



(51) International Patent Classification:

H04N 21/426 (2011.01) H04N 21/433 (2011.01)
H04H 60/59 (2008.01) H04N 21/44 (2011.01)
H04N 5/775 (2006.01)

(21) International Application Number:

PCT/EP2015/065492

(22) International Filing Date:

7 July 2015 (07.07.2015)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant: ARCELIK ANONIM SIRKETI [TR/TR]; E5
Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).

(72) Inventors: BETTEMIR, Alkim Onur; E5 Ankara Asfalti
Uzeri, Tuzla, 34950 Istanbul (TR). ARAS, Ahmet; E5
Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

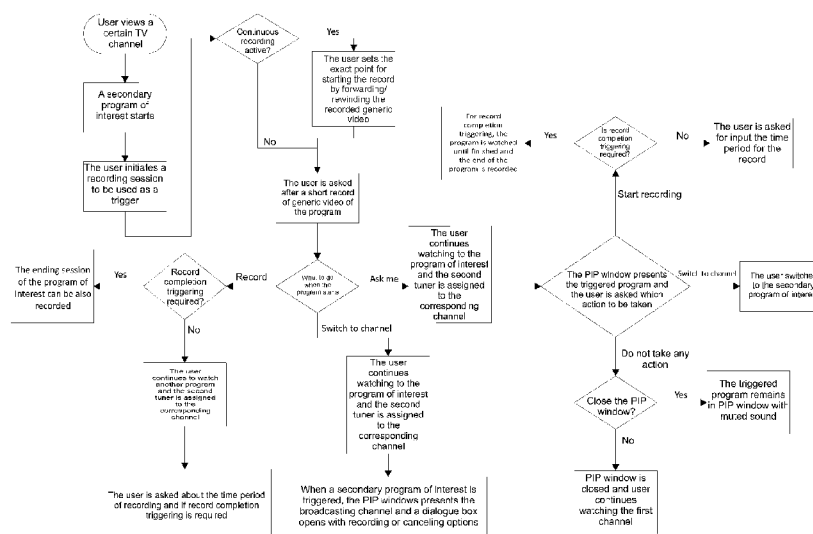
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG,
MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,
PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC,
SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ,
TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU,
TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE,
DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: IMAGE DISPLAY DEVICE ENABLING ACTIVATION OF AN INTERACTIVE TRIGGER



(57) Abstract: The present invention relates to an image display device capable of retrieving and recording an alternative channel broadcast during a broadcast program by an interactive triggering system. The present invention more particularly relates to an image display device receiving a plurality of broadcasting services and comprising at least a first and second tuners, an interactive triggering system configured to perform an automatic recording function in association with the start of a second alternative broadcast program content while a first broadcast program content is being viewed through the first tuner and a memory unit for storing broadcast program contents.



Description**IMAGE DISPLAY DEVICE ENABLING ACTIVATION OF AN INTERACTIVE TRIGGER**

- [0001] The present invention relates to an image display device capable of retrieving and recording an alternative channel broadcast during a broadcast program by an interactive triggering system.
- [0002] Digital and interactive TV systems provide a comprehensive amount of TV channels and programs leading to the general outcome that the users cannot be timely informed of another program of interest while viewing a first program. In such cases, the users are not presented with an effective option to timely switch to an alternative channel broadcasting at the same time.
- [0003] The electronic program guide (EPG) designed to serve for informing the user about the broadcast program contents is not effective enough due to insufficient number of broadcasters appropriately conveying program information for the increasing number of available channels. The insufficient information provided by a limited number of broadcasters eliminates practical use of the electronic program guide.
- [0004] An image display device with various features and capabilities can be provided with a multitude of tuners so as to perform viewing of a first broadcast channel and simultaneous recording of a second broadcast program. It is to be noted that apart from viewing a first program content and recording a second program content, the receiver-decoder or the image display device itself may enable various types of services including interactive functions such as picture-in-picture.
- [0005] Among others, one of the prior art disclosures in the technical field of the present invention may be referred to as GB2519768, which discloses a method of providing interaction options to a user of a device. The device in the form of a smart TV is capable of receiving broadcast content from a broadcaster and content via a network. The method comprises receiving, at the device, both broadcast content and a call-to-action related to the broadcast content. The call-to-action is received via a network. The method includes presenting the broadcast content and the call-to-action to

the user, receiving a trigger signal from the user in response to the call-to-action, and initiating, in response to the trigger signal, an interaction over the network between the user and a call-to-action party associated with the call-to-action. The method enables an interaction to be established between the user and the call-to-action party regardless of whether the call-to-action party is the same entity as or a different entity to the broadcaster. The method may be used to enable a viewer of the broadcast content to purchase items related to the broadcast over the internet from a third party supplier.

