

RTPA2A
Real-Time Spectrum Analyzer
TekConnect® Probe Adapter
Instruction Manual



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Tektronix

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TekConnect® Probe Adapter
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For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

To Avoid Fire or Personal Injury

Connect and Disconnect Properly. Do not connect or disconnect probes or test leads while they are connected to a voltage source.

Connect and Disconnect Properly. Connect the probe output to the measurement instrument before connecting the probe to the circuit under test. Connect the probe reference lead to the circuit under test before connecting the probe input. Disconnect the probe input and the probe reference lead from the circuit under test before disconnecting the probe from the measurement instrument.

Ground the Product. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Connect the probe reference lead to earth ground only.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Power Disconnect. The power cord disconnects the product from the power source. Do not block the power cord; it must remain accessible to the user at all times.

Do Not Operate Without Covers. Do not operate this product with covers or panels removed.

Do Not Operate With Suspected Failures. If you suspect that there is damage to this product, have it inspected by qualified service personnel.

Avoid Exposed Circuitry. Do not touch exposed connections and components when power is present.

Use Proper AC Adapter. Use only the AC adapter specified for this product.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Provide Proper Ventilation. Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

Terms in this Manual These terms may appear in this manual:



WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*



CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

- DANGER indicates an injury hazard immediately accessible as you read the marking.
- WARNING indicates an injury hazard not immediately accessible as you read the marking.
- CAUTION indicates a hazard to property including the product.



CAUTION
Refer to Manual

Compliance Information

This section lists the EMC (electromagnetic compliance) and environmental standards with which the instrument complies.

EMC Compliance

EC Declaration of Conformity – EMC

Meets intent of Directive 2004/108/EC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN 61326-1:2006, EN 61326-2-1:2006. EMC requirements for electrical equipment for measurement, control, and laboratory use. ^{1 2 3}

- CISPR 11:2003. Radiated and conducted emissions, Group 1, Class A
- IEC 61000-4-2:2001. Electrostatic discharge immunity
- IEC 61000-4-3:2002. RF electromagnetic field immunity
- IEC 61000-4-4:2004. Electrical fast transient/burst immunity
- IEC 61000-4-5:2001. Power line surge immunity
- IEC 61000-4-6:2003. Conducted RF immunity
- IEC 61000-4-11:2004. Voltage dips and interruptions immunity ⁴

EN 61000-3-2:2006. AC power line harmonic emissions

EN 61000-3-3:1995. Voltage changes, fluctuations, and flicker

European Contact.

Tektronix UK, Ltd.
Western Peninsula
Western Road
Bracknell, RG12 1RF
United Kingdom

¹ This product is intended for use in nonresidential areas only. Use in residential areas may cause electromagnetic interference.

² Emissions which exceed the levels required by this standard may occur when this equipment is connected to a test object.

³ To ensure compliance with the EMC standards listed here, high quality shielded interface cables should be used.

⁴ Performance Criterion C applied at the 70%/25 cycle Voltage-Dip and the 0%/250 cycle Voltage-Interruption test levels (IEC 61000-4-11).

**Australia / New Zealand
Declaration of
Conformity – EMC**

Complies with the EMC provision of the Radiocommunications Act per the following standard, in accordance with ACMA:

- CISPR 11:2003. Radiated and Conducted Emissions, Group 1, Class A, in accordance with EN 61326-1:2006 and EN 61326-2-1:2006.

Environmental Considerations

This section provides information about the environmental impact of the product.

Product End-of-Life Handling

Observe the following guidelines when recycling an instrument or component:

Equipment Recycling. Production of this equipment required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. In order to avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle this product in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.



This symbol indicates that this product complies with the applicable European Union requirements according to Directives 2002/96/EC and 2006/66/EC on waste electrical and electronic equipment (WEEE) and batteries. For information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive.

Getting Started

The RTP2A2 Real-Time Spectrum Analyzer TekConnect Probe Adapter allows you to connect a TekConnect probe to a Real-Time Spectrum Analyzer. The probe adapter is comprised of an enclosure that houses two TekConnect probe inputs. The probe adapter connects to a Real-Time Spectrum Analyzer through a USB cable and a coaxial cable.

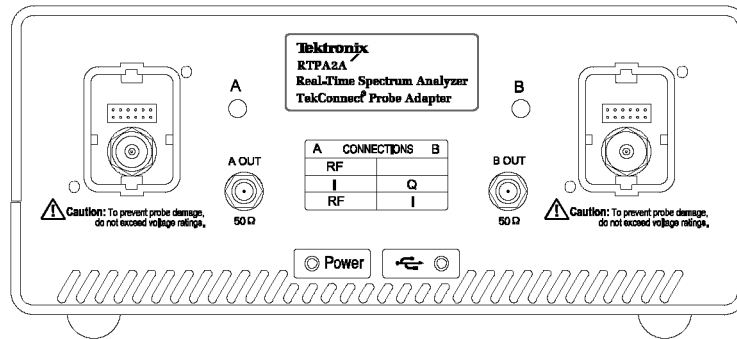


Figure 1: The TekConnect probe adapter

Cable Connections

USB Cable

The USB cable provides a data and communications path from the probe adapter to the Real-Time Spectrum Analyzer. Probe characteristic data transfers through this cable.

SMA-to-N Coaxial Cable

The SMA-to-N coaxial cable provides a low-noise path for the analog signal, from the probe adapter to the Real-Time Spectrum Analyzer.

Power

The power for the probe adapter and probe is supplied through the DC power supply cable.

Real-Time Spectrum Analyzer Software Compatibility

If your product is running Windows 98 application software, you need to upgrade to Windows XP to use the TekConnect probe adapter. To upgrade your product, contact the Tektronix support center (for contact information, see the contact page at the front of this manual).

