

Agilent U5855A True*/R* Thermal Imager

Service Guide



Agilent Technologies

Notices

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Safety Notices

CAUTION



A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the likes of that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the likes of that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

Safety Symbols

The following symbols on the instrument and in the documentation indicate precautions which must be taken to maintain safe operation of the instrument.

	Caution, risk of danger (refer to this manual for specific Warning or Caution information)
	Laser radiation

Safety Considerations

Read the information below before using this instrument.

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards for design, manufacture, and intended use of the instrument. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

WARNING

- **Do not use the device if it is damaged. Before you use the device, inspect the casing. Look for cracks or missing plastic. Do not operate the device around explosive gas, vapor, or dust.**
- **Always use the device with the cables provided.**
- **Observe all markings on the device before establishing any connection.**
- **Turn off the device before removing the battery cover.**
- **When servicing the device, use only the specified replacement parts.**
- **Do not operate the device with the battery cover or portions of the cover removed or loosened.**
- **Use only the designated AC/DC power adapter or charger provided by the manufacturer to avoid any unexpected hazards.**
- **Use only the battery pack supplied with the device. Do not disassemble/modify the battery pack or leave it under direct heat/sunlight.**
- **Keep the battery pack away from water, fire, or heat.**
- **Avoid any contact with battery leakage to prevent personal injuries. If there is leakage or strange smell, remove the battery pack immediately from the device or the external battery charger.**
- **Do not connect the positive terminal and the negative terminal of the battery pack (metallic part) to each other with any metal objects, such as wires.**
- **Do not continue to charge the battery pack if it does not become charged within the specified charging time.**
- **Do not apply impact to or insert foreign objects into the battery pack.**
- **Do not use the camera on a tripod in an area with large vibration or shock.**
- **Do not use the device under water or with conductive gloves or cloths worn or in a strong electromagnetic field.**
- **Do not stare into the torch light.**

WARNING

Laser pointer precautions:

- This laser pointer is a Class 2 laser product.
- Laser beam contact with the eyes may cause visual impairment.
- Do not point the laser beam towards people.
- Do not stare into the laser beam.
- This measuring device is intended for professional use and not suitable for general use.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



CAUTION

- The device uses a highly-sensitive infrared detector. Ensure to comply with the requirements in “[Environmental Conditions](#)” on page VII when using the device.
- Do not apply excessive stress to the LCD screen, the focus adjustment ring, or the camera lens to avoid damages.
- Avoid direct rays or shock to the visible or infrared camera lens of the device.
- The following condition may be observed when the device acquires or saves a visible image. This condition is not a device failure.
 - The color of the visible image changes periodically or may be different from the real target object when the image is replayed in the freeze mode.

To avoid this condition, perform image acquisitions by changing the camera angle. In this case, it is recommended to acquire visible images by observing the image on the screen.

- The following condition may be observed in outdoor data acquisitions. This condition is not a device failure.
 - If the contrast is great (e.g., due to backlight), the object may appear darker on the camera display as compared to the brightness of the background.To avoid this condition, control the frame so that it covers only the target object.
- If bright sunlight enters the visible camera, the entire picture may become reddish. To avoid this, shield the camera from bright sunlight.
- **Do not input laser beam (CO₂ laser, etc.) to avoid damage to the infrared detector.**

CAUTION

- If the device is used in a manner not specified by the manufacturer, the device protection may be impaired.
 - Always use dry cloth to clean the device. Do not use ethyl alcohol or any other volatile liquid to clean the device.
 - Do not permit any blockage of the ventilation holes of the device.
-

Environmental Conditions

This instrument is designed for indoor use and in an area with low condensation. The table below shows the general environmental requirements for this instrument.

Environmental condition	Requirement
Temperature	Operating condition • -15 °C to 50 °C Storage condition • -40 °C to 70 °C
Humidity	Operating condition • 50% RH to 95% RH at 40 °C Storage condition • 95% RH at 40 °C
Altitude	Up to 2000 m
Pollution degree	2

Regulatory Information

The U5855A complies with the following safety and Electromagnetic Compatibility (EMC) requirements:






Safety compliance

- Laser safety: IEC 60825-1:2001/EN 60825-1:2001 (Laser Class 2)
- IEC 61010-1:2010/EN 61010-1:2010

EMC compliance

- IEC 61326-1:2005/EN61326-1:2006
- CISPR11:2003/EN55011:2007, Group 1 Class A
- Canada: ICES/NMB-001: Issue 4, June 2006
- Australia/New Zealand: AS/NZS CISPR 11:2004

Regulatory Markings

	<p>The CE marking is a legal compliance marking of the European Community. This CE marking shows that the product complies with all the relevant European Legal Directives.</p>		<p>The C-tick mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australia EMC Framework regulations under the terms of the Radio Communication Act of 1992.</p>
<p>ICES/NMB-001</p>	<p>ICES/NMB-001 indicates that this ISM device complies with the Canadian ICES-001. Cet appareil ISM est conforme a la norme NMB-001 du Canada.</p>		<p>This instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard this electrical or electronic product in domestic household waste.</p>
	<p>This symbol is a South Korean Class A EMC Declaration. This is a Class A instrument suitable for professional use and in electromagnetic environment outside of the home.</p>		<p>This symbol indicates the time period during which no hazardous or toxic substance elements are expected to leak or deteriorate during normal use. Forty years is the expected useful life of the product.</p>

Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

This instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard this electrical or electronic product in domestic household waste.

Product Category:

With reference to the equipment types in the WEEE directive Annex 1, this instrument is classified as a “Monitoring and Control Instrument” product.

The affixed product label is as shown below.



Do not dispose in domestic household waste.

To return this unwanted instrument, contact your nearest Agilent Service Center, or visit

www.agilent.com/environment/product

for more information.

Declaration of Conformity (DoC)

The Declaration of Conformity (DoC) for this instrument is available on the Agilent Web site. You can search the DoC by its product model or description at the Web address below.

<http://regulations.corporate.agilent.com/DoC/search.htm>

NOTE

If you are unable to search for the respective DoC, contact your local Agilent representative.

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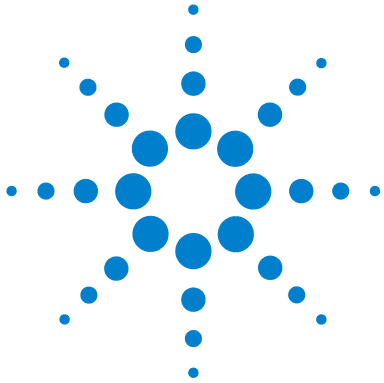
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1 Performance Verification Test

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This chapter guides you to verify the performance of the U5855A.

Introduction

This chapter contains procedures to verify the U5855A performance.

NOTE

Adjustment/calibration procedures for the U5855A are not provided as they should only be performed by qualified Agilent personnel.

The performance verification test procedures allow you to verify that the U5855A is operating within its published specifications.

Agilent calibration services

When your U5855A is due for calibration, contact your local Agilent Service Center to inquire about calibration services.

Calibration interval

A 1-year interval is adequate for most applications. Accuracy specifications are warranted only if adjustment is made at regular calibration intervals. Accuracy specifications are not warranted beyond the 1-year calibration interval.

Recommended Test Equipment

The following table lists the test equipment recommended for the performance verification test procedures. If the exact equipment is not available, substitute with another calibration standard of equivalent accuracy.

Table 1-1 Recommended test equipment

Application	Recommended equipment	Recommended accuracy requirement
23 °C, 66 °C, 97 °C, 245 °C, 345 °C	Black body source	± 1 °C for 0 to 100 °C $\pm 1\%$ for >100 °C

Test Considerations

For optimum performance, all procedures should comply with the following recommendations:

- The performance verification test should be performed under laboratory conditions where the ambient temperature can be controlled. The test should be performed at 23 ± 5 °C.
- Ensure that the ambient relative humidity is 30% to 85% RH or less (not condensed).
- Allow the black body source to warm up and stabilize before performing the verification test. Ensure that the background does not influence the apparent emissivity. Refer to the specifications of the black body source.
- Allow the U5855A to warm up for 30 minutes before performing the verification test.
- Ensure that no strong electromagnetic field is present when performing the verification test.

Performance Verification Test

Use the following performance verification test to verify the measurement performance of the U5855A. This test uses the U5855A specifications listed in the *U5855A User's Guide*.