- [0006] The present invention provides a system and a method by which an image display device is operated such that an interactive triggering system detects and informs the user of the start of a program content of interest while the user is watching another channel. Said interactive triggering system enables recording of the triggered program by means of a second tuner of the image display device.
- [0007] The present invention therefore provides a system and method for setting an interactive image or video trigger to record a currently non-viewed channel while broadcasting another broadcast program as provided by the characterizing features defined in Claim 1.
- [0008] Primary object of the present invention is hence to provide a system and method by which an image display device provides an interactive trigger by means of an image or generic video of a program broadcast content of interest on another channel while the users views a first channel.
- [0009] The present invention proposes an image display device with an electronic control unit in communication with a digital image processor which automatically initiates recording of a second alternative broadcast program content through a second tuner while the user views a first broadcast program content through a first tuner. The digital image processor detects a formerly set image or recorded generic video stream as a triggering image or video in association with the second alternative broadcast program.
- [0010] If the user intends to record a multitude of broadcast program contents, a plurality of reminders in the form of a triggering list with different triggering

images or videos can be created. Alternatively, the image detected by the digital image processor can contain a machine readable code containing exact starting time of the second broadcast program content. Additionally, a triggering video for terminating recording of the second broadcast program content is recorded or a recording time is accordingly set.

- [0011] Accompanying drawings are given solely for the purpose of exemplifying a system and method by which an image display device performs an interactive triggering function, whose advantages over prior art were outlined above and will be explained in brief hereinafter.
- [0012] The drawings are not meant to delimit the scope of protection as identified in the claims nor should they be referred to alone in an effort to interpret the scope identified in the claims without recourse to the technical disclosure in the description of the present invention.
- [0013] Fig. 1 demonstrates a general workflow diagram of a triggering configuration according to the present invention.
- [0014] The present invention proposes a signal processing device in the form of an image display device or a set-top box receiving programs via satellite, cable or terrestrial broadcasting for instance in the form of separate subscription formats. A set-top box may typically contain a plurality of tuner inputs, operating in connection with an image display device. Alternatively, the image display device itself can receive programs using built-in tuners.
- [0015] The present invention relates to an image display device having an interactive triggering system to provide the user with an automatic reminder activated by means of a generic video or image of a program content of interest. When a secondary program of interest starts, in order to be timely notified at the start of the program, preferably a picture-in-picture (PIP) window automatically appears on the screen and the user is notified of the start of the broadcast program on another channel while viewing a first program on a first channel.
- [0016] The image display device therefore comprises or communicates with at least a pair of tuners for viewing a first program content and for simultaneously recording a second program content and a memory unit in

the form of a storage device /hard drive to store an image or a generic video as will be delineated below.

- [0017] According to the present invention, to effectuate recording of an alternative program content of interest, a digital image processor of the image display device is to catch and detect, analysing consecutive frames of the broadcast program, a certain image with a specific visual form as a specific figure or shape indicative of a certain program content or a generic video comprised of a number of successive frames.
- [0018] Alternatively, the image display device may detect a block of information in the following manner: The image display device may retrieve the program content initiation information in the form of a machine readable code, such as barcode, two-dimensional or matrix code as in the case of Quick Response (QR) codes. The machine readable codes may be discontinuously displayed on the TV screen in a non-intrusive manner, i.e. interfering with the actual program content in a minimal level. The machine readable code will be displayed on the screen in a manner to be overlaid on the actual program so as to be replaced periodically as long as necessary, i.e. at times when new program contents are available. The machine readable code can be retrieved by way of analysing consecutive frames of the video sequence of a broadcast program such that a screen portion where a constant image region is detected for a predetermined time period.
- [0019] The image display device in accordance with the present invention utilizes one of the tuners for detecting initiation of a formerly recorded generic video of an alternative program content of interest. The user is requested to specify the channel of a given program of interest and records a short-duration, preferably five seconds video forming a part of the generic video of the program content. Therefore, when the user views a first program content on a first channel and records a triggering video (or sets an image) for a second alternative program content on a different second channel, as soon as the alternative program content broadcast starts, the recorded short-duration video forming part of the program's generic video will be detected by the digital image processor, which will trigger an

automatic screen notification to request approval of the user in order for initiating automatic recording of the alternative program content. The triggering system may typically open a PIP (picture-in picture) window as a visual reminder of the detected part or the broadcast program on the second channel so that the user can effect initiation of recording or cancel the recording operation.