If your product is a RSA2200A, RSA3300A, RSA3408A, or WCA200A Series instrument, it requires Main System software shipped after August 2005 to be compatible with the TekConnect probe adapter. Contact Tektronix technical support if you need to verify that your Main System software supports the RTPA2A TekConnect probe adapter.

For questions about an instrument not listed here, contact the Tektronix support center.

TekConnect Probe Compatibility

The TekConnect probe adapter supports only TekConnect probes. Refer to the table below for a list of compatible probes. (See Table 1.)

Table 1: Compatible probes


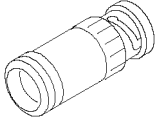
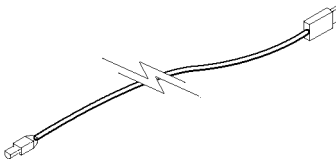
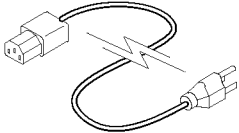
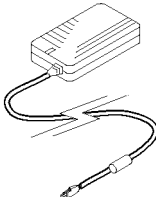


Probe	Attenuation	Description
P7225	10x	Active Probe
P7240	5x	Active Probe
P7260	5x, 25x	Active Probe
P7330	5x	Differential Probe
P7313	5x, 25x	Differential Probe
P7313SMA	2.5x, 12.5x	Differential Probe
P7350	6.25x	Differential Probe
P7350SMA	6.25x	Differential Probe
P7380	5x, 25x	Differential Probe
P7380SMA	2.5x, 12.5x	Differential Probe
P7504	5x, 12.5x	TriMode Probe
P7506	5x, 12.5x	TriMode Probe
P7508	5x, 12.5x	TriMode Probe
P7513	5x, 12.5x	TriMode Probe
P7516	5x, 12.5x	TriMode Probe
P7520	5x, 12.5x	TriMode Probe

There is no support for TekProbe Level 2 legacy probes that use the TCA-1MEG, TCA-BNC, and TCA75 adapters.

Standard Accessories

Standard accessories are listed in the table below. (See Table 2.) Order extra standard accessories as needed.

Table 2: Standard accessories

Accessory	Description ¹
	<p>50 Ω SMA-to-N cable. Use the 50 Ω SMA-to-N cable to connect the TekConnect probe adapter to the Real-Time Spectrum Analyzer. The SMA cable passes the analog signal output from the probe adapter channel to the spectrum analyzer.</p>
	<p>BNC-to-N adapter. Use the BNC-to-N adapter to connect the TekConnect probe adapter to the Real-Time Spectrum Analyzer RF input.</p>
	<p>USB cable. Provides a data and communications path from a TekConnect probe adapter to the Real-Time Spectrum Analyzer.</p>
	<p>Power cord. Provides AC power to the power supply. Option A0 comes standard with the TekConnect probe adapter. Other power cord options are available. (See Table 4 on page 4.)</p>
	<p>Power supply and cable. Provides DC power to the TekConnect probe adapter.</p>
	<p>Statement of compliance. A certificate verifying that the product is assembled and verified using established procedures and work instructions. When applicable, test equipment is traceable to known standards. Included with product at initial shipment. This accessory cannot be ordered.</p>
	<p>Instruction manual. Provides instruction and information about the TekConnect probe adapter.</p> <p>Quick reference card. Provides RF, I, and Q setups for the TekConnect probe adapter and the Real-Time Spectrum Analyzer.</p>

¹ See the Replaceable Parts List for Tektronix part numbers. (See Table 15 on page 28.)

Options

Options that are available for the TekConnect probe adapter are listed in the two tables that follow.

Table 3: Options

Option	Description
R3	Repair Service 3 years (available at purchase only)
R5	Repair Service 5 years (available at purchase only)
L0	English Instruction Manual ¹
L5	Japanese Instruction Manual ¹

¹ See the Replaceable Parts List for Tektronix part numbers. (See Table 15 on page 28.)

Table 4: Power cord options

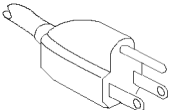
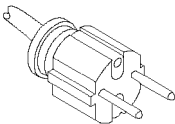
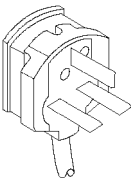
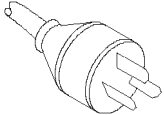
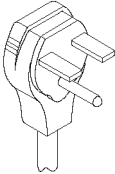
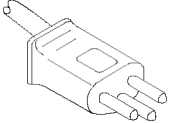
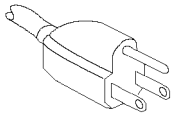
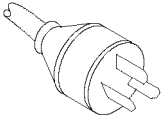
Plug configuration	Normal usage	Option number
	North America 120 V	A0 (Standard) 161-0066-00
	Universal Euro	A1 161-0066-09
	United Kingdom	A2 161-0066-10
	Australia	A3 161-0066-13
	North America 250 V	A4 161-0104-08
	Switzerland	A5 161-0154-00

Table 4: Power cord options (cont.)

Plug configuration	Normal usage	Option number
	Japan	A6 161-A005-00
	China	A10 161-0306-00
	No power cord supplied	A99

Installing the Probe Adapter

The TekConnect probe adapter, standard accessories, and location of the probe inputs is shown below. (See Figure 2.)

You must allow for airflow clearance for the probe adapter. (See Table 11 on page 19.)

