

seek™ Compact SERIES USER GUIDE



Compact



CompactXR

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Introduction

A Tiny Thermal Camera. A Big Step Forward.

An unseen world of energy surrounds us. It is part of everything we touch, see, and feel. This unseen world – specifically levels of infrared energy, which our eyes can't detect – provides information that is incredibly useful for solving everyday problems. Bringing to the table over 35 years of innovation, Seek Thermal's cofounding team – Dr. William Parrish and Tim Fitzgibbons – knew that turning every smartphone into a high-powered thermal imaging device was groundbreaking and could change lives.

Seek a New Advantage

By measuring very small temperature differences within the scene, invisible energy patterns are converted by our thermal imagers into clear, visible images that the human eye can't always see. Since the energy we sense is not impacted by visible light, our infrared thermal imagers can be used in both daylight and night conditions and across long distances.

The Compact Series

Seek currently makes three different Compact cameras that each come in Android and iPhone platforms. These three different cameras each have particular uses and benefits as expressed by their feature set. Each of the platforms, Android or iPhone requires a free app to perform. See the section that applies to you and your smartphone to see a discussion of the two applications.

Table 1: Camera Specs

Camera	Image	Field of View	Speed	Power Consumption
Compact	206 x 156	36°	<9Hz	Apple: 260 milliwatts (.00026 kilowatts)
CompactXR	206 x 156	20°	<9Hz	Android: 280 milliwatts (.00028 kilowatts)



Figure 1: The Compact installed on a smartphone in portrait 4:3 display.



Figure 2: The Compact installed on a smartphone rotated to landscape in 4:3 display.



Figure 3: Compact or CompactXR in both platforms.

Compact



Compact



Turn your Smartphone into a Thermal Imager

Thermal imaging provides useful insight into the detection of energy loss in homes, commercial buildings, and industrial facilities. Inspection with thermal imaging detects energy loss caused by air leaks, missing or damaged insulation, inefficient HVAC systems, and poor construction.

Finding and assessing these problems requires a thermal imager to identify hot and cold spots. Seek Thermal Compact thermal imaging cameras enable contractors to conduct building and home inspections quickly and accurately, without the need to crawl through attics and crawlspaces or punch holes in walls to find air leaks, thermal bypasses, and insulation gaps.

Quick to connect and detect, the smartphone attachment is designed to work with both iPhone and Android top models. This device is portable and easy to pack away for any occasion. It combines powerful thermal insight with a 206x156 sensor, a 36-degree wide field of view, and runs off the low energy from your smartphone. Your smartphone display makes this as visual and large as your smartphone or tablet. Seek Compact uses advanced infrared technology to let you see thermal images in day or night – and comes with its own waterproof carry case. Its detection distance can shorten into a few inches or as far as 1,000 ft.

CompactXR



Long-Range Thermal Imaging Camera Designed for Your Smartphone

CompactXR is the world's smallest thermal imager. Its highly portable design fits in your pocket for easy connect and detect convenience. The CompactXR delivers powerful thermal imaging through its advanced 206x156 thermal sensor engineered with the same military-proven technology the pros use. Its 20-degree narrow field of view allows it to detect heat signatures up to 1,800 feet away between -40 and 626 degrees Fahrenheit.



Hunting & Outdoors

The outdoor environment is directly impacted by light conditions and weather. With a thermal imaging camera, you can scout terrain in total darkness, accurately track during fog or dense conditions, and recover long after dusk sets in.

- Accurately Scout Terrain
- Track Game
- Recover with a New Advantage after Dusk
- Stay Safe in the Blind

Safety & Security

Keep an eye on things – even things your eyes can't see. A visual assessment using Seek Thermal Imaging Cameras has unique benefits especially at night and over long distances. Thermal imaging detects elevated temperatures, which are

indicative of objects radiating energy (or heat). This makes it easier to discover and detect heat-emitting sources at night where lighting provides unwanted attention:

- Law Enforcement
- Night Security
- Search & Rescue
- Land Surveillance and Border Protection
- Public Safety & Tactical Support
- Safeguard Corporate Facilities, Factories & Warehouses, Government Sites, or Residential Property

Installing the iPhone App

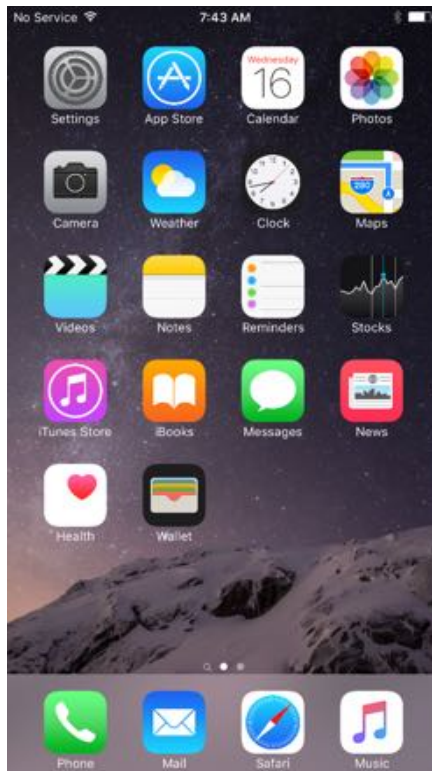


Figure 4: iPhone Main App Screen



Figure 5: iPhone App Store (Seek Thermal App) Screen

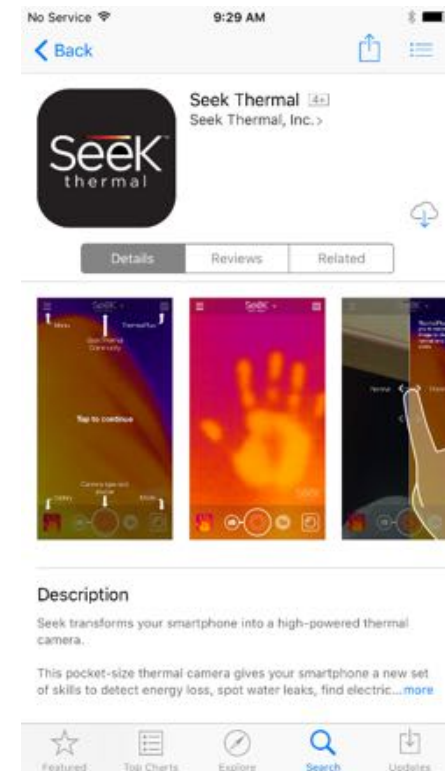



Figure 6: The App Store's Display of the Seek Thermal App

Start the App Store  app and search for “Seek Thermal”:

Start the download, answer the permissions queries and the app is installed.

The app can be started in two ways:

- 1) Clicking on the app on your smartphone display, or just by

2) Connecting the camera.

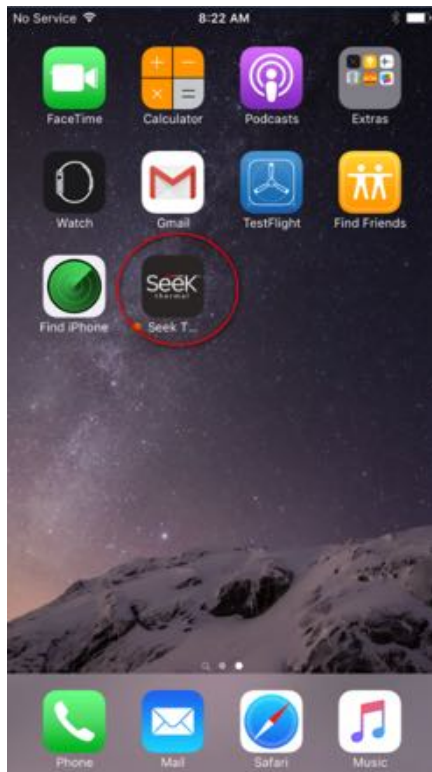


Figure 7: iPhone Display Showing (Seek Thermal) App Installed



Figure 8: iPhone Initial Screen Asking for a Camera

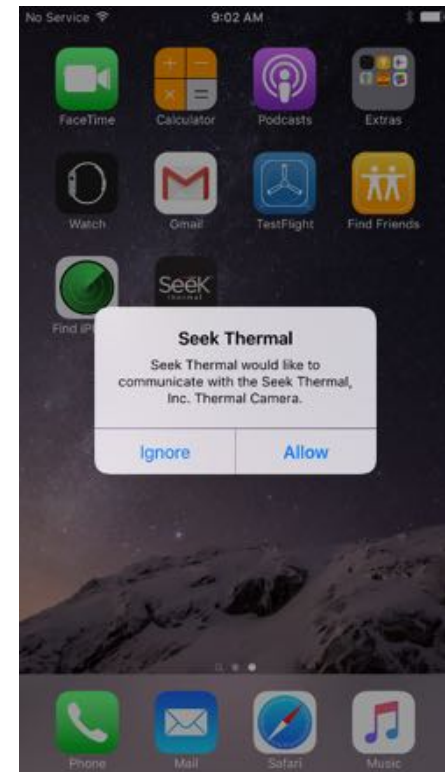


Figure 9: iPhone Camera Connection Permission Query

Installing the Android App



Figure 10: Android Phone Screen Showing Google Play

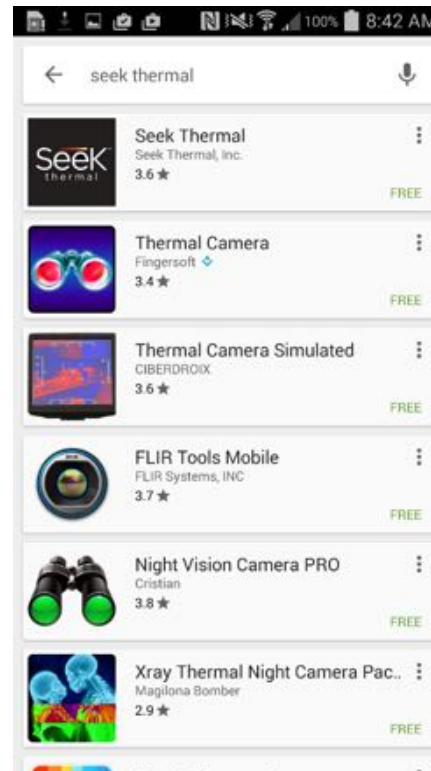


Figure 11: Google Play Showing the Seek Thermal App Query

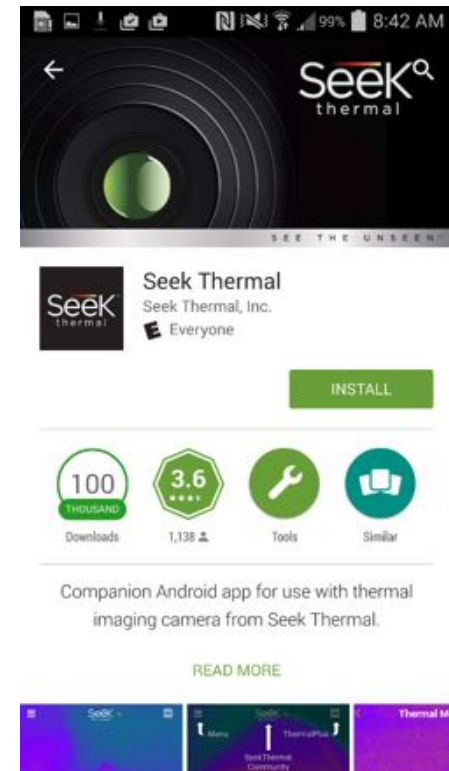



Figure 12: Google Play's Display of the Seek Thermal App

Start the Google Play  app on your smartphone and search for Seek Thermal. Select the Seek Thermal app and tap the Seek Thermal app to select it.


Tap the **INSTALL**  button. When it is finished downloading and you have answered the Android permission queries, you are done.