The performance verification test is recommended as an acceptance test when you first receive the U5855A. The acceptance test results should be compared against the 1-year test limits. After acceptance, you should repeat the performance verification test at every calibration interval.

NOTE

Make sure you have read the “[Test Considerations](#)” on page 4 before proceeding with the performance verification test.

Test setup

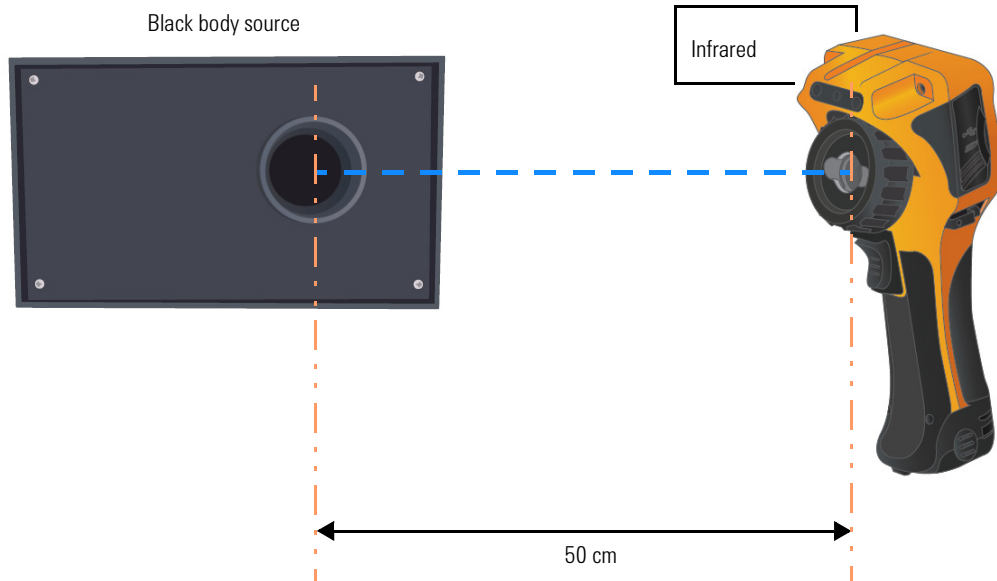


Figure 1-1 Test setup for Range 1 and Range 2 verification

1 Performance Verification Test

Performance Verification Test

- 1 Set up the U5855A and the black body source as shown in [Figure 1-1](#).
- 2 Ensure that the optical axis of the black body source is horizontal with the U5855A.
- 3 Set the following parameters of the U5855A:
 - Emissivity (ϵ): **1**
 - Object distance: **1 m**
 - Ambient temperature: **25 °C**
 - Humidity: **50%**
 - Center spot: **ON**
- 4 Ensure that the focus of the U5855A is targeted at the surface of the black body source.
- 5 Ensure that the image of the black body source is displayed at the center of the U5855A LCD screen. [Figure 1-2](#) shows an example of the image when performing the verification.

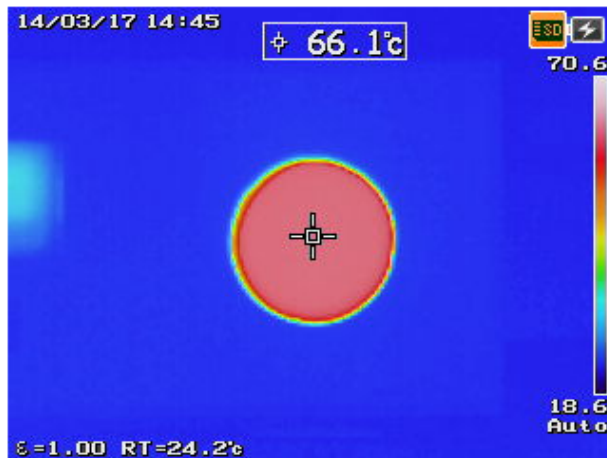


Figure 1-2 Black body source image

- 6 Set the black body source to the appropriate temperature as listed in [Table 1-2](#). Ensure that the appropriate range of the U5855A is selected. Record the center spot reading on the U5855A. Compare the measurement results to the test limits in [Table 1-2](#).