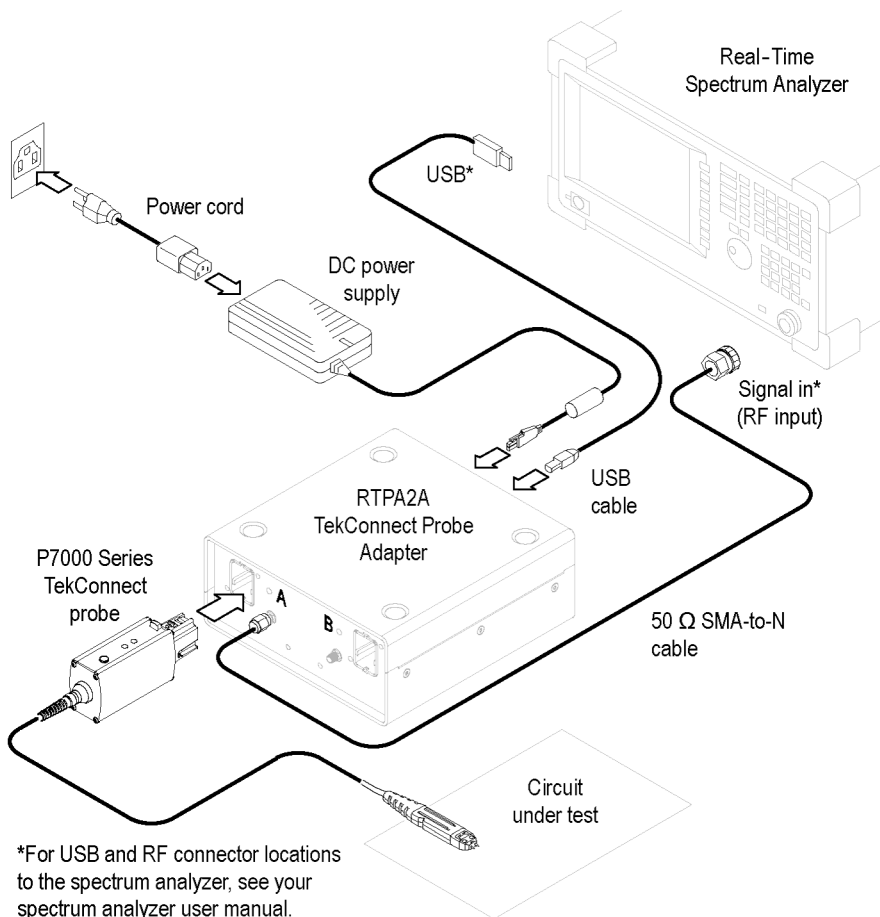


Figure 2: Probe adapter inputs and outputs

Installing the probe adapter consists of the following steps:

1. Connect the power cord.
2. Connect the power supply cable.
3. Connect the USB cable (also to the spectrum analyzer).
4. Connect a 50 Ω SMA-to-N cable (also to the spectrum analyzer RF input).
Torque to 8 in-lb.



CAUTION. *To prevent damage to the probe or spectrum analyzer, do not exceed the voltage ratings specified on your TekConnect probe. For further probe information, refer to your probe instruction manual, and if necessary, The ABC's of Probes on the Tektronix Web site.*

5. Connect a P7000 Series TekConnect probe.

CONNECTIONS Table

All procedures in this instruction manual match the cable configurations shown in the CONNECTIONS table on the front of the probe adapter.

NOTE. *The CONNECTIONS table on the front of the probe adapter recommends cable and probe connections to the spectrum analyzer. For the spectrum analyzer to apply correct probe-related amplitude offsets, you must connect the cables as shown under columns A and B. See the RTPA2A Real-Time Spectrum Analyzer TekConnect Probe Adapter Setups Quick Reference for instructions on setting up these connections.*

Installing the USB Cable and Power Supply Cable

When a USB cable is connected to a Tektronix Real-Time Spectrum Analyzer, power is enabled to the probe. The USB cable must be attached for the probe adapter and a spectrum analyzer system to function properly.

Use only the supplied power supply cable and power cord with the TekConnect probe adapter.

The USB and power supply connections on the back of the probe adapter are shown below. (See Figure 3.) To locate a USB connection on a Real-Time Spectrum Analyzer, refer to your user manual.

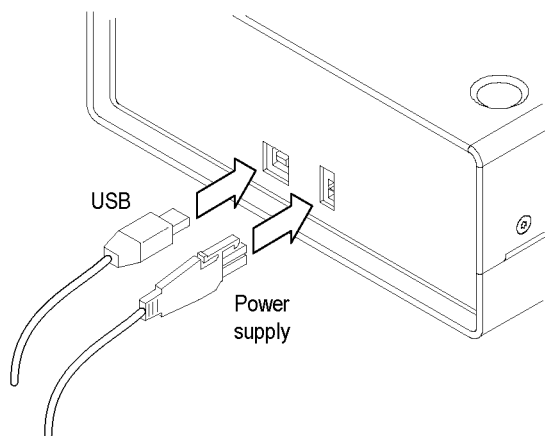


Figure 3: Back panel connections

Installing the TekConnect Probe

When the probe is connected, the probe adapter reads EEPROM information from the probe, identifying the device and allowing the appropriate power supplies to be powered on.

NOTE. *It is not necessary to power off the probe adapter when removing or installing a TekConnect probe.*

The TekConnect interface features a spring-loaded latch that provides audible and tactile confirmation that a reliable connection has been made to the probe adapter. Slide the probe into the TekConnect receptacle on the probe adapter. The probe snaps into the receptacle when fully engaged. (See Figure 4.)

To release the probe from the probe adapter, grasp the compensation box, press the latch button, and pull out the probe.