Figure 13: Android Seek Thermal App Installed



Figure 14: Android Initial Screen Asking for a Camera

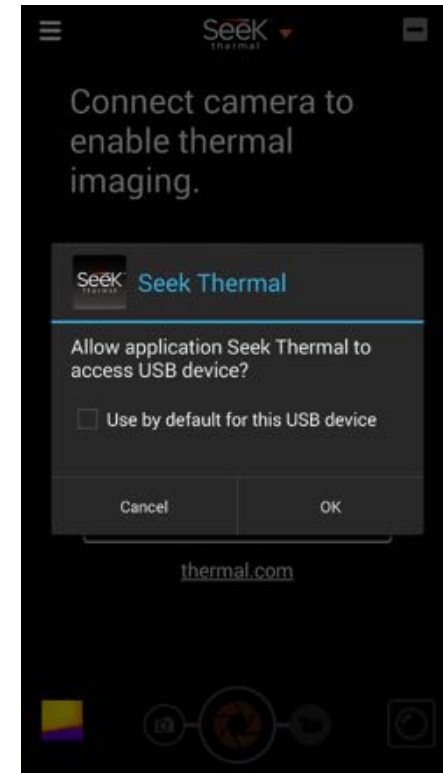


Figure 15: Android Camera Connection Permission Query

The app is installed and can be started in two ways:

- 1) Clicking on the app on your smartphone display, or just by
- 2) Connecting the camera.

Using the Seek Thermal App(s)

Camera Connection

The Apple iPhone or iPad or iTouch requires a camera with a Lightning connector. Push the bottom of the camera while inserting the male connector. It should snap into place. It can be installed with the camera facing away from the smartphone display (normal) or reversed in a selfie position. The app should still work except for the Thermal+ option, which would have the native camera facing in the opposite direction.



Figure 16: Lightning Connector

The Android platform of camera can only be installed in one direction or the other, and it depends on the particular brand and model of smartphone or tablet as to whether it can be installed in a normal facing direction or selfie. Adaptors¹ or cables are available to be able to turn the cameras in those smartphones where they are stuck in the selfie position.

If the app is not already running, connecting the camera should invoke the respective app.



Figure 17: Android Connector Reverser #1



Figure 18: Android Connector Reverser #2

¹ It can be purchased separately at <http://www.amazon.com/gp/product/B0141Q9OGO> or http://www.yourcablestore.com/YCS-Basics-USB-20-Micro-B-5-Pin-Male-to-Micro-B-5-Pin-reversed-Female-adapter-All-5-pins-wired_p_1455.html

Imaging

Focusing Your Camera

If your Compact has a rubber knurled ring around the lens, you should first adjust the focus before capturing an image/video.






Figure 19: Compact Cameras Showing Focusing Rings



Figure 20: Focus First then Capture Image/Video.

Taking a Picture

Tap the “camera”  icon and a shutter  icon appears in the bottom center of the screen. Point the camera at the desired scene and tap the shutter  icon. A captured image thumbnail appears in the bottom left of the screen (the Gallery button). Note that images/video that are taken will retain the aspect ratio that the screen is displaying during capture. See the Gallery section for instructions on how to review the images and videos. Also, see the section on the connection to a PC/Mac for instructions on how to transfer images/videos.

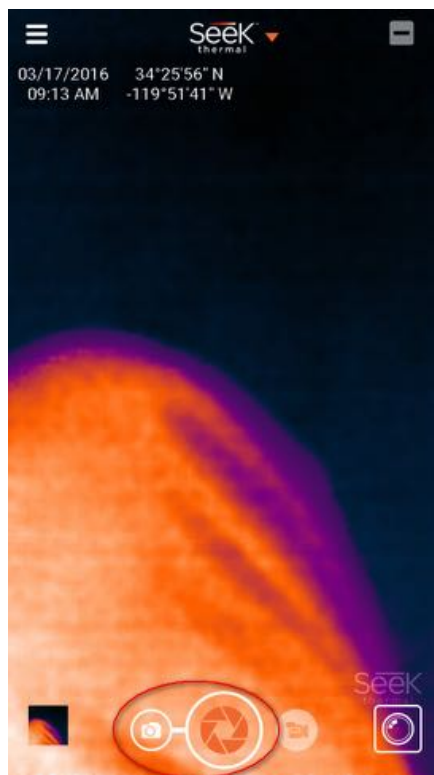


Figure 21: Camera and shutter icons.

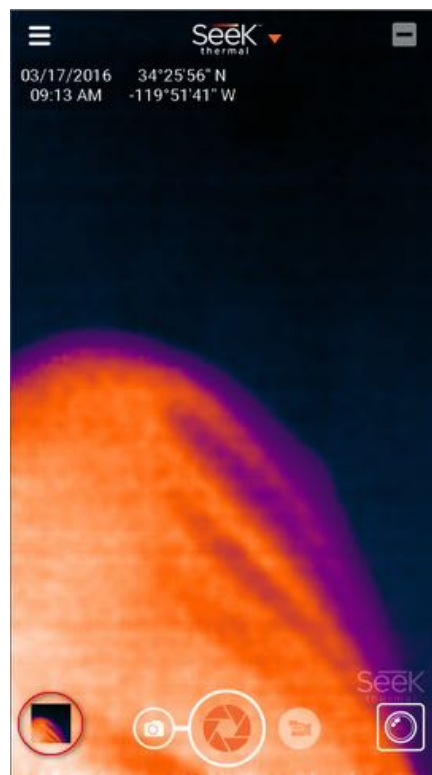








Figure 22: Gallery button.



Figure 23: Close up of camera and video controls.

Taking a Video

Tap the “video camera”  icon and a red ball  icon appears in the bottom center of the screen. Point the camera at the desired scene and tap the red ball  icon. The red ball icon changes to a red square  icon and a video counter  appears above it. When it is desired to terminate the video, tap the red square  icon. A captured video thumbnail appears in the bottom left of the screen (the Gallery button). Note that images/video that are taken will retain the aspect ratio that the screen is displaying during capture. See the Gallery section for instructions on how to review the images and videos. Also, see the section on the connection to a PC/Mac for instructions on how to transfer images/videos.

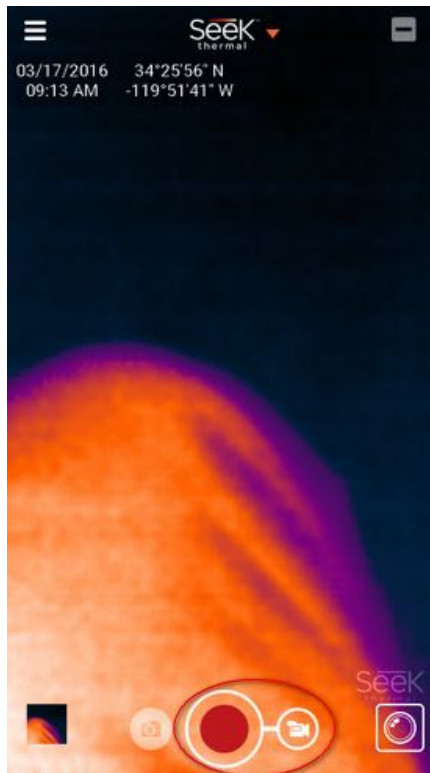


Figure 24: Red ball and video camera icons

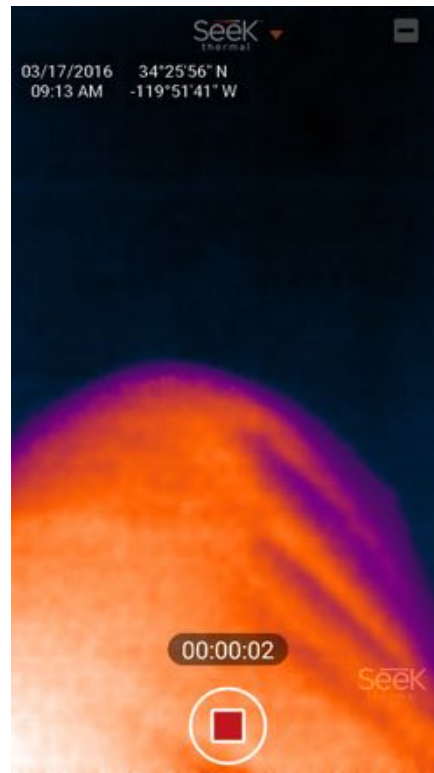


Figure 25: Red square icon and video counter



Figure 26: Close up of camera and video controls (#2)

The Gallery

Tapping the Gallery button will display the last image/video that was created. The user can swipe sideways to display each image/video. Tapping the image/video will reveal/hide the three icons at the bottom, Simple Share, Sharing, and Trash.

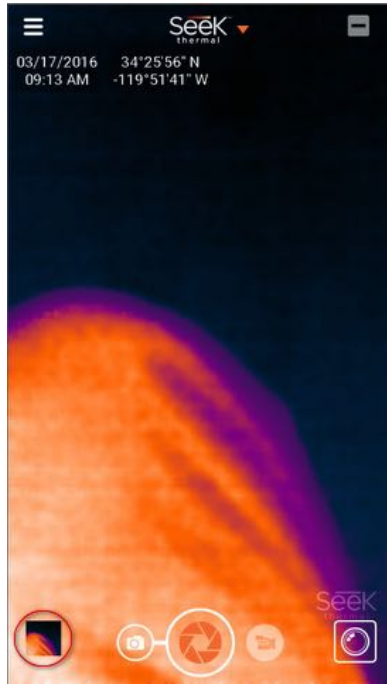


Figure 27: The Gallery button

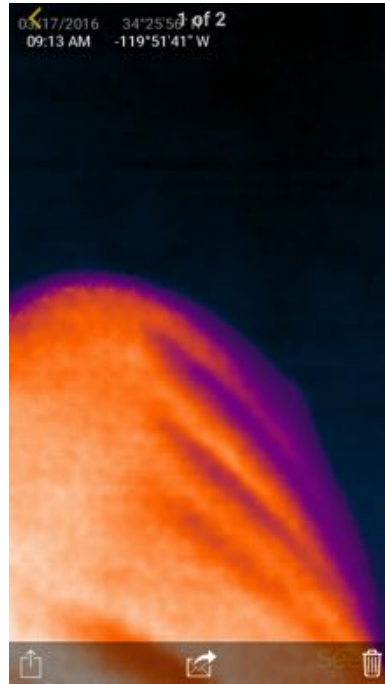


Figure 28: Captured image from the Gallery

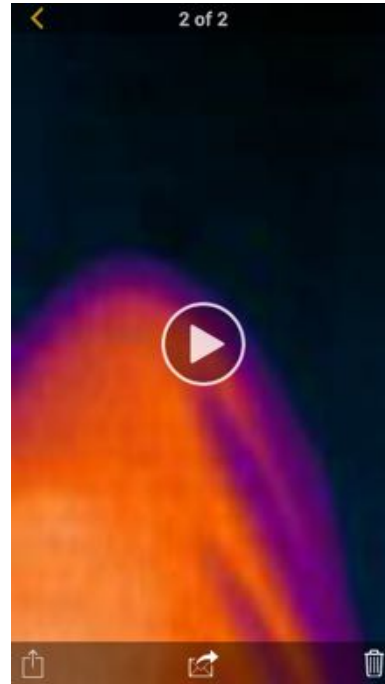


Figure 29: Captured video from the Gallery

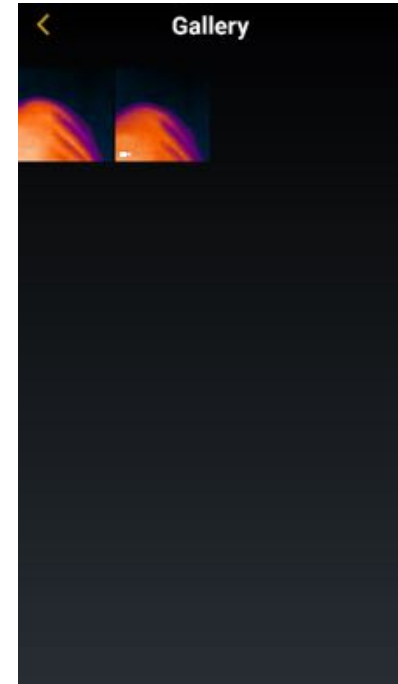




Figure 30: Gallery thumbnail view

The Simple Share icon allows selecting your own method of sharing and attaches the image/video.

