

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT7283969

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
GRACENOTE, INC.	04/15/2021
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	ROKU, INC.
<b>Street Address:</b>	1155 COLEMAN AVE.
<b>City:</b>	SAN JOSE
<b>State/Country:</b>	CALIFORNIA
<b>Postal Code:</b>	95110
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	17722523
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(312)913-0002
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	3129130001
<b>Email:</b>	docketing@mbhb.com, huffman@mbhb.com
<b>Correspondent Name:</b>	MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP
<b>Address Line 1:</b>	300 SOUTH WACKER DRIVE, 32ND FLOOR
<b>Address Line 4:</b>	CHICAGO, ILLINOIS 60606
<b>ATTORNEY DOCKET NUMBER:</b>	18-1238-US-CON9
<b>NAME OF SUBMITTER:</b>	GREGORY M. HUFFMAN
<b>SIGNATURE:</b>	/Gregory M. Huffman/
<b>DATE SIGNED:</b>	04/18/2022
<b>Total Attachments: 38</b>	
source=18-1238-US-CON9_Patent-Assignment-to-Roku#page1.tif	
source=18-1238-US-CON9_Patent-Assignment-to-Roku#page2.tif	
source=18-1238-US-CON9_Patent-Assignment-to-Roku#page3.tif	
source=18-1238-US-CON9_Patent-Assignment-to-Roku#page4.tif	
source=18-1238-US-CON9_Patent-Assignment-to-Roku#page5.tif	
source=18-1238-US-CON9_Patent-Assignment-to-Roku#page6.tif	

source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page7.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page8.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page9.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page10.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page11.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page12.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page13.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page14.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page15.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page16.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page17.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page18.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page19.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page20.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page21.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page22.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page23.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page24.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page25.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page26.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page27.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page28.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page29.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page30.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page31.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page32.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page33.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page34.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page35.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page36.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page37.tif  
source=18-1238-US-CON9\_Patent-Assignment-to-Roku#page38.tif

## **PATENT ASSIGNMENT**

THIS PATENT ASSIGNMENT (together with all Attachments hereto, this “**Patent Assignment**”), entered into on April 15, 2021, is made and entered into by and between Gracenote, Inc., a Delaware corporation (the “**Seller**”), and Roku, Inc., a Delaware corporation (the “**Buyer**”). The Seller and the Buyer are referred to collectively herein as the “**Parties**” and individually as a “**Party**.” Capitalized terms used herein and not otherwise defined shall have the respective meanings ascribed thereto in the Purchase Agreement (as defined below).

WHEREAS, the Seller and certain of its Affiliates and the Buyer have entered into that certain Asset and Stock Purchase Agreement, dated as of February 28, 2021 (the “**Purchase Agreement**”), pursuant to which the Seller has agreed to sell to the Buyer all of the Seller’s right, title and interest in and to, among other things, the Patents and other Intellectual Property included in the Acquired Assets, including the Assigned Patents (as defined below); and

WHEREAS, the Seller and the Buyer desire to execute this Patent Assignment for purposes of, among other things, recording the assignment of the Assigned Patents and filing this Patent Assignment with the United States Patent and Trademark Office and/or any other applicable agencies outside of the United States, including to indicate ownership of the Intellectual Property described below.

NOW, THEREFORE, in consideration of the premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. **Assignment and Transfer.** The Seller hereby irrevocably and forever, without reservation, sells, assigns, conveys, transfers and delivers to the Buyer the Seller’s entire right, title and interest throughout the world in, to and under the patents and patent applications listed on Attachment 1 and the inventions and other Proprietary Information disclosed, described, embodied or claimed therein (the “**Assigned Patents**”), the same to be held and enjoyed by the Buyer for its own use and enjoyment and the use and enjoyment of its successors, assigns and other legal representatives to the full end of the term or terms for which Patents or other rights may be granted, as fully and entirely as the same would have been held and enjoyed by the Seller if this assignment had not been made and the Buyer hereby accepts from the Seller and succeeds to the Assigned Patents, including (a) all applications or counterparts in any jurisdiction pertaining to any of the foregoing, including applications filed pursuant to any international patent law treaty, together all worldwide rights and priorities afforded under any Law with respect to any of the foregoing, and any other Patents, applications or extensions that claim priority to or through any of the foregoing, and any inventions or other Proprietary Information disclosed, described, embodied or claimed in any of the foregoing, (b) continuations, continuations-in-part, divisionals, reissues, re-examinations, renewals, confirmations, substitutions and extensions thereof or related thereto, (c) all other rights of any kind whatsoever, whether statutory, common law or otherwise, in, arising out of, or associated with the foregoing in any jurisdiction worldwide, including those arising under international treaties and convention rights; (d) all rights and powers to assert, defend and recover title to any of the foregoing; (e) all rights to assert, defend, sue, and recover damages for any past, present and future infringement, misuse, misappropriation, impairment, unauthorized use or other violation of any rights in or to any of the foregoing; (f) all proceeds, income, royalties, damages and payments now or hereafter due and payable under or in respect of all of the foregoing (including with respect to past, present or future infringement or violation thereof); and (g) all administrative rights arising from the foregoing, including the right to file and prosecute applications and oppose, interfere with or challenge the applications of others and obtain legal protection pertaining to any of the foregoing.

2. **Terms of the Purchase Agreement.** None of the representations, warranties, covenants, obligations, rights or remedies of any party under the Purchase Agreement shall be deemed to be limited, qualified, enlarged, modified or altered in any way by the execution, delivery or acceptance of this Patent Assignment. In the event of any conflict or inconsistency between the terms of the Purchase Agreement and the terms hereof, the terms of the Purchase Agreement shall govern.

3. **Governing Law.** Section 10.2 of the Purchase Agreement shall apply *mutatis mutandis* to this Patent Assignment.

4. **Counterparts.** This Patent Assignment may be executed in multiple counterparts (including by means of copied or PDF signature pages), each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Counterpart signatures need not be on the same page and shall be deemed effective upon receipt. A signed copy of this Patent Assignment delivered by email or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original signed copy of this Patent Assignment.

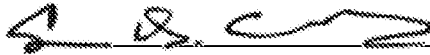
*[SIGNATURE PAGES TO FOLLOW]*

IN WITNESS WHEREOF, the Parties have executed this Patent Assignment as of the date first set forth above.

**SELLER:**

GRACENOTE, INC.

By:

A handwritten signature in black ink, appearing to read "G. D. Callard", written over a horizontal line.

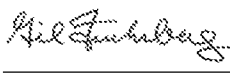
Name: George D. Callard

Title: President

IN WITNESS WHEREOF, the Parties have executed this Patent Assignment and as of the date first set forth above.

**BUYER:**

ROKU, INC.

By: 

Name: Gil Fuchsberg  
Title: Head of Corporate Development &  
Strategic Planning

Attachment 1  
**Schedule of AVA Patent Assets**

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN102- AVA-CN01	Computing System with Channel-Change-Based Trigger Feature	China	201780008900.2	1/5/2017	108604252	9/28/2018	N/A	N/A
GN102- AVA-CN02	Computing System with Content-Characteristic-Based Trigger Feature	China	201780009065.4	1/5/2017	108605150	9/28/2018	N/A	N/A
GN102- AVA-EP01	Computing System with Channel-Change-Based Trigger Feature	European Patent	17736335.5	1/5/2017	3400545	11/14/2018	N/A	N/A
GN102- AVA-EP02	Computing System with Content-Characteristic-Based Trigger Feature	European Patent	17736337.1	1/5/2017	3400709	11/14/2018	N/A	N/A
GN102- AVA-HK01	Computing System with Channel-Change-Based Trigger Feature	Hong Kong	19122959	1/5/2017	N/A	1/24/2020	N/A	N/A
GN102- AVA-HK02	Computing System with Channel-Change-Based Trigger Feature	Hong Kong	19122961.6	1/5/2017	N/A	1/24/2020	N/A	N/A
GN102- AVA-JP01	Computing System with Channel-Change-Based Trigger Feature	Japan	2018-535099	1/5/2017	2019-503139	1/31/2019	6707138	5/21/2020
GN102- AVA-JP02	Computing System with Content-Characteristic-Based Trigger Feature	Japan	2018-535104	1/5/2017	2019-507526	3/14/2019	6707139	5/21/2020
GN102- AVA-JP03	Computing System with Content-Characteristic-Based Trigger Feature	Japan	2020-087364	5/19/2020	2020-14121	9/3/2020	N/A	N/A
GN102- AVA-JP04	Computing System with Channel-Change-Based Trigger Feature	Japan	2020-087363	5/19/2020	2020-141420	9/3/2020	N/A	N/A
GN102- AVA-KR01	Computing System with Channel-Change-Based Trigger Feature	Korea, Republic of (KR)	10-2018-7021995	1/5/2017	N/A	N/A	2107499	4/28/2020
GN102- AVA-KR02	Computing System with Content-Characteristic-Based Trigger Feature	Korea, Republic of (KR)	10-2018-7021994	1/5/2017	N/A	N/A	2084510	2/27/2020
GN102- AVA-KR03	Computing System with Content-Characteristic-Based Trigger Feature	Korea, Republic of (KR)	2020-7005587	1/5/2017	N/A	N/A	2165080	10/6/2020
GN102- AVA-KR04	Computing System with Channel-Change-Based Trigger Feature	Korea, Republic of (KR)	2020-7012347	1/5/2017	N/A	N/A	2169466	10/19/2020
GN102- AVA-KR05	Computing System with Content-Characteristic-Based Trigger Feature	Korea, Republic of (KR)	2020-7028625	10/6/2020	N/A	N/A	10-2203496	1/11/2021
GN102- AVA-KR06	Computing System with Channel-Change-Based Trigger Feature	Korea, Republic of (KR)	2020-7029929	10/19/2020	N/A	N/A	2210075	1/26/2021
GN102- AVA-KR07	Computing System with Channel-Change-Based Trigger Feature	Korea, Republic of (KR)	2021-7002549	1/26/2021	N/A	N/A	N/A	N/A
GN102- AVA-KR08	Computing System with Content-Characteristic-Based Trigger Feature	Korea, Republic of (KR)	2021-7000757	1/11/2021	N/A	N/A	N/A	N/A
GN102- AVA-US01	Video Classifier	United States of America	62/275,081	1/5/2016	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN102-US02	Computing System with Channel-Change-Based Trigger Feature	United States of America	15/399,404	1/5/2017	US-2017-0195714	7/6/2017	10,939,185	3/2/2021
GN102-US03	Computing System with Content-Characteristic-Based Trigger Feature	United States of America	15/399,415	1/5/2017	US-2017-0195752	7/6/2017	10,484,758	11/19/2019
GN102-US05	Computing System with Content-Characteristic-Based Trigger Feature	United States of America	16/597,597	10/9/2019	US-2020-0045380	2/6/2020	10,841,665	11/17/2020
GN102-US06	Computing System with Content-Characteristic-Based Trigger Feature	United States of America	17/066,028	10/8/2020	US-2021-0029417	1/28/2021	N/A	N/A
GN102-US07	Computing System with Channel-Change-Based Trigger Feature	United States of America	17/175,788	2/15/2021	N/A	N/A	N/A	N/A
GN102-AVA-WO01	Computing System with Channel-Change-Based Trigger Feature	Patent Cooperation Treaty	PCT/US2017/012336	1/5/2017	WO2017/120337	7/13/2017	N/A	N/A
GN102-AVA-WO02	Computing System with Content-Characteristic-Based Trigger Feature	Patent Cooperation Treaty	PCT/US2017/012338	1/5/2017	WO2017/120339	7/13/2017	N/A	N/A
GN111-AVA-CN01	Detecting and Responding to Rendering of Interactive Video Content	China	201880038769.9	5/11/2018	110731085	1/24/2020	N/A	N/A
GN111-AVA-EP01	Detecting and Responding to Rendering of Interactive Video Content	European Patent	18816920.5	5/11/2018	3639522	4/22/2020	N/A	N/A
GN111-AVA-HK01	Detecting and Responding to Rendering of Interactive Video Content	Hong Kong	62020006472.8	4/24/2020	40017015A	9/18/2020	N/A	N/A
GN111-AVA-JP01	Detecting and Responding to Rendering of Interactive Video Content	Japan	2019-568685	5/11/2018	2020-523871	8/6/2020	N/A	N/A
GN111-AVA-KR01	Detecting and Responding to Rendering of Interactive Video Content	Korea, Republic of (KR)	2019-7036619	5/11/2018	N/A	N/A	N/A	N/A
GN111-AVA-US01	Detecting and Responding to Rendering of Interactive Video Content	United States of America	15/620,440	6/12/2017	US-2018-0359040	12/13/2018	10,972,203	4/6/2021
GN111-AVA-US02	Detecting and Responding to Rendering of Interactive Video Content	United States of America	16/015,771	6/22/2018	US-2018-0359041	12/13/2018	10,972,204	4/6/2021
GN111-AVA-US03	Detecting and Responding to Rendering of Interactive Video Content	United States of America	17/249,318	2/26/2021	N/A	N/A	N/A	N/A
GN111-AVA-WO01	Detecting and Responding to Rendering of Interactive Video Content	Patent Cooperation Treaty	PCT/US2018/032202	5/11/2018	WO2018/231393	12/20/2018	N/A	N/A
GN117-AVA-CN02	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	China	201780013808.5	2/28/2017	108702524	10/23/2018	108702524	6/11/2019



## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN117- AVA-CN03	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	China	201780013813.6	2/28/2017	108702525	10/23/2018	108702525	9/27/2019
GN117- AVA-CN04	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	China	201780014047.5	2/28/2017	108702543	10/23/2018	201780014047.5	8/30/2019
GN117- AVA-CN05	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Time of Broadcast	China	201780013811.7	2/28/2017	CN108713321A	10/26/2018	201780013811.7	6/11/2019
GN117- AVA-CN06	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	China	201780013817.4	2/28/2017	108702531	10/23/2018	201780013817.4	7/14/2020
GN117- AVA-CN07	Method and System for Detecting and Responding to Changing of Media Channel	China	201780014054.5	2/28/2017	108702545	10/23/2018	201780014054.5	12/25/2020
GN117- AVA-CN08	Media Channel Identification and Action with Multi-Media Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	China	201780014008.5	2/28/2017	108885629	11/23/2018	108885629	11/11/2019
GN117- AVA-CN09	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Time of Broadcast	China	201910491796.8	2/28/2017	110149162	8/20/2019	N/A	N/A
GN117- AVA-CN10	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	China	201910492421.3	2/28/2017	110266418	9/20/2019	N/A	N/A
GN117- AVA-CN11	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	China	201910743945.5	2/28/2017	CN110516111A	11/29/2019	N/A	N/A
GN117- AVA-CN12	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	China	201910849752.8	9/9/2019	110650356	1/3/2020	N/A	N/A
GN117- AVA-CN13	Media Channel Identification and Action with Multi-Media Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	China	201911035354.9	10/29/2019	CN110891186A	3/17/2020	N/A	N/A
GN117- AVA-CN14	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	China	202010710569.2	7/22/2020	CN111954026A	11/17/2020	N/A	N/A
GN117- AVA-CN15	Method and System for Detecting and Responding to Changing of Media Channel	China	202011606627.3	12/30/2020	N/A	N/A	N/A	N/A
GN117- AVA-DE01	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	Germany (Federal Republic of)	17760624.1	2/28/2017	3424221	1/9/2019	3424221	9/23/2020
GN117- AVA-DE02	Method and System for Detecting and Responding to Changing of Media Channel	Germany (Federal Republic of)	17760641.5	2/28/2017	3424226	1/9/2019	3424226	12/23/2020
GN117- AVA-DE03	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	Germany (Federal Republic of)	17760606.8	2/28/2017	3424219	1/9/2019	3424219	1/20/2021
GN117- AVA-EP02	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	European Patent	17760596.1	2/28/2017	3424218	1/9/2019	N/A	N/A
GN117- AVA-EP03	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	European Patent	17760606.8	2/28/2017	3424219	1/9/2019	3424219	1/20/2021

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN117- AVA-EP04	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	European Patent	17760594.6	2/28/2017	3424224	1/9/2019	N/A	N/A
GN117- AVA-EP05	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Time of Broadcast	European Patent	17760609.2	2/28/2017	3424220	1/9/2019	N/A	N/A
GN117- AVA-EP06	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	European Patent	17760624.1	2/28/2017	3424221	1/9/2019	3424221	9/23/2020
GN117- AVA-EP07	Method and System for Detecting and Responding to Changing of Media Channel	European Patent	17760641.5	2/28/2017	3424226	1/9/2019	3424226	12/23/2020
GN117- AVA-EP08	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	European Patent	20197250.2	2/28/2017	3780630	2/17/2021	N/A	N/A
GN117- AVA-EP09	Method and System for Detecting and Responding to Changing of Media Channel	European Patent	20216175.8	12/21/2021	N/A	N/A	N/A	N/A
GN117- AVA-EP10	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	European Patent	21152181	1/18/2021	N/A	N/A	N/A	N/A
GN117- AVA-FR01	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	France	17760624.1	2/28/2017	3424221	1/9/2019	3424221	9/23/2020
GN117- AVA-FR02	Method and System for Detecting and Responding to Changing of Media Channel	France	17760641.5	2/28/2017	3424226	1/9/2019	3424226	12/23/2020
GN117- AVA-FR03	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	France	17760606.8	2/28/2017	3424219	1/9/2019	3424219	1/20/2021
GN117- AVA-GB01	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	United Kingdom	17760624.1	2/28/2017	3424221	1/9/2019	3424221	9/23/2020
GN117- AVA-GB02	Method and System for Detecting and Responding to Changing of Media Channel	United Kingdom	17760641.5	2/28/2017	3424226	1/9/2019	3424226	12/23/2020
GN117- AVA-GB03	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	United Kingdom	17760606.8	2/28/2017	3424219	1/9/2019	3424219	1/20/2021
GN117- AVA-HK01	Media Channel Identification and Action with Multi-Media Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	Hong Kong	18116199.5	2/28/2017	1257063	10/11/2019	HK1257063	8/14/2020
GN117- AVA-HK02	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	Hong Kong	18115982.8	12/12/2018	1256881	10/4/2019	1256881	7/3/2020
GN117- AVA-HK03	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	Hong Kong	18116198.6	2/28/2017	1257062	10/11/2019	HK1257062	6/5/2020
GN117- AVA-HK04	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	Hong Kong	18115983.7	12/12/2018	1256882	7/3/2020	1256882	7/3/2020
GN117- AVA-HK05	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Time of Broadcast	Hong Kong	18116196.8	2/28/2017	1257060	6/5/2020	1257060	6/5/2020

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN117-	Media Channel Identification and Action with Multi-Match							
AVA-HK06	Detection Based on Reference Stream Comparison	Hong Kong	18116030.8	12/13/2018	1256916	10/4/2019	N/A	N/A
GN117-	Method and System for Detecting and Responding to							
AVA-HK07	Changing of Media Channel	Hong Kong	18116197.7	1/20/2021	1257061	10/11/2019	N/A	N/A
GN117-	Media Channel Identification with Video Multi-Match Detection							
AVA-HK08	and Disambiguation Based on Time of Broadcast	Hong Kong	19129352.1	2/28/2017	40005878	5/15/2020	N/A	N/A
GN117-	Media Channel Identification with Multi-Match Detection and							
AVA-HK09	Disambiguation Based on Location	Hong Kong	19131577.9	10/28/2019	40007997	6/5/2020	N/A	N/A
GN117-	Media Channel Identification with Video Multi-Match Detection							
AVA-HK10	and Disambiguation Based on Audio Fingerprint	Hong Kong	42019000111	12/19/2019	40010385	7/3/2020	N/A	N/A
GN117-	Media Channel Identification with Multi-Match Detection and							
AVA-HK11	Disambiguation Based on Single-Match	Hong Kong	42020003832.1	3/6/2020	40013816	8/14/2020	N/A	N/A
GN117-	Media Channel Identification and Action with Multi-Media							
AVA-HK12	Differential Reference-Fingerprint Based on Matching with	Hong Kong	42020006281.8	4/22/2020	40016289	9/11/2020	N/A	N/A
GN117-	Media Channel Identification and Action with Multi-Match							
AVA-HK13	Detection Based on Reference Stream Comparison	Hong Kong	42020022125.7	12/15/2020	N/A	N/A	N/A	N/A
GN117-	Media Channel Identification with Multi-Match Detection and							
AVA-JP02	Disambiguation Based on Location	Japan	2018-532652	2/28/2017	2019/511138	4/18/2019	6556366	7/19/2019
GN117-	Media Channel Identification with Multi-Match Detection and							
AVA-JP03	Disambiguation Based on Single-Match	Japan	2018-532558	2/28/2017	2019-508923	3/28/2019	6556364	7/19/2019
GN117-	Media Channel Identification with Video Multi-Match Detection							
AVA-JP04	and Disambiguation Based on Audio Fingerprint	Japan	2018-532651	2/28/2017	2019-507515	3/14/2019	6556365	7/19/2019
GN117-	Media Channel Identification with Video Multi-Match Detection							
AVA-JP05	and Disambiguation Based on Time of Broadcast	Japan	2018-532646	2/28/2017	N/A	N/A	6490874	3/8/2019
GN117-	Media Channel Identification and Action with Multi-Match							
AVA-JP06	Detection Based on Reference Stream Comparison	Japan	2018-532653	2/28/2017	2019-507516	3/14/2019	6707137	5/21/2020
GN117-	Method and System for Detecting and Responding to							
AVA-JP07	Changing of Media Channel	Japan	2018-532647	2/28/2017	N/A	N/A	6490875	3/8/2019
GN117-	Media Channel Identification with Multi-Match Detection and							
AVA-JP08	Disambiguation Based on Time of Broadcast	Japan	2019-033878	6/21/2016	2019-146168	8/29/2019	6842482	2/24/2021
GN117-	Method and System for Detecting and Responding to							
AVA-JP09	Changing of Media Channel	Japan	2019-033879	6/21/2018	2019-146169	8/29/2019	N/A	N/A
GN117-	Media Channel Identification with Multi-Match Detection and							
AVA-JP10	Disambiguation Based on Single-Match	Japan	2019-127486	7/9/2019	2019-216425	12/19/2019	6839733	2/17/2021
GN117-	Media Channel Identification with Multi-Match Detection and							
AVA-JP11	Disambiguation Based on Location	Japan	2019-127487	2/28/2017	2019-201415	11/21/2019	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN117- AVA-JP12	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	Japan	2019-127485	7/9/2019	2019-220958	12/26/2019	6818093	1/4/2021
GN117- AVA-JP13	Media Channel Identification and Action with Multi-Media Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	Japan	2020-087362	5/19/2020	2020-145722	9/10/2020	N/A	N/A
GN117- AVA-JP14	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	Japan	2020-216275	12/25/2020	N/A	N/A	N/A	N/A
GN117- AVA-JP15	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	Japan	2021-021605	2/15/2021	N/A	N/A	N/A	N/A
GN117- AVA-JP16	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Time of Broadcast	Japan	2021-025105	2/19/2021	N/A	N/A	N/A	N/A
GN117- AVA-KR02	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	Korea, Republic of (KR)	10-2018-7026917	2/28/2017	10-2018-0105748	9/28/2018	10-1994204	6/24/2019
GN117- AVA-KR03	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	Korea, Republic of (KR)	10-2018-7026919	2/28/2017	10-2018-0105749	9/28/2018	10-1992705	6/19/2019
GN117- AVA-KR04	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	Korea, Republic of (KR)	10-2018-7026928	2/28/2017	N/A	N/A	10-2024105	9/17/2019
GN117- AVA-KR05	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Time of Broadcast	Korea, Republic of (KR)	10-2018-7026922	2/28/2017	N/A	N/A	1985826	5/29/2019
GN117- AVA-KR06	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	Korea, Republic of (KR)	2018-7026930	2/28/2017	N/A	N/A	10-2127851	6/23/2020
GN117- AVA-KR07	Method and System for Detecting and Responding to Changing of Media Channel	Korea, Republic of (KR)	10-2018-7026927	2/28/2017	N/A	N/A	1922997	11/22/2018
GN117- AVA-KR08	Method And System For Detecting And Responding To Changing Of Media Channel	Korea, Republic of (KR)	2018-7033849	2/28/2017	20180128085	11/30/2018	1969812	4/11/2019
GN117- AVA-KR09	Method and System for Detecting and Responding to Changing of Media Channel	Korea, Republic of (KR)	2019-7010400	2/28/2017	N/A	N/A	2000130	7/9/2019
GN117- AVA-KR10	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Time of Broadcast	Korea, Republic of (KR)	2019-7015434	5/29/2019	N/A	N/A	2073679	1/30/2020
GN117- AVA-KR11	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	Korea, Republic of (KR)	2019-7018143	6/24/2019	N/A	N/A	2075447	2/4/2020
GN117- AVA-KR12	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	Korea, Republic of (KR)	2019-7017586	6/19/2019	N/A	N/A	2131125	7/1/2020
GN117- AVA-KR13	Method and System for Detecting and Responding to Changing of Media Channel	Korea, Republic of (KR)	2019-7019883	2/28/2017	N/A	N/A	2034031	10/14/2019
GN117- AVA-KR14	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	Korea, Republic of (KR)	2019-7027093	2/28/2017	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN117- AVA-KR15	Method and System for Detecting and Responding to Changing of Media Channel	Korea, Republic of (KR)	2019-7030056	7/9/2019	N/A	N/A	N/A	N/A
GN117- AVA-KR16	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Time of Broadcast	Korea, Republic of (KR)	2020-7002893	1/30/2020	N/A	N/A	N/A	N/A
GN117- AVA-KR17	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	Korea, Republic of (KR)	2020-7003274	2/4/2020	N/A	N/A	2108895	5/4/2020
GN117- AVA-KR18	Media Channel Identification and Action with Multi-Media Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	Korea, Republic of (KR)	2020-7012779	5/4/2020	N/A	N/A	N/A	N/A
GN117- AVA-KR19	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	Korea, Republic of (KR)	2020-7018119	6/23/2020	N/A	N/A	N/A	N/A
GN117- AVA-KR20	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	Korea, Republic of (KR)	2020-7019002	7/1/2020	N/A	N/A	N/A	N/A
GN117- AVA-US01	Method and System for Media Channel Identification with Multi-Match Detection and Disambiguation, and Channel-Changing Detection	United States of America	62/301,293	2/29/2016	N/A	N/A	N/A	N/A
GN117- AVA-US02	Method and System for Media Channel Identification with Multi-match Detection and Disambiguation, and Channel-changing Detection	United States of America	62/301,616	2/29/2016	N/A	N/A	N/A	N/A
GN117- AVA-US03	Method and System for Media Channel Identification with Multi-match Detection and Disambiguation, and Channel-changing Detection	United States of America	62/301,623	2/29/2016	N/A	N/A	N/A	N/A
GN117- AVA-US04	Media Channel Identification and Action with Multi-Media Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	United States of America	15/442,114	2/24/2017	US-2017-0251250	8/31/2017	9,992,533	6/5/2018
GN117- AVA-US05	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	United States of America	15/179,143	6/10/2016	US-2017-0251280	8/31/2017	9,924,222	3/20/2018
GN117- AVA-US06	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	United States of America	15/222,405	7/28/2016	US-2017-0251248	8/31/2017	10,063,918	8/28/2018
GN117- AVA-US07	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	United States of America	15/253,354	8/31/2016	US-2017-0251249	8/31/2017	9,930,406	3/27/2018
GN117- AVA-US08	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Time of Broadcast	United States of America	15/343,895	11/4/2016	US-2017-0251281	8/31/2017	10,045,073	8/7/2018
GN117- AVA-US09	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	United States of America	15/443,580	2/27/2017	US-2017-0251251	8/31/2017	10,104,426	10/16/2018
GN117- AVA-US10	Method and System for Detecting and Responding to Changing of Media Channel	United States of America	15/443,615	2/27/2017	US-2017-0251247	8/31/2017	10,045,074	8/7/2018
GN117- AVA-US11	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	United States of America	15/842,189	12/14/2017	US-2018-0109841	4/19/2018	10,149,007	12/4/2018