Table 1-2 Range 1 = -20 °C to 120 °C, Accuracy $\leq \pm 2$ °C

Black body source (°C)	Reading on U5855A		Error from nominal 1 year
	Range (°C)	Measurement (°C)	
23	-20 to 120	23	± 2 °C
66	-20 to 120	66	± 2 °C
97	-20 to 120	97	± 2 °C

- 7 Repeat steps 1 to 5 for Range 2 of the U5855A.
- 8 Set the black body source to the appropriate temperature as listed in [Table 1-3](#). Ensure that the appropriate range of the U5855A is selected. Record the center spot reading on the U5855A. Compare the measurement results to the test limits in [Table 1-3](#).

CAUTION

Ensure that the measurement time is kept as short as possible when using the black body source. This is to avoid any impact from the heat of the black body source to the U5855A internal sensor.

Table 1-3 Range 2 = 0 to 350 °C, Accuracy $\leq \pm 2$ °C (at <100 °C), $\pm 2\%$ (at <350 °C)

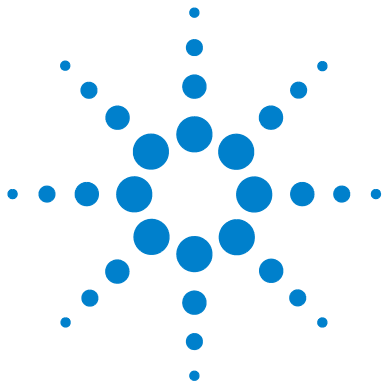
Black body source (°C)	Reading on U5855A		Error from nominal 1 year
	Range (°C)	Measurement (°C)	
23	0 to 350	23	± 2 °C
66	0 to 350	66	± 2 °C
97	0 to 350	97	± 2 °C
245	0 to 350	245	$\pm 2\%$
345	0 to 350	345	$\pm 2\%$

1 Performance Verification Test

Performance Verification Test

NOTE

If the test results are out of specifications and calibration/adjustment is required, contact your nearest Agilent Service Center. Calibration/adjustment on the U5855A should only be performed by Agilent qualified personnel.



2 Service and Maintenance

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This chapter guides you on the proper usage and maintenance of the U5855A.

WARNING

To avoid electrical shock, do not perform any servicing unless you are qualified to do so.

CAUTION

Any repair or service which is not covered in this manual should only be performed by qualified personnel.



General Usage and Maintenance

- Ensure that the U5855A is used in accordance to the “[Environmental Conditions](#)” on page VII.
- Do not use the U5855A on a tripod in an area with large vibration or shock.
- Use or store the U5855A in accordance to the “[Environmental Conditions](#)” on page VII.
- When the shutter is open, do not store or use the U5855A in the water atmosphere such as rain or snowfall.
- Do not soak the U5855A in water. The U5855A is dustproof and splashproof.
- Wipe off any contamination on the external surface of the U5855A using a dry and soft cloth.
- If dirt is hardened, first wipe with a cloth moistened with a neutral detergent, and then wipe again with a dry cloth.

Infrared (IR) image camera lens

To clean the lens:

- Use a small blower to blow off loose dust or debris on the lens.
- Wipe off the dust lightly using a chamois cloth.
- To remove oil film, moisten a soft cotton swab with a little non-aqueous alcohol (ethanol) and wipe it lightly.