- [0020] According to the invention, the PIP frame appears on the screen when the digital image processor detects an image or recorded video stream in association with the introduction of the alternative program content. Alternatively, the user may set a plurality of reminders in the form of a triggering list on a daily basis. In this case, the user is requested to provide channel and expected starting time of the TV programs. The image display device will then monitor programs on different channels before the starting times thereof to detect the image or recorded video stream as provided by the user. Typically, the program content being recorded is stored in the memory unit of the image display device to be accessible at a later time.
- [0021] The reminder for a program of interest is set through a trigger setting menu. The user may set the interactive triggering system to directly record the alternative program or to be asked before any action being taking or to directly switch to the triggered program. As an alternative embodiment, the user may add a triggering video for terminating the record or set a recording time.
- [0022] In the case the user prefers to be asked before an action is taken for the triggered broadcast program, a PIP window appears while watching the current channel. The user may not perform any action and may leave the PIP window open on the screen or close it.
- [0023] In summary, the present invention proposes a signal processing device receiving a plurality of broadcasting services and comprising at least a first and second tuners and an interactive triggering system configured to perform an automatic recording function in association with the start of a second alternative broadcast program content while a first broadcast program content is being viewed through the first tuner, the signal processing device being in communication with a memory unit for storing

broadcast program contents.

- [0024] In one embodiment of the present invention, an electronic control unit of the signal processing device communicates with a digital image processor of the signal processing device in the manner that the electronic control unit automatically initiates recording of a second alternative broadcast program content through the second tuner when the digital image processor detects an image or generic video stream in association with the second alternative broadcast program.
- [0025] In a further embodiment of the present invention, the digital image processor detects an image or generic video stream in association with the second alternative broadcast program, the image or generic video stream being recorded as a triggering image or video prior to the start of the second alternative broadcast program content.
- [0026] In a further embodiment of the present invention, the recorded generic video stream forms part of the second broadcast program content's introduction.
- [0027] In a further embodiment of the present invention, the recorded image or generic video stream is detected by the digital image processor upon which an automatic screen notification is generated to request approval of the user in order for initiating automatic recording of the alternative broadcast program content.
- [0028] In a further embodiment of the present invention, a plurality of reminders in the form of a triggering list with different images or generic video streams for multiple broadcast program contents is created.
- [0029] In a further embodiment of the present invention, channel information and expected starting times of multiple broadcast program contents are provided in the manner that the digital image processor monitors broadcast program contents on different channels before the respective expected starting times.
- [0030] In a further embodiment of the present invention, the image detected by the digital image processor contains a specific visual form as a specific figure or shape indicative of a certain broadcast program content.
- [0031] In a further embodiment of the present invention, the image detected by

the digital image processor contains a block of information in the form of a machine readable code. Such machine readable codes as provided by broadcasters are processed by the digital image processor.

[0032] In a further embodiment of the present invention, the machine readable code contains exact starting time of the second broadcast program content.

[0033] In a further embodiment of the present invention, the machine readable code is a barcode, two-dimensional or matrix code in the form of Quick Response (QR) code.

[0034] In a further embodiment of the present invention, the machine readable codes are discontinuously displayed on the screen overlaid on the actual broadcast program content at times when new broadcast program contents are available.

[0035] In a further embodiment of the present invention, a triggering video for terminating recording of the second broadcast program content is recorded or a recording time is set.

[0036] In a further embodiment of the present invention, the signal processing device is an image display device.

[0037] The present invention therefore provides a system and method by which an image display device is operated such that an interactive triggering system detects and informs the user of the start of a program content of interest while the user is watching another channel. Said interactive triggering system enables recording of the triggered program by means of a second tuner of the image display device.