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN117- AVA-US12	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	United States of America	15/842,206	12/14/2017	US-2018-0109639	4/19/2018	10,057,638	8/21/2018
GN117- AVA-US13	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	United States of America	16/015,783	6/22/2018	US-2018-0316967	11/1/2018	10,567,835	2/18/2020
GN117- AVA-US14	Media Channel Identification and Action with Multi-Match Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	United States of America	15/982,437	5/17/2018	US-2018-0270529	9/20/2018	10,523,999	12/31/2019
GN117- AVA-US15	Media Channel Identification and Action with Multi-Match Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	United States of America	16/017,190	6/25/2018	US-2018-0310053	10/25/2018	10,524,000	12/31/2019
GN117- AVA-US16	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Audio Fingerprint	United States of America	16/017,203	6/25/2018	US-2018-0310057	10/25/2018	10,440,430	10/8/2019
GN117- AVA-US17	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	United States of America	16/017,218	6/25/2018	US-2018-0310054	10/25/2018	10,412,448	9/10/2019
GN117- AVA-US18	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Time of Broadcast	United States of America	16/015,800	6/22/2018	US-2018-0302668	10/18/2018	10,419,814	9/17/2019
GN117- AVA-US19	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	United States of America	16/015,811	6/22/2018	US-2018-0302669	10/18/2018	10,225,605	3/5/2019
GN117- AVA-US20	Method and System for Detecting and Responding to Changing Of Media Channel	United States of America	16/015,827	6/22/2018	US-2018-0302670	10/18/2018	10,531,150	1/7/2020
GN117- AVA-US21	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	United States of America	16/246,746	1/14/2019	US-2019-0149877	5/16/2019	10,575,052	2/25/2020
GN117- AVA-US22	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Time of Broadcast	United States of America	16/276,050	2/14/2019	US-2019-0182540	6/13/2019	10,848,820	11/24/2020
GN117- AVA-US23	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	United States of America	16/274,975	2/13/2019	US-2019-0182539	6/13/2019	10,536,746	1/14/2020
GN117- AVA-US24	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	United States of America	16/274,966	2/13/2019	US-2019-0182541	6/13/2019	10,631,049	4/21/2020
GN117- AVA-US25	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	United States of America	16/276,061	2/14/2019	US-2019-0182542	6/13/2019	10,567,836	2/18/2020
GN117- AVA-US26	Media Channel Identification and Action with Multi-Match Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	United States of America	15/929,180	12/5/2019	US-2020-0154164	5/14/2020	10,972,786	4/6/2021
GN117- AVA-US27	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	United States of America	15/929,167	11/19/2019	15/929167	3/19/2020	N/A	N/A
GN117- AVA-US28	Method and System for Detecting and Responding to Changing of Media Channel	United States of America	15/929,179	12/5/2019	US-2020-0149290	5/14/2020	10,805,673	10/13/2020

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN117- AVA-US29	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	United States of America	15/929,193	12/19/2019	US-2020-0128295	4/23/2020	10,939,162	3/2/2021
GN117- AVA-US30	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	United States of America	15/929,203	1/10/2020	US-2020-0267444	8/20/2020	N/A	N/A
GN117- AVA-US31	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	United States of America	16/819,657	3/16/2020	US-2020-0221173	7/9/2020	N/A	N/A
GN117- AVA-US32	Method and System for Detecting and Responding to Changing of Media Channel	United States of America	16/946,888	7/10/2020	US-2020-0344521	10/29/2020	N/A	N/A
GN117- AVA-US33	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Time of Broadcast	United States of America	16/949,183	10/19/2020	US-2021-0037825	2/4/2021	N/A	N/A
GN117- AVA-US34	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	United States of America	17/248,352	1/21/2021	N/A	N/A	N/A	N/A
GN117- AVA-US35	Media Channel Identification and Action with Multi-Match Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	United States of America	17/249,107	2/19/2021	N/A	N/A	N/A	N/A
GN117- AVA- WO01	Media Channel Identification and Action with Multi-Match Detection and Disambiguation Based on Matching with Differential Reference-Fingerprint Feature	Patent Cooperation Treaty	PCT/US2017/019974	2/28/2017	WO2017/151633	9/8/2017	N/A	N/A
GN117- AVA- WO02	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Location	Patent Cooperation Treaty	PCT/US2017/019915	2/28/2017	WO2017/151596	9/8/2017	N/A	N/A
GN117- AVA- WO03	Media Channel Identification with Multi-Match Detection and Disambiguation Based on Single-Match	Patent Cooperation Treaty	PCT/US2017/019946	2/28/2017	WO2017/151611	9/8/2017	N/A	N/A
GN117- AVA- WO04	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Audio Fingerprint	Patent Cooperation Treaty	PCT/US2017/019908	2/28/2017	WO2017/151591	9/8/2017	N/A	N/A
GN117- AVA- WO05	Media Channel Identification with Video Multi-Match Detection and Disambiguation Based on Time of Broadcast	Patent Cooperation Treaty	PCT/US2017/019949	2/28/2017	WO2017/151614	9/8/2017	N/A	N/A
GN117- AVA- WO06	Media Channel Identification and Action with Multi-Match Detection Based on Reference Stream Comparison	Patent Cooperation Treaty	PCT/US2017/019979	2/28/2017	WO2017/151636	9/8/2017	N/A	N/A
GN117- AVA- WO07	Method and System for Detecting and Responding to Changing of Media Channel	Patent Cooperation Treaty	PCT/US2017/020003	2/28/2017	WO2017/151654	9/8/2017	N/A	N/A
GN119- AVA-EP01	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	European Patent	4744496.3	7/5/2004	1647144	4/19/2006	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	Japan	2006-518477	7/5/2004	2007-528144	10/4/2007	N/A	N/A
GN119-US01	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	10/564,297	7/5/2004	US-2006-0190776	8/24/2006	8,020,000	9/13/2011
GN119-AVA-US02	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	13/220,267	8/29/2011	US-2012-0016876	1/19/2012	8,660,267	2/25/2014
GN119-AVA-US03	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	14/151,879	1/10/2014	US-2014-0130077	5/8/2014	9,066,114	6/23/2015
GN119-AVA-US04	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	14/659,044	3/16/2015	US-2015-0189380	7/2/2015	9,407,962	8/2/2016
GN119-AVA-US05	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	15/164,605	5/25/2016	US-2016-0269780	9/15/2016	9,479,831	10/25/2016
GN119-AVA-US06	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	15/273,185	9/22/2016	US-2017-0013291	1/12/2017	9,712,853	7/18/2017
GN119-AVA-US07	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	15/622,024	6/13/2017	US-2017-0289590	10/5/2017	10,045,054	8/7/2018
GN119-AVA-US08	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	16/018,022	6/25/2018	US-2019-0045240	2/7/2019	10,250,916	4/2/2019
GN119-AVA-US09	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	16/264,134	1/31/2019	US-2019-0327502	10/24/2019	10,595,053	3/17/2020
GN119-AVA-US10	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	United States of America	16/815,720	3/11/2020	US-2020-0322653	10/8/2020	N/A	N/A
GN119-AVA-WO01	Method and Device for Generating and Detecting a Fingerprint Functioning as a Trigger Marker in a Multimedia Signal	Patent Cooperation Treaty	PCT/IB2004/051128	7/5/2004	WO2005006758	1/20/2005	N/A	N/A
GN123-AVA-US01	Method and System for Remotely Controlling Media Systems	United States of America	61/170,586	4/17/2009	N/A	N/A	N/A	N/A
GN123-AVA-US02	Method And System For Remotely Controlling Consumer Electronic Devices	United States of America	61/293,798	1/8/2010	N/A	N/A	N/A	N/A
GN123-AVA-US03	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	12/760,004	4/14/2010	US-2010-0269128	10/21/2010	9,015,741	4/21/2015
GN123-AVA-US04	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	14/659,971	3/17/2015	US-2015-0195597	7/9/2015	9,992,518	6/5/2018
GN123-AVA-US05	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	15/287,116	10/6/2016	US-2017-0026697	1/26/2017	9,998,767	6/12/2018
GN123-AVA-US06	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	15/292,705	10/13/2016	US-2017-0034549	2/2/2017	9,706,233	7/11/2017



## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN123-US07	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	15/614,566	6/5/2017	US-2017-0280176	9/28/2017	10,250,919	4/2/2019
GN123-US08	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/018,050	6/26/2018	US-2019-0007712	1/3/2019	10,341,697	7/2/2019
GN123-US09	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/390,595	4/22/2019	US-2019-0306546	10/3/2019	10,979,742	4/13/2021
GN123-US10	Method and System for Remotely Controlling Consumer Electronic Device	United States of America	16/390,627	4/22/2019	US-2019-0261034	8/22/2019	10,972,763	4/6/2021
GN123-US11	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/390,631	4/22/2019	US-2019-0261035	8/22/2019	10,972,764	4/6/2021
GN123-US12	Method and System for Remotely Controlling Consumer Electronic Device	United States of America	16/390,644	4/22/2019	US-2019-0261036	8/22/2019	10,701,410	6/30/2020
GN123-US13	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/403,075	5/3/2019	N/A	N/A	N/A	N/A
GN123-US14	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/403,084	5/3/2019	US-2019-0268636	8/29/2019	N/A	N/A
GN123-US15	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/403,089	5/3/2019	US-2019-0268637	8/29/2019	10,735,782	8/4/2020
GN123-US16	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/403,096	5/3/2019	US-2019-0306547	10/3/2019	N/A	N/A
GN123-US17	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/403,105	5/3/2019	US-2019-0268638	8/29/2019	N/A	N/A
GN123-US18	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/403,111	5/3/2019	US-2019-0268639	8/29/2019	N/A	N/A
GN123-US19	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/568,407	9/12/2019	US-2020-0007908	1/2/2020	10,701,411	6/30/2020
GN123-US20	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/568,414	9/12/2019	US-2020-0007909	1/2/2020	10,715,841	7/14/2020
GN123-US21	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/568,438	9/12/2019	US-2020-0007910	1/2/2020	10,701,412	6/30/2020
GN123-US22	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/568,445	9/12/2019	US-2020-0007911	1/2/2020	10,904,589	1/26/2021
GN123-US23	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/775,126	1/28/2020	US-2020-0177933	6/4/2020	10,972,766	4/6/2021
GN123-US25	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/828,522	3/24/2020	US-2020-0236409	7/23/2020	N/A	N/A
GN123-AVA-US26	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/845,392	4/10/2020	US-2020-0252665	8/6/2020	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN123-	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/836,280	3/31/2020	US-2020-0245007	7/30/2020	N/A	N/A
AVA-US27	Electronic Devices	United States of America	16/836,417	3/31/2020	US-2020-0245008	7/30/2020	N/A	N/A
GN123-	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	16/881,397	5/22/2020	US-2020-0344503	10/29/2020	N/A	N/A
GN123-	Method and System for Remotely Controlling Consumer Electronic Devices	United States of America	61/409,018	11/1/2010	N/A	N/A	N/A	N/A
AVA-US01	Method and System for Presenting Additional Content at a Media System	United States of America	13/286,138	10/31/2011	US-2012-0117584	5/10/2012	8,863,165	10/14/2014
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	14/475,971	9/3/2014	US-2015-0089526	3/26/2015	N/A	N/A
AVA-US03	Method and System for Presenting Additional Content at a Media System	United States of America	15/375,698	12/12/2016	US-2017-0094351	3/30/2017	10,506,291	12/10/2019
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/017,900	6/25/2018	US-2018-0310058	10/25/2018	N/A	N/A
AVA-US05	Method and System for Presenting Additional Content at a Media System	United States of America	16/017,910	6/25/2018	US-2018-0302672	10/18/2018	10,341,734	7/2/2019
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/017,926	6/25/2018	US-2018-0302673	10/18/2018	N/A	N/A
AVA-US07	Method and System for Presenting Additional Content at a Media System	United States of America	16/670,954	10/31/2019	US-2020-0068256	2/27/2020	N/A	N/A
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/670,956	10/31/2019	US-2020-0068257	2/27/2020	10,904,629	1/26/2021
AVA-US08	Method and System for Presenting Additional Content at a Media System	United States of America	16/670,961	10/31/2019	US-2020-0068258	2/27/2020	10,972,764	4/6/2021
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/670,965	10/31/2019	US-2020-0068259	2/27/2020	10,979,772	4/13/2021
AVA-US10	Method and System for Presenting Additional Content at a Media System	United States of America	16/670,983	10/31/2019	US-2020-0068260	2/27/2020	10,869,095	12/15/2020
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/835,201	3/30/2020	US-2020-0228870	7/16/2020	N/A	N/A
AVA-US13	Method and System for Presenting Additional Content at a Media System	United States of America	16/835,203	3/30/2020	US-2020-0228871	7/16/2020	N/A	N/A
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/835,204	3/30/2020	US-2020-0236435	7/23/2020	N/A	N/A
AVA-US15	Method and System for Presenting Additional Content at a Media System	United States of America	16/835,206	3/30/2020	US-2020-0228872	7/16/2020	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/835,209	3/30/2020	US-2020-0228873	7/16/2020	N/A	N/A
AVA-US17	Method and System for Presenting Additional Content at a Media System	United States of America	16/835,213	3/30/2020	US-2020-0228874	7/16/2020	N/A	N/A
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/835,215	3/30/2020	US-2020-0228875	7/16/2020	N/A	N/A
GN124-	Method and System for Presenting Additional Content at a Media System	United States of America	16/835,217	3/30/2020	US-2020-0228876	7/16/2020	N/A	N/A
AVA-US20	Selection of Content from a Stream of Video or Audio Data	China	200580027251.8	8/9/2005	CN101002472A	7/18/2007	CN100592789C	2/24/2010
GN125-	Selection of Content from a Stream of Video or Audio Data	Germany (Federal Republic of)	5773404.8	8/9/2005	1779659	5/2/2007	1779659	10/7/2020
AVA-DE01	Selection of Content from a Stream of Video or Audio Data	European Patent	5773404.8	8/9/2005	1779659	5/2/2007	1779659	10/7/2020
GN125-	Selection of Content from a Stream of Video or Audio Data	Japan	2007-525435	8/9/2005	2008-510345	4/3/2008	4842944	12/21/2011
	Selection of Content from a Stream of Video or Audio Data	Korea, Republic of (KR)	10-2007-7003067	2/8/2007	10-2007-0046846	5/3/2007	N/A	N/A
GN125-	Selection of Content from a Stream of Video or Audio Data	United States of America	11/573,455	8/9/2005	US-2009-0226148	9/10/2009	8,406,607	3/26/2013
AVA-US01	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	13/778,439	2/27/2013	US-2013-0302011	11/14/2013	9,143,718	9/22/2015
GN125-	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	14/789,048	7/1/2015	US-2015-0304597	10/22/2015	9,414,008	8/9/2016
AVA-US03	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	15/204,366	7/7/2016	US-2016-0323533	11/3/2016	9,736,549	8/15/2017
GN125-	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	15/285,056	10/4/2016	US-2017-0026716	1/26/2017	9,794,644	10/17/2017
AVA-US05	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	15/703,687	9/13/2017	US-2018-0014088	1/11/2018	9,986,306	5/29/2018
GN125-	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	15/971,608	8/9/2005	US-2018-0316986	11/1/2018	10,555,052	2/4/2020
AVA-US07	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	16/734,081	8/9/2005	US-2020-0145731	5/7/2020	10,945,049	3/9/2021
GN125-	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	16/734,283	1/3/2020	US-2020-0145732	5/7/2020	10,924,816	2/16/2021
AVA-US09	Method and Apparatus for Selection of Content from a Stream of Data	United States of America	17/148,700	1/14/2021	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN125- AVA- WO01	Selection of Content from a Stream of Video or Audio Data	Patent Cooperation Treaty	PCT/IB2005/052642	8/9/2005	WO2006/018790	2/23/2006	N/A	N/A
GN126- AVA-US01	Identifying Video Content Via Fingerprint Matching	United States of America	13/735,426	1/7/2013	US-2014-0195548	7/10/2014	9,495,451	11/15/2016
GN126- AVA-US02	Identifying Media Content Via Fingerprint Matching	United States of America	15/287,063	10/6/2016	US-2017-0024470	1/26/2017	10,866,988	12/15/2020
GN126- AVA-US03	Video Fingerprinting	United States of America	14/263,647	4/28/2014	US-2014-0236988	8/21/2014	9,323,840	4/26/2016
GN126- AVA-US04	Video Fingerprinting	United States of America	15/136,412	4/22/2016	US-2016-0267180	9/15/2016	N/A	N/A
GN126- AVA-US05	Identifying Media Content Via Fingerprint Matching	United States of America	17/096,826	11/12/2020	20210064654	3/4/2021	N/A	N/A
GN126- AVA- WO01	Video Fingerprinting	Patent Cooperation Treaty	PCT/US2015/027117	4/22/2015	WO2015/167901	11/5/2015	N/A	N/A
GN127- AVA-US01	Inserting Advertisements into Video Content	United States of America	61/749,518	1/7/2013	N/A	N/A	N/A	N/A
GN127- AVA-US02	Inserting Advertisements into Video Content	United States of America	13/826,282	3/14/2013	US-2014-0196085	7/10/2014	9,794,642	10/17/2017
GN127- AVA-US03	Inserting Advertisements into Video Content	United States of America	15/700,054	9/8/2017	US-2018-0020265	1/18/2018	10,110,970	10/23/2018
GN127- AVA-US04	Inserting Advertisements into Video Content	United States of America	16/018,056	6/26/2018	US-2019-0007748	1/3/2019	10,595,097	3/17/2020
GN127- AVA-US05	Inserting Advertisements into Video Content	United States of America	16/779,547	1/31/2020	US-2020-0245034	7/30/2020	N/A	N/A
GN128- AVA-AU01	Authorizing Devices Based on Identifying Content Distributor	Australia	2013371482	12/18/2013	2013371482	8/20/2015	2013371482	12/18/2017
GN128- AVA-DE01	Authorizing Devices Based on Identifying Content Distributor	Germany (Federal Republic of)	13870108.1	12/18/2013	2944051	11/18/2015	2944051	6/5/2019
GN128- AVA-EP01	Authorizing Devices Based on Identifying Content Distributor	European Patent	13870108.1	12/18/2013	2944051	11/18/2015	2944051	6/5/2019
GN128- AVA-FR01	Authorizing Devices Based on Identifying Content Distributor	France	13870108.1	12/18/2013	2944051	11/18/2015	2944051	6/5/2019
GN128- AVA-GB01	Authorizing Devices Based on Identifying Content Distributor	United Kingdom	13870108.1	12/18/2013	2944051	11/18/2015	2944051	6/5/2019
GN128- AVA-HK01	Authorizing Devices Based on Identifying Content Distributor	Hong Kong	16105674.4	5/17/2016	HK1217835	1/20/2017	1217835	4/29/2020

PATENT

REEL: 059725 FRAME: 0123

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN128- AVA-KR01	Authorizing Devices Based on Identifying Content Distributor	Korea, Republic of (KR)	2015-7021476	12/18/2013	10-2015-0106904	9/22/2015	10-2017602	8/28/2019
GN128- AVA-KR02	Authorizing Devices Based on Identifying Content Distributor	Korea, Republic of (KR)	2019-7025227	12/18/2013	N/A	N/A	10-2094651	3/23/2020
GN128- AVA-KR03	Authorizing Devices Based on Identifying Content Distributor	Korea, Republic of (KR)	2020-7008195	3/20/2020	N/A	N/A	N/A	N/A
GN128- AVA-US01	Authorizing Devices Based On Identifying Content Distributor	United States of America	61/749,524	1/7/2013	N/A	N/A	N/A	N/A
GN128- AVA-US02	Authorizing Devices Based on Identifying Content Distributor	United States of America	13/826,606	3/14/2013	US-2014-0196077	7/10/2014	8,997,164	3/31/2015
GN128- AVA-US03	Authorizing Devices Based on Identifying Content Distributor	United States of America	14/640,253	3/6/2015	US-2015-0181263	6/25/2015	9,596,490	3/14/2017
GN128- AVA-US04	Authorizing Devices Based on Identifying Content Distributor	United States of America	15/406,887	1/16/2017	US-2017-0127097	5/4/2017	N/A	N/A
GN128- AVA-US05	Authorizing Devices Based on Identifying Content Distributor	United States of America	16/947,748	8/14/2020	US-2020-0374569	11/26/2020	N/A	N/A
GN128- AVA- WO01	Authorizing Devices Based on Identifying Content Distributor	Patent Cooperation Treaty	PCT/US2013/076201	12/18/2013	WO2014/107311	7/10/2014	N/A	N/A
GN129- AVA-US01	Detecting An Event Within Interactive Media Including Spatialized Multi-Channel Audio Content	United States of America	13/795,877	3/12/2013	US-2014-0274353	9/18/2014	9,372,531	6/21/2016
GN129- AVA-US02	Detecting an Event within Interactive Media Including Spatialized Multi-Channel Audio Content	United States of America	15/003,658	1/21/2016	US-2016-0139756	5/19/2016	10,055,010	8/21/2018
GN129- AVA-US03	Detecting an Event Within Interactive Media	United States of America	16/017,170	6/25/2018	US-2018-0307300	10/25/2018	10,156,894	12/18/2018
GN129- AVA-US04	Detecting and Responding to an Event Within an Interactive Videogame	United States of America	16/168,412	10/23/2018	US-2019-0056778	2/21/2019	10,345,892	7/9/2019
GN129- AVA-US05	Detecting and Responding to an Event Within an Interactive Videogame	United States of America	16/425,490	5/29/2019	US-2019-0278366	9/12/2019	10,824,222	11/3/2020
GN129- AVA-US06	Detecting and Responding to an Event within an Interactive Videogame	United States of America	16/947,969	8/26/2020	US-2020-0379549	12/3/2020	N/A	N/A
GN130- AVA-US01	Search And Identification Of Video Content	United States of America	61/749,819	1/7/2013	N/A	N/A	N/A	N/A
GN130- AVA-US02	Search And Identification Of Video Content	United States of America	13/839,782	3/15/2013	US-2014-0193027	7/10/2014	9,146,990	9/29/2015
GN130- AVA-US03	Search And Identification Of Video Content	United States of America	14/828,293	8/17/2015	US-2015-0356178	12/10/2015	9,959,345	5/1/2018

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN131- AVA-US01	Displaying An Actionable Element Over Playing Content	United States of America	14/020,295	9/6/2013	US-2015-0074703	3/12/2015	10,965,991	3/30/2021
GN131- AVA-US02	Displaying an Actionable Element Over Playing Content	United States of America	16/124,928	9/7/2018	US-2019-0007741	1/3/2019	10,979,771	4/13/2021
GN131- AVA-US03	Displaying an Actionable Element Over Playing Content	United States of America	16/126,771	9/10/2018	US-2019-0007742	1/3/2019	N/A	N/A
GN131- AVA-US04	Displaying an Actionable Element Over Playing Content	United States of America	16/178,116	11/1/2018	US-2019-0075362	3/7/2019	10,965,992	3/30/2021
GN131- AVA-US05	Displaying An Actionable Element Over Playing Content	United States of America	17/190,859	3/3/2021	N/A	N/A	N/A	N/A
GN131- AVA-US06	Displaying An Actionable Element Over Playing Content	United States of America	17/190,870	3/3/2021	N/A	N/A	N/A	N/A
GN132- AVA-US01	Identifying Video Content Via Color-Based Fingerprint Matching	United States of America	14/061,043	10/23/2013	US-2015-0110340	4/23/2015	9,465,995	10/11/2016
GN132- AVA-US02	Identifying Video Content Via Color-Based Fingerprint Matching	United States of America	15/286,787	10/6/2016	US-2017-0091524	3/30/2017	10,503,956	12/10/2019
GN132- AVA-US03	Identifying Video Content Via Color-Based Fingerprint Matching	United States of America	16/692,124	11/22/2019	US-2020-0089934	3/19/2020	N/A	N/A
GN137- AVA-CN01	Dynamic Video Overlays	China	201680074415.0	12/16/2016	CN108496368A	9/4/2018	201680074415.0	11/24/2020
GN137- AVA-CN02	Dynamic Video Overlays	China	202011252640.3	11/11/2020	CN112423083A	2/26/2021	N/A	N/A
GN137- AVA-CN03	Dynamic Video Overlays	China	202011254676.5	11/11/2020	CN112333523A	2/5/2021	N/A	N/A
GN137- AVA-CN04	Dynamic Video Overlays	China	202011252620.6	11/11/2020	112423082	2/26/2021	N/A	N/A
GN137- AVA-CN05	Dynamic Video Overlays	China	202011257196.4	11/11/2020	CN112333524A	2/5/2021	N/A	N/A
GN137- AVA-EP01	Dynamic Video Overlays	European Patent	16876800	12/16/2016	3391651	10/24/2018	N/A	N/A
GN137- AVA-JP01	Dynamic Video Overlays	Japan	2018-531572	12/16/2016	2018-537925	12/20/2018	N/A	N/A
GN137- AVA-KR01	Dynamic Video Overlays	Korea, Republic of (KR)	2018-7019944	12/16/2016	N/A	N/A	2147230	8/18/2020
GN137- AVA-KR02	Dynamic Video Overlays	Korea, Republic of (KR)	2020-7023726	12/16/2016	N/A	N/A	2185022	11/25/2020
GN137- AVA-KR03	Dynamic Video Overlays	Korea, Republic of (KR)	2020-7033924	11/25/2020	N/A	N/A	2227161	3/8/2021