The Sharing icon creates an email to share@thermal.com, the Seek Thermal Community.

The Trash icon allows deletion of the image/video, on Android. On iPhone, images/videos can be deleted in the Photos app.

To play a video, tap the  play icon.

Tapping the  back symbol will return the app to the imaging screen.

Changing the Color Palette



Figure 31: Black Palette



Figure 32: White Palette



Figure 33: Iron Palette

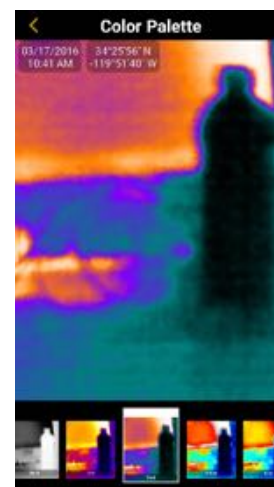


Figure 34: Cool Palette

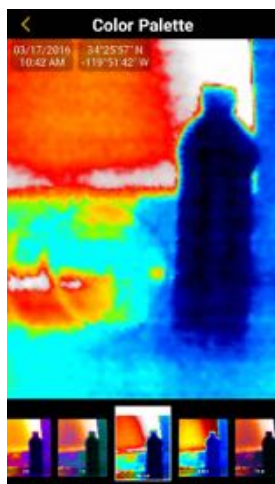


Figure 35: Amber Palette

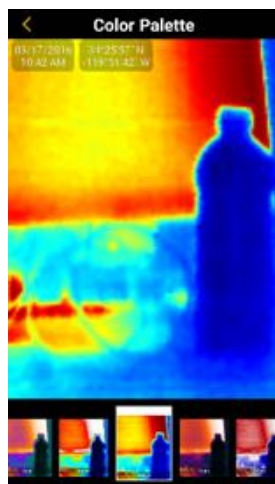


Figure 36: Indigo Palette



Figure 37: Tyrian Palette

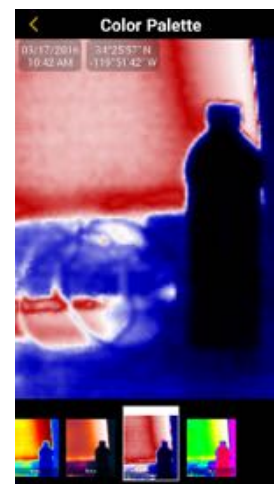





Figure 38: Glory Palette



Figure 39: Envy Palette

With a camera connected, the Color Palette is one level down in settings. Tap the burger  icon, and it will be visible. Selecting a color palette is as simple as tapping the desired palette on the bottom of the screen. After the desired palette is chosen, then tapping the  return will take the app back to imaging mode, with the selected color palette enacted.

While in Thermal Modes, the color palette is accessible by tapping the  icon at the top right corner of the screen.

Thermal Modes

(See Tutorials: Thermal Modes.)

Temperature Units

When temperature is displayed, the user has choice as to which units are used, Fahrenheit, Celsius or Kelvin.

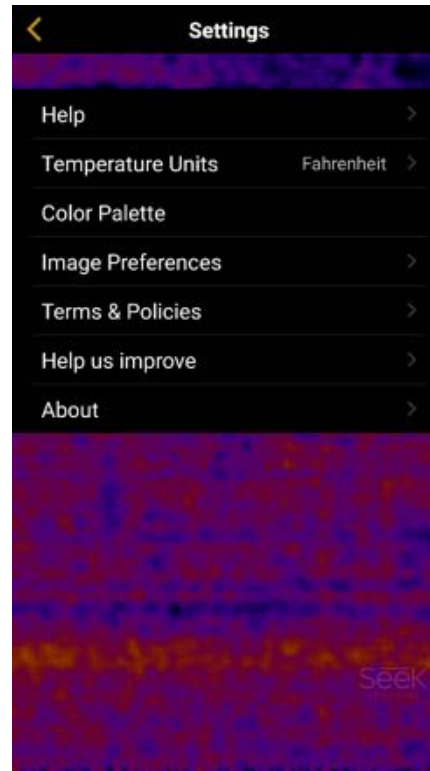


Figure 40: The Settings

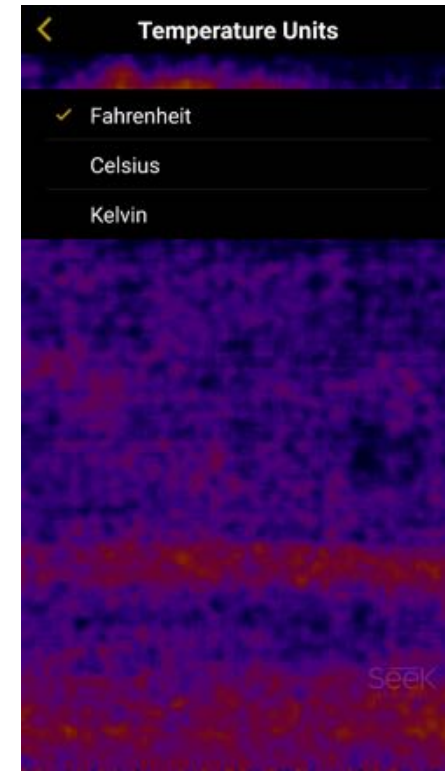


Figure 41: Temperature Units Settings

Image Preferences

Aspect Ratio

Most smartphones have 16:9 displays, just like computer monitors and televisions. Occasionally, a need for images/videos in a 4:3 aspect ratio arises.

16:9



Figure 42: Sample 16:9 Aspect Ratio Portrait

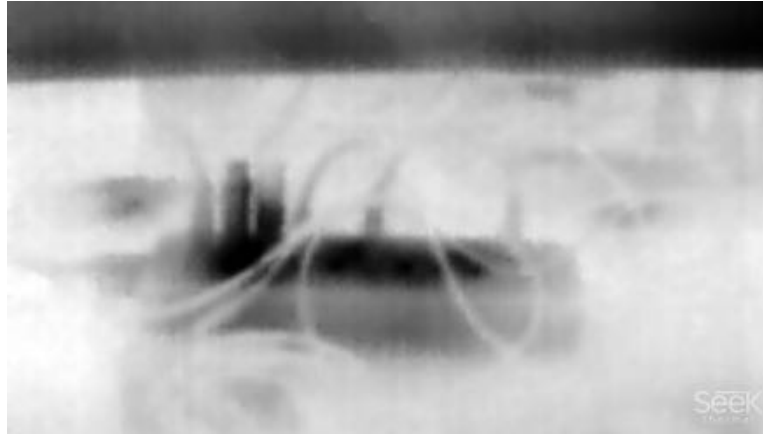


Figure 43: Sample 16:9 Aspect Ratio Landscape

4:3

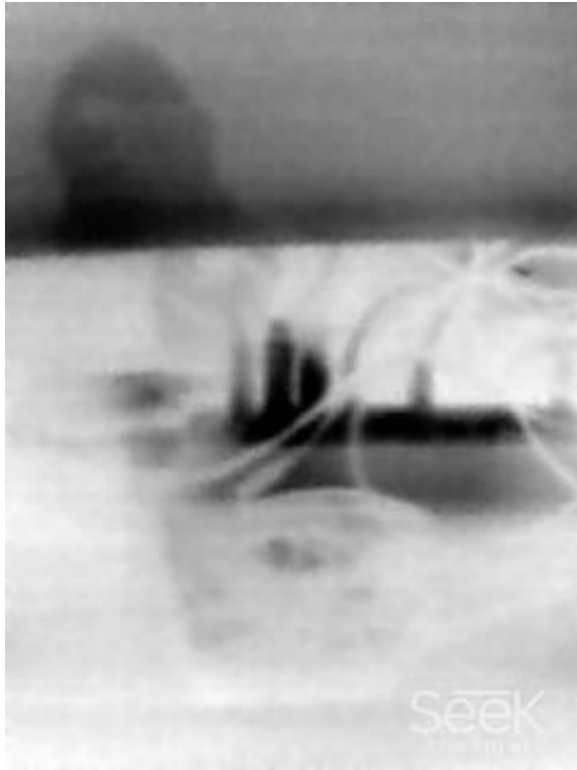


Figure 44: Sample 4:3 Aspect Ratio Portrait

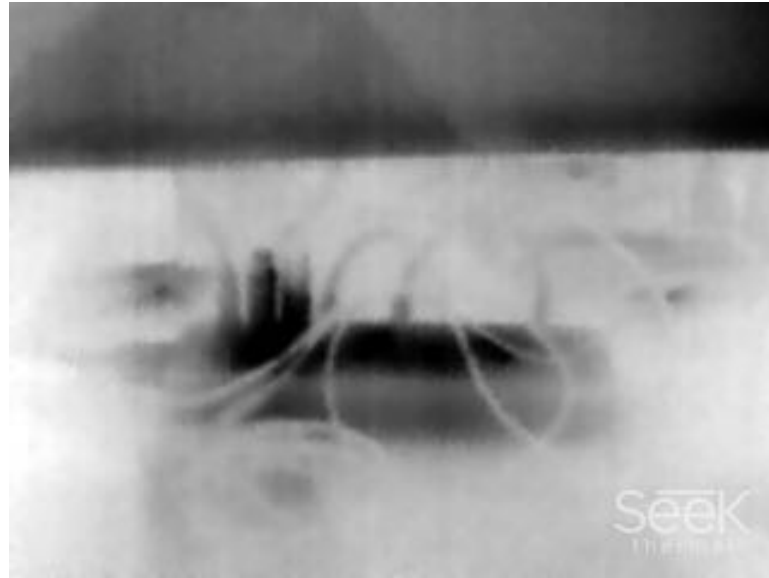


Figure 45: Sample 4:3 Aspect Ratio Landscape

Watermarks

Each of these can be enabled/disabled independently.