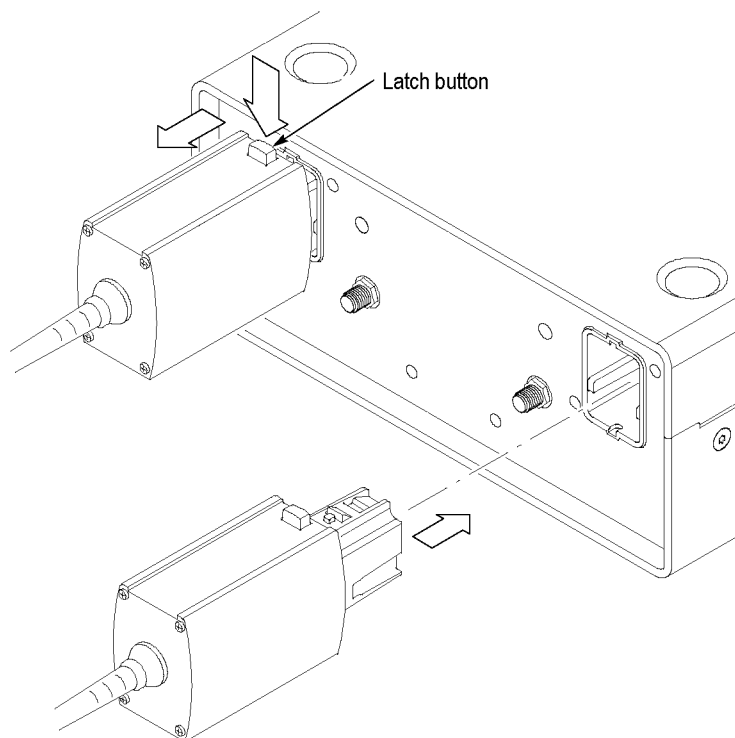


Figure 4: Installing TekConnect probes

NOTE. *Use the integral thumb screw (on probe models that have the option), to secure the probe to the adapter.*

Performing a Functional Check

To verify that the TekConnect probe adapter is functioning properly, perform the following procedure. Refer to the table below for a list of recommended equipment. (See Table 5.)

Table 5: Recommended equipment for functional check

Item description	Recommended example
Real-Time Spectrum Analyzer	Tektronix RSA2200A, RSA3300A, RSA3408A, or WCA200A Series (See page 1, <i>Real-Time Spectrum Analyzer Software Compatibility</i> .)
USB cable ¹	174-4401-XX ²
Power supply and cable ¹	119-7017-XX ²
50 Ω SMA-to-N cable ¹	174-5218-XX ²
TekConnect probe	Tektronix P7000 Series
Probe tip adapter	Attaching the probe tip will leave your hands free to perform the functional check. Use the standard accessories recommended in the functional check for your TekConnect probe to attach the probe tip to a connector.
50 Ω (M-to-M) RF coaxial cable	012-0057-XX ²
BNC (F-to-F) adapter	103-0028-XX ²
T-BNC (M-to-two F) connector	103-0030-XX ² or equivalent
50 Ω (BNC-type) termination	011-0049-XX ² or equivalent

¹ Included with the RTPA2A TekConnect probe adapter.

² Nine-digit part numbers (XXX-XXXX-XX) are Tektronix part numbers.

To verify the functionality of Channel A, perform the following tasks:

1. Set up the spectrum analyzer:
 - a. Power on and wait for the boot-up process to complete, if necessary.
 - b. Preset the factory defaults. For example, RSA2203A - Press the System key, and then press the Reset All to Factory Defaults side key.
 - c. Set the center frequency to 10 MHz.
 - d. Set the span to 1 MHz.
2. Connect the probe adapter as shown. (See Figure 5.) If necessary, refer to *Installing the Probe Adapter* for more information. (See page 6, *Installing the Probe Adapter*.)

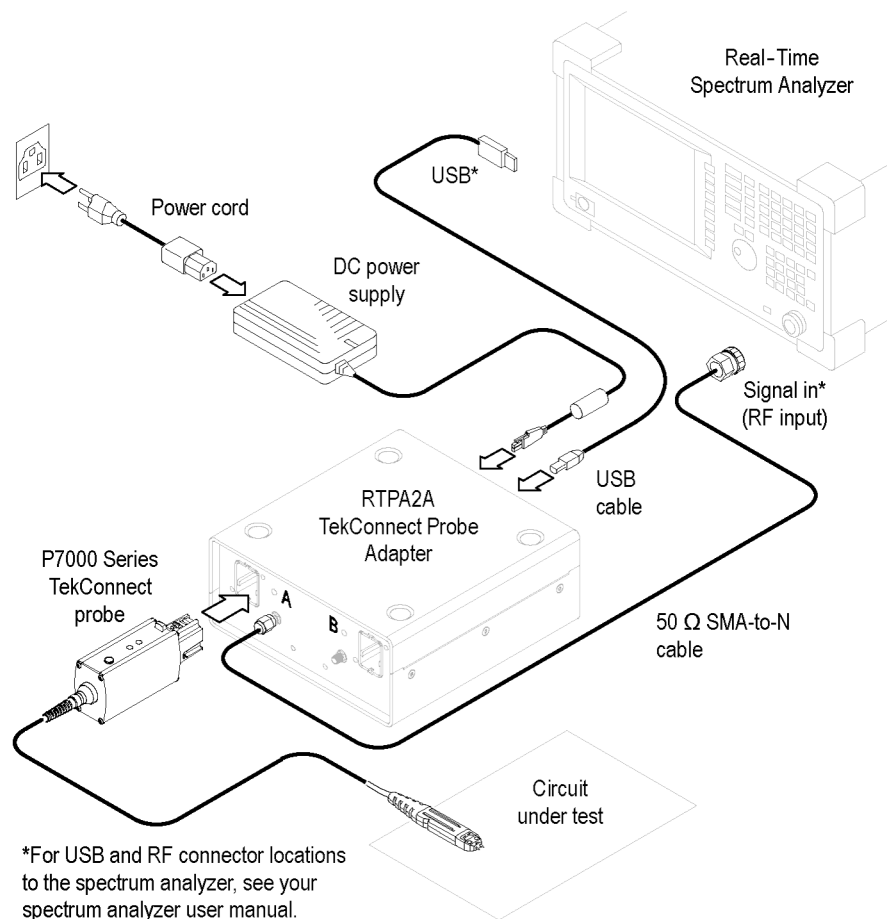


Figure 5: Connecting the RTPA2A components

3. On the probe adapter, visually check that the LEDs are lighted green. The status LEDs on the probe adapter are lighted only when a probe is attached. The LED locations are shown. (See Figure 6.)