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN137- AVA-KR04	Dynamic Video Overlays	Korea, Republic of (KR)	2021-7006944	3/8/2021	N/A	N/A	N/A	N/A
GN137- AVA-US01	Dynamic Video Overlays	United States of America	62/268,410	12/16/2015	N/A	N/A	N/A	N/A
GN137- AVA-US02	Dynamic Video Overlays	United States of America	15/381,496	12/16/2016	US-2017-0150213	5/25/2017	10,142,680	11/27/2018
GN137- AVA-US03	Dynamic Video Overlays	United States of America	15/381,497	12/16/2016	US-2017-0180792	6/22/2017	10,785,530	9/22/2020
GN137- AVA-US04	Dynamic Video Overlays	United States of America	15/381,513	12/16/2016	US-2017-0180793	6/22/2017	10,412,447	9/10/2019
GN137- AVA-US05	Dynamic Video Overlays	United States of America	15/381,556	12/16/2016	US-2017-0180794	6/22/2017	10,136,183	11/20/2018
GN137- AVA-US06	Dynamic Video Overlays	United States of America	15/381,572	12/16/2016	US-2017-0180795	6/22/2017	10,123,073	11/6/2018
GN137- AVA-US07	Dynamic Video Overlays	United States of America	16/140,539	9/25/2018	US-2019-0132641	5/2/2019	10,893,320	1/12/2021
GN137- AVA-US08	Dynamic Video Overlays	United States of America	16/520,294	7/23/2019	US-2020-0053422	2/13/2020	10,869,086	12/15/2020
GN137- AVA-US09	Dynamic Video Overlays	United States of America	16/928,683	7/14/2020	US-2021-0037283	2/4/2021	N/A	N/A
GN137- AVA-US10	Dynamic Video Overlays	United States of America	17/098,409	11/15/2020	N/A	N/A	N/A	N/A
GN137- AVA- WO01	Dynamic Video Overlays	Patent Cooperation Treaty	PCT/US2016/067250	12/16/2016	WO2017/106695	6/22/2017	N/A	N/A
GN141- AVA-US01	Digital Video Content Fingerprinting Using Image Pixel Intensity and Color Information	United States of America	61/266,668	12/4/2009	N/A	N/A	N/A	N/A
GN141- AVA-US01	Digital Video Content Fingerprinting Using Image Pixel Intensity and Color Information	United States of America	61/266,668	12/4/2009	N/A	N/A	N/A	N/A
GN141- AVA-US02	Digital Video Content Fingerprinting Using Image Pixel Intensity and Color Information	United States of America	12/955,416	11/29/2010	N/A	N/A	8,666,152	3/4/2014
GN141- AVA-US02	Digital Video Content Fingerprinting Using Image Pixel Intensity and Color Information	United States of America	12/955,416	11/29/2010	N/A	N/A	8,666,152	3/4/2014
GN142- AVA-US01	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	61/331,965	5/6/2010	N/A	N/A	N/A	N/A
GN142- AVA-US01	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	61/331,965	5/6/2010	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN142-US02	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	13/102,479	5/6/2011	N/A	N/A	8,655,878	2/18/2014
GN142-US02	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	13/102,479	5/6/2011	N/A	N/A	8,655,878	2/18/2014
GN142-US03	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	14/151,335	1/9/2014	N/A	N/A	9,058,355	6/16/2015
GN142-US03	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	14/151,335	1/9/2014	N/A	N/A	9,058,355	6/16/2015
GN142-US04	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	14/151,294	1/9/2014	N/A	N/A	8,965,863	2/24/2015
GN142-US04	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	14/151,294	1/9/2014	N/A	N/A	8,965,863	2/24/2015
GN142-US05	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	14/718,218	5/21/2015	US-2015-0254344	9/10/2015	9,785,708	10/10/2017
GN142-US05	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	14/718,218	5/21/2015	US-2015-0254344	9/10/2015	9,785,708	10/10/2017
GN142-US06	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	16/597,648	10/9/2019	N/A	N/A	N/A	N/A
GN142-US06	Scalable, Adaptable, and Manageable System for Multimedia Identification	United States of America	16/597,648	10/9/2019	N/A	N/A	N/A	N/A
GN143-US01	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Array of Anisotropic Filters	United States of America	61/181,521	5/27/2009	N/A	N/A	N/A	N/A
GN143-US01	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Array of Anisotropic Filters	United States of America	61/181,521	5/27/2009	N/A	N/A	N/A	N/A
GN143-US02	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Array of Anisotropic Filters	United States of America	12/612,729	11/5/2009	US-2010-0303338	12/2/2010	8,189,945	5/29/2012
GN143-US02	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Array of Anisotropic Filters	United States of America	12/612,729	11/5/2009	US-2010-0303338	12/2/2010	8,189,945	5/29/2012
GN143-US03	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Array of Anisotropic Filters	United States of America	13/455,560	4/25/2012	US-2012-0207402	8/16/2012	8,781,245	7/15/2014
GN143-US03	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Array of Anisotropic Filters	United States of America	13/455,560	4/25/2012	US-2012-0207402	8/16/2012	8,781,245	7/15/2014

PATENT

REEL: 059725 FRAME: 0127



## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN143-US04	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Arrany of Anisotropic Filters	United States of America	14/298,261	6/6/2014	US-2015-0003731	1/1/2015	9,396,393	7/19/2016
GN143-US04	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Arrany of Anisotropic Filters	United States of America	14/298,261	6/6/2014	US-2015-0003731	1/1/2015	9,396,393	7/19/2016
GN143-US05	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Arrany of Anisotropic Filters	United States of America	15/186,901	6/20/2016	US-2016-0307037	10/20/2016	9,652,672	5/16/2017
GN143-US05	Content Based Digital Video Fingerprinting Based on Scale Invariant Interest Region Detection with an Arrany of Anisotropic Filters	United States of America	15/186,901	6/20/2016	US-2016-0307037	10/20/2016	9,652,672	5/16/2017
GN144-US01	Methods and Apparatus for Providing a Scalable Identification of Digital Video Sequences	United States of America	60/944,643	6/18/2007	N/A	N/A	N/A	N/A
GN144-US01	Methods and Apparatus for Providing a Scalable Identification of Digital Video Sequences	United States of America	60/944,643	6/18/2007	N/A	N/A	N/A	N/A
GN144-US02	Methods and Apparatus for Providing a Scalable Identification of Digital Video Sequences	United States of America	12/141,163	6/18/2008	US-2008-0310731	12/18/2008	8,229,227	7/24/2012
GN144-US02	Methods and Apparatus for Providing a Scalable Identification of Digital Video Sequences	United States of America	12/141,163	6/18/2008	US-2008-0310731	12/18/2008	8,229,227	7/24/2012
GN144-US03	Methods and Apparatus for Providing a Scalable Identification of Digital Video Sequences	United States of America	13/488,568	6/5/2012	US-2012-0237129	9/20/2012	8,666,168	3/4/2014
GN144-US03	Methods and Apparatus for Providing a Scalable Identification of Digital Video Sequences	United States of America	13/488,568	6/5/2012	US-2012-0237129	9/20/2012	8,666,168	3/4/2014
GN145-US01	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	60/944,668	6/18/2007	N/A	N/A	N/A	N/A
GN145-US01	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	60/944,668	6/18/2007	N/A	N/A	N/A	N/A
GN145-US02	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	12/141,337	6/18/2008	US-2008-0313140	12/18/2008	8,171,030	5/1/2012
GN145-US02	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	12/141,337	6/18/2008	US-2008-0313140	12/18/2008	8,171,030	5/1/2012
GN145-US03	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	13/432,914	3/28/2012	US-2012-0207387	8/16/2012	9,323,841	4/26/2016
GN145-US03	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	13/432,914	3/28/2012	US-2012-0207387	8/16/2012	9,323,841	4/26/2016
GN145-US04	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	15/078,056	3/23/2016	US-2016-0275084	9/22/2016	9,489,455	11/8/2016