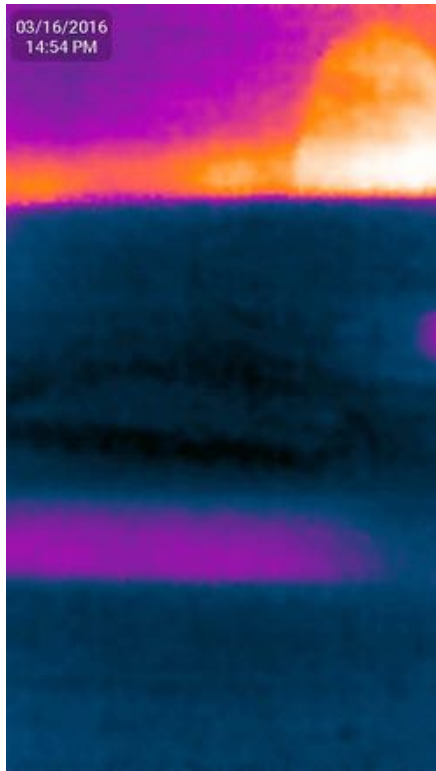


Figure 46: Date and Time Watermark

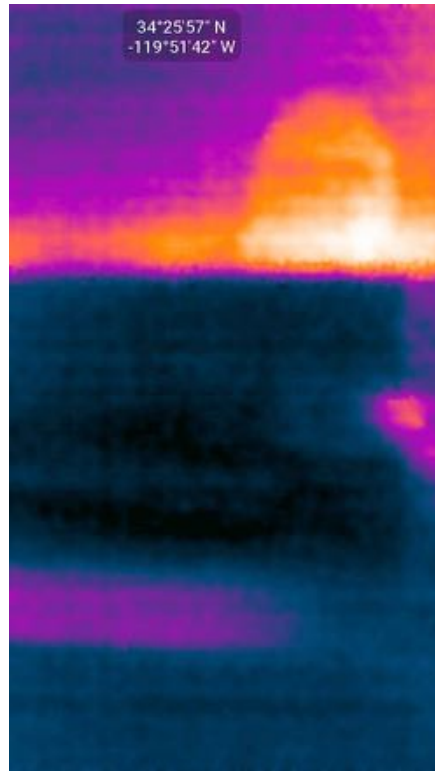


Figure 47: Location Watermark

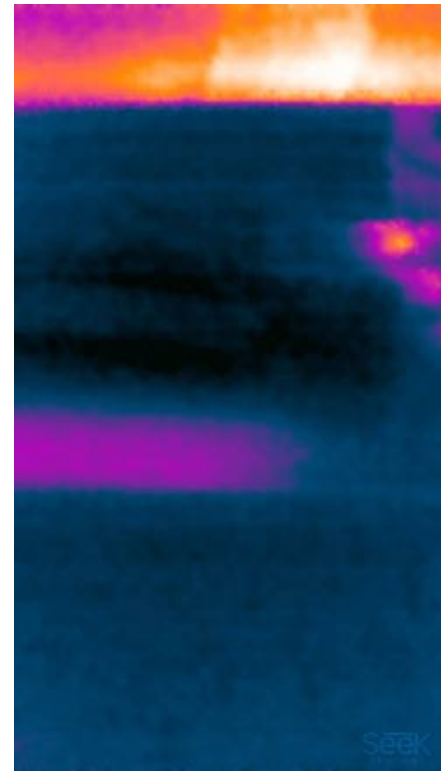


Figure 48: Seek Logo Watermark

About

The About screen shows the various version of portions of the software, the camera type, firmware version, and camera serial number.



Figure 49: Sample Android About Screen



Figure 50: Sample iPhone About Screen

[Help](#)


[Tutorials](#)


[The Basics](#)

A thermal imaging device lets the user see differences in heat to better identify objects when natural vision can't. Heat can't hide, even in the dark.

To take a picture or video of the thermal image you are viewing simply select the camera mode you want and tap the big round button at the bottom of the screen (or side if your smartphone is horizontal).

Any images or videos you take can be reviewed by visiting the media gallery, which can be accessed through the button next to the photo camera icon.


For some advanced picture options you can turn on Thermal+ (the  icon in the upper right corner) and slide back and forth between thermal view and standard view. Thermal+ images can even be reviewed later, in swipe mode from the app's media gallery.


If checking temperature is what you are after, just switch to a different thermal mode through the button  next to the video camera icon.


While there you can also tap the color palette  button to change the color scheme of your thermal images.


Thermal Modes

The Seek Thermal app has four thermal modes to meet your thermal imaging needs:

Normal  – Regular thermal images can be viewed and recorded (this is the default mode).

Spot  – Average temperature around the center spot will be displayed.

High/Low  – Indicators will be displayed at the highest and lowest temperatures, along with their current temperatures.

Threshold  – The selected temperature and property will be highlighted. Tap indicator to change mode and temperature.

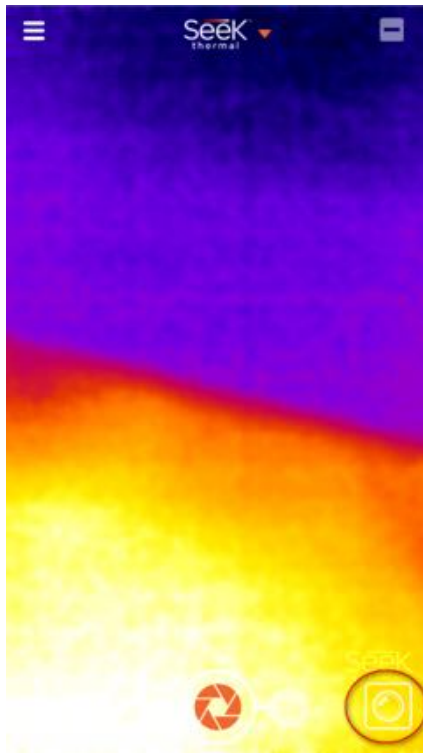


Figure 51: Thermal mode button circled.

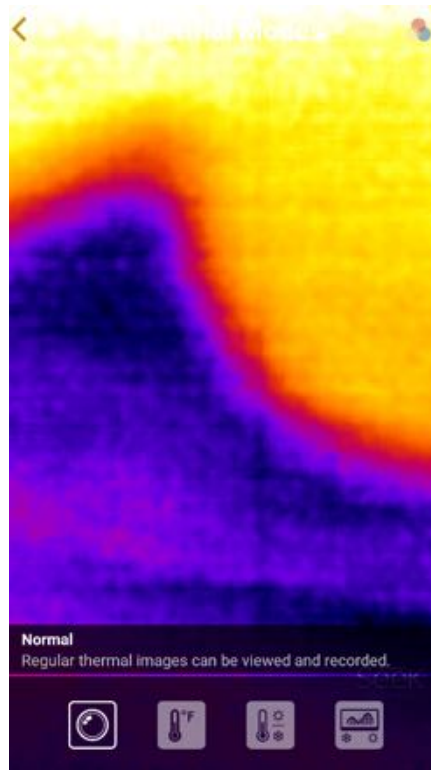


Figure 52: Normal Thermal Mode

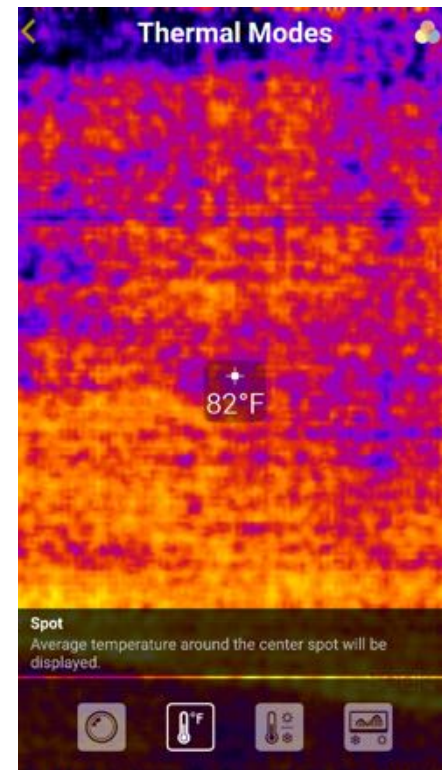


Figure 53: Spot Thermal Mode

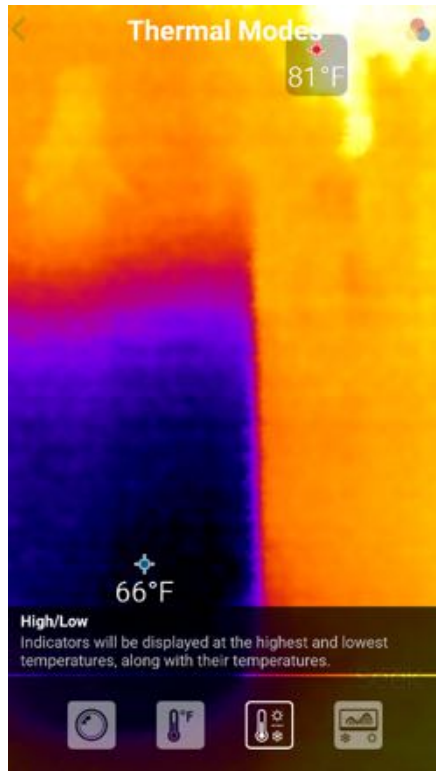


Figure 54: High/Low Thermal Mode

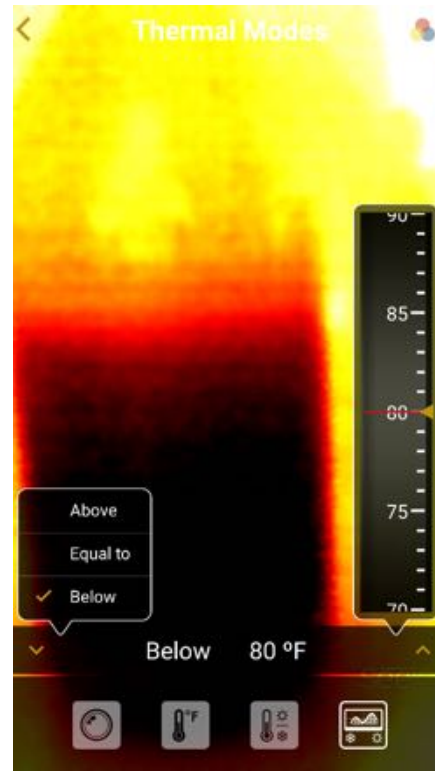


Figure 55: Threshold Thermal Mode

Thermal+

Thermal+ allows you to swipe from side to side across an image to display it in standard and thermal views. The standard image comes from your mobile device's native camera, and appears on the left. The thermal image appears on the right. Any photos you take with Thermal+ on can be reviewed, in swipe mode, from the app, from the app's media gallery.

To align the thermal image with the standard image, simply double-tap to go into the thermal+ alignment mode. Then you can pan and magnify the standard image until it aligns with the thermal image. The pan and mag co-ordinates display in the lower left hand corner. Once you are satisfied simply double-tap again to lock your settings. There are different settings for portrait vs. landscape.

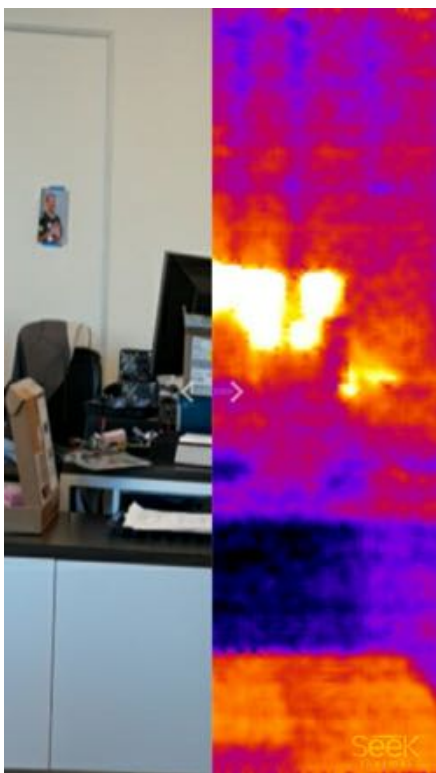


Figure 56: Sample Thermal+ Image #1

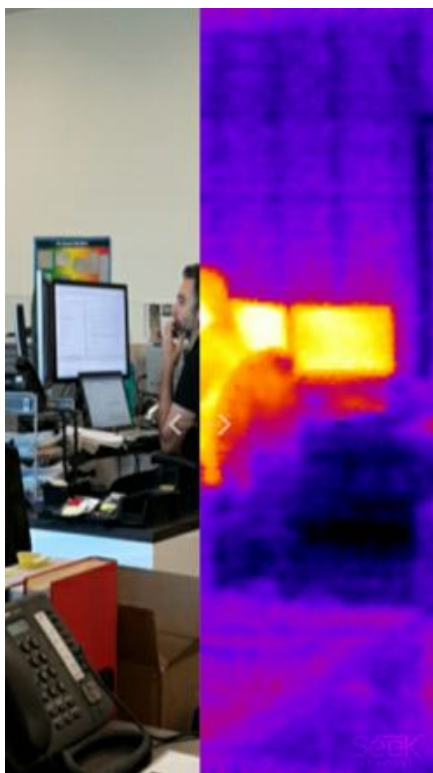


Figure 57: Sample Thermal+ Image #2

What is that clicking sound?