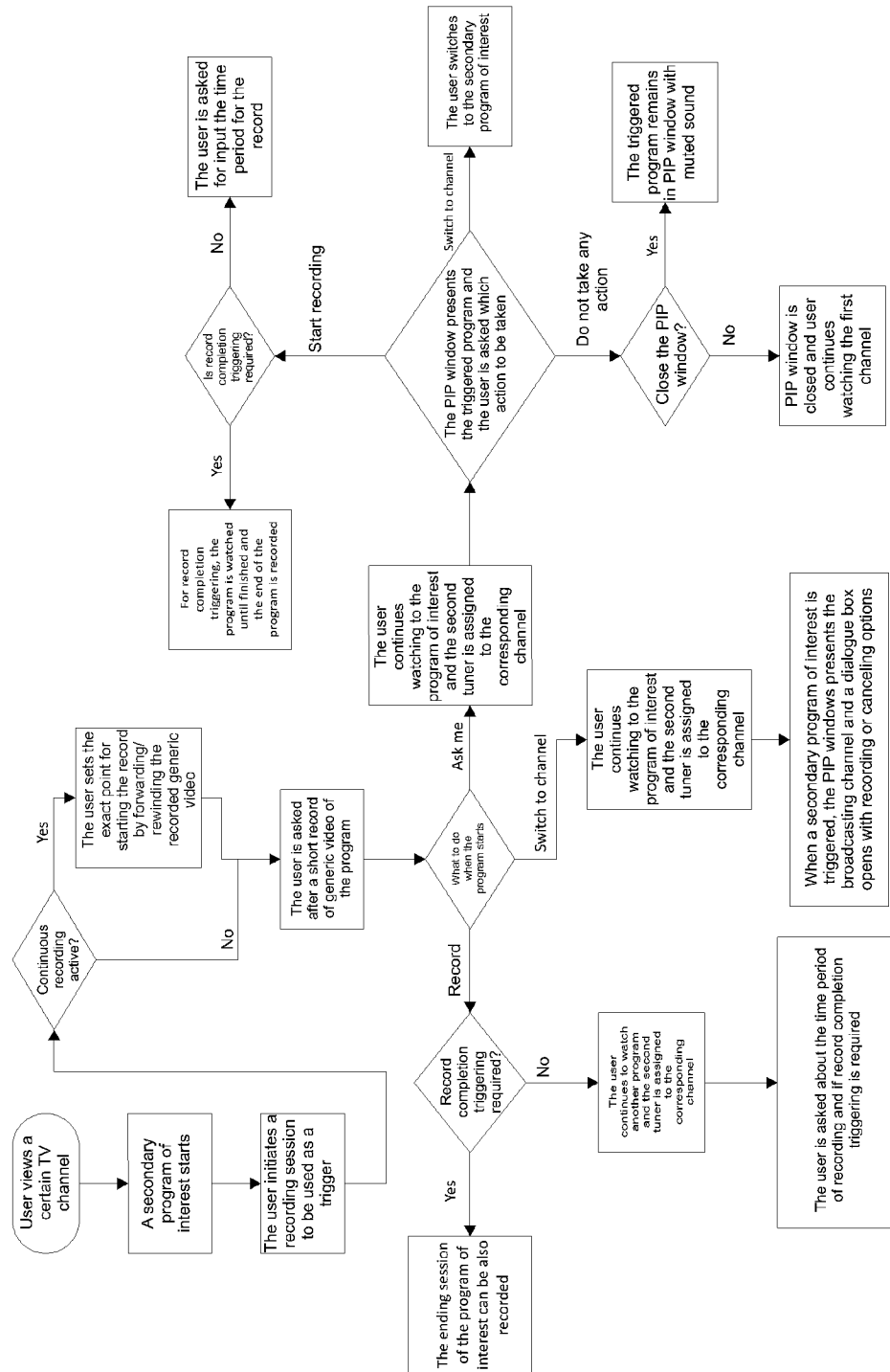
Claims

1. A signal processing device receiving a plurality of broadcasting services and comprising at least a first and second tuners and an interactive triggering system configured to perform an automatic recording function in association with the start of a second alternative broadcast program content while a first broadcast program content is being viewed through the first tuner, the signal processing device being in communication with a memory unit for storing broadcast program contents, **characterized in that** an electronic control unit of the signal processing device communicates with a digital image processor of the signal processing device in the manner that the electronic control unit automatically initiates recording of a second alternative broadcast program content through the second tuner when the digital image processor detects an image or generic video stream in association with the second alternative broadcast program.
2. A signal processing device as in Claim 1, **characterized in that** the digital image processor detects an image or generic video stream in association with the second alternative broadcast program, the image or generic video stream being recorded as a triggering image or video prior to the start of the second alternative broadcast program content.
3. A signal processing device as in Claim 2, **characterized in that** the recorded generic video stream forms part of the second broadcast program content's introduction.
4. A signal processing device as in Claim 3, **characterized in that** the recorded image or generic video stream is detected by the digital image processor upon which an automatic notification is generated to request approval of the user in order for initiating automatic recording of the alternative broadcast program content.
5. A signal processing device as in Claim 2, **characterized in that** a plurality of reminders in the form of a triggering list with different images or generic video streams for multiple broadcast program contents is created.
6. A signal processing device as in Claim 5, **characterized in that** channel information and expected starting times of multiple broadcast program contents are provided in the manner that the digital image processor monitors

broadcast program contents on different channels before the respective expected starting times.

7. A signal processing device as in Claim 2, **characterized in that** the image detected by the digital image processor contains a specific visual form as a specific figure or shape indicative of a certain broadcast program content.
8. A signal processing device as in Claim 2, **characterized in that** the image detected by the digital image processor contains a block of information in the form of a machine readable code.
9. A signal processing device as in Claim 8, **characterized in that** the machine readable code contains exact starting time of the second broadcast program content.
10. A signal processing device as in Claim 9, **characterized in that** the machine readable code is a barcode, two-dimensional or matrix code in the form of Quick Response (QR) code.
11. A signal processing device as in Claim 8, **characterized in that** the machine readable codes are discontinuously displayed on an image display device screen overlaid on the actual broadcast program content at times when new broadcast program contents are available.
12. A signal processing device as in any preceding Claims, **characterized in that** a triggering video for terminating recording of the second broadcast program content is recorded or a recording duration is determined.
13. A signal processing device as in any preceding Claims, **characterized in that** the signal processing device is an image display device.

Fig. 1



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/065492

A. CLASSIFICATION OF SUBJECT MATTER INV. H04N21/426 H04H60/59 H04N5/775 H04N21/433 H04N21/44 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) H04N H04H		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 8 750 688 B2 (ST JOHN-LARKIN DAVID CHRISTOPHER [US]) 10 June 2014 (2014-06-10)	1-3,5,6, 13
Y	abstract column 1, line 9 - column 2, line 29 column 3, line 3 - column 7, line 60 figures 1-3 claim 1	4,7-12
Y	----- WO 01/37549 A2 (WEBTV NETWORKS INC [US]) 25 May 2001 (2001-05-25) abstract page 12, line 10 - page 15, line 4 figure 5A ----- -/--	4
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 2 March 2016		Date of mailing of the international search report 10/03/2016
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Schreib, Franz

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/065492

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2014/186012 A1 (BEALS WILLIAM MICHAEL [US]) 3 July 2014 (2014-07-03) abstract paragraph [0007] paragraph [0060] paragraph [0065] - paragraph [0077] figures 1-6 -----	7-11
Y	US 8 682 145 B2 (PONIATOWKI BOB [US] ET AL) 25 March 2014 (2014-03-25) abstract column 18, line 65 - column 19, line 26 -----	12
A	GB 2 519 768 A (MASTERCARD INTERNATIONAL INC [US]) 6 May 2015 (2015-05-06) cited in the application abstract -----	1-13

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2015/065492

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 8750688	B2	10-06-2014	NONE
WO 0137549	A2	25-05-2001	AU 1614001 A 30-05-2001
		US 7159232 B1	02-01-2007
		US 2005196136 A1	08-09-2005
		US 2005196137 A1	08-09-2005
		US 2005196138 A1	08-09-2005
		US 2005196139 A1	08-09-2005
		WO 0137549 A2	25-05-2001
US 2014186012	A1	03-07-2014	NONE
US 8682145	B2	25-03-2014	US 2011135283 A1 09-06-2011
		US 2014205267 A1	24-07-2014
GB 2519768	A	06-05-2015	GB 2519768 A 06-05-2015
		US 2015121411 A1	30-04-2015
		WO 2015063183 A2	07-05-2015