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN145-US04	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	15/078,056	3/23/2016	US-2016-0275084	9/22/2016	9,489,455	11/8/2016
GN145-US05	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	15/290,364	10/11/2016	US2017-0192980	7/6/2017	10,210,252	2/19/2019
GN145-US05	Method And Apparatus For Multi-Dimensional Content Search And Video Identification	United States of America	15/290,364	10/11/2016	US2017-0192980	7/6/2017	10,210,252	2/19/2019
GN145-US06	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/240,859	1/7/2019	US-2019-0272290	9/5/2019	10,977,307	4/13/2021
GN145-US06	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/240,859	1/7/2019	US-2019-0272290	9/5/2019	10,977,307	4/13/2021
GN145-US07	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,006	6/14/2019	US-2020-0004779	1/2/2020	N/A	N/A
GN145-US07	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,006	6/14/2019	US-2020-0004779	1/2/2020	N/A	N/A
GN145-US08	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,398	6/14/2019	US-2020-0004780	1/2/2020	N/A	N/A
GN145-US08	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,398	6/14/2019	US-2020-0004780	1/2/2020	N/A	N/A
GN145-US09	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,404	6/14/2019	US02020-0004781	1/2/2020	N/A	N/A
GN145-US09	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,404	6/14/2019	US02020-0004781	1/2/2020	N/A	N/A
GN145-US09	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,404	6/14/2019	US02020-0004781	1/2/2020	N/A	N/A
GN145-US10	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,414	6/14/2019	US-2020-0004782	1/2/2020	N/A	N/A
GN145-US10	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	16/442,414	6/14/2019	US-2020-0004782	1/2/2020	N/A	N/A
GN145-US11	Method and Apparatus for Multi-Dimensional Content Search and Video Identification	United States of America	17/017,589	9/10/2020	N/A	N/A	N/A	N/A
GN147-US01	Content Based Digital Video Fingerprinting Based on Resultant Weighted Gradient Orientation Computation	United States of America	61/078,941	7/8/2008	N/A	N/A	N/A	N/A
GN147-US01	Content Based Digital Video Fingerprinting Based on Resultant Weighted Gradient Orientation Computation	United States of America	61/078,941	7/8/2008	N/A	N/A	N/A	N/A
GN147-US02	Content Based Digital Video Fingerprinting Based on Resultant Weighted Gradient Orientation Computation	United States of America	12/491,896	6/25/2009	US-2010-0007797	1/14/2010	8,385,644	2/26/2013
GN147-US02	Content Based Digital Video Fingerprinting Based on Resultant Weighted Gradient Orientation Computation	United States of America	12/491,896	6/25/2009	US-2010-0007797	1/14/2010	8,385,644	2/26/2013
GN148-US01	Highly Scalable, Accurate and Distortion-Robust Media Fingerprinting and Identification System	United States of America	61/185,670	6/10/2009	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN148- AVA-US02	Media Fingerprinting And Identification System	United States of America	12/772,566	5/3/2010	US-2010-0318515	12/16/2010	8,195,689	6/5/2012
GN148- AVA-US02	Media Fingerprinting And Identification System	United States of America	12/772,566	5/3/2010	US-2010-0318515	12/16/2010	8,195,689	6/5/2012
GN148- AVA-US03	Highly Scalable, Accurate and Distortion-Robust Media Fingerprinting and Identification System	United States of America	13/463,137	5/3/2012	US-2012-0215789	8/23/2012	8,364,703	1/29/2013
GN148- AVA-US04	Media Fingerprinting and Identification System	United States of America	13/719,603	12/19/2012	US-2013-0179452	7/11/2013	8,688,731	4/1/2014
GN148- AVA-US04	Media Fingerprinting and Identification System	United States of America	13/719,603	12/19/2012	US-2013-0179452	7/11/2013	8,688,731	4/1/2014
GN148- AVA-US05	Highly Scalable, Accurate and Distortion-Robust Media Fingerprinting and Identification System	United States of America	14/059,688	10/22/2013	US-2014-0052737	2/20/2014	9,053,104	6/9/2015
GN148- AVA-US05	Highly Scalable, Accurate and Distortion-Robust Media Fingerprinting and Identification System	United States of America	14/059,688	10/22/2013	US-2014-0052737	2/20/2014	9,053,104	6/9/2015
GN148- AVA-US06	Media Fingerprinting and Identification System	United States of America	14/711,054	5/13/2015	US-2015-0242399	8/27/2015	9,195,663	11/24/2015
GN148- AVA-US07	Media Fingerprinting and Identification System	United States of America	14/885,110	10/16/2015	US-2016-0034452	2/4/2016	9,323,754	4/26/2016
GN148- AVA-US08	Media Fingerprinting and Identification System	United States of America	15/073,858	3/18/2016	US-2016-0267079	9/15/2016	9,471,674	10/18/2016
GN148- AVA-US09	Media Fingerprinting and Identification System	United States of America	15/265,002	9/14/2016	US-2017-0068671	3/9/2017	10,402,443	9/3/2019
GN148- AVA-US10	Media Fingerprinting and Identification System	United States of America	16/383,473	4/12/2019	US-2019-0251111	8/15/2019	N/A	N/A
GN148- AVA-US11	Media Fingerprinting and Identification System	United States of America	16/355,727	3/16/2019	US-2019-0213210	7/11/2019	10,423,654	9/24/2019
GN148- AVA-US12	Media Fingerprinting and Identification System	United States of America	16/385,575	4/16/2019	US-2019-0251112	8/15/2019	N/A	N/A
GN148- AVA-US14	Media Fingerprinting and Identification System	United States of America	16/387,443	4/17/2019	US-2019-0243851	8/8/2019	N/A	N/A
GN148- AVA-US15	Media Fingerprinting and Identification System	United States of America	16/387,448	4/17/2019	US-2019-0251113	8/15/2019	N/A	N/A
GN148- AVA-US16	Media Fingerprinting and Identification System	United States of America	16/387,456	4/17/2019	US-2019-0251114	8/15/2019	N/A	N/A
GN148- AVA-US17	Media Fingerprinting and Identification System	United States of America	16/365,577	3/26/2019	US-2019-0220478	7/18/2019	N/A	N/A
GN148- AVA-US18	Media Fingerprinting and Identification System	United States of America	16/367,921	3/28/2019	US-2019-0228030	7/25/2019	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN148-		United States of America						
AVA-US19	Media Fingerprinting and Identification System	United States of America	16/388,740	4/18/2019	US-2019-0251115	8/15/2019	N/A	N/A
GN148-		United States of America						
AVA-US20	Media Fingerprinting and Identification System	United States of America	16/388,747	4/18/2019	US-2019-0243852	8/8/2019	10,387,482	8/20/2019
GN148-		United States of America						
AVA-US21	Media Fingerprinting and Identification System	United States of America	16/388,750	4/18/2019	US-2019-0251116	8/15/2019	N/A	N/A
GN148-		United States of America						
AVA-US22	Media Fingerprinting and Identification System	United States of America	16/502,857	7/3/2019	N/A	N/A	N/A	N/A
GN148-		United States of America						
AVA-US23	Media Fingerprinting and Identification System	United States of America	16/553,658	8/28/2019	US-2019-0384786	12/19/2019	N/A	N/A
GN148-		United States of America						
AVA-US24	Media Fingerprinting and Identification System	United States of America	16/596,291	10/8/2019	N/A	N/A	10,579,668	3/3/2020
GN148-		United States of America						
AVA-US25	Media Fingerprinting and Identification System	United States of America	16/874,896	5/15/2020	N/A	N/A	N/A	N/A
GN148-		United States of America						
AVA-US26	Media Fingerprinting and Identification System	United States of America	16/869,214	5/7/2020	US-2020-0265079	8/20/2020	N/A	N/A
GN149-	Multi-Media Content Identification Using Multi-Level Content Signature Correlation and Fast Similarity Search	United States of America	61/181,806	5/28/2009	N/A	N/A	N/A	N/A
AVA-US01	Multi-Media Content Identification Using Multi-Level Content Signature Correlation and Fast Similarity Search	United States of America	61/181,806	5/28/2009	N/A	N/A	N/A	N/A
GN149-	Multi-Media Content Identification Using Multi-Level Content Signature Correlation and Fast Similarity Search	United States of America	61/181,806	5/28/2009	N/A	N/A	N/A	N/A
GN149-	Multi-Media Content Identification Using Multi-Level Content Signature Correlation and Fast Similarity Search	United States of America	12/788,796	5/27/2010	US-2010-0306193	12/2/2010	8,335,786	12/18/2012
AVA-US02	Multi-Media Content Identification Using Multi-Level Content Signature Correlation and Fast Similarity Search	United States of America	12/788,796	5/27/2010	US-2010-0306193	12/2/2010	8,335,786	12/18/2012
GN150-	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	61/393,971	10/18/2010	N/A	N/A	N/A	N/A
AVA-US01	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	61/393,971	10/18/2010	N/A	N/A	N/A	N/A
GN150-	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	61/393,971	10/18/2010	N/A	N/A	N/A	N/A
GN150-	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	13/276,110	10/18/2011	US-2012-0095958	4/19/2012	8,959,108	2/17/2015
AVA-US02	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	13/276,110	10/18/2011	US-2012-0095958	4/19/2012	8,959,108	2/17/2015
GN150-	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	14/589,366	1/5/2015	US-2015-0112988	4/23/2015	9,262,421	2/16/2016
AVA-US03	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	14/589,366	1/5/2015	US-2015-0112988	4/23/2015	9,262,421	2/16/2016
GN150-	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	14/589,366	1/5/2015	US-2015-0112988	4/23/2015	9,262,421	2/16/2016
AVA-US04	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	14/990,565	1/7/2016	US-2016-0132500	5/12/2016	9,436,689	9/6/2016

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN150-US04	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	14/990,565	1/7/2016	US-2016-0132500	5/1/2016	9,436,689	9/6/2016
GN150-US05	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	15/163,004	5/24/2016	US-2016-0371269	12/22/2016	9,646,007	5/9/2017
GN150-US05	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	15/163,004	5/24/2016	US-2016-0371269	12/22/2016	9,646,007	5/9/2017
GN150-US06	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	15/477,135	4/3/2017	N/A	N/A	N/A	N/A
GN150-US06	Distributed and Tiered Architecture for Content Search and Content Monitoring	United States of America	15/477,135	4/3/2017	N/A	N/A	N/A	N/A
GN151-US01	TV Content Segmentation, Categorization and Identification and Time-Aligned Applications	United States of America	61/423,205	12/15/2010	N/A	N/A	N/A	N/A
GN151-US01	TV Content Segmentation, Categorization and Identification and Time-Aligned Applications	United States of America	61/423,205	12/15/2010	N/A	N/A	N/A	N/A
GN151-US02	TV Content Segmentation, Categorization and Identification and Time-Aligned Applications	United States of America	13/327,359	12/15/2011	N/A	N/A	9,510,044	11/29/2016
GN151-US02	TV Content Segmentation, Categorization and Identification and Time-Aligned Applications	United States of America	13/327,359	12/15/2011	N/A	N/A	9,510,044	11/29/2016
GN151-US03	TV Content Segmentation, Categorization and Identification and Time-Aligned Applications	United States of America	15/297,658	10/19/2016	US-2017-0201793	7/13/2017	N/A	N/A
GN151-US03	TV Content Segmentation, Categorization and Identification and Time-Aligned Applications	United States of America	15/297,658	10/19/2016	US-2017-0201793	7/13/2017	N/A	N/A
GN152-US01	Method and Apparatus for Synchronous Television/Media Content Identification on Mobile/Media Devices	United States of America	61/601,234	2/21/2012	N/A	N/A	N/A	N/A
GN152-US01	Method and Apparatus for Synchronous Television/Media Content Identification on Mobile/Media Devices	United States of America	61/601,234	2/21/2012	N/A	N/A	N/A	N/A
GN152-US02	Media Content Identification on Mobile Devices	United States of America	13/590,701	8/21/2012	N/A	N/A	9,313,359	4/12/2016
GN152-US02	Media Content Identification on Mobile Devices	United States of America	13/590,701	8/21/2012	N/A	N/A	9,313,359	4/12/2016
GN152-US03	Media Content Identification on Mobile Devices	United States of America	15/053,064	2/25/2016	US-2016-0249093	8/25/2016	N/A	N/A
GN152-US03	Media Content Identification on Mobile Devices	United States of America	15/053,064	2/25/2016	US-2016-0249093	8/25/2016	N/A	N/A
GN152-US04	Media Content Identification on Mobile Devices	United States of America	16/441,924	6/14/2019	US-2019-0373311	12/5/2019	N/A	N/A
GN152-US04	Media Content Identification on Mobile Devices	United States of America	16/441,924	6/14/2019	US-2019-0373311	12/5/2019	N/A	N/A