The clicking sound is normal for a thermal camera. As the temperature of the camera changes, it calibrates itself using an electromechanical shutter to sample the temperature of the environment.

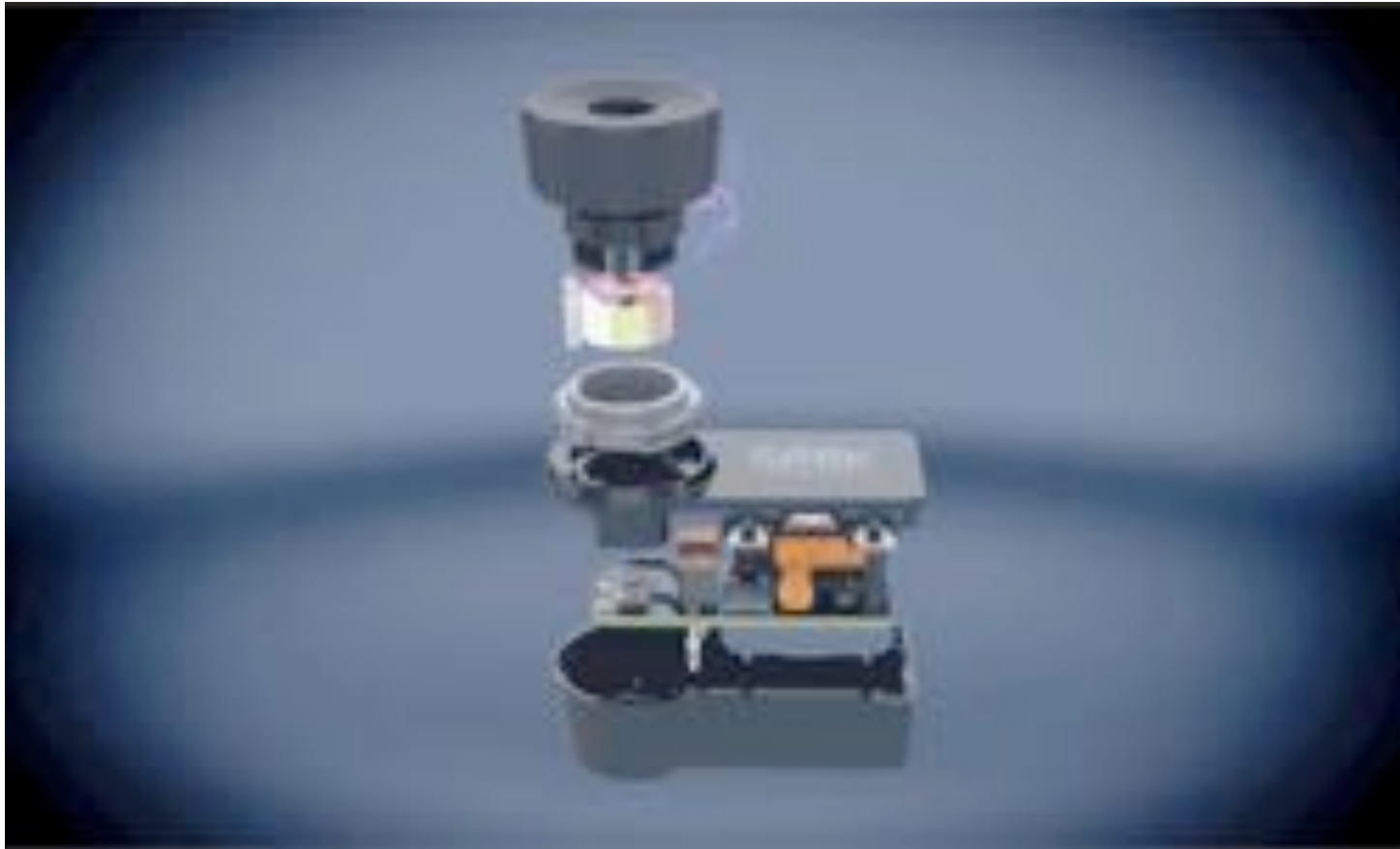


Figure 58: Compact blow-up showing the shutter...

Reset Help Overlays

The Help overlays are presented upon the first use of the app. They disappear after a single touch. To cause them to be reinstated again (for reference), this option should be selected.

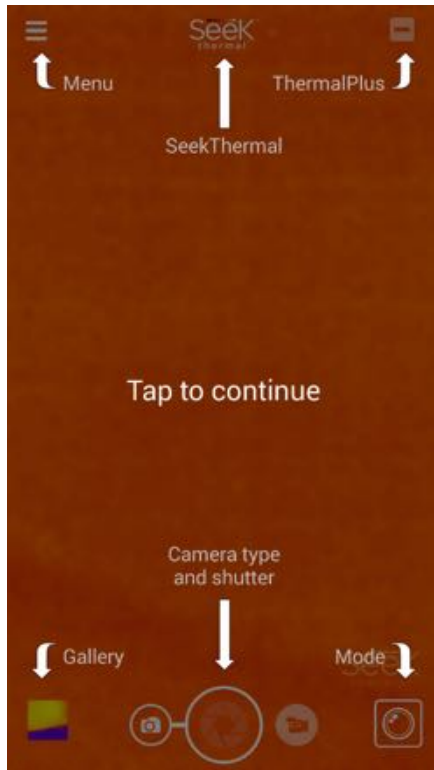


Figure 59: Main Screen Help Overlay

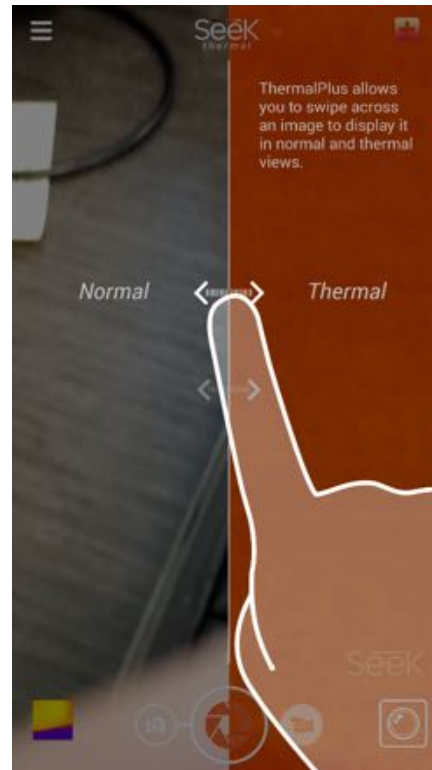


Figure 60: Thermal+ Help Overlay

Report an Issue

This option generates an email to support@thermal.com that allows the user to describe the issue that he/she is experiencing.

Visit Support Center

This option gives the user access to the Seek Thermal Support Center from within the app.

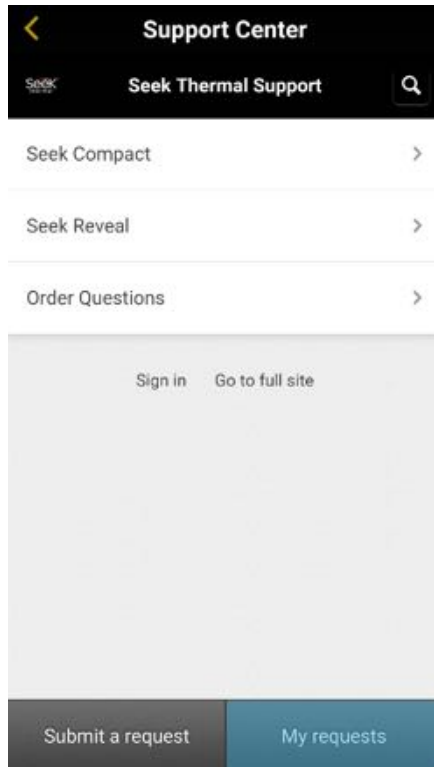


Figure 61: The Support Center

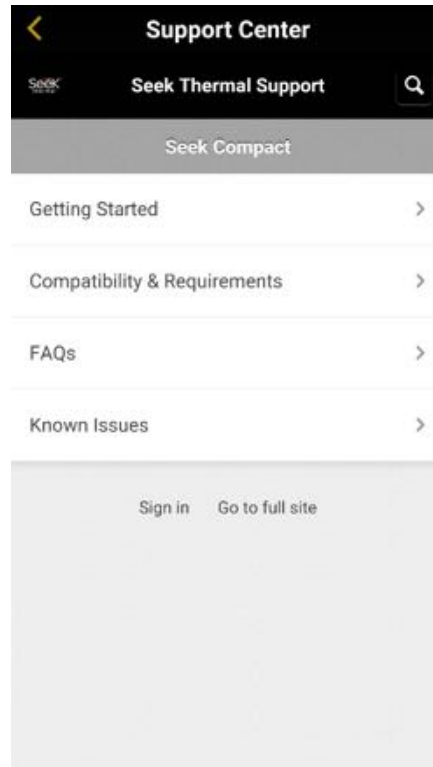


Figure 62: The Support Center: The Compact Area

Connecting to a PC/MAC

Android on PC

Connect your Android smartphone to a USB port on your PC. If it does not open up directly, then open File Explorer manually and it should be listed. As you can see the thermal images/videos in Figure 66: File Explorer View of an Android Smartphone #4; they can be selected and copied/cut or dragged off to your PC.

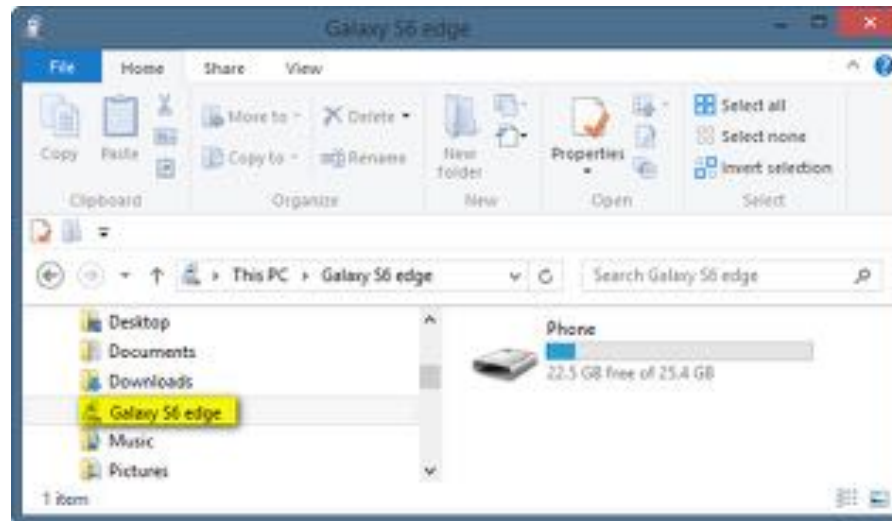


Figure 63: File Explorer View of an Android Smartphone

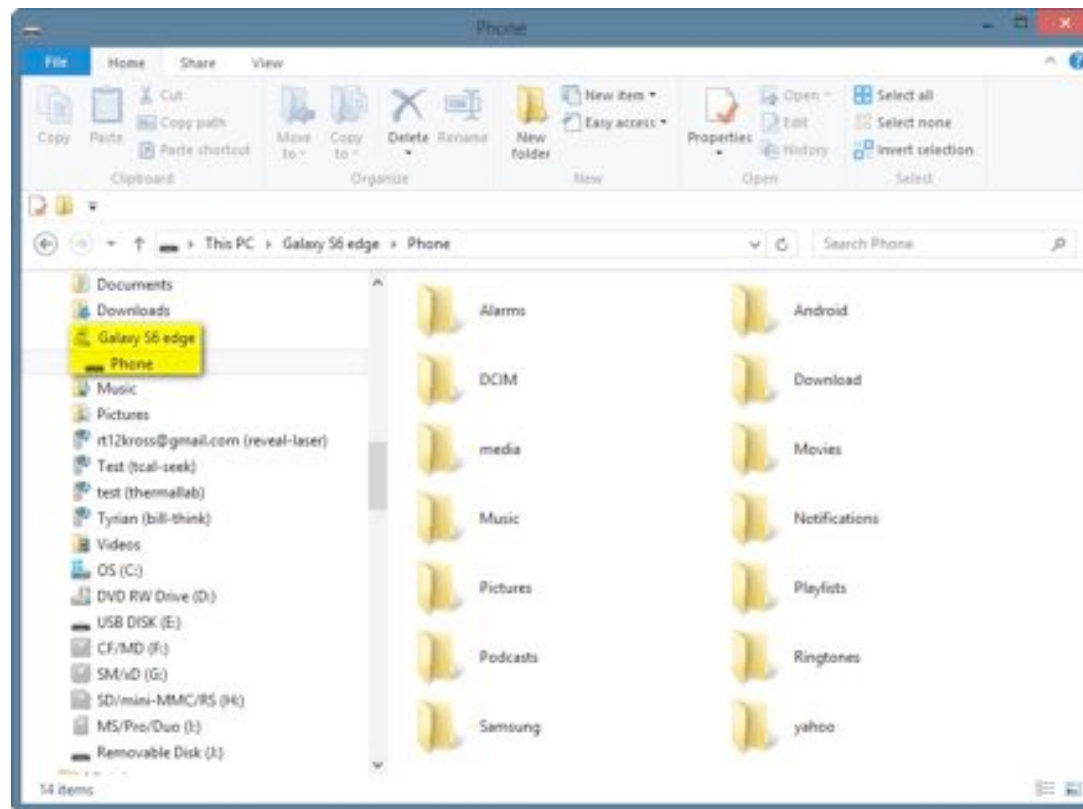


Figure 64: File Explorer View of an Android Smartphone #2

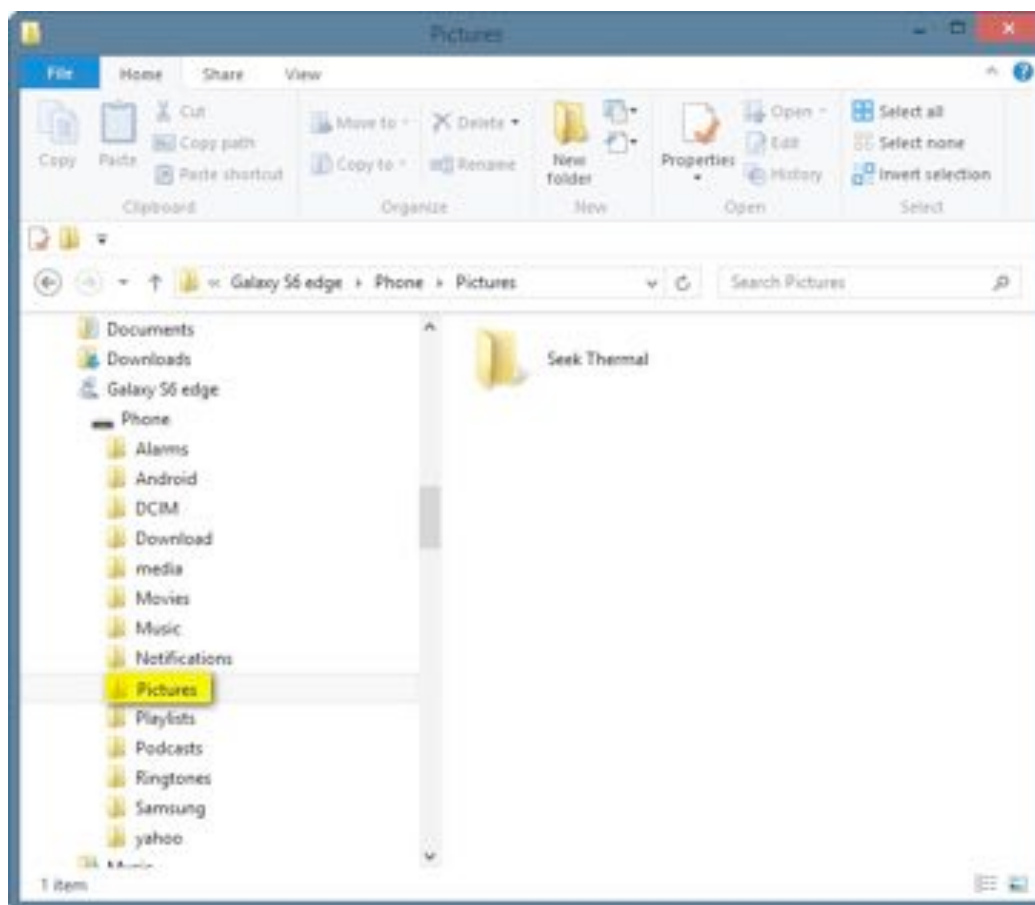


Figure 65: File Explorer View of an Android Smartphone #3

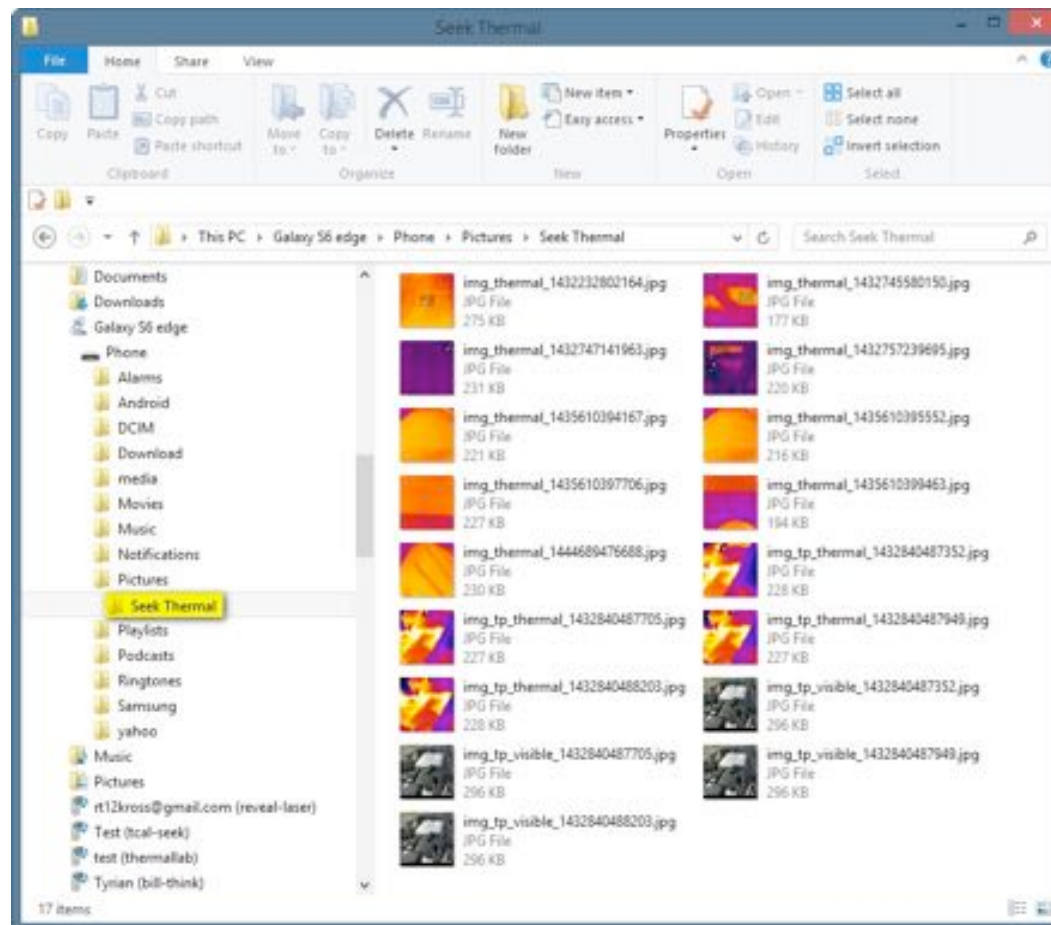


Figure 66: File Explorer View of an Android Smartphone #4

Android on Mac

Connect your Android Smartphone to a USB port on your Mac. It should cause a similar window to appear as in Figure 67: Samsung Galaxy 6 Edge on a Mac; the images can be selected and copied/cut or dragged off to your Mac.

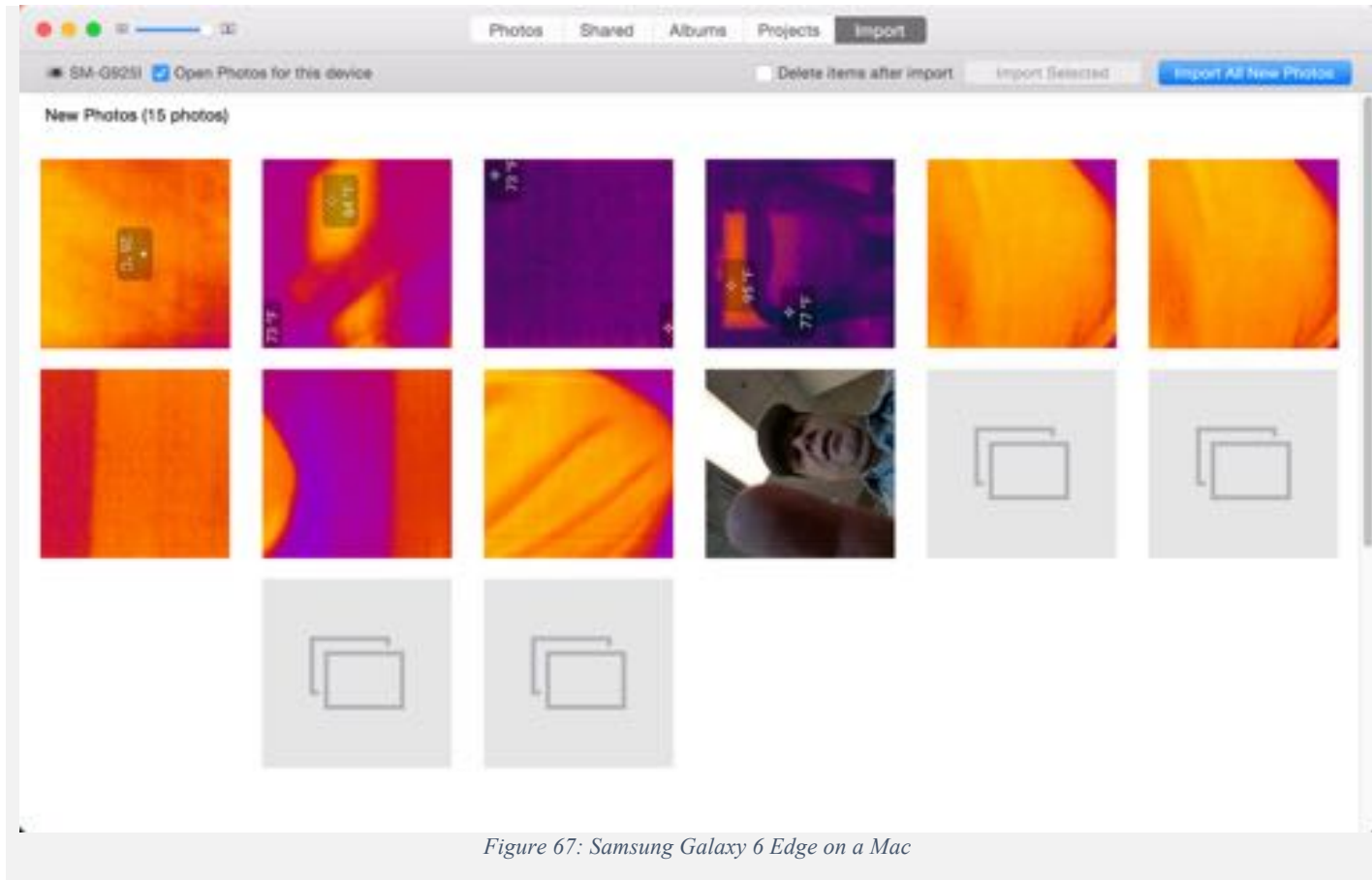


Figure 67: Samsung Galaxy 6 Edge on a Mac

iPhone on PC

Connect your iPhone/iPad to a USB port on your PC. If it does not open up directly, then open File Explorer manually and it should be listed. As you can see the thermal images/videos in Figure 71: File Explorer View of an iPhone/iPad #4; they can be selected and copied/cut or dragged off to your PC.

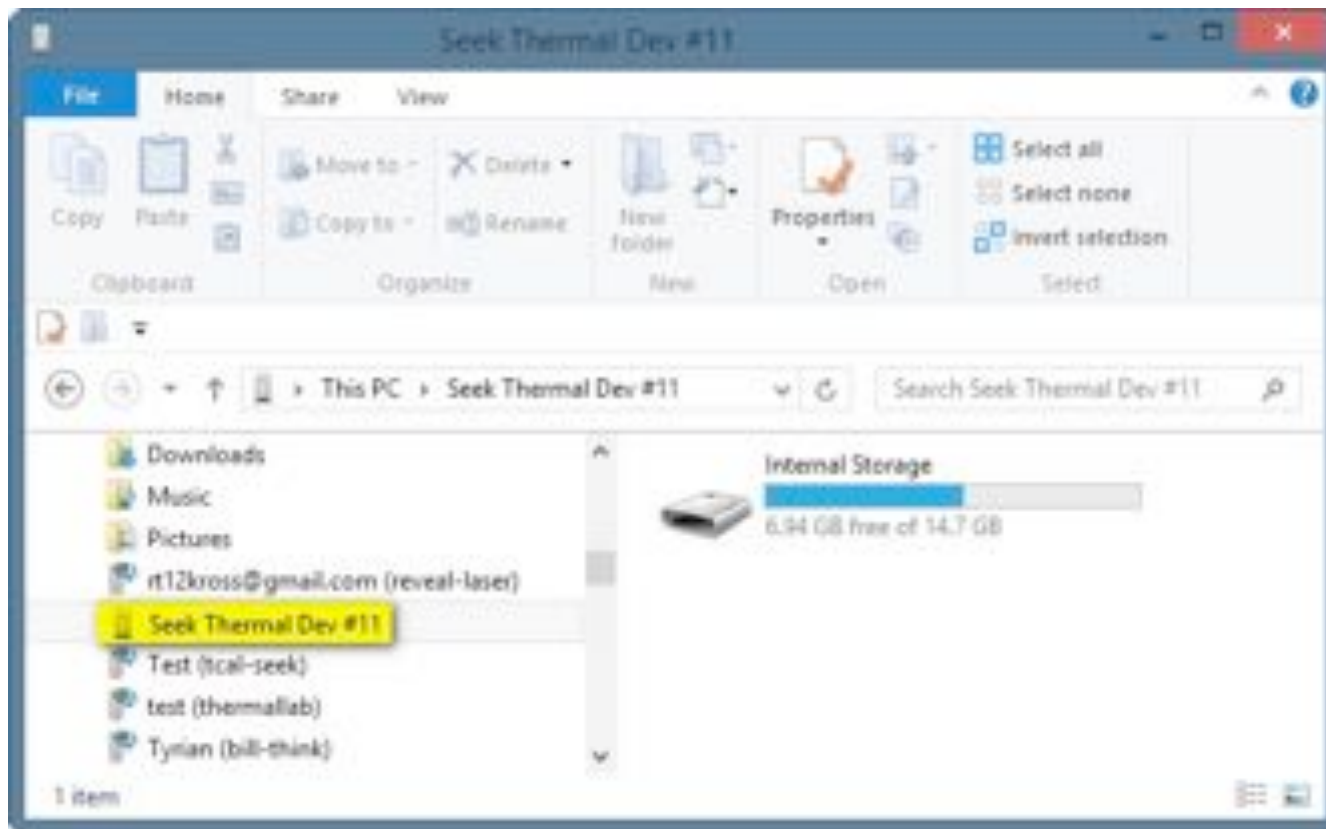


Figure 68: File Explorer View of an iPhone/iPad

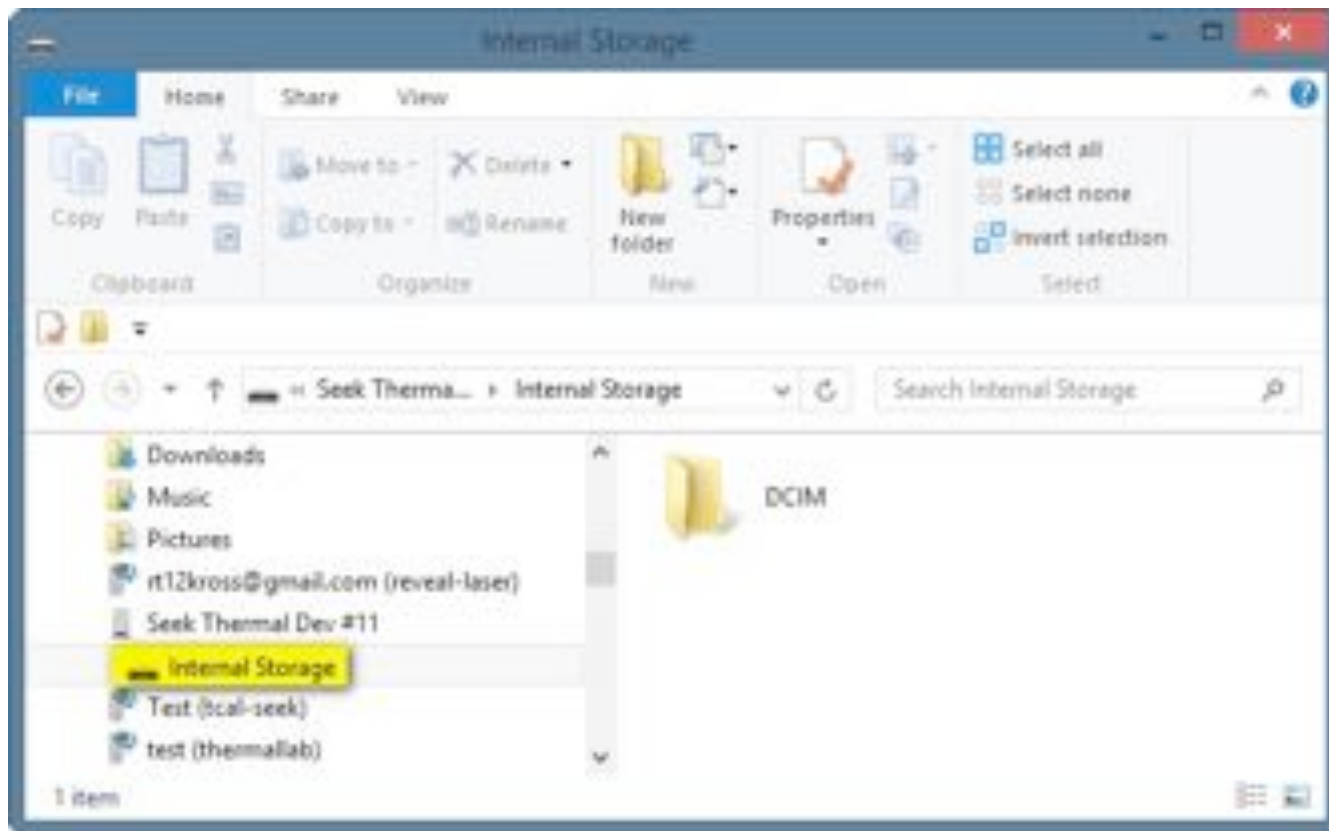


Figure 69: File Explorer View of an iPhone/iPad #2

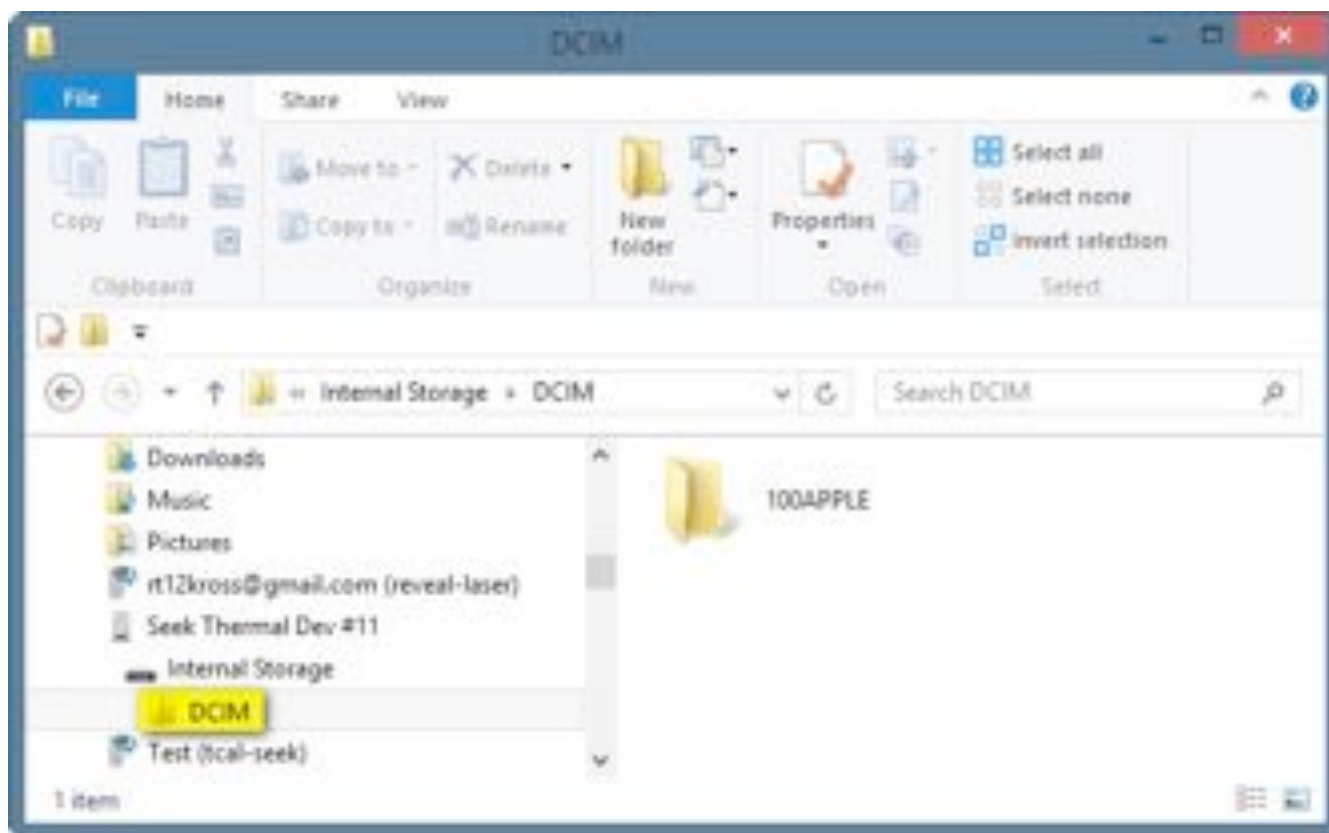


Figure 70: File Explorer View of an iPhone/iPad #3

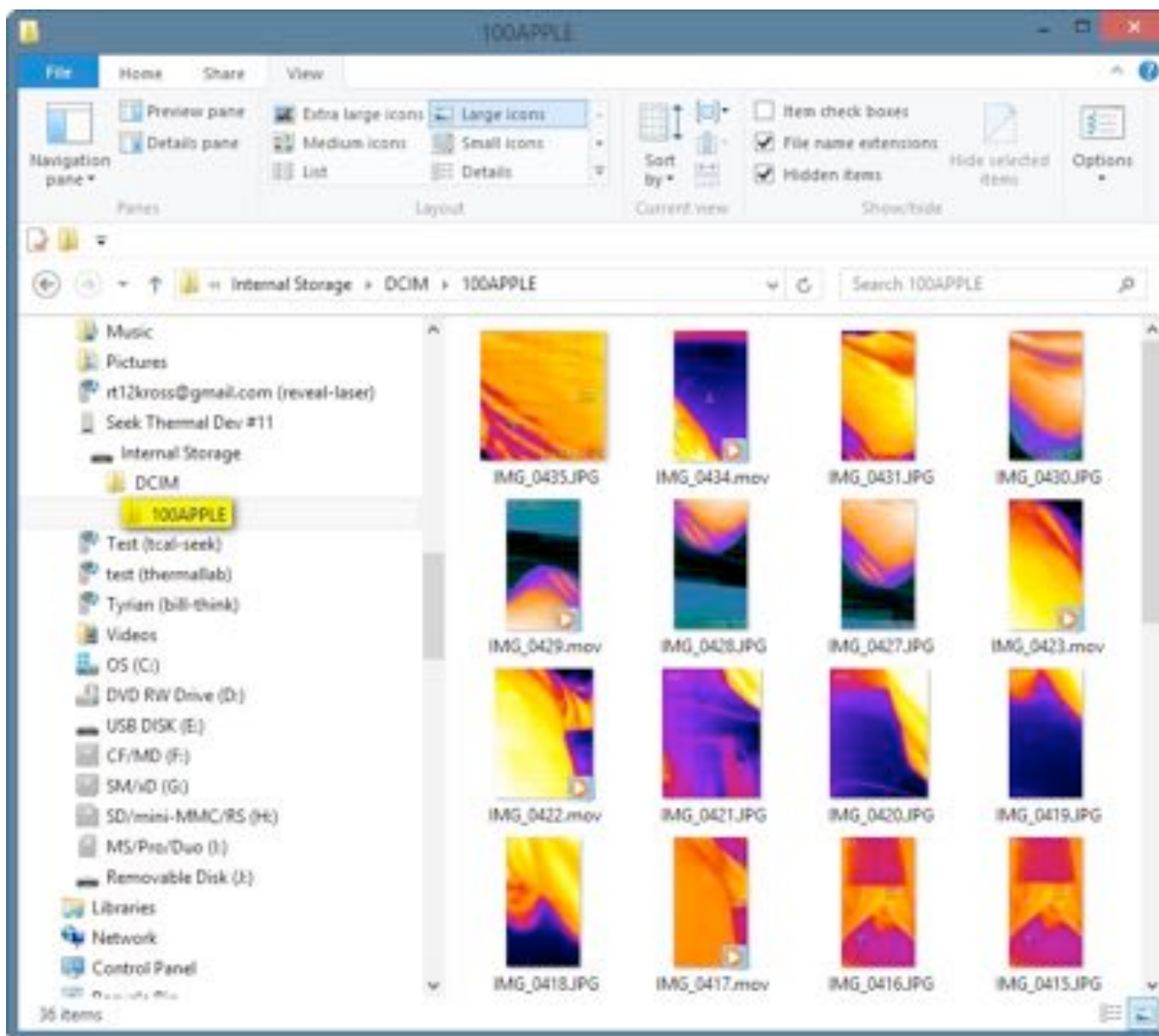


Figure 71: File Explorer View of an iPhone/iPad #4

iPhone on Mac

Connect your iPhone/iPad to a USB port on your Mac. It should cause a similar window to appear as in Figure 72: iPhone 6+ on a Mac; the images can be selected and copied/cut or dragged off to your Mac.

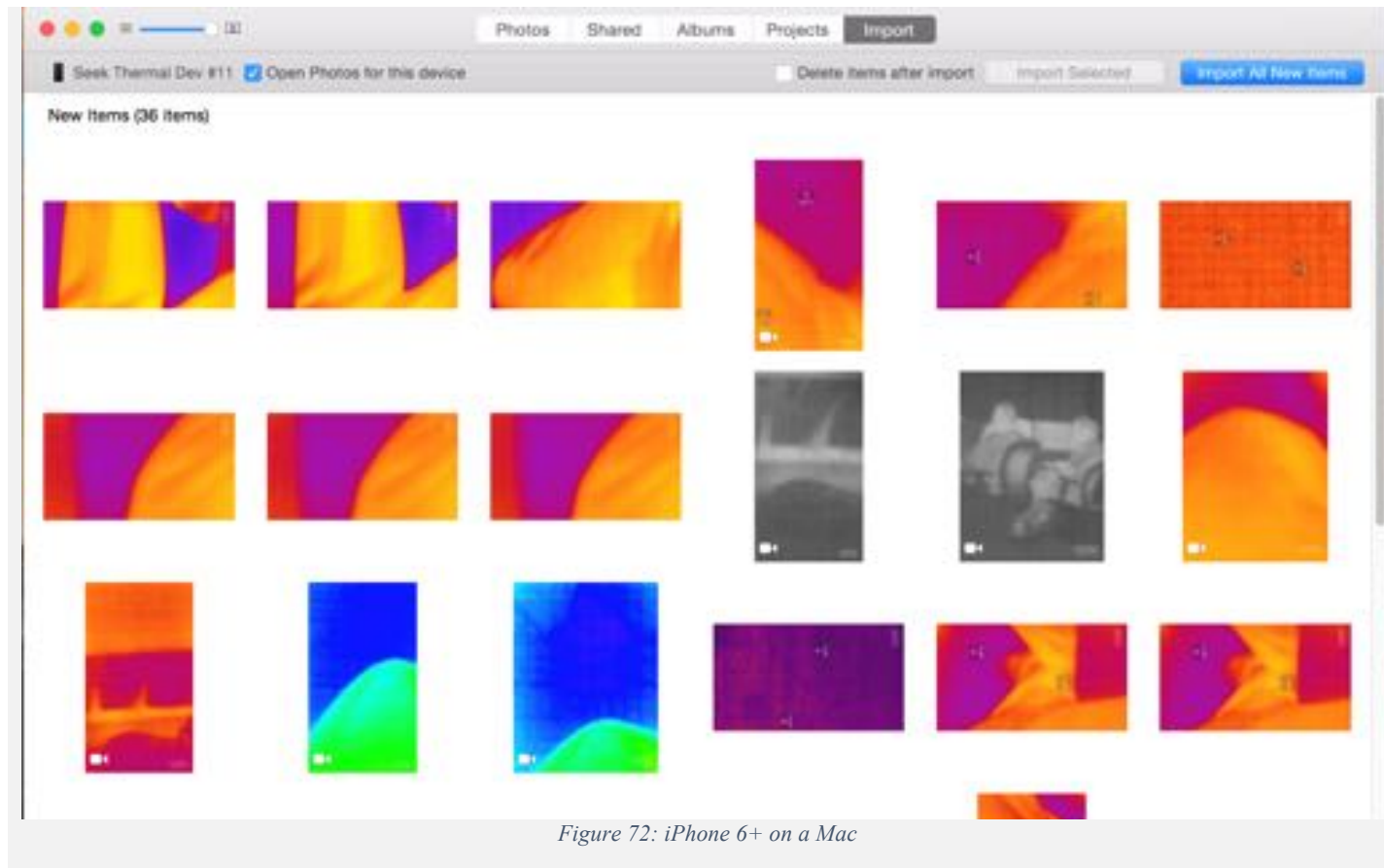


Figure 72: iPhone 6+ on a Mac

Firmware Updates

From time to time, updates to the Seek Thermal mobile app (both platforms) will be released, as well as firmware updates for the Seek Compact imager. If a mobile app update includes a firmware update for the imager, your imager will update automatically the next time you connect to your mobile device and run the app.

If for some reason your mobile device is running an older version of the Seek Thermal app, and you connect an imager running a newer firmware that is not compatible, your app will automatically update the imager to match. The next time you connect your imager to a device running the current Seek Thermal app, it will automatically update back to the matching version.

The Protective Case

The protective case that comes with your Seek Thermal camera can be difficult to open if you haven't opened it before. The latch is tight for a reason, and that reason is that we want the case to be water resistant for protection.

If you are having trouble finding the latch, you can follow these steps:

- Place the case in the palm of your left hand with the right side up and the small handle pointed away from you (it should be wrapped in your fingers)
- Place your left thumb on top of the case to hold it steady.
- Place two fingertips from your right hand under the flap on the right side of the case.
- Pull the flap away from the case, using your right palm as leverage against the top part of the case.



Figure 73: Waterproof Carrying Case



Figure 74: Waterproof Carrying Case (opened)



Figure 75: Waterproof Carrying Case (empty)

Registration

In order to keep track of where our cameras are being used, and to support the warranty, each camera causes the app to access a Registration screen ONLY the first time that it is used. The information that is accessed during registration besides name and email is the serial number of the camera, the type of smartphone that it is being used on and the location. After the camera is registered, the screen is no longer invoked. To avoid registration, “skip” can be tapped.

A mobile application screen titled "Device Registration". It features three text input fields: "First Name" with the value "Joe", "Last Name" with the value "Thermal", and "Email" with the value "joe@thermal.com". Below the fields are two buttons: a green "SUBMIT" button and a blue "Skip" button.

Device Registration

First Name
Joe

Last Name
Thermal

Email
joe@thermal.com

SUBMIT Skip

Figure 76: Camera Registration screen

Localization

Both apps currently support the automatic language localization feature of iOS and Android. The user, wishing to change the language used by his/her smartphone would proceed to Settings and select the language (not necessarily the location) that is desired. All of the apps that support the language chosen will change their verbiage, given that it is one of the languages that they support. The Seek Thermal apps currently support English, Spanish, German, Italian, Dutch, Portuguese, Russian, Japanese, Korean, and Simplified Chinese.



Figure 77: Sample Language Screen: English

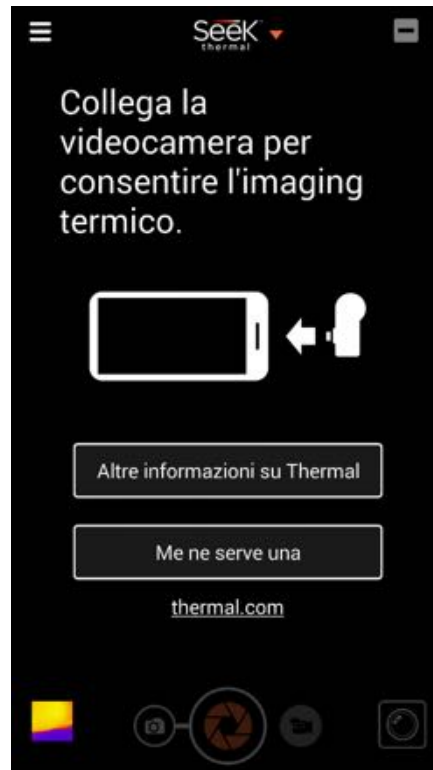


Figure 78: Sample Language Screen: Italian



Figure 79: Sample Language Screen: Korean

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