Pop Up Camera Design Patent on Vivo APEX

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Abstract

The technology disclosed here maximizes the size of the display area associated with mobile devices with various camera placements. In one embodiment, the camera is placed on a mobile device, and can appear outside a mobile device when the camera is activated. when the camera is inactive, the camera shortens inside the mobile device, and becomes inconspicuous to the user. in another embodiment, the camera is integrated into the display of a mobile device as a camera icon. integrated camera icon.

Integrated camera serves two purposes: to record images, and act as a camera icon, which when selected activates the camera. by removing the camera from the front of the mobile device, or by integrating the camera into the display screen of a mobile device, the size of the display screen of a mobile device can be increased.

Keywords: Patents, Camera Design, Vivo APEX

A. INTRODUCTION

The growing technology in smartphones is getting more advanced every year as well as the hardware used. The last development we can see last week at the Mobile World Congress (MWC) event held in Barcelona, in the annual event the most interesting innovation came from a Chinese company, Vivo. They managed to attract attention by presenting the vivo apex series which has a bezel-less screen display up to 90 percent without notch, to get around this design the company uses the concept of a camera pop up that can appear from the top left.

Although no single smartphone vendor has brought this concept, it is now known that the breakthrough made by Vivo has been patented by the Essential Phone first. The company led by the Android Co-Founder patented a concept similar to Vivo APEX since May 2016 under the name "Apparatus And Method For Maximizing The Display of A Mobile Device" and was only received in August last year. Both the Essential-owned concept and Vivo APEX both carry the bezel-less smartphone design without the notch at the top of the screen, the difference is for the Vivo camera module

on the top left side while the Essential Phone's patent rights are on the top right.

FIG. 1

Vivo managed to attract attention by presenting the Pop Up camera design in the APEX series. However, the patent has apparently been owned by an Essential Phone since 2017.

The Vivo Apex phone has a 5.99 "(15.21 cm) screen with a screen resolution of 1080 x 2160 pixels and runs on the Android v8.0 (Oreo) operating system. This device is supported by the Octa core, a 2.8 GHz processor paired with 4 GB RAM. As far as the battery in question has 4000

mAh, more than that, as far as the rear camera in question this phone has a 12 MP camera, other sensors include the Light sensor, Proximity sensor, Accelerometer, Compass, Gyroscope, does it have a fingerprint sensor? Yes, of course. For graphics performance that can make the game run smoothly, this phone has got the Adreno 630 GPU. Storage boards are at 64 GB with the option to expand memory with Yes Up to 256 GB.

➤ **VIVO APEX SPECIFICATIONS SUMMARY**

Performance: Octa Cor
Display: 5.99 "(15.21 cm)
Stronge: 64 Gb
Camera: 12 Mp
Battery: 4000 Mah
Ram: 4 Gb
Launch Date In India: Aug 23, 2018.

➤ **SPECIAL FEATURES**
Fingerprint Sensor Position: On-Screen
Other Sensors: Light Sensors, Proximity Sensors, Accelerometers, Compass, Gyroscopes
Fingerprint Sensor: Yess

➤ **GENERAL**
Operating System: Android V8.0 (Oreo)
Sim Slots: Dual SIM, GSM + GSM
Model: Apex
Launch Date: August 23, 2018 (Unofficial)
Brand: Vivo

Sim Size: SIM1: Nano SIM2:
Nano (Hybrid)

Network: 4G: Available
(Doesn't Support Indian Bands)

3G: Available, 2G: Available

Fingerprint Sensor: Yess

➤ **MULTIMEDIA**

Loudspeaker: Yes

Audio Jack: 3.5 mm

➤ **PERFORMANCE**

Chipset: Qualcomm
Snapdragon 845

Graphics: Adreno 630

Processor: Octa Core, 2.8 Ghz

Architecture: 64 Bit

Ram: 4 Gb

➤ **DISPLAY**

Display Type: Oled

Pixel Density: 403 Ppi

Screen Protection: Corning
Gorilla Glass

Screen Size: 5.99 Inches (15.21
Cm)

Screen Resolution: 1080 X
2160 Pixels

Touch Screen: Yes Capacitive
Touchscreen, Multi-Touch

➤ **STORAGE**

User Available Storage: Up To
106 Gb

Internal Memory: 128 Gb

Expandable Memory: No

Usb Otg Support: Yes

➤ **CAMERA**

Settings : Exposure

Compensation, Iso Control

Camera Features : 2 X Digital

Zoom, Auto Flash, Face

Detection, Touch To Focus

Image Resolution : 4000 X
3000 Pixels

Sensor Exmor Rs

Autofocus : Yes

Shooting Modes : High

Dynamic Range Mode (Hdr)

Resolution : 25 Mp Front

Camera

Physical Aperture : F2.0

Optical Image Stabilisation :
Yes

Flash : Yes Led Flash

➤ **BATTERY**

User Replaceable : No

Quick Charging : Yes Fast

Type: Li-Polymer

Capacity : 3700 Mah

➤ **NETWORK**

CONNECTIVITY

Wifi : Yes Wi-Fi 802.11,

A/Ac/B/G/N/N 5ghz

Usb Typec : Yes (Doesn`T
Support Micro-Usb)

Sar Value: Head: 1.390 W/Kg,

Body: 0.535 W/Kg

Nfc : Yes

Network Support : 4g

(Supports Indian Bands), 3g,
2g

Gps : Yes With A-Gps,

Glomass

Edge : Available

Wifi Features Mobile Hotspot

Bluetooth : Yes V5.0

Volte : Yes

Usb Connectivity : Mass
Storage Device, Usb Charging

The revelation of this news stems from Twitter's tweet made by someone named Rafael. The Tweet was responded to by the Essential CEO, Andy Robin, who responded with a patent link that had been received by his company. In addition to these patents, Essential also registers a camera concept that is integrated with the icon located at the top left of the screen.

This camera icon has two functions, namely as a button to take photos and record videos and to activate the camera module. With the disclosure of information on patents owned by the Essential Phone does not necessarily make Vivo get a legal problem, because at the MWC title they just introduced the concept of not smartphone products that are ready to be released in the near future. Conversely, even though you already have Essential patent rights, you will not necessarily release a smartphone with this concept. If you think which concept is more interesting? A camera with a Pop Up design like Vivo APEX or a smartphone with a normal camera display?

B. CONCLUSION

The technology disclosed here maximizes the size of the display area associated with mobile devices with various camera placements. In one embodiment, the camera is placed on a mobile device, and can appear outside a mobile device when the camera is activated. when the camera is inactive, the camera shortens inside the mobile device, and becomes inconspicuous to the user. in another embodiment, the camera is integrated into the display of a mobile device as a camera icon. integrated camera icon.

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