CAUTION

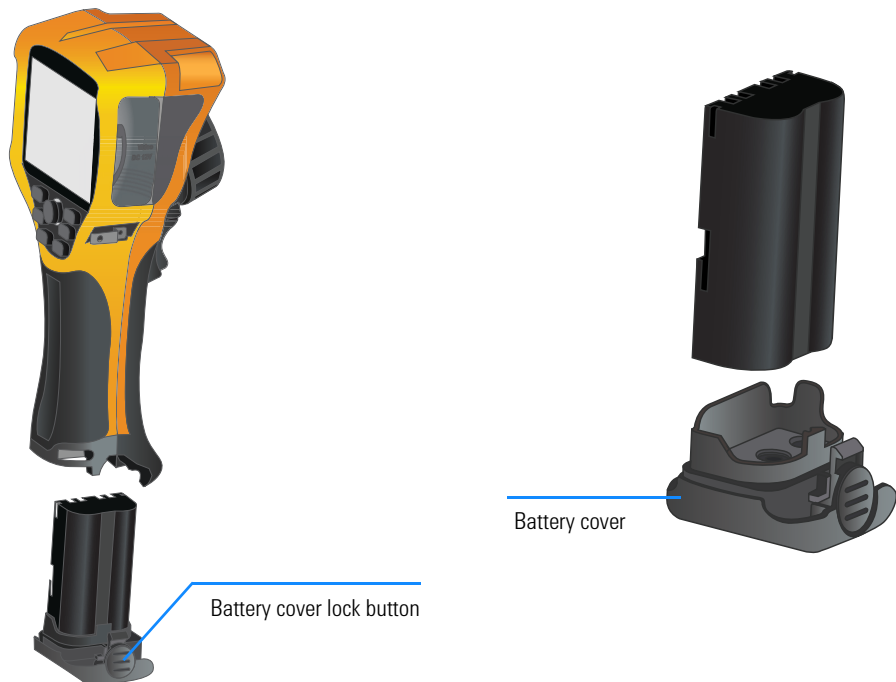
- Do not use organic solvents such as thinner, benzene, or chemicals for cleaning. These would cause discoloration and damage to the lens.
 - Do not wipe the lens with a coarse cloth as it may leave scratches.
-

Battery Replacement

The U5855A is powered by a 7.4 VDC, 2500 mAh Lithium-Ion rechargeable battery. To avoid false readings which may lead to possible personal injury, replace or charge the battery immediately when the low or empty battery status is indicated.

Use the following procedure to replace the battery.

- 1 Release the battery cover by pressing the lock button as illustrated below.
- 2 Remove the attached battery from the battery cover.
- 3 Install a new battery into the battery cover.
- 4 Insert the battery into the unit and press the lock button to lock it firmly in place.

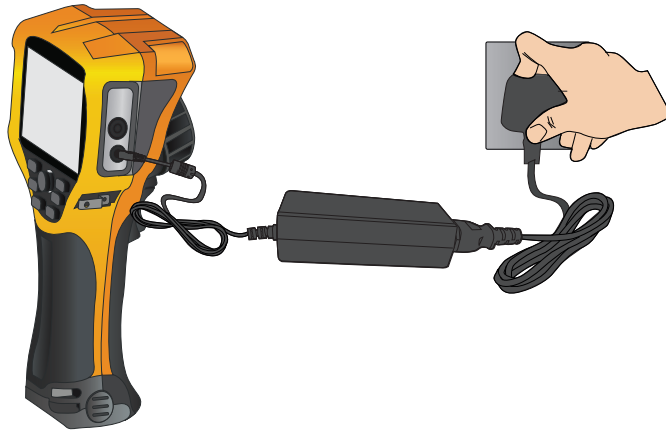


Battery Charging

Use only Agilent's recommended and approved AC/DC power adapter to charge the battery.

Use the following procedure to charge the battery.

- 1 Connect one end of the power cord to the DC power inlet of the U5855A, and connect the other end of the power cord to the mains outlet, as illustrated below.



- 2 Allow at least 4 hours for the battery to fully charge.
- 3 The LED status indicator will indicate the charging status.











LED status indication

Unit turned on/off	LED	Status
Off	Red (flashing)	Charging
	Off	Full charge
	Red	Charge error
On	Green	Charging
		Full charge
	Red	Charge error
	Red (flashing)	Laser on
	Green (flashing)	Power saving (Auto-Sleep) mode

4 If the U5855A is already turned on, the screen will display the battery status.

Battery status indication^[1]

<p>Full (~2.5 to 5 hours remaining)</p> 	<p>1 to 2.5 hours remaining</p> 	<p>15 to 60 minutes remaining</p> 	<p>Empty (flashing)</p> 
<p>Charging</p> 	<p>Fully charged (with adapter connected)</p> 	<p>No battery (with adapter connected)</p> 	<p>Charge error (flashing) (with adapter connected)</p> 

[1] Typical operating time of a new battery.

Battery Handling, Operation, Storage, and Transportation

Battery handling

A battery pack is consumable. Replace with a new battery pack when the operating time of the U5855A becomes shorter.

Disposal of the battery pack must be done according to the waste-disposal law of the country or region where the battery pack is disposed of.

Battery operating and storage temperatures

Refer to the following specifications of the battery pack for its operating and storage temperatures.

Table 2-1 Battery specifications

Parameter	Specification
Nominal capacity	2500 mAh
Nominal voltage	7.4 V
Ambient temperature	
• Charging	• 0 to 40 °C
• Discharging	• -20 to +60 °C
• Storage	• -20 to +50 °C
Weight	~ 111 g
Dimensions	22.9 ±0.2 mm (D) × 39.5 ±0.2 mm (W) × 70.5 ±0.3 mm (H)

CAUTION

To avoid instrument damage from battery pack leakage:

- Always remove a dead battery pack immediately.
- It is recommended that the battery pack is removed and stored separately if the U5855A is to be unused for long periods of time.

NOTE

The performance of the battery pack may degrade with time.

Battery transportation regulations

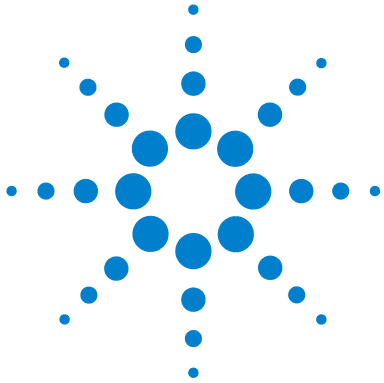
The U5855A uses the Lithium-Ion battery pack which is subjected to transportation regulations.

Applied regulations depend on the packing condition or number of batteries; therefore when you plan to transport the U5855A, check with a carrier for appropriate formalities.

2 Service and Maintenance

Battery Handling, Operation, Storage, and Transportation

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3 Troubleshooting and Repair

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This chapter guides you on how to troubleshoot, order replaceable parts, and acquire service for the U5855A.



Operating and Troubleshooting Hints

WARNING

To avoid electrical shock, do not perform any servicing on the U5855A unless you are qualified to do so.

If the U5855A fails to operate, check and replace the battery if necessary. And if the U5855A still does not function properly, check the operating procedures in the User's Guide.

The following table helps you identify some basic problems and their solutions. Proceed with the described advice.

Table 3-1 Troubleshooting hints

Malfunction	Probable cause	Troubleshooting procedure
The U5855A does not turn on.	Power is not supplied to the U5855A.	Check if the power cord is properly connected to the AC power adapter.
		Check if the power cord is properly connected to the mains power outlet.
		Check if the AC power adapter is operating normally. If not, replace the adapter.
		If the U5855A is running on battery, check the battery condition.
		Check if the battery is properly installed in the U5855A.
No thermal images displayed.	The external shutter is not opened properly.	Open the external shutter fully and lock it in place.
	The infrared (IR) sensor fails to operate properly.	Return the U5855A to Agilent for servicing.
The thermal image is abnormal (the previous image still remains).	The internal shutter is not opened properly.	Check if there is a sound of the internal shutter closing when switching from the freeze mode to the run mode. If no, return the U5855A to Agilent for servicing.

Table 3-1 Troubleshooting hints (continued)

Malfunction	Probable cause	Troubleshooting procedure
The thermal image display is blacked-out or yellowed-out.	The internal temperature sensor fails to operate properly.	Return the U5855A to Agilent for servicing.
Noise problem.	Noise sources exist around the U5855A or the AC power adapter.	Remove the U5855A or the AC power adapter away from the noise sources.
	The IR sensor fails to operate properly.	Return the U5855A to Agilent for servicing.
There is a change in the thermal image, and the measurement temperature fluctuates.	The internal temperature sensor fails to operate properly.	Return the U5855A to Agilent for servicing.
	The IR sensor fails to operate properly.	Return the U5855A to Agilent for servicing.
Defective/dead pixels appearing on the thermal image.	Degradation of pixels occur.	Return the U5855A to Agilent for servicing.
The Max/Min cursor is fixed to one location (not moving).	Defective/dead pixels appearing on the thermal image.	Return the U5855A to Agilent for servicing.
The visible image is blurry.	The protection film is attached to the camera lens.	Remove the protection film from the lens.
The thermal image and visible image are out of alignment in the Picture in Picture or Blend camera mode.	The potentiometer fails to operate properly.	Adjust the focus and check if the thermal image is adjusted accordingly. If not, return the U5855A to Agilent for servicing.
	A problem occurs in the potentiometer assembly.	Adjust the focus and check if the thermal image is adjusted accordingly. If not, return the U5855A to Agilent for servicing.
	Focus is not set properly in the Picture in Picture or Blend camera mode.	Adjust the focus and check if the thermal image is adjusted accordingly. If not, return the U5855A to Agilent for servicing.