If they are not lighted green, see the *Troubleshooting* section. (See page 23, *Troubleshooting*.)

NOTE. *The probe adapter automatically powers off if the fan fails.*

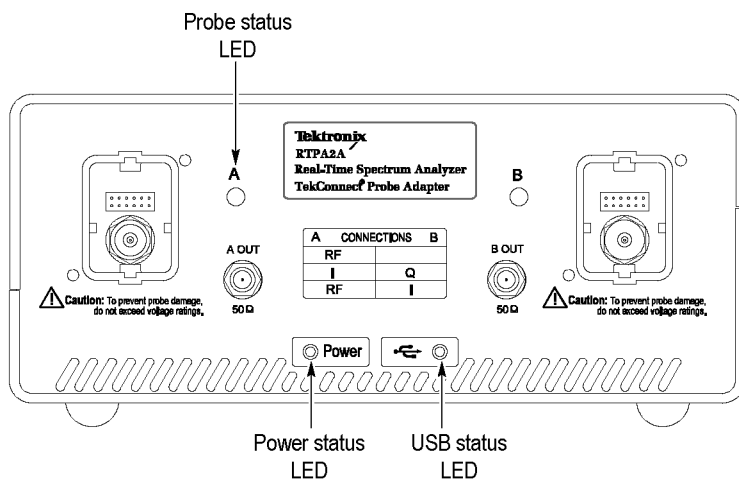


Figure 6: Check for lighted LEDs

4. Connect the spectrum analyzer:
 - a. Attach one end of a 50 Ω cable to the REF OUT connector on the spectrum analyzer.
 - b. Attach the other end of a 50 Ω cable to a BNC (F-to-F) barrel connector. (See Figure 7.)
 - c. Attach the BNC (F-to-F) barrel connector to the center T-BNC connector.
 - d. Attach the 50 Ω (BNC type) termination to an open end of the T-BNC connector.

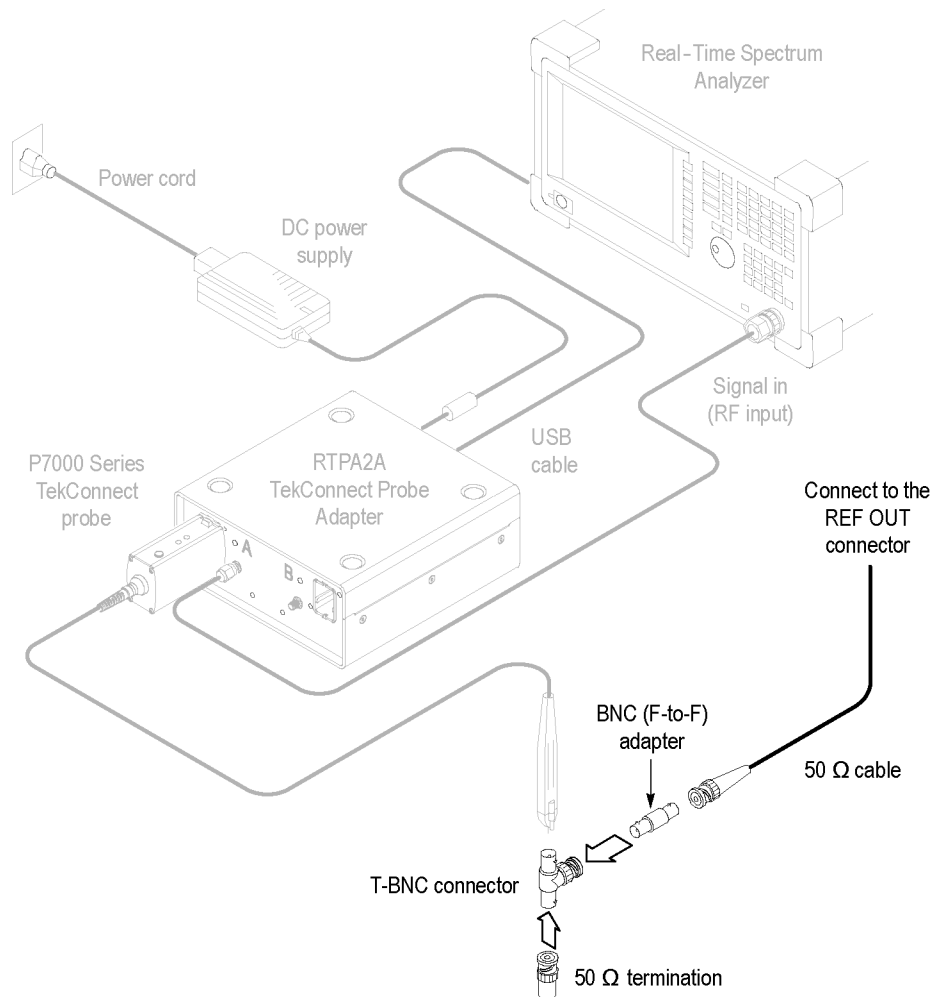


Figure 7: Equipment setup with Real-Time Spectrum Analyzer

5. Install a probe-tip adapter on the probe (optional). This leaves your hands free to complete the rest of the functional check.
6. Connect the probe tip to the open end of the T-BNC connector.

The spectrum analyzer displays an amplitude signal ($0 \text{ dBm} \pm 5 \text{ dB}$) as shown. (See Figure 8.)

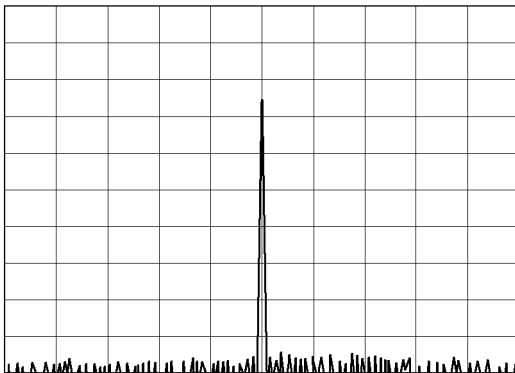


Figure 8: Amplitude signal

To verify the functionality of Channel B, perform the following tasks:

1. Move the probe from Channel A to Channel B.
2. Move the SMA cable from A OUT to B OUT.

NOTE. The spectrum analyzer will adjust the RF amplitude offset for Channel A only. To correct the amplitude for Channel B, refer to the table below. (See Table 6.) For example, if you are using a 5X probe on Channel B, manually apply an amplitude offset of -14 dB.

Table 6: Probe amplitude offset for Channel B

Probe attenuation	Amplitude offset
2.5X	-8 dB
5X	-14 dB
6.25X	-16 dB
10X	-20 dB
12.5X	-22 dB
25X	-28 dB

Operating Basics

This section contains information you need to operate the TekConnect probe adapter.

Understanding the Controls

The front panel on the TekConnect probe adapter has an LED for the status of power, USB, and each probe connection. See the following LED status explanations. (See page 23, *Troubleshooting*.)

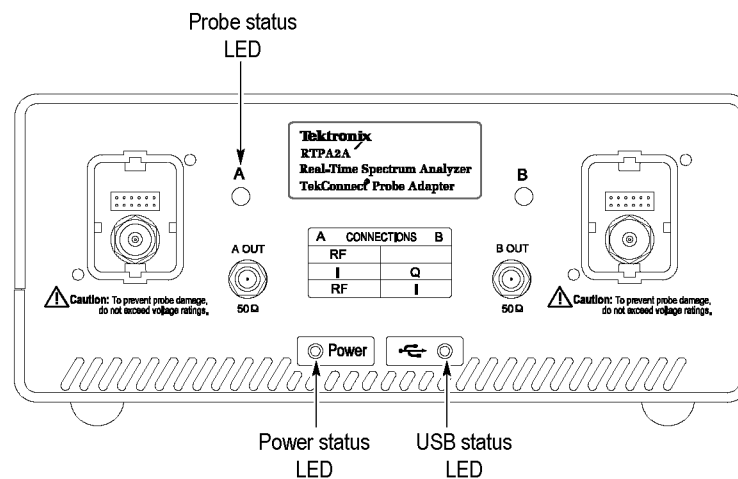


Figure 9: Location of status LEDs

Power Status The table below describes LED operation when power is on.

Table 7: Power status LED

LED	Indicates
Solid green	Proper power is applied
Off	The probe adapter is not receiving power

USB Status The table below describes LED operation when a USB cable is attached.

Table 8: USB status LED

LED	Indicates
Solid green	The USB host is detected and the spectrum analyzer is supported

Table 8: USB status LED (cont.)

LED	Indicates
Flashes green	The USB host is detected, but the spectrum analyzer is not supported
Off	The USB host was not detected; recheck the USB cable

Probe Status The table below describes LED operation when a TekConnect probe is attached.

Table 9: Probe status LED

LED	Indicates
Solid green	A supported probe is attached
Solid red	An unsupported or unrecognized probe is attached.
Off	No power to the probe adapter TekConnect receptacle did not detect a probe

NOTE. *The Power and USB LEDs must both be solid green for the probe status LEDs to operate.*

Reference

This section contains information you may need to take measurements or to avoid damaging the RTPA2A product.

Avoiding Damage from Electrostatic Discharge or Overvoltage

Circuitry in the TekConnect probe adapter and probe is very susceptible to damage from electrostatic discharge or from overdrive signals. Be sure to operate the system only in a static-controlled environment. Be sure to discharge to ground any electrostatic charge that may be present on the center and outer connectors of cables before attaching the cables to the system. Be sure to operate the TekConnect probe adapter and probe only where DC voltage levels are within the probe limits. Refer to the probe specifications in your probe instruction manual.

Specifications

This section lists the electrical, environmental, and physical characteristics of the RTPA2A product.

Typical specifications are provided for your convenience and are not guaranteed.

The electrical characteristics listed below are valid when the RTPA2A product operates within the environmental conditions listed in the table. (See Table 11.)

Table 10: Electrical characteristics

Characteristic	Description
Output impedance, nominal	50 Ω ¹
Frequency range ² , typical	DC to >18 GHz
Insertion loss, typical	
Without RF cable attached	DC to 10 GHz: <0.3 dB (See Figure 10 on page 20.) DC to 18 GHz: <0.5 dB
With 1 meter cable (SMA-to-N) 174-5218-XX	DC to 10 GHz: <1.2 dB DC to 18 GHz: <2 dB
Return loss, typical	
Without RF cable attached	DC to 5 GHz: >25 dB DC to 10 GHz: >20 dB (See Figure 11 on page 21.) DC to 18 GHz: >15 dB
With 1 meter cable (SMA-to-N) 174-5218-XX	DC to 5 GHz: >25 dB DC to 10 GHz: >20 dB DC to 18 GHz: >15 dB
Electrical delay, nominal	
Without RF cable attached	470 ps
With 1 meter male-to-male cable	4.62 ns

¹ Provided by the spectrum analyzer input.

² Provided by the RTPA2A product only.

Table 11: Environmental characteristics

Characteristic	Description
Temperature range	
Operating	10 °C to 40 °C (50 °F to 104 °F)
Nonoperating	-20 °C to +60 °C (-68 °F to 140 °F)
Humidity	
Operating	20 to 80% RH, noncondensing
Nonoperating	5 to 90% RH, noncondensing

Table 11: Environmental characteristics (cont.)

Characteristic	Description
Altitude	
Operating	3,048 m (10,000 ft)
Nonoperating	12,190 m (40,000 ft)
Mechanical shock	50 g half-sine: 11 ms
Required airflow clearance (front and back)	2 in (5.08 cm)

Table 12: Physical characteristics

Characteristic	Description
Weight ¹	1.07 kg (2.36 lbs)
Dimensions	Height: 110 mm (4.250 in) Width: 70 mm (2.750 in) Depth: 42 mm (1.625 in)
Cable length, nominal	1 m (3.28 ft)

¹ Does not include accessories and shipping container.

The graphs of insertion loss and return loss are as follows:

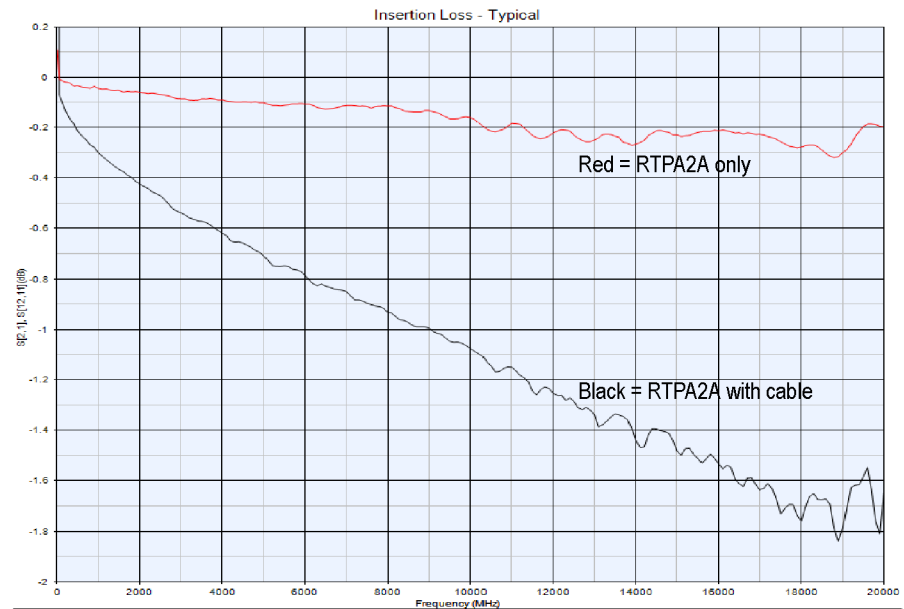


Figure 10: Insertion loss

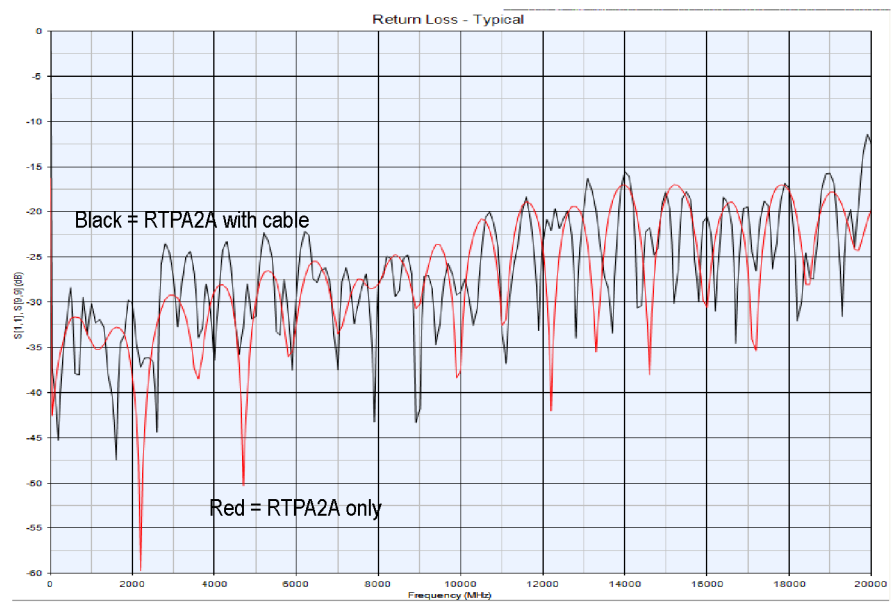


Figure 11: Return loss

Maintenance

This section contains information on troubleshooting and how to clean and maintain your equipment.

Inspecting and Cleaning

Remove accumulated loose dust from the probe adapter with a soft cloth or brush. Remaining dirt may be removed with a soft cloth dampened with isopropyl alcohol.

Do not immerse any equipment in cleaning solutions or use abrasive cleaners.



CAUTION. To prevent damage, avoid using cleaning materials that contain acetone, benzene, toluene, xylene, or similar solvents.

Troubleshooting

If you encounter problems installing or operating the probe adapter, try the troubleshooting procedures before returning the probe adapter for service. (See page 23, *Troubleshooting*.)

NOTE. If problems occur with your TekConnect probe adapter, the Technical Support Center may need the firmware version of your probe adapter to isolate the symptoms to a specific cause. The firmware version number is located on the back of the TekConnect probe adapter.

Table 13: Probe Adapter LEDs

LEDs			Problem	Check
Power	USB	Probe		
on	on	green	None (probe adapter performing correctly)	—
off	off	off	Power status LED remains off	Power cord connection.
on	off	off	USB status LED remains off	USB connections on the probe adapter and spectrum analyzer.
on	flashing	off	USB status LED flashes	If the spectrum analyzer software needs to be upgraded. Refer to <i>Real-Time Spectrum Analyzer Software Compatibility</i> for more information. (See page 1, <i>Real-Time Spectrum Analyzer Software Compatibility</i> .)

Table 13: Probe Adapter LEDs (cont.)

LEDs			Problem	Check
Power	USB	Probe		
on	on	off	Probe status LED on the probe adapter remains off, and the fan is not rotating	An internal fault has been detected. Send the probe adapter for service.
			Probe status LED on the probe adapter remains off, and the fan is rotating	If the probe status LED lights when the probe is connected to the other probe adapter channel, send the probe adapter for service. If the probe functions incorrectly in a TekConnect oscilloscope, send the probe for service. If the probe status LED on the probe adapter does not light in either channel, but the probe functions in a TekConnect scope, send the probe adapter for service.
on	on	red	Probe status LED is red	Incompatible probe (See Table 1 on page 2.)
on	on	green	No Signal Detected (from the connected TekConnect probe)	The 50 Ω cable connection(s) between the spectrum analyzer and the probe adapter.

Product Requires Service

The following conditions indicate an internal failure. See the copyright page at the front of the manual for information on contacting Tektronix for service.

- No probe-adapter LEDs active at power on.
- Probe status LEDs are inactive on one channel, but are active on the other channel of the TekConnect probe adapter.
- Probe status LED response is inconsistent when connecting the same probe alternately to each channel of the TekConnect probe adapter.
- USB status LED flashes even when attached to a valid Real-Time Spectrum Analyzer.
- Neither probe status LED lights when working probes are attached.
- Power status LED is lighted, but the fan is not rotating.

Repackaging for Shipment

If the original packaging is unfit for use or not available, use the following packaging guidelines:

1. Use a corrugated cardboard shipping carton having inside dimensions at least one inch greater than the probe dimensions. The box must have a carton test strength of at least 200 pounds.
2. Place the probe adapter into an antistatic bag or wrap to protect it from dampness.
3. Place the probe adapter into the box and stabilize it with light packing material.
4. Seal the carton with shipping tape.

Replaceable Parts

This section contains a list of the replaceable parts for the RTPA2A TekConnect probe adapter. Use this list to identify and order replacement parts.

Parts Ordering Information

Replacement parts are available through your local Tektronix field office or representative.

Changes to Tektronix products are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest improvements. Therefore, when ordering parts, it is important to include the following information in your order:

- Part number
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If you order a part that has been replaced with a different or improved part, your local Tektronix field office or representative will contact you concerning any change in part number.

Using the Replaceable Parts List

This section contains a list of the mechanical and or electrical components that are replaceable. Use this list to identify and order replacement parts. The following table describes each column in the parts list.

Table 14: Parts list column descriptions

Column	Column name	Description
1	Figure & index number	Items in this section are referenced by figure and index numbers to the exploded view illustrations that follow.
2	Tektronix part number	Use this part number when ordering replacement parts from Tektronix.
3 and 4	Serial number	Column three indicates the serial number at which the part was first effective. Column four indicates the serial number at which the part was discontinued. No entry indicates the part is good for all serial numbers.
5	Qty	This indicates the quantity of parts used.
6	Name & description	An item name is separated from the description by a colon (:). Because of space limitations, an item name may sometimes appear as incomplete. Use the U.S. Federal Catalog handbook H6-1 for further item name identification.

Abbreviations Abbreviations conform to American National Standard ANSI Y1.1-1972.

Table 15: Replaceable parts list

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description
12-1	200-4827-XX			1	COVER; EXTERIOR,AL;SAFETY CONTROLLED
12-2	174-5189-XX			1	CABLE ASSEMBLY;2X8 .100 CENTER, .050 RIBBON, 8.00 LONG
12-3	671-6079-XX			1	CIRCUIT BD ASSY;USB;389378500,WIRED
12-4	211-0722-XX			1	SCREW,MACHINE; 6-32 X 0.250,PNH,STL,CDPL,T-15 TORX DR
12-5	335-1350-XX			1	MARKER,IDENT; LABEL, REAR PANEL; SAFETY CONTROLLED
12-6	119-6617-XX			1	FAN ASSEMBLY; DC,12V;0.045A,TACH OUTPUT,4100 RPM,5 CFM,20DBA,40MM X 40MM X 28MM;6 IN,3 LEAD, WITH CONN & HOUSING,SAFETY CONTROLLED
12-7	211-0208-XX			1	SCREW,MACHINE; 4-40 X 1.625,FLH,100 DEG,STL CD PL,POZ
	220-0221-XX			1	NUT ASSY; 4-40 X .250,HEX,LOCK WASHER
12-8	441-2442-XX			1	CHASSIS ASSY; MAIN
12-9	211-0734-XX			1	SCREW,MACHINE; 6-32 X 0.250,FLH100,STL,CDPL,T-10 TORX DR
12-10	348-0430-XX			1	BUMPER,PLASTIC; POLYURETHANE,BLACK
12-11	131-6417-XX			1	CONTACT,ELEC; GROUNDING,0.600 L X 0.250 W X 0.220 D,ELECTROLESS NICKEL PLATE
12-12	174-4856-XX			1	CA,ASSY;SP,ELEC,SEMI-RIGID COAX, 0.141 OD
12-13	386-7448-XX			1	PLATE,MOUNTING;AL,SELLWOOD
12-14	426-2625-XX			1	MODULAR KIT; RECEPTACLE; PROBE ASSEMBLY, LATCHING, SAFETY CONTROLLED
12-15	335-0428-XX			1	MARKER,IDENT; LABEL,COSMETIC,RECEPTACLE BOTTOM,BLACK,LEXAN,W/PSA,SAFETY CONTROLLED
12-16	407-5087-XX			1	BRACKET ASSY, TEKCONNECT BUCKET MOUNT
12-17	671-6176-XX			1	CIRCUIT BD ASSY;TEKCONNECT INTERFