address(es) attached? ☐ Yes ☒ No

3. Nature of conveyance:

☐ Assignment ☐ Merger

☐ Security Agreement ☐ Change of Name

☒ Other Patent Collateral Assignment and Security Agreement

Execution Date: April 29, 1998

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s)

B. Patent No.(s)

Additional numbers attached? ☒ Yes ☐ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Laura Konrath

Internal Address: Winston & Strawn

33rd Floor

Street Address: 35 W. Wacker

City: Chicago State: IL ZIP: 60601

6. Total number of applications and patents involved: 132

7. Total fee (37 CFR 3.41).....$ 5280.00

☒ Enclosed

☐ Authorized to be charged to deposit account

8. Deposit account number:

N/A

(Attach duplicate copy of this page if paying by deposit account)

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Laura Konrath

Name of Person Signing

Laura Konrath 4/27/98

Signature

5/4/98

Date

Total number of pages including cover sheet, attachments, and document:

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

ID	DF Number	Filed	Serial No	Patent No	GASP	GAIP	16VSB	Description
1	5872		201137	4907069				Two channel ATV
2	5984		298394	4941049				Reverse scan to minimize ghost visibility
3	6022		298081	4951146				Directionally controlled dispersive filtering
4	6086		453525	5016100				Hybrid with adaptive delta modulation
5	5892		281156	5027163		yes		High level wideband RF mixer
6	5930		239155	5029002		yes		787.5 line progressive display
7	5779CIP5		408158	5040063				Hybrid
8	5779CIP2		370222	5043805	yes			HDTV transmission on "taboo" channel
9	5779CIPFWC		566784	5043812				Hybrid
10	6298		573436	5049992				HDTV receiver operable at different resolutions
11	6314		618188	5060067		yes	yes	Alternately inverted field sync for reducing DC offset in equalizer
12	6228/6331		601169	5086340	yes	yes		Precoder, NTSC rejection comb & digital postcoder
13	6364		611236	5087975	yes	yes	yes	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	yes			HDTV transmission on "taboo" channel
17	6393		653560	5113256		yes		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
20	6274		600457	5121208				Reverse hybrid

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ID	DF Number	Filed	Serial No	Patent No	GASP	GAIP	16VSB	Description
21	6247		539770	5128757				2D compressor with perceptual modelling
22	6328		600469	5132797				Comb plus intersymbol interference filter
23	6192		553822	5136375				Entropy encoding
24	5779CIP4		407596	5136381				Hybrid
25	5779CIP3		408152	5144431				Hybrid
26	6305		709960	5151785				Cochannel reduction with prefilter & inverse postfilter
27	6477		734841	5153723				Audio sampling rate = 3H (48 Khz adopted)
28	6367CIP		678778	5161015				Video peaking based on image classification
29	6328CIP		784334	5162900				Controllable comb & intersymbol interference filter
30			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		yes		Select comb/digital postcoder based on interference present
36	5779CIP6C		908772	5270816				Hybrid
37	6522		815711	5270824		yes		AGC for double conversion tuner
38	5892CIP2		746387	5280648		yes		Double balanced RF mixer
39	6402CIP2		894388	5416524	yes	yes	yes	Data segment sync & use for sampling data
40	6413CIP2		204972	5598220	yes	yes	yes	Field sync detection

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ID	DF Number	Filed	Serial No	Patent No	GASP	GAIP	16VSB	Description
41	6520		936144	5392315				FIR filter coefficient updating
42	6510		815721	5420646		yes		Bandswithed LO for double conversion synthesizer
43	6509		865407	5291291				Complementary transmit & receive filters for reducing cochannel
44	6482		887624	5283653				Carrier regeneration in dual NTSC/HDTV receiver
45	6481	8/6/97	907233			yes	yes	.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	6669		14889	5406587		yes	yes	Phase noise tracking loop
53	6614		931.172	5311318			yes	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			yes	Switched oscillator for carrier acquisition (also cap coupling to AD)
63	6738		175070	5631645			yes	Symbol to byte converter