PATENT

REEL: 059725 FRAME: 0132

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN152-US05	Media Content Identification on Mobile Devices	United States of America	16/441,936	6/14/2019	US-2019-0373312	12/5/2019	N/A	N/A
GN152-US05	Media Content Identification on Mobile Devices	United States of America	16/441,936	6/14/2019	US-2019-0373312	12/5/2019	N/A	N/A
GN152-US06	Media Content Identification on Mobile Devices	United States of America	16/441,949	6/14/2019	US-2019-0379927	12/12/2019	N/A	N/A
GN152-US06	Media Content Identification on Mobile Devices	United States of America	16/441,949	6/14/2019	US-2019-0379927	12/12/2019	N/A	N/A
GN152-US07	Media Content Identification on Mobile Devices	United States of America	16/441,956	6/14/2019	US-2019-0387273	12/19/2019	10,986,399	4/20/2021
GN152-US07	Media Content Identification on Mobile Devices	United States of America	16/441,956	6/14/2019	US-2019-0387273	12/19/2019	10,986,399	4/20/2021
GN152-US08	Media Content Identification on Mobile Devices	United States of America	16/441,967	6/14/2019	US-2019-0379928	12/12/2019	N/A	N/A
GN152-US08	Media Content Identification on Mobile Devices	United States of America	16/441,967	6/14/2019	US-2019-0379928	12/12/2019	N/A	N/A
GN152-US09	Media Content Identification on Mobile Devices	United States of America	16/441,987	6/14/2019	US-2019-0379929	12/12/2019	N/A	N/A
GN152-US09	Media Content Identification on Mobile Devices	United States of America	16/441,987	6/14/2019	US-2019-0379929	12/12/2019	N/A	N/A
GN152-US10	Media Content Identification on Mobile Devices	United States of America	16/441,996	6/14/2019	US-2019-0379930	12/12/2019	N/A	N/A
GN152-US10	Media Content Identification on Mobile Devices	United States of America	16/441,996	6/14/2019	US-2019-0379930	12/12/2019	N/A	N/A
GN152-US11	Media Content Identification on Mobile Devices	United States of America	16/442,392	6/14/2019	US-2019-0379931	12/12/2019	N/A	N/A
GN152-US11	Media Content Identification on Mobile Devices	United States of America	16/442,392	6/14/2019	US-2019-0379931	12/12/2019	N/A	N/A
GN153-US01	ROBUST AUDIO IDENTIFICATION AND TIME-ALIGNED APPLICATIONS	United States of America	61/543,943	10/6/2011	N/A	N/A	N/A	N/A
GN153-US01	ROBUST AUDIO IDENTIFICATION AND TIME-ALIGNED APPLICATIONS	United States of America	61/543,943	10/6/2011	N/A	N/A	N/A	N/A
GN153-US02	ROBUST AUDIO IDENTIFICATION AND TIME-ALIGNED APPLICATIONS	United States of America	61/544,035	10/6/2011	N/A	N/A	N/A	N/A
GN153-US02	ROBUST AUDIO IDENTIFICATION AND TIME-ALIGNED APPLICATIONS	United States of America	61/544,035	10/6/2011	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN153- AVA-US03	AUDIO CONTENT FINGERPRINTING BASED ON TWO-DIMENSIONAL CONSTANT 1-FACTOR TRANSFORM REPRESENTATION AND ROBUST AUDIO IDENTIFICATION FOR TIME-ALIGNED APPLICATIONS	United States of America	13/647,996	10/9/2012	N/A	N/A	9,299,364	3/29/2016
GN153- AVA-US03	AUDIO CONTENT FINGERPRINTING BASED ON TWO-DIMENSIONAL CONSTANT 1-FACTOR TRANSFORM REPRESENTATION AND ROBUST AUDIO IDENTIFICATION FOR TIME-ALIGNED APPLICATIONS	United States of America	13/647,996	10/9/2012	N/A	N/A	9,299,364	3/29/2016
GN153- AVA-US04	AUDIO CONTENT FINGERPRINTING BASED ON TWO-DIMENSIONAL CONSTANT 1-FACTOR TRANSFORM REPRESENTATION AND ROBUST AUDIO IDENTIFICATION FOR TIME-ALIGNED APPLICATIONS	United States of America	15/050,123	2/22/2016	N/A	N/A	9,798,513	10/24/2017
GN153- AVA-US04	AUDIO CONTENT FINGERPRINTING BASED ON TWO-DIMENSIONAL CONSTANT 1-FACTOR TRANSFORM REPRESENTATION AND ROBUST AUDIO IDENTIFICATION FOR TIME-ALIGNED APPLICATIONS	United States of America	15/050,123	2/22/2016	N/A	N/A	9,798,513	10/24/2017
GN154- AVA-US01	Method for Efficient Data Base Formation and Search on Portable Media Devices Acting Synchronously with Television Programming	United States of America	61/610,672	3/14/2012	N/A	N/A	N/A	N/A
GN154- AVA-US01	Method for Efficient Data Base Formation and Search on Portable Media Devices Acting Synchronously with Television Programming	United States of America	61/610,672	3/14/2012	N/A	N/A	N/A	N/A
GN154- AVA-US02	Method for Efficient Data Base Formation and Search on Portable Media Devices Acting Synchronously with Television Programming	United States of America	13/826,502	3/14/2013	US-2013-0246457	9/19/2013	9,367,544	6/14/2016
GN154- AVA-US02	Method for Efficient Data Base Formation and Search on Portable Media Devices Acting Synchronously with Television Programming	United States of America	13/826,502	3/14/2013	US-2013-0246457	9/19/2013	9,367,544	6/14/2016
GN154- AVA-US03	Method for Efficient Data Base Formation and Search on Portable Media Devices Acting Synchronously with Television Programming	United States of America	15/155,428	5/16/2016	US-2016-0364389	12/15/2016	N/A	N/A
GN154- AVA-US03	Method for Efficient Data Base Formation and Search on Portable Media Devices Acting Synchronously with Television Programming	United States of America	15/155,428	5/16/2016	US-2016-0364389	12/15/2016	N/A	N/A
GN155- AVA-US01	Method For Valuing And Targeting Advertising Using Media Content Recognition	United States of America	61/940,921	2/18/2014	N/A	N/A	N/A	N/A
GN155- AVA-US02	Method for Valuing and Targeting Advertising Using Media Content Recognition	United States of America	62/306,692	3/11/2016	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN156-		United States of America						
AVA-US01	Robust Audio Identification with Interference Cancellation	United States of America	61/636,195	4/20/2012	N/A	N/A	N/A	N/A
GN156-		United States of America						
AVA-US02	Robust Audio Identification with Interference Cancellation	United States of America	15/456,859	3/13/2017	N/A	N/A	10,360,905	7/23/2019
GN156-		United States of America						
AVA-US03	Robust Audio Identification with Interference Cancellation	United States of America	16/140,538	9/25/2018	N/A	N/A	N/A	N/A
GN157-		United States of America						
AVA-US01	Audio-Video Synchronization Based On Content Fingerprinting	United States of America	61/322,514	4/9/2010	N/A	N/A	N/A	N/A
GN157-		United States of America						
AVA-US02	Audio-Video Synchronization Based on Content Fingerprinting	United States of America	62/306,733	3/11/2016	N/A	N/A	N/A	N/A
GN158-		United States of America						
AVA-US01	Enabling Video/Audio-Content-Synchronous Applications On A Mobile Device	United States of America	62/306,771	3/11/2016	N/A	N/A	N/A	N/A
GN158-		United States of America						
AVA-US02	Enabling Video/Audio-Content-Synchronous Applications On A Mobile Device	United States of America	61/377,350	8/26/2010	N/A	N/A	N/A	N/A
GN159-		United States of America						
AVA-US01	Method To Differentiate And Classify Fingerprints Using Fingerprint Neighborhood Analysis	United States of America	62/306,700	3/11/2016	N/A	N/A	N/A	N/A
GN159-		United States of America						
AVA-US02	Method To Differentiate And Classify Fingerprints Using Fingerprint Neighborhood Analysis	United States of America	15/456,861	3/13/2017	N/A	N/A	10,956,484	3/23/2021
GN159-		United States of America						
AVA-US03	Method to Differentiate and Classify Fingerprints Using Fingerprint Neighborhood Analysis	United States of America	16/140,531	9/24/2018	N/A	N/A	10,970,328	4/6/2021
GN159-		United States of America						
AVA-US04	Method to Differentiate and Classify Fingerprints Using Fingerprint Neighborhood Analysis	United States of America	16/929,858	7/15/2020	N/A	N/A	N/A	N/A
GN160-		United States of America						
AVA-US01	Digital Video Fingerprinting Using Motion Segmentation	United States of America	62/306,719	3/11/2016	N/A	N/A	N/A	N/A
GN160-		United States of America						
AVA-US02	Digital Video Fingerprinting Using Motion Segmentation	United States of America	15/456,856	3/13/2017	N/A	N/A	10,318,813	6/11/2019
GN160-		United States of America						
AVA-US03	Digital Video Fingerprinting Using Motion Segmentation	United States of America	16/140,534	9/25/2018	US-2019-0138813	5/9/2019	10,733,985	8/4/2020
GN160-		United States of America						
AVA-US04	Digital Video Fingerprinting Using Motion Segmentation	United States of America	16/916,179	6/30/2020	US-2021-0020171	1/21/2021	N/A	N/A
GN161-		United States of America						
AVA-US01	Actional Event Detection For Enhance Television Delivery And Ad Monitoring Based On Video-Audio Content Fingerprinting	United States of America	62/306,755	3/11/2016	N/A	N/A	N/A	N/A
GN190-								
GN190-	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals that Modify Operation of the Playback Device	China	201980047223.4	7/3/2019	CN112470486A	3/9/2021	N/A	N/A
GN190-								
AVA-EP01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals that Modify Operation of the Playback Device	European Patent	19838101.4	7/3/2019	N/A	N/A	N/A	N/A



## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN190-AVA-JP01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Modify Operation of the Playback Device	Japan	2021-502622	7/3/2019	N/A	N/A	N/A	N/A
GN190-AVA-KR01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Modify Operation of the Playback Device	Korea, Republic of (KR)	2021-7004194	7/3/2019	N/A	N/A	N/A	N/A
GN190-AVA-TW01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Modify Operation of the Playback Device	Taiwan	108122258	6/26/2019	202007174	2/1/2020	N/A	N/A
GN190-AVA-US01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Modify Operation of the Playback Device	United States of America	62/698,781	7/16/2018	N/A	N/A	N/A	N/A
GN190-AVA-US02	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Modify Operation of the Playback Device	United States of America	16/181,961	11/6/2018	US-2020-0021789	1/16/2020	10,791,312	9/29/2020
GN190-AVA-US03	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Modify Operation of the Playback Device	United States of America	17/003,203	8/26/2020	US-2020-0389637	12/10/2020	N/A	N/A
GN190-AVA-WO01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Modify Operation of the Playback Device	Patent Cooperation Treaty	PCT/US2019/040546	7/3/2019	WO2020/018287	1/23/2020	N/A	N/A
GN191-AVA-CN01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device	China	201980047693.0	7/3/2019	CN112425182A	2/26/2021	N/A	N/A
GN191-AVA-EP01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device	European Patent	19838103	7/3/2019	N/A	N/A	N/A	N/A
GN191-AVA-JP01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device	Japan	2021-503047	7/3/2019	N/A	N/A	N/A	N/A
GN191-AVA-KR01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device	Korea, Republic of (KR)	2021-7004196	7/3/2019	N/A	N/A	N/A	N/A
GN191-AVA-TW01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device	Taiwan	108122259	6/26/2019	202008790	2/16/2020	N/A	N/A
GN191-AVA-US01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device	United States of America	62/700,409	7/19/2018	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN191- AVA-US02	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device Providing Video to the Playback Device	United States of America	16/181,978	11/6/2018	US-2020-0029129	1/23/2020	10,827,224	11/3/2020
GN191- AVA-US03	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device Providing Video to the Playback Device	United States of America	17/003,211	8/26/2020	US-2020-0396513	12/17/2020	N/A	N/A
GN191- AVA- WO01	Modifying Playback of Replacement Content Responsive to Detection of Remote Control Signals That Control a Device Providing Video to the Playback Device	Patent Cooperation Treaty	PCT/US2019/040550	7/3/2019	WO2020/018288	1/23/2020	N/A	N/A
GN192- AVA-CN01	Modifying Playback of Replacement Content Based on Control Messages	China	201980047554.8	7/3/2019	CN112514409A	3/16/2021	N/A	N/A
GN192- AVA-EP01	Modifying Playback of Replacement Content Based on Control Messages	European Patent	19838621.1	7/3/2019	N/A	N/A	N/A	N/A
GN192- AVA-JP01	Modifying Playback of Replacement Content Based on Control Messages	Japan	2021-503046	7/3/2019	N/A	N/A	N/A	N/A
GN192- AVA-KR01	Modifying Playback of Replacement Content Based on Control Messages	Korea, Republic of (KR)	2021-7004197	7/3/2019	N/A	N/A	N/A	N/A
GN192- AVA-TW01	Modifying Playback of Replacement Content Based on Control Messages	Taiwan	108122260	6/26/2019	202008795	2/16/2020	N/A	N/A
GN192- AVA-US01	Modifying Playback of Replacement Content Based on Control Messages	United States of America	62/700,410	7/19/2018	N/A	N/A	N/A	N/A
GN192- AVA-US02	Modifying Playback of Replacement Content Based on Control Messages	United States of America	16/182,201	11/6/2018	US-2020-0029118	1/23/2020	N/A	N/A
GN192- AVA- WO01	Modifying Playback of Replacement Content Based on Control Messages	Patent Cooperation Treaty	PCT/US2019/040553	7/3/2019	WO2020/018289	1/23/2020	N/A	N/A
GN193- AVA-CN01	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content	China	201980001136.5	6/7/2019	CN110959293A	4/3/2020	N/A	N/A
GN193- AVA-CN03	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content (Client Side)	China	201980001137.X	6/7/2019	111183650	5/19/2020	N/A	N/A
GN193- AVA-EP01	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content	European Patent	19838757.3	6/7/2019	N/A	N/A	N/A	N/A
GN193- AVA-EP02	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	European Patent	19838759.9	6/7/2019	N/A	N/A	N/A	N/A
GN193- AVA-JP01	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content	Japan	2021-502404	6/7/2019	N/A	N/A	N/A	N/A
GN193- AVA-JP02	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	Japan	2021-502405	6/7/2019	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN193- AVA-KR01	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content	Korea, Republic of (KR)	2021-7004195	6/7/2019	N/A	N/A	N/A	N/A
GN193- AVA-KR02	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	Korea, Republic of (KR)	2021-7004198	6/7/2019	N/A	N/A	N/A	N/A
GN193- AVA-TW01	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content	Taiwan	108122190	6/25/2019	202007179	2/1/2020	1701947	8/11/2020
GN193- AVA-TW03	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content (Client Side)	Taiwan	108122899	6/28/2019	202007180	2/1/2020	1716022	1/11/2021
GN193- AVA-TW04	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content	Taiwan	109126783	8/7/2020	202044845	12/1/2020	N/A	N/A
GN193- AVA-TW05	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	Taiwan	109146501	12/28/2020	N/A	N/A	N/A	N/A
GN193- AVA-US01	Dynamic Control of Fingerprinting Rate to Facilitate Time-accurate Revision of Playback Content	United States of America	62/698,629	7/16/2018	N/A	N/A	N/A	N/A
GN193- AVA-US02	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	United States of America	16/166,561	10/22/2018	N/A	N/A	10,506,275	12/10/2019
GN193- AVA-US03	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	United States of America	16/166,948	10/22/2018	US-2020-0021877	1/16/2020	10,623,800	4/14/2020
AVA-US05	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	United States of America	16/674,652	11/5/2019	US-2020-0068248	2/27/2020	10,979,758	4/13/2021
GN193- AVA-US06	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	United States of America	16/790,335	2/13/2020	US-2020-0186860	6/11/2020	N/A	N/A
GN193- AVA-US07	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	United States of America	17/213,921	3/26/2021	N/A	N/A	N/A	N/A
GN193- AVA-US08	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	United States of America	17/196,762	3/9/2021	N/A	N/A	N/A	N/A
GN193- AVA-WO01	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Playback Content	Patent Cooperation Treaty	PCT/US2019/035955	6/7/2019	WO2020/018189	1/23/2020	N/A	N/A
GN193- AVA-WO03	Dynamic Control of Fingerprinting Rate to Facilitate Time-Accurate Revision of Media Content	Patent Cooperation Treaty	PCT/US2019/035961	6/7/2019	WO2020/018190	1/23/2020	N/A	N/A
GN194- AVA-CN01	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	China	201980001148.8	6/7/2019	CN111034204A	4/17/2020	N/A	N/A
GN194- AVA-EP01	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	European Patent	19838379.6	6/7/2019	N/A	N/A	N/A	N/A
GN194- AVA-JP01	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	Japan	2021-502952	6/7/2019	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN194- AVA-KR01	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	Korea, Republic of (KR)	2021-7004200	6/7/2019	N/A	N/A	N/A	N/A
GN194- AVA-TW01	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	Taiwan	108122188	6/25/2019	202008793	2/16/2020	1717769	2/1/2021
GN194- AVA-TW02	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	Taiwan	110103493	1/29/2021	N/A	N/A	N/A	N/A
GN194- AVA-US01	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	United States of America	62/700,647	7/19/2018	N/A	N/A	N/A	N/A
GN194- AVA-US02	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	United States of America	16/166,962	10/22/2018	US-2020-0029107	1/23/2020	10,820,020	10/27/2020
GN194- AVA-US03	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	United States of America	16/924,806	7/9/2020	US-2020-0344506	10/29/2020	N/A	N/A
GN194- AVA- WO01	Advanced Preparation for Content Revision Based on Expected Latency in Obtaining New Content	Patent Cooperation Treaty	PCT/US2019/035967	6/7/2019	WO2020/018191	1/23/2020	N/A	N/A
GN195- AVA-CN01	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	China	201980001147.3	6/7/2019	110999311	4/10/2020	N/A	N/A
GN195- AVA-CN02	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision (Client Side)	China	201980001138.4	6/7/2019	111213385	5/29/2020	N/A	N/A
GN195- AVA-EP01	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	European Patent	19837119.7	6/7/2019	N/A	N/A	N/A	N/A
GN195- AVA-EP02	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	European Patent	19837362.3	6/7/2019	N/A	N/A	N/A	N/A
GN195- AVA-JP01	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	Japan	2021-502961	6/7/2019	N/A	N/A	N/A	N/A
GN195- AVA-JP02	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	Japan	2021-503012	6/7/2019	N/A	N/A	N/A	N/A
GN195- AVA-KR01	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	Korea, Republic of (KR)	2021-7004201	6/7/2019	N/A	N/A	N/A	N/A
GN195- AVA-KR02	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	Korea, Republic of (KR)	2021-7004199	6/7/2019	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN195-AVA-TW01	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	Taiwan	108122189	6/25/2019	202008794	2/16/2020	N/A	N/A
GN195-AVA-TW02	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision (Client Side)	Taiwan	108122901	6/28/2019	202008796	2/16/2020	N/A	N/A
GN195-AVA-US01	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	United States of America	62/700,660	7/19/2018	N/A	N/A	N/A	N/A
GN195-AVA-US02	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	United States of America	16/166,971	10/22/2018	US-2020-0029108	1/23/2020	10,904,587	1/26/2021
GN195-AVA-US03	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	United States of America	16/166,981	10/22/2018	US-2020-0029115	1/23/2020	10,715,840	7/14/2020
GN195-AVA-US04	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	United States of America	16/890,592	6/2/2020	US-2020-0296436	9/17/2020	N/A	N/A
GN195-AVA-US05	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	United States of America	17/247,517	12/15/2020	N/A	N/A	N/A	N/A
GN195-AVA-WO01	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	Patent Cooperation Treaty	PCT/US2019/035973	6/7/2019	WO2020/018192	1/23/2020	N/A	N/A
GN195-AVA-WO02	Establishment and Use of Time Mapping Based on Interpolation Using Low-Rate Fingerprinting, to Help Facilitate Frame-Accurate Content Revision	Patent Cooperation Treaty	PCT/US2019/035974	6/7/2019	WO2020/018193	1/23/2020	N/A	N/A
GN204-AVA-CN01	Dynamic Playout of Transition Frames while Transitioning Between Playout of Media Streams	China	201980001149.2	6/7/2019	111418215	7/14/2020	N/A	N/A
GN204-AVA-EP01	Dynamic Playout of Transition Frames while Transitioning Between Playout of Media Streams	European Patent	19849629.1	6/7/2019	N/A	N/A	N/A	N/A
GN204-AVA-JP01	Dynamic Playout of Transition Frames while Transitioning Between Playout of Media Streams	Japan	N/A	6/7/2019	N/A	N/A	N/A	N/A
GN204-AVA-KR01	Dynamic Playout of Transition Frames while Transitioning Between Playout of Media Streams	Korea, Republic of (KR)	2021-7006327	6/7/2019	N/A	N/A	N/A	N/A
GN204-AVA-TW01	Dynamic Playout of Transition Frames while Transitioning Between Playout of Media Streams	Taiwan	108122594	6/27/2019	202010313	3/1/2020	1716017	1/11/2021
GN204-AVA-TW02	Dynamic Playout of Transition Frames while Transitioning Between Playout of Media Streams	Taiwan	109145505	12/22/2020	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN204-US01	Dynamic Playback of Transition Frames while Transitioning between Playback of Media Streams	United States of America	62/765,161	8/17/2018	N/A	N/A	N/A	N/A
GN204-US02	Dynamic Playback of Transition Frames While Transitioning between Playback of Media Streams	United States of America	16/183,185	11/7/2018	US-2020-0059691	2/20/2020	N/A	N/A
GN204-AVA-WO01	Dynamic Playback of Transition Frames while Transitioning between Playback of Media Streams	Patent Cooperation Treaty	PCT/US2019/035996	6/7/2019	WO2020/036667	2/20/2020	N/A	N/A
GN205-AVA-CN01	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content with End of Replaced Content	China	201980001150.5	6/7/2019	CN111316659A	6/19/2020	N/A	N/A
GN205-AVA-EP01	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content with End of Replaced Content	European Patent	N/A	6/7/2019	N/A	N/A	N/A	N/A
GN205-AVA-JP01	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content with End of Replaced Content	Japan	N/A	6/7/2019	N/A	N/A	N/A	N/A
GN205-AVA-KR01	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content with End of Replaced Content	Korea, Republic of (KR)	2021-7006324	6/7/2019	N/A	N/A	N/A	N/A
GN205-AVA-TW01	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content with End of Replaced Content	Taiwan	108122595	6/27/2019	202010314	3/1/2020	I716018	1/11/2021
GN205-AVA-TW02	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content with End of Replaced Content	Taiwan	109145507	12/22/2020	N/A	N/A	N/A	N/A
GN205-AVA-US01	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content with End of Replaced Content	United States of America	62/765,276	8/17/2018	N/A	N/A	N/A	N/A
GN205-AVA-US02	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content With End of Replaced Content	United States of America	16/183,266	11/7/2018	US-2020-0059692	2/20/2020	N/A	N/A
GN205-AVA-WO01	Dynamic Reduction in Playback of Replacement Content to Help Align End of Replacement Content with End of Replaced Content	Patent Cooperation Treaty	PCT/US2019/036001	6/7/2019	WO2020/036668	2/20/2020	N/A	N/A
GN213-US01	Scale/Affine Invariant Interest Region Detection with an Array of Anisotropic Filters for Video Fingerprinting	United States of America	61/331,879	5/6/2010	N/A	N/A	N/A	N/A
AVA-US02	Scale/Affine Invariant Interest Region Detection with an Array of Anisotropic Filters for Video Fingerprinting	United States of America	13/076,628	3/31/2011	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN216- AVA-TW01	Detection of Mute and Compensation Therefor During Media Replacement Event	Taiwan	108141307	11/14/2019	202021371	6/1/2020	1718756	2/11/2021
GN216- AVA-TW02	Detection of Mute and Compensation Therefor During Media Replacement Event	Taiwan	110100332	1/6/2021	N/A	N/A	N/A	N/A
GN216- AVA-US01	Detection of Mute and Compensation Therefor During Media Replacement Event	United States of America	62/768,587	11/16/2018	N/A	N/A	N/A	N/A
GN216- AVA-US02	Detection of Mute and Compensation Therefor During Media Replacement Event	United States of America	16/433,530	6/6/2019	US-2020-0162788	5/21/2020	N/A	N/A
GN216- AVA-US03	Detection of Mute and Compensation Therefor During Media Replacement Event	United States of America	16/847,532	4/13/2020	US-2020-0245024	7/30/2020	N/A	N/A
GN216- AVA- WO01	Detection of Mute and Compensation Therefor During Media Replacement Event	Patent Cooperation Treaty	PCT/US2019/054798	10/4/2019	WO2020/101819	5/22/2020	N/A	N/A
GN217- AVA-TW01	Volume Edge Case for DAI – Detect Volume Adjustments Using Loudness Level Profile	Taiwan	108141663	11/15/2019	202034705	9/16/2020	N/A	N/A
GN217- AVA-TW02	Detection of Media Playback Audio Volume Level and Corresponding Adjustment to Audio During Media Replacement Event	Taiwan	108141593	11/15/2019	202027513	7/16/2020	N/A	N/A
GN217- AVA-TW03	DETECTION OF MEDIA PLAYBACK LOUDNESS LEVEL AND CORRESPONDING ADJUSTMENT TO AUDIO DURING MEDIA REPLACEMENT EVENT	Taiwan	110107028	2/26/2021	N/A	N/A	N/A	N/A
GN217- AVA-US01	Detection of Media Playback Loudness Level and Corresponding Adjustment to Audio During Media Replacement Event	United States of America	62/768,596	11/16/2018	N/A	N/A	N/A	N/A
GN217- AVA-US02	Detection of Media Playback Loudness Level and Corresponding Adjustment to Audio During Media Replacement Event	United States of America	16/673,859	11/4/2019	US-2020-0159489	5/21/2020	N/A	N/A
GN217- AVA-US03	Detection of Media Playback Loudness Level and Corresponding Adjustment to Audio During Media Replacement Event	United States of America	62/861,474	6/14/2019	N/A	N/A	N/A	N/A
GN217- AVA-US04	Monitoring Loudness Level During Media Replacement Event Using Shorter Time Constant	United States of America	16/684,514	11/14/2019	US-2020-0162048	5/21/2020	N/A	N/A
GN217- AVA-US05	Detection of Volume Adjustments During Media Replacement Events Using Loudness Level Profiles	United States of America	16/684,510	11/14/2019	US-2020-0162049	5/21/2020	N/A	N/A
GN217- AVA-US06	Detection of Media Playback Loudness Level and Corresponding Adjustment to Audio During Media Replacement Event	United States of America	62/909,676	10/2/2019	N/A	N/A	N/A	N/A

## Schedule of AVA Patent Assets

Patent Reference	Application Title	Country	Application Number	Application Filing Date	Publication Number	Publication Date	Patent Number	Issue Date
GN217- AVA- WO01	Volume Edge Case For Dai – Monitor Loudness Level During Media Content Replacement Event Using Shorter Time Co	Patent Cooperation Treaty	PCT/US2019/061632	11/15/2019	WO2020/102632	5/22/2020	N/A	N/A
GN217- AVA- WO02	Volume Edge Case for Dai – Detect Volume Adjustments Using Loudness Level Profile	Patent Cooperation Treaty	PCT/US2019/061633	11/15/2019	WO2020/102633	5/22/2020	N/A	N/A
GN217- AVA- WO03	Detection of Media Playback Audio Volume Level and Corresponding Adjustment to Audio During Media Replacement Event	Patent Cooperation Treaty	PCT/US2019/059882	11/15/2019	WO2020/101951	5/22/2020	N/A	N/A
GN221- AVA- TW01	Method and System for Use of Automatic Content Recognition to Trigger Dynamic Ad Insertion in Response to Repeat Playback of Ad	Taiwan	109132960	9/23/2020	N/A	N/A	N/A	N/A
GN221- AVA- US01	Method and System for Use of Automatic Content Recognition to Trigger Dynamic Ad Insertion in Response to Repeat Playback of Ad	United States of America	16/668,833	10/30/2019	N/A	N/A	N/A	N/A
GN221- AVA- WO01	Method and System for Use of Automatic Content Recognition to Trigger Dynamic Ad Insertion in Response to Repeat Playback of Ad	Patent Cooperation Treaty	PCT/US2020/049356	9/4/2020	N/A	N/A	N/A	N/A
GN228- AVA- US01	Method and System for Use of Earlier and/or Later Single-Match as Basis to Disambiguate Channel Multi-Match with Non-Matching Programs	United States of America	62/876,363	7/19/2019	N/A	N/A	N/A	N/A
GN228- AVA- US02	Method and System for Use of Earlier and/or Later Single-Match as Basis to Disambiguate Channel Multi-Match with Non-Matching Programs	United States of America	16/586,552	9/27/2019	US-2021-0021893	1/21/2021	N/A	N/A
GN228- AVA- WO01	Method and System for Use of Earlier and/or Later Single-Match as Basis to Disambiguate Channel Multi-Match with Non-Matching Programs	Patent Cooperation Treaty	PCT/US2020/042743	7/20/2020	WO2021/016169	1/28/2021	N/A	N/A
GN229- AVA- US01	Method and System for Use of Network Affiliation as Basis to Determine Channel Rendered by Content Presentation Device	United States of America	62/876,359	7/19/2019	N/A	N/A	N/A	N/A
GN229- AVA- US02	Method and System for Use of Network Affiliation as Basis to Determine Channel Rendered by Content Presentation Device	United States of America	16/586,542	9/27/2019	US02021-0021884	1/21/2021	N/A	N/A
GN229- AVA- WO01	Method and System for Use of Network Affiliation as Basis to Determine Channel Rendered by Content Presentation Device	Patent Cooperation Treaty	PCT/US2020/042742	7/20/2020	WO2021/016168	1/28/2021	N/A	N/A

**PATENT**

**REEL: 059725 FRAME: 0143**