3 Troubleshooting and Repair

Operating and Troubleshooting Hints

Table 3-1 Troubleshooting hints (continued)

Malfunction	Probable cause	Troubleshooting procedure
Error in temperature measurements.	The external shutter is not opened properly.	Open the external shutter fully and lock it in place.
	The surface of the IR lens is dirty or scratched.	Clean the IR lens surface properly.
	The target image is out of focus.	Adjust the focus correctly.
	The wrong emissivity value is set.	Set the correct emissivity.
	The wrong reflected temperature (RT) value is set. (This is not valid if emissivity is set to 1.0.)	Set the correct RT value.
	Yearly calibration is not performed.	Perform the calibration.
	The IR sensor fails to operate properly (sensitivity degradation).	Return the U5855A to Agilent for servicing.
Unable to save images to the SD memory card.	The SD memory card is write-protected.	Disable write-protection of the SD memory card.
Unable to access the SD memory card.	The SD memory card fails to operate properly.	Check the memory status of the SD memory card. Replace with another compatible SD memory card and check if it is accessible on the U5855A. Insert the original SD memory card to a personal computer and check if it is accessible. If still fails, return the U5855A to Agilent for servicing.
Backlight of the LCD screen does not illuminate.	Power is not turned on.	Check the LED status indication of the power on/off key.
	A connection failure occurs between the flexible cable (FPC) of the LCD and the main board, or the FPC is disconnected.	Connect the U5855A to an external monitor and check the display. If still fails, return the U5855A to Agilent for servicing.

Table 3-1 Troubleshooting hints (continued)

Malfunction	Probable cause	Troubleshooting procedure
The LCD displays a white screen.	Power is not turned on.	Check the LED status indication of the power on/off key.
	A connection failure occurs between the flexible cable (FPC) of the LCD and the main board, or the FPC is disconnected.	Connect the U5855A to an external monitor and check the display. If still fails, return the U5855A to Agilent for servicing.
The LCD screen indicates abnormality in the image gradation.	A connection failure occurs between the flexible cable (FPC) of the LCD and the main board, or the FPC is disconnected.	Connect the U5855A to an external monitor and check the image gradation. If still fails, return the U5855A to Agilent for servicing.
No images displayed on an external monitor during video out.	The wrong video out format is set.	Set the correct video out format for both the U5855A and the external monitor.
The date/time setting is reset to default.	The coin battery is weak, or the coin battery drops out of the battery compartment.	Set the date/time and restart the U5855A. Check if the date/time setting is correct. If not, return the U5855A to Agilent for servicing.
The battery operating time is shorter than 4 hours (out of specification).	The battery life is depleting.	Replace with a new battery.
	The surface of the battery terminals is dirty.	Check the battery terminals and clean the surface properly.
Battery charging error is indicated.	The battery fails to operate properly.	Check if the battery is installed correctly, and re-install if necessary.
Unable to update the firmware.	The firmware update operation is performed incorrectly.	Check the proper procedure for firmware update and try again. If still fails, return the U5855A to Agilent for servicing.
	The wrong folder name is used.	Check if the folder format is correct and try again. If still fails, return the U5855A to Agilent for servicing.

NOTE

If you encounter any problem not covered in the above table, contact your nearest Agilent Service Center.

3 Troubleshooting and Repair

Operating and Troubleshooting Hints

The following table explains the error messages that may appear on the U5855A screen and their solutions.

Table 3-2 Error messages

Error message	Error description	Troubleshooting procedure
Low battery	The battery is draining.	Charge the battery, or turn off the power and replace the battery.
Lens temp error	The internal temperature sensor fails to operate properly.	Turn off and on the power several times. If the error still occurs, return the U5855A to Agilent for servicing.
Visible com error	I2C communication error of the CPU and the visible image occurs.	Turn off and on the power several times. If the error still occurs, return the U5855A to Agilent for servicing.
SD card access error	Access error of the CPU and the SD memory card occurs.	Replace with a new SD memory card. If the error still occurs, return the U5855A to Agilent for servicing.
Backup memory error	I2C communication error of the CPU and EEPROM or check sum error occurs.	Turn off and on the power several times. If the error still occurs, return the U5855A to Agilent for servicing.
Correction memory error	Check sum error occurs on the temperature calibration data.	Turn off and on the power several times. If the error still occurs, return the U5855A to Agilent for servicing.

Replaceable Parts

This section contains information for ordering replaceable parts for your U5855A. You can find the instrument support parts list in the Agilent's Test & Measurement Parts Catalog at <http://www.agilent.com/find/parts>.

This parts list includes a brief description of each part with its respective Agilent part number.

To order replaceable parts

You can order replaceable parts from Agilent using their respective Agilent part numbers.

NOTE

Not all parts listed are available as field-replaceable parts.

Use the following procedure to order replaceable parts from Agilent.

- 1 Contact your nearest Agilent Sales Office or Service Center.
- 2 Identify the parts by their Agilent part numbers shown in the support parts list.
- 3 Provide the instrument model number and serial number.

Returning the U5855A for Service

Before shipping your U5855A for repair or replacement, Agilent recommends that you acquire the shipping instructions from the Agilent Service Center. A clear understanding of the shipping instructions is necessary to secure your U5855A for shipment.

- 1** Attach a tag to the U5855A with the following information:
 - Name and address of owner
 - Instrument model number
 - Instrument serial number
 - Description of the service required or failure indications
- 2** Remove all accessories from the U5855A. Do not include accessories unless they are associated with the failure symptoms.
- 3** Place the U5855A in its original container with appropriate packaging material for shipping. If the original shipping container is not available, place the U5855A in a container which will ensure at least 4 inches of compressible packaging material around all sides for the U5855A. Use static-free packaging material to avoid additional damage to the U5855A.

NOTE

Agilent suggests that you always insure your shipments.

Types of Services Available

Calibration/adjustment

When your U5855A is due for calibration, contact your local Agilent Service Center to inquire about recalibration services.

Repair

If your U5855A fails during the warranty period, Agilent will repair or replace it under the terms of your warranty. After your warranty expires, Agilent offers repair services at competitive prices.

Extended service contracts

Many Agilent products are available with optional service contracts that extend the covered period after the standard warranty expires. If you have such a service contract and your U5855A fails during the covered period, Agilent will repair or replace it in accordance with the contract.

3 Troubleshooting and Repair

Obtaining Repair Service (Worldwide)

Obtaining Repair Service (Worldwide)

To obtain service for your U5855A (in-warranty, under service contract, or post-warranty), contact your nearest Agilent Service Center. They will arrange to have your U5855A repaired or replaced, and can provide warranty or repair-cost information where applicable. To obtain warranty, service, or technical support information, you can refer to “[Contact us](#)” on page 27 to contact Agilent.

Before shipping your U5855A, request the Agilent Service Center to provide shipping instructions, including what components to ship. Agilent recommends that you retain the original shipping carton for use in such shipments.

www.agilent.com

Contact us

To obtain service, warranty, or technical assistance, contact us at the following phone or fax numbers:

United States:

(tel) 800 829 4444 (fax) 800 829 4433

Canada:

(tel) 877 894 4414 (fax) 800 746 4866

China:

(tel) 800 810 0189 (fax) 800 820 2816

Europe:

(tel) 31 20 547 2111

Japan:

(tel) 0120 (421) 345 (fax) 0120 (421) 678

Korea:

(tel) (080) 769 0800 (fax) (080) 769 0900

Latin America:

(tel) (305) 269 7500

Taiwan:

(tel) 0800 047 866 (fax) 0800 286 331

Other Asia Pacific Countries:

(tel) (65) 6375 8100 (fax) (65) 6755 0042

Or visit Agilent World Wide Web at:

www.agilent.com/find/assist

Product specifications and descriptions in this document are subject to change without notice. Always refer to the Agilent Web site for the latest revision.

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