ID	DF Number	Filed	Serial No	Patent No	GASP	GAIP	16VSB	Description
66	6717		175014	5452009				Lower VSB modes for higher frequency channels
67	6726		221133	5475438		yes		Five field motion detector for scan line doubler
69	6767CIP		225201	5508748			yes	Data level selection for multilevel VSB
70	6789		259284	5475714		yes	yes	Feedback circuit for removing DC from demodulated signal
71	6732		272181	5583889		yes		MLS decder with linear (comb) filter
72	6732A		272357	5629958	yes	yes		Last 12 symbols of field copied to next field sync segment
73	6770		301931	5642154			yes	Cable maintenance responsive to field sync
74	6823		335603	5565932		yes		AGC controlled in response to received data
75	6811CIP		315153	5572532		yes	yes	Convolutional deinterleaver (CIP of 6727)
76	6754CIP		320362	5546138			yes	Dual mode AGC
77	6413C		324054	5534938	yes		yes	Digital transmission system with field & data segment sync
78	6810		303989	5574509		yes		Orienting HDTV antenna
79	6669CIPA		366656	5533070			yes	Phase tracking loop improvements
80	6669CIPB		366844	5533071			yes	Phase tracking loop improvements
81	6771CIP		354408	5627604			yes	Bi-phase stable FPLL with pilot augmentation
82	6858		386589	5602583				NTSC rejection filter with switched Tomlinson precoder
83	6753D		345886	5638140			yes	AFC filter for FPLL
84	6812		411000	5563884				Reducing multiplex jitter in ATM/MPEG system

ID	DF Number	Filed	Serial No	Patent No	GASP	GAIP	16VSB	Description
85	6737CIP		417581	5677911	yes		yes	Integral number of data bytes & RS blocks for all VSB modes
86	6874		481664	5619269	yes		yes	Field sync with middle 63 PN sequence alternately inverted
87	6769		475713	5594496		yes		Field comb used to determine switching for NTSC rejection filter
88	6873CIP		479428	5602595	yes	yes	yes	Use of segment sync instead of MPEG sync in 207 byte blocks
89	6875		474049	5574496		yes		Optimal offset NTSC/ATV & ATV/ATV
90	3139DC		493129	4449145		yes	yes	Claim9=equalizer implementation (FIR filters used for CCD)
91	6755C		500272	5621483			yes	FPLL polarity selector operated in response to segment sync
92	6904		501966	5745528			yes	VSB mode selection system
93	6894	12/19/95	520544			yes		NTSC rejection filter selection in response to energy comparison
94	6613		516031	5752179		yes		Selective RF circuit for high quality tuner
95	6895		539155	5684827		yes		Equalizer controlled by DC variation of received signal
96	6919		539149	5572547		yes	yes	Equalizer controlled by differences in received FSYNC
97	6926		569975	5778028			yes	CIP of 6789, plus using DC to control eq & inversion
98	6894CIP	12/19/95	575008			yes		Replacement Cip of 6894
99	6732D		586441	5600677	yes			Trellis modulator design for terrestial VSB
100	6917		610171	5764701			yes	VSB modulation using digital and analog techniques
101	6732C		593733	5636251		yes		Receiver for trellis coded ATV signal

ID	DF Number	Filed	Serial No	Patent No	GASP	GAIP	16VSB	Description
102	6921	4/2/96	627826					Slice points predicted by lowest path metric
103	6957		645175	5668498		yes	yes	Pilot used to determine FPLL polarity and use of input inverter
104	6967	6/10/96	661241					VSB mode detector
105	6961		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	6/27/96	671464					MPEG transport MUX for independently clocked transport streams
110	6976	8/27/96	697544					Transport Mux with PCR restamper
111	6944		678902	5745004				FPLL with relocated 3rd multipier
112	6971	7/26/96	687866					Data de-rotator and de-interleaver
113	6993	10/4/96	725870					SMPTE VSB input interface
114	6969	10/7/96	726498					Adjustment of sync levels in multi-mode VSB signal
115	6966		726597	5764309				Adjustment of sync levels in an AGC system
116	6966A	10/7/96	726501					Smaller of 1st & 3rd compared samples generates AGC signal
117	6954	10/11/96	729611					1st & 2nd filters for contrlllably reducing cochannel & noise
118	6934		583733	5692010				Adaptive equalizer with impulse noise protection
119	6994	10/21/96	734224					Stabilizing IF in HDTV modulator

ID	DF Number	Filed	Serial No	Patent No	GASP	GAIP	16VSB	Description
120	6946	11/18/96	751895					Two step field sync identification system
121	6979	9/13/96	713778					Rotating data symbols to maintain proper decoding sequence
122	6998	11/12/96	745549					On-line nonlinearamplitude precorrection for ATV transmitter
123	7018	3/12/97	815560					Improved oscillator for ATV tuner
124	7017	3/12/97	815561					Hybrid transformer for ATV tuner mixer
125	7016	3/12/97	815559					Pin diode attenuator for ATV AGC circuit
126	6983	12/30/97	791521					Symbol synch recovery
127	6974	10/22/96	735855					Horiz synch separator for multi-standard synchs
128	6975	10/23/96	735615					HDTV compatible vertical synch separator
129	7046	9/23/97	933744					Testing arrangement for MPEG decoders
130	7049	10/17/97	951269					Frame to field converter for MPEG data
131	7038	10/3/97	943916					Double conv tuner with adjacent channel rejection
132	6904C	11/17/97	971746					VSB mode selection signal

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5-5-98

05-07-1998
100706109

May 4, 1998

VIA MESSENGER
Commissioner of Patent and Trademarks
U.S. Patent and Trademark Office
Washington D.C. 20231
Attn: Patent Assignment Department

Re: LG Electronics Inc./Zenith Electronics Corporation

Dear Commissioner:

Enclosed is a Patent Collateral Assignment and Security Agreement together with a check in the amount of $5280.00 payable to the Commissioner of Patents and Trademarks for the assignment recordation fees.

Please file the enclosed with the Patent Assignment Department of the U.S. Patent and Trademark Office. When the filing process is completed, please send the file-stamped document to the following address:

Laura L. Konrath
WINSTON & STRAWN
35 W. Wacker Drive
Chicago, IL 60601

Should you require any additional information, please do not hesitate to call.

Thank you for your attention to this matter.

Very truly yours,
WINSTON & STRAWN

Laura Konrath
Senior Legal Assistant

LLK/nak
Enclosures

EXECUTION COPY

PATENT COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

This PATENT COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT (this "Assignment"), made as of this 31st day of March, 1998, by ZENITH ELECTRONICS CORPORATION, a Delaware corporation, having its chief executive office at 1000 Milwaukee Avenue, Glenview, Illinois 60025 ("Assignor") in favor of LG ELECTRONICS INC., having its chief executive office at 20 Yoido-dong, Youngdungpo-ku, Seoul 150-721 Korea ("Assignee").

WHEREAS, Assignor and Citicorp North America, Inc., a Delaware corporation, as agent (the "Agent") for itself and on behalf of the Issuing Bank and the Lenders described below, have entered into that certain Patent Collateral Assignment and Security Agreement dated as of March 31, 1998 (as amended, modified or supplemented from time to time, the "Credit Patent Collateral Security Agreement");

WHEREAS, Assignor, the Agent, the Issuing Bank and the various Lenders signatory thereto are parties to that certain Credit Agreement dated as of March 31, 1997 (as amended, modified or supplemented from time to time, the "Credit Agreement");

WHEREAS, Assignor and Assignee are parties to that certain Note Agreement dated as of March 31, 1998 (as amended, modified or supplemented from time to time, the "Note Agreement"), pursuant to which Assignee has agreed to make Advances (as defined in the Note Agreement) to Assignor;

WHEREAS, all Advances, liabilities, obligations and covenants arising from time to time under the Note Agreement owing by Assignor to Assignee, shall be referred to collectively as the "Note Obligations";

WHEREAS, in consideration for, among other things, Assignee's execution of the Note Agreement, and to secure the payment and performance of the Note Obligations Assignor has agreed to grant to Assignee a security interest in certain of Assignor's assets, including, without limitation, the HDTV Patents (as hereinafter defined); and

WHEREAS, Assignee and the Agent have entered into a Subordination Agreement dated as of November 3, 1997 (as amended, modified or supplemented from time to time, the "Subordination Agreement") relating to the respective rights and interests of Assignee and the Agent in, and to, the Collateral (as defined in the Subordination Agreement).

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. Definitions. Terms used herein which are defined in the Note Agreement shall have the respective meanings set forth in the Note Agreement unless otherwise defined herein.

2. Assignment and Grant of Security. To secure the complete and timely payment of all the Note Obligations of Assignor, now or hereafter existing from time to time, Assignor hereby pledges and collaterally assigns to Assignee, a security interest in, Assignor's entire right, title and interest in and to all United States patents and patent applications for VSB technology or relating to and used in connection with the high definition television technology of Assignor (collectively, the "HDTV Patents"), including, without limitation, each patent and patent application listed on Schedule A attached hereto, and all future United States HDTV Patents and patent applications of Assignor, including all proceeds thereof, 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 and continuations-in-part thereof (it being understood and agreed that the HDTV Patents assigned hereby shall include, without limitation, rights and interests pursuant to licensing or other contracts in favor of Assignor pertaining to the HDTV Patents, but in the case of third parties which are not Affiliates (as defined in the Credit Agreement) of Assignor, only to the extent permitted by such licensing or other contracts and, if not so permitted, only with the consent of such third parties).

3. Representations and Warranties. Assignor covenants and warrants as follows:

(a) A true and complete list of all HDTV Patents in existence as of the date hereof is set forth in Schedule A hereto.

(b) The HDTV Patents are subsisting and have not been adjudged invalid or unenforceable and Assignor is not aware of any claim by any third party that the HDTV Patents are invalid or unenforceable.

(c) To the best of Assignor's knowledge, each of the HDTV Patents is valid and enforceable.

(d) No claim has been made that the practice of any of the HDTV Patents does or may violate the rights of any third person.

(e) Assignor is the legal and beneficial owner of the HDTV 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, the senior security interest and assignment created by the Credit Patent Collateral Security Agreement, and the license agreements set forth on Schedule B attached hereto (the "Existing License Agreements"). No effective financing statement or other instrument similar in effect covering all or any part of the HDTV Patents is on file in any recording office, except such as may have been filed in favor of the Agent relating to the Credit Patent Collateral Security Agreement and of Assignee relating to this Assignment or for which duly executed termination statements have been recorded or delivered to Assignee.

(f) This Assignment shall create in favor of Assignee a valid and perfected security interest in the HDTV Patents upon making the filings referred to in clause (g) below, free and clear of all Liens other than the Senior Lien in favor of the Agent under the Credit Patent Collateral Security Agreement

(g) Except for the filing of financing statements with the Secretary of State of Illinois under the UCC 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 by Assignee of its rights and remedies hereunder to the HDTV 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 (as defined in the Credit Agreement) has any right, title or interest in any HDTV Patents.

4. New HDTV Patents and Applications. If, at any time during the term of the Note 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 HDTV Patent or any improvement on any HDTV 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 HDTV Patents. Without limiting the generality of the foregoing sentence, Assignor (i) shall not enter into any agreement which 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 HDTV 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 HDTV 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 HDTV 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 HDTV Patents; (vi) shall not permit the inclusion in any contract to which it becomes a party of any provisions which 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 HDTV Patents; (vii) shall properly maintain and care for the HDTV Patents; (viii) shall not grant any security interest in any HDTV Patent except in the name of the Agent or in the name of Assignee; (ix) except as permitted under the Credit Agreement and herein, shall not sell or contract for sale or otherwise dispose of any HDTV Patent; (x) except with the consent of the Assignee, which consent shall not be unreasonably withheld, shall not license any HDTV Patent other than pursuant to the Existing License Agreements; (xi) upon any officer of Assignor obtaining knowledge thereof, shall promptly notify Assignee of any event which materially adversely affects

the value of any HDTV Patent, the ability of Assignor or Assignee to dispose of any of the HDTV Patents or the rights and remedies of Assignee in relation thereto including, without limitation, the levy of any legal process against any of the HDTV Patents; (xii) until Assignee exercises its rights to make collection, shall diligently keep reasonable records respecting the HDTV Patents; (xiii) shall promptly notify Assignee of any suspected infringement of any of the HDTV 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 HDTV 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 HDTV 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 HDTV Patents. Upon the occurrence and during the continuance of an Event of Default (as defined in the Note Agreement) (herein called a "Default"), Assignee is hereby given full power and authority, without notice or demand, (i) to notify any and all obligors with respect to any HDTV 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 HDTV Patents, and in connection therewith to enforce all rights and remedies with respect to any HDTV 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 a Default, 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 HDTV Patents, (ii) to take any other actions with respect to the HDTV Patents including, without limitation, commencement or continuation of any litigation or administrative proceeding, as Assignee deems in its best interests, (iii) to grant or issue licenses to the HDTV 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

HDTV Patents to anyone on terms which Assignee in its reasonable judgment deems commercially reasonable.

8. Patent Applications; Maintenance and Litigation.

(a) Assignor shall have the duty to preserve and maintain all HDTV 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 HDTV Patents, shall be borne by Assignor.

(b) Notwithstanding anything to the contrary in Section 2 hereof, 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 HDTV 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.

(c) Assignor hereby agrees to indemnify and hold harmless Assignee for 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 HDTV 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 HDTV 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 heretofore, shall in any event be effective unless the same 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. Addresses for Notices. All notices and other communications to any party provided for hereunder shall be in writing (including telecommunications) and mailed, transmitted or delivered to such party, addressed to it at the address first stated herein for such party, or as to either party at such other address as shall be designated by such party in a written notice delivered to the other party in accordance with the terms of this Section. All such notices and other communications shall be effective as provided in the Note Agreement.

11. Continuing Assignment; Transfers by Assignee.

(a) This Assignment shall create a continuing security interest and collateral assignment of the HDTV Patents and shall (i) remain in full force and effect until payment in full of the Note Obligations and the termination of the Note Agreement, (ii) be binding upon Assignor, its successors and assigns and (iii) inure to the benefit of Assignee, and its successors, transferees and assigns. Upon the payment in full of the Note Obligations (other than indemnities and other contingent liabilities, not then due and payable, that expressly survive the termination of the Note Agreement) and the termination of the Note Agreement, the assignment hereunder shall terminate and all rights to the HDTV Patents shall revert to Assignor, subject to any disposition thereof which may have been made by Assignee pursuant hereto. 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) Assignee agrees to give 10 business days notice to Assignor prior to Assignee's taking possession or control of, or Assignee's relevy, attachment or levy on or of, the HDTV Patents or any bond or security which might be required by any court prior to allowing Assignee to exercise any of Assignee's remedies with respect to the HDTV Patents.

12. Cumulative Remedies; Power of Attorney; Effect on Note Agreement. All of Assignee's rights and remedies with respect to the HDTV Patents, whether established hereby, 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 Assignment is not intended to limit or restrict in any way the rights and remedies of Assignee under the Note Agreement, but rather is intended to facilitate the exercise of such rights and remedies. Assignee shall have, upon the occurrence and during the continuation of a Default, in addition to all other rights and remedies given it by this Assignment, those rights and remedies allowed by law and the rights and remedies of a secured party on default under the Uniform Commercial Code as enacted in the State of Illinois at that time.

13. Counterparts. 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. Severability. 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. Governing Law. THIS ASSIGNMENT SHALL BE CONSTRUED IN ACCORDANCE WITH AND GOVERNED BY THE LAWS OF THE STATE OF ILLINOIS.

16. Subordination Agreement. Assignee acknowledges that this Assignment, its rights, title and interest in and to the HDTV Patents, its rights and remedies hereunder and Assignor's duties hereunder are subject to the terms and conditions of the Subordination Agreement.

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, as Assignor

By: _____
Name: Kevin F. Brindley
Title: Corporate Treasurer

Agreed and Accepted as of
this 31st day of March, 1998.

LG ELECTRONICS INC., as Assignee

By: _____
Name: _____
Title: _____

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, as Assignor

By:_____
Name:_____
Title:_____

Agreed and Accepted as of
this 31st day of March, 1998.

LG ELECTRONICS INC., as Assignee

By: LG Electronics Inc.
Name:_____
Title:_____

CHA HONG (JOHN) KOO PRESIDENT

STATE OF ILLINOIS)
) ss.:
COUNTY OF COOK)

The foregoing Patent Collateral Assignment and Security Agreement was executed and acknowledged before me this 29th day of April, 1998, by Kevin F. Brindley, personally known to me to be the Treasurer of Zenith Electronics Corporation, a Delaware corporation, on behalf of such corporation.

(SEAL)

OFFICIAL SEAL
SHARON KROLL
NOTARY PUBLIC STATE OF ILLINOIS
MY COMMISSION EXP. NOV. 19,2000

Sharon Kroll
Notary Public
My Commission expires:Nov. 19, 2000

ID	DF Number	Serial No	Patent No	GASP	GAIP	16VSB	Description
1	5872	201137	4907069				Two channel AIV
2	5984	298394	4941049				Reverse scan to minimize ghost visibility
3	6022	298081	4951146				Directionally controlled dispersive filtering
4	6086	453525	5016100				Hybrid with adaptive delta modulation
5	5892	281156	5027163		yes		High level wideband RF mixer
6	5930	239155	5029002		yes		787.5 line progresssive display
7	5779CIP5	408158	5040063				Hybrid
8	5779CIP2	370222	5043805	yes			HDTV transmission on "taboo" channel
9	5779CIPFWC	566784	5043812				Hybrid
10	6298	573436	5049992				HDTV receiver operable at different resolutions
11	6314	618188	5060067		yes	yes	Alternately inverted field sync for reducing DC offset in equalizer
12	6228/6331	601169	5086340	yes	yes		Precoder, NTSC rejection comb & digital postcoder
13	6364	611236	5087975	yes	yes	yes	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	yes			HDTV transmission on "taboo" channel
17	6393	653560	5113256		yes		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
20	6274	600457	5121208				Reverse hybrid
21	6247	539770	5128757				2D compressor with perceptual modelling
22	6328	600469	5132797				Comb plus intersymbol interference filter
23	6192	553822	5136375				Entropy encoding
24	5779CIP4	407596	5136381				Hybrid
25	5779CIP3	408152	5144431				Hybrid
26	6305	709960	5151785				Cochannel reduction with prefilter & inverse postfilter
27	6477	734841	5153723				Audio sampling rate = 3H (48 Khz adopted)
28	6367CIP	678778	5161015				Video peaking based on image classification
29	6328CIP	784334	5162900				Controllable comb & intersymbol interference filter
30		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		yes		Select comb/digital postcoder based on interference present
36	5779CIP6C	908772	5270816				Hybrid
37	6522	815711	5270824		yes		AGC for double conversion tuner
38	5892CIP2	746387	5280648		yes		Double balanced RF mixer
39	6402CIP2	894388	5416524	yes	yes	yes	Data segment sync & use for sampling data
40	6413CIP2	204972	5598220	yes	yes	yes	Field sync detection
41	6520	936144	5392315				FIR filter coefficient updating
42	6510	815721	5420646		yes		Bandswithed LO for double conversion synthesizer
43	6509	865407	5291291				Complementary transmit & receive filters for reducing cochannel

Schedule A (Page 2 of 3)

ID	DF Number	Serial No	Patent No	GASP	GAIP	16VSB	Description
44	6482	887624	5283653				Carrier regeneration in dual NTSC/HDTV receiver
45	6481`	907233			yes	yes	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				Muliplexed transmission of compressed video & aux data
51	6669	14889	5406587		yes	yes	Phase noise tracking loop
53	6614	931,172	5311318			yes	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			yes	Switched oscillator for carrier acquisition (also cap coupling to AD)
63	6738	175070	5631645			yes	Symbol to byte converter
66	6717	175014	5452009				Lower VSB modes for higher frequency channels
67	6726	221133	5475438		yes		Five field motion detector for scan line doubler
69	6767CIP	225201	5508748			yes	Data level selection for multilevel VSB
70	6789	259284	5475714		yes	yes	Feedback circuit for removing DC from demodulated signal
71	6732	272181	5583889		yes		MLS decder with linear (comb) filter
72	6732A	272357	5629958	yes	yes		Last 12 symbols of field copied to next field sync segment
73	6770	301931	5642154			yes	Cable maintenance responsive to field sync
74	6823	335603	5565932		yes		AGC controlled in response to received data
75	6811CIP	315153	5572532		yes	yes	Convolutional deinterleaver (CIP of 6727)
76	6754CIP	320362	5546130			yes	Dual mode AGC
77	6413C	324054	5534938	yes		yes	Digital transmission system with field & data segment sync
78	6810	303989	5574509		yes		Orienting HDTV antenna
79	6669CIPA	366656	5533070			yes	Phase tracking loop improvements
80	6669CIPB	366844	5533071			yes	Phase tracking loop improvements
81	6771CIP	354408	5627604			yes	Bi-phase stable FPLL with pilot augmentation
82	6858	386589	5602583				NTSC rejection filter with switched Tomlinson precoder
83	6753D	345886	5638140			yes	AFC filter for FPLL
84	6812	411000	5563884				Reducing multiplex litter in ATM/MPEG system
85	6737CIP	417581	5677911	yes		yes	Integral number of data bytes & RS blocks for all VSB modes
86	6874	481664	5619269	yes		yes	Field sync with middle 63 PN sequence alternately inverted
87	6769	475713	5594496		yes		Field comb used to determine switching for NTSC rejection filter
88	6873CIP	479428	5602595	yes	yes	yes	Use of segment sync instead of MPEG sync in 207 byte blocks
89	6875	474049	5574496		yes		Optimal offset NTSC/ATV & ATV/ATV
90	3139DC	493129	4449145		yes	yes	Claim9=equalizer implementation (FIR filters used for CCD)
91	6755C	500272	5621483			yes	FPLL polarity selector operated in response to segment sync
92	6904	501966				yes	VSB mode selection system
93	6894	520544			yes		NTSC rejection filter selection in response to energy comparison

Schedule A (Page 3 of 3)

ID	DF Number	Serial No	Patent No	GASP	GAIP	16VSB	Description
94	6613	516031			yes		Selective RF circuit for high quality tuner
95	6895	539155	5684827		yes		Equalizer controlled by DC variation of received signal
96	6919	539149	5572547		yes	yes	Equalizer controlled by differences in received FSYNC
97	6926	569975				yes	CIP of 6789, plus using DC to control eq & inversion
98	6894CIP	575008			yes		Replacement Cip of 6894
99	6732D	586441	5600677	yes			Trellis modulator design for terrestial VSB
100	6917	610171				yes	VSB modulation using digital and analog techniques
101	6732C	593733	5636251		yes		Receiver for trellis coded ATV signal
102	6921	627826					Slice points predicted by lowest path metric
103	6957	645175	5668498		yes	yes	Pilot used to determine FPLL polarity and use of input inverter
104	6967	661241					VSB mode detector
105	6961	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				Frequency lock detector responsive to zero crossings
108	6949	696427					Slip phase FPLL
109	6893	671464					MPEG transport MUX for independently clocked transport streams
110	6976	697544					Transport Mux with PCR restamper
111	6944	678902	5745004				FPLL with relocated 3rd multiplier
112	6971	687866					Data de-rotator and de-interleaver
113	6993	725870					SMPTE VSB input interface
114	6969	726498					Adjustment of sync levels in multi-mode VSB signal
115	6966	726597					Adjustment of sync levels in an AGC system
116	6966A	726501					Smaller of 1st & 3rd compared samples generates AGC signal
117	6954	729611					1st & 2nd filters for controllably reducing cochannel & noise
118	6934	583733	5692010				Adaptive equalizer with impulse noise protection
119	6994	734224					Stabilizing IF in HDTV modulator
120	6946	751895					Two step field sync identification system
121	6979	713778					Rotating data symbols to maintain proper decoding sequence
122	6998	745549					On-line nonlinear amplitude precorrection for ATV transmitter
123	7018	815560					Improved oscillator for ATV tuner
124	7017	815561					Hybrid transformer for ATV tuner mixer
125	7016	815559					Pin diode attenuator for ATV AGC circuit
126	6983	791521					Symbol synch recovery
127	6974	735855					Horiz synch separator for multi-standard synchs
128	6975	735615					HDTV compatible vertical synch separator
129	7046	933744					Testing arrangement for MPEG decoders
130	7049	951269					Frame to field converter for MPEG data
131	7038	943916					Double conv tuner with adjacent channel rejection
132	6904C	971746					VSB mode selection signal

SCHEDULE B

HDTV Patents

ZENITH ELECTRONICS CORPORATION

List of Existing License Agreements

None

313689.5

Resubmission
MM
7.28.98

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July 27, 1998

VIA EXPRESS MAIL
U.S. Patent and Trademark Office
Assignment Division
CG-4
1213 Jefferson Hwy
Suite 320
Washington, D.C. 20231
Attn.: Pearlene Foster, Examiner

Re: Document #100706109

Dear Ms. Foster:

Enclosed please find our corrected Patent Schedule for filing with the Assignment Branch.

Please proceed with the recording process. As always, do not hesitate to call with any questions or comments.

Sincerely yours,
WINSTON & STRAWN

Laura L. Konrath
Senior Legal Assistant

LLK/nak
Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
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JUNE 30, 1998

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WINSTON & STRAWN
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PEARLENE FOSTER, EXAMINER
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