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(56) Documents Cited:
GB 2486505 A **WO 2012/058753 A**
WO 2010/060585 A **US 20110298726 A**
US 20050099360 A

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 INT CL **G06F**
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(54) Title of the Invention: **Repeater screen for mobile telephone**
 Abstract Title: **Touch screen for connection to smartphone**

(57) Disclosed is a repeater screen 10 for a touch screen smartphone 1. The screen has a video output and an RF controlled input to control the functions of the phone. The repeater screen has a touch screen 12 larger than the touch screen 4 on the phone. An interface 13 connects the video output 2 of a touch screen phone to the repeater display screen and transmits RF signals with data representing operation of the repeater touch screen to the RF controlled input of the touch screen phone. The interface may be hard wired or wirelessly connected to the screen and it may be part of a docking station. The screen may have an entertainment controller which converts the RF output of the phone into infrared. The repeater screen displays an enlarged image of the image displayed on the phone and the repeater touch screen to operates the phone.

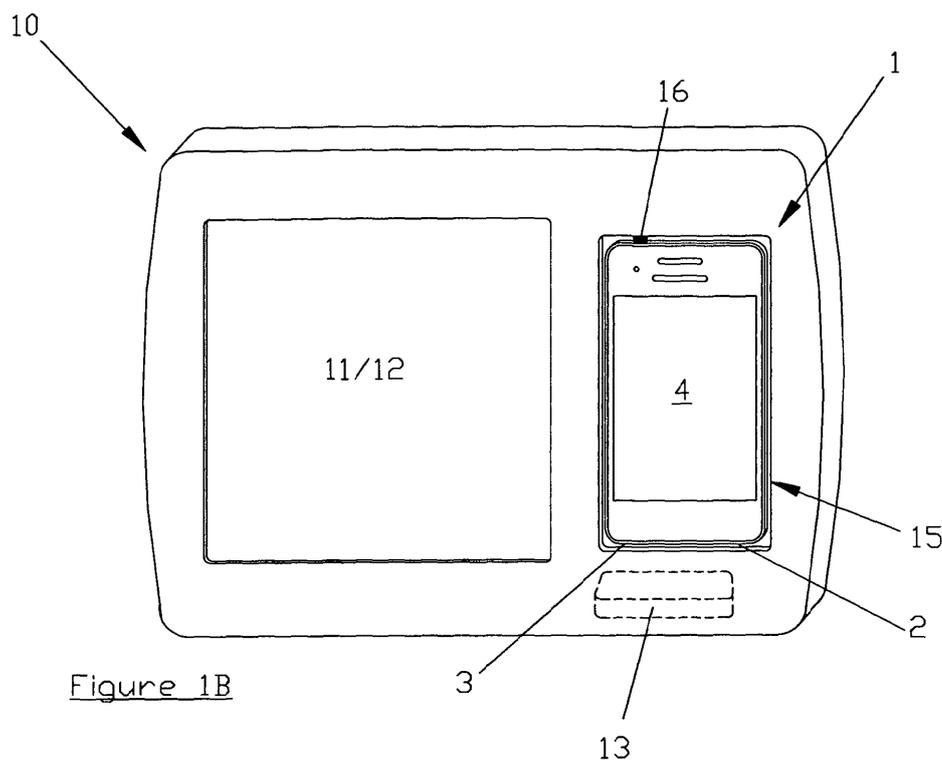


Figure 1B

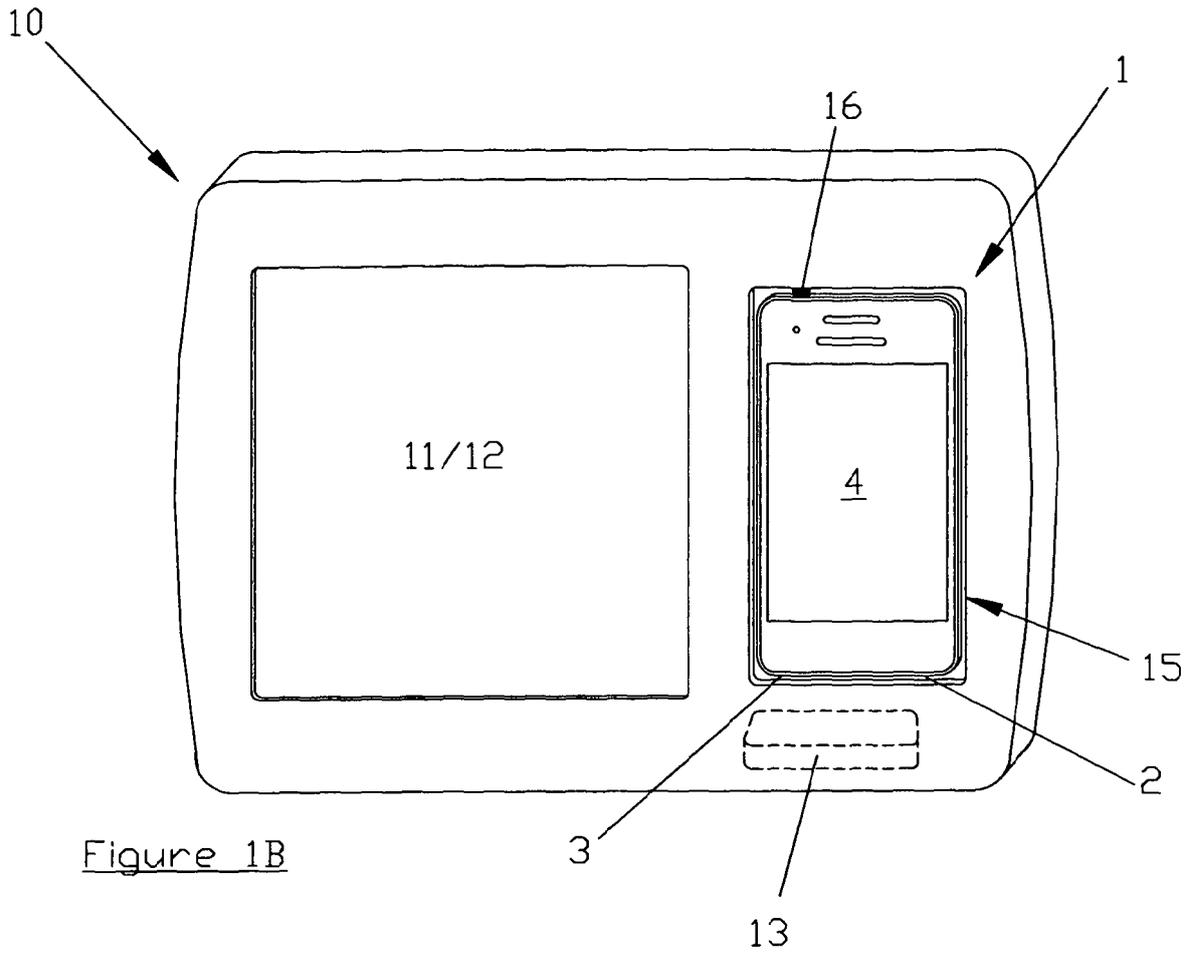


Figure 1B

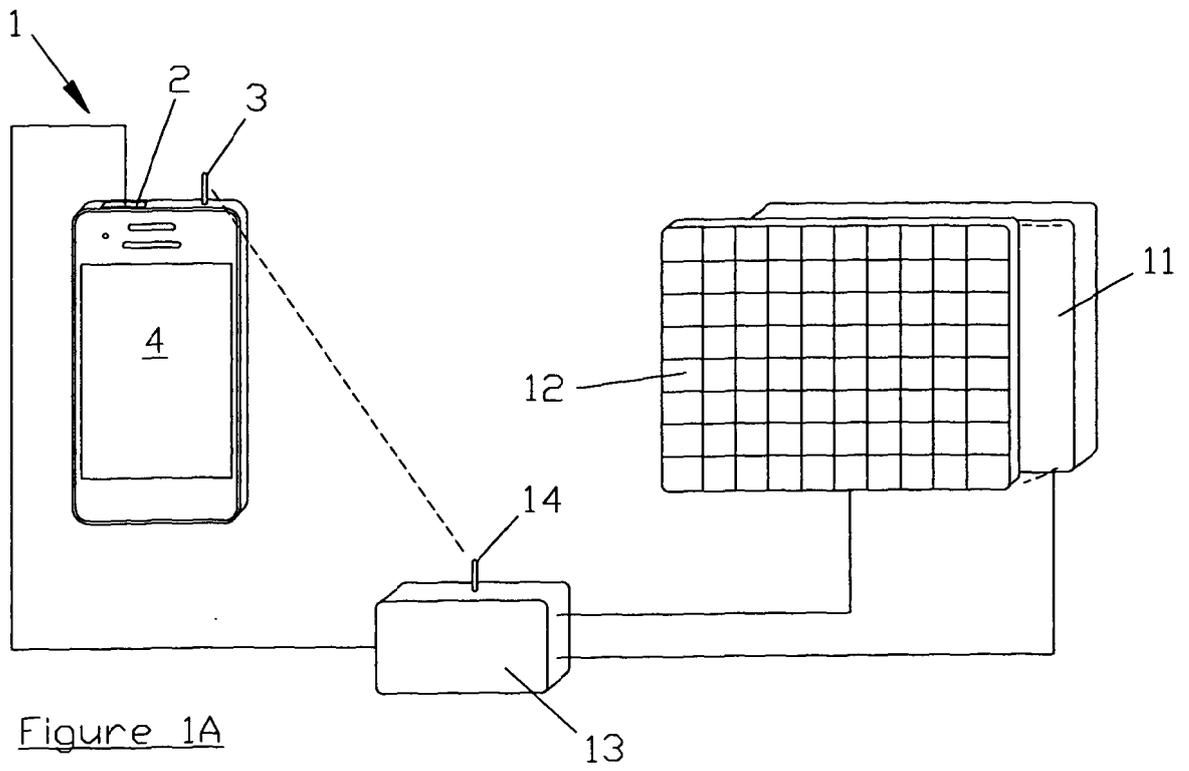


Figure 1A

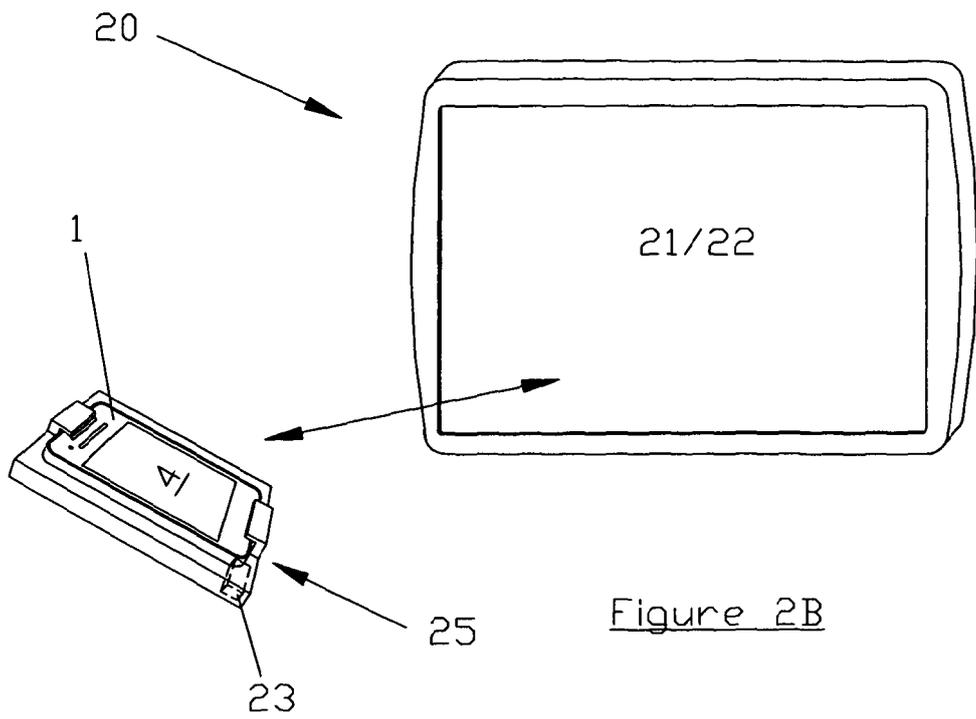


Figure 2B

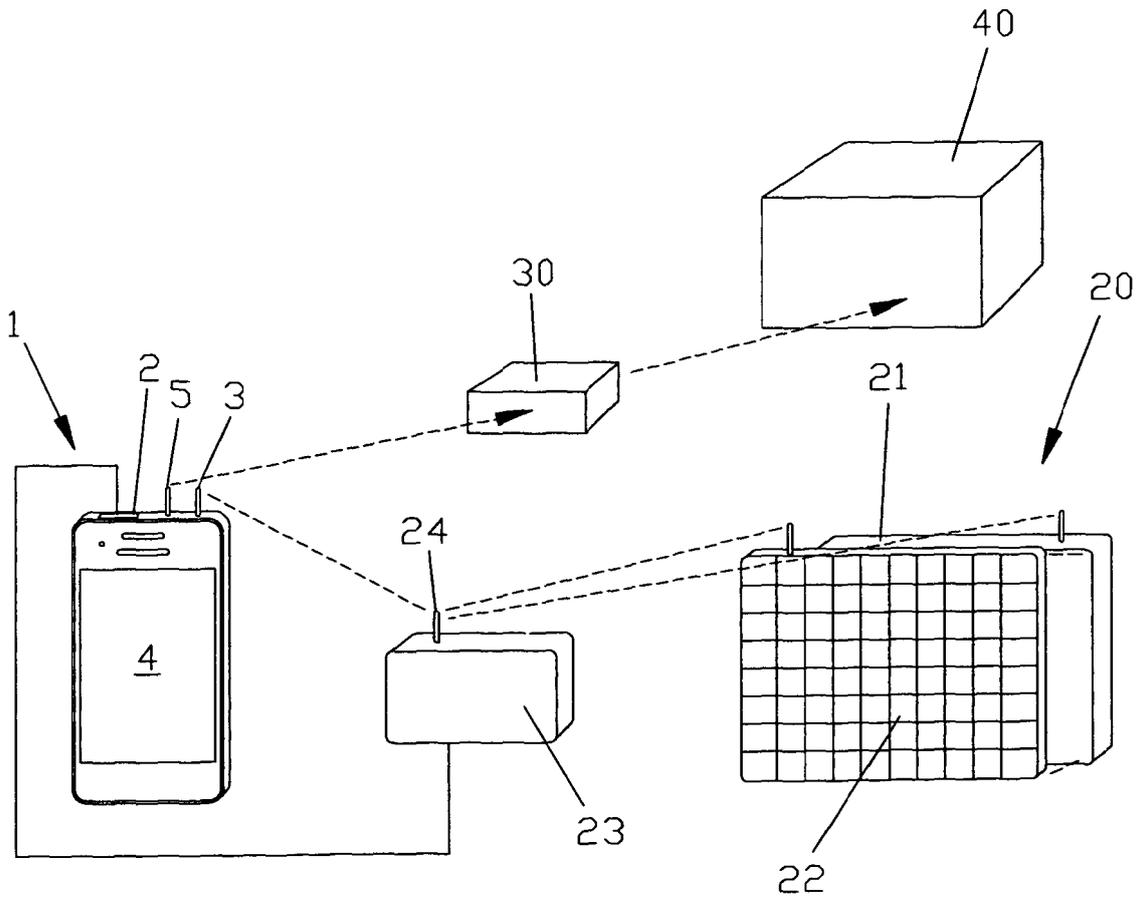


Figure 2A

Title: Repeater Screen for Mobile Telephone

The present invention relates to a repeater screen for a mobile telephone.

Many mobile telephones have a touch screen which displays not only virtual buttons to be touched by the user to operate the functions of the telephone, but also allows images to be displayed such a video images, or pages on a website which can be navigated using the touch screen rather than operating a cursor. These are often referred to a as “Smart Phones”. A problem with these telephones is that the screen size is very small making it difficult to watch video images or navigating around websites.

One solution is to purchase a “Tablet”, e.g. an “I-Pad” (trade mark of Apple Corporation) which can receive a SIM card to go on the internet using 3G or 4G networks. These have larger screens, but this means that a user have to purchase (often by way of a contract) both a mobile telephone and a “Tablet” which is expensive.

The invention seeks to provide a solution to this problem.

According to the present invention there is provided a repeater screen for a phone with a touch screen and having a video output and an RF controlled input to control functions of the phone, said repeater screen comprising:

- a) a repeater screen having a repeater display screen and a repeater touch screen larger than the screen on a touch screen phone, and
 - b) an interface to connect the video output of a touch screen phone to the repeater display screen and to transmit RF signals with data representing operation of the repeater touch screen to the RF controlled input of the touch screen phone,
- in use the repeater screen displaying an enlarged image of image displayed on the touch screen phone and repeater touch screen allowing the user to operate the touch screen phone.

Preferably the RF signal is a Bluetooth™ signal. Preferably the RF signals transmitted by the interface are encrypted for security.

Preferably the video output is an HDMI.

Preferably the interface includes conversion means to convert the repeater screen ratio to mimic the ratio of the phone touch screen.

In one embodiment the interface is hard wired to the repeater screen.

In another embodiment the interface is connected wirelessly to the repeater screen.

The interface may form part of a docking station. The docking station may be integral with the repeater screen or separate to the repeater screen. The docking station may have a removable insert whereby inserts of different sizes may be used to accommodate different sizes of phones. The repeater screen may further comprise an entertainment controller which converts RF output from the phone to infra red, and the RF output is controlled by the repeater screen.

Embodiments of the invention will now be described with reference to the accompanying drawings in which:

Figure 1A shows a schematic diagram of a first embodiment,

Figure 1B shows a perspective view of a first embodiment,

Figure 2A shows a schematic diagram of a second embodiment, and

Figure 2B shows a perspective view of a second embodiment.

Referring to Figures 1A and 1B there is shown a touch screen phone 1 of a type well known in the art. Phone 1 has a HDMI video and audio output 2, and a "Bluetooth" RF controlled input 3 to control functions of the phone. Phone 1 has a touch screen 4.

In accordance with the present invention there is provided a repeater screen 10 for phone 1. Screen 10 has a repeater display screen 11 and a repeater touch screen 12 larger than the screen on a touch screen 4 on phone 1. Touch screen 12 may be in the form of a grid overlaying the display screen 11 but allowing images on the display screen 11 to be viewed.

An interface 13 is provided to connect (physically through wires) the HDMI output 2 of the touch screen phone to the repeater display screen 11, and repeater touch screen 12 is connected to the interface 13. Interface 13 also transmits Bluetooth signals from an antennae 14 with data representing operation of the repeater touch screen 12 to the RF controlled input 3 of the touch screen phone 1. Interface 13 is located adjacent a recess 15 forming a docking station for phone 1. Recess 15 may include a plug 16 which engages with the HDMI output 2 when phone 4 is placed in the recess 15.

In use the repeater display screen displays an enlarged image of image displayed on the touch screen phone 1, and the repeater touch screen 12 allows the user to operate the touch screen phone by touching the repeater touch screen 12 in the same way as touching the phone touch screen. Because the display screen 11 is larger than the screen 4 on the phone 1, images are much easier to see making video more enjoyable to watch, and the larger display screen 11 and touch screen 12 make it easy to navigate around websites.

The interface 13 includes a conversion means to convert the repeater screen ratio to mimic the ratio of the phone touch screen. RF signals transmitted by the interface may also be encrypted for security. Recess 15 may be provided by a removable insert whereby inserts of different sizes may used to accommodate different sizes of phone 1.

Referring to Figures 2A and 2B there is shown a touch screen phone 1 of a type well known in the art. Phone 1 has a HDMI video and audio output 2, and a "Bluetooth" RF controlled input 3 to control functions of the phone. Phone 1 has a touch screen 4. Phone 1 also has a "Bluetooth" RF controlled output 5 to emit control signals from the phone.

In accordance with the present invention there is provided a repeater screen 20 for phone 1. Screen 20 has a repeater display screen 21 and a repeater touch screen 22 larger than the screen on a touch screen 4 on phone 1. Touch screen 22 may be in the form of a grid overlaying the display screen 21 but allowing images on the display screen 21 to be viewed.

An interface 23 is provided to connect wirelessly the HDMI output 2 of the touch screen phone to the repeater display screen 21 from an antennae 24, and repeater touch screen 22 is connected wirelessly to the interface 23. Interface 23 also transmits Bluetooth signals from antennae 24 with data representing operation of the repeater touch screen 22 to the RF controlled input 3 of the touch screen phone 1. Interface 23 is located in a cradle docking station 25 for phone 1.

In use the repeater display screen displays an enlarged image of image displayed on the touch screen phone 1, and the repeater touch screen 22 allows the user to operate the touch screen phone by touching the repeater touch screen 22 in the same way as touching the phone touch screen. Again, because the display screen 22 is larger than the screen 4 on the phone 1, images

are much easier to see making video more enjoyable to watch, and the larger display screen 21 and touch screen 22 make it easy to navigate around websites.

The interface 23 includes a conversion means to convert the repeater screen ratio to mimic the ratio of the phone touch screen. RF signals transmitted by the interface may also be encrypted for security. Cradle 25 may be provided by a removable insert whereby inserts of different sizes may be used to accommodate different sizes of phone 1.

The repeater screen may further comprise an entertainment controller 30 which converts "Bluetooth" RF output 5 from the phone to infra red, and the RF output is controlled by the repeater screen 20. Controller 30 may be used to operate electrical equipment 40 such as TVs, DVDs, Audio Systems, Set Top boxes (e.g. associated satellite and cable television). This would obviate the need to have a separate remote controller for such electrical equipment. A controller 30 could also be incorporated into the embodiment of Figures 1A and 1B.

Because the phone 1 is located in a cradle 25 separate to the repeater screen 20, the phone can be located in a remote location to screen 20. For example the screen can be held on the lap of a user in a chair and the phone 1 in cradle 25 can be located on a nearby shelf for example. The repeater screen can be used to all the functions of a "tablet" without the inherent cost.

The invention may take a form different to that specifically described above.

Further modifications will be apparent to those skilled in the art without departing from the scope of the present invention.

CLAIMS

1. A repeater screen for a phone with a touch screen and having a video output and an RF controlled input to control functions of the phone, said repeater screen comprising:

a) a repeater screen having a repeater display screen and a repeater touch screen larger than the screen on a touch screen phone, and

b) an interface to connect the video output of a touch screen phone to the repeater display screen and to transmit RF signals with data representing operation of the repeater touch screen to the RF controlled input of the touch screen phone,

in use the repeater screen displaying an enlarged image of image displayed on the touch screen phone and repeater touch screen allowing the user to operate the touch screen phone.

2. A repeater screen for a phone according to claim 1, wherein the RF signal is a Bluetooth[®] signal.

3. A repeater screen for a phone according to claim 1 or 2, wherein the RF signals transmitted by the interface are encrypted for security.

4. A repeater screen for a phone according to claim 1, 2, or 3, wherein the video output is an HDMI, MHL or DNLA output.

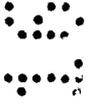
5. A repeater screen for a phone according to any preceding claim, wherein the interface includes conversion means to convert the repeater screen ratio to mimic the ratio of the phone touch screen.

6. A repeater screen for a phone according to any preceding claim, wherein the interface is hard wired to the repeater screen.

7. A repeater screen for a phone according to any of claims 1 to 6, wherein the interface is connected wirelessly to the repeater screen.



8. A repeater screen for a phone according to any preceding claim 1, wherein the interface may form part of a docking station.



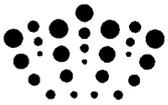
9. A repeater screen for a phone according to any preceding claim, wherein the docking station is integral with the repeater screen or separate to the repeater screen.

10. A repeater screen for a phone according to any preceding claim, wherein the docking station has a removable insert whereby inserts of different sizes may be used to accommodate different sizes of phones.

11. A repeater screen for a phone according to any preceding claim, wherein the repeater screen further comprises an entertainment controller which converts RF output from the phone to infra red, and the RF output is controlled by the repeater screen.

12. A repeater screen for a phone substantially as hereinbefore described with reference to and as shown in the accompanying drawings.





Application No: GB1108491.0

Examiner: Mr David Maskery

Claims searched: 1 - 11

Date of search: 21 August 2012

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X,E	1 - 10	GB 2486505 A (JAMBHULKAR) See whole document.
X,E	1 - 10	WO 2012/058753 A (MITAB INC) See pages 2 to 5.
X,E	1 - 10	WO 2010/060585 A (HAN) See abstract and figures.
X	1 - 10	US 2005/0099360 A (YUEH) See whole document.
A	-	US 2011/0298726 A (WU et AL) See whole document.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

Worldwide search of patent documents classified in the following areas of the IPC

G06F

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI.

International Classification:

Subclass	Subgroup	Valid From
G06F	0001/16	01/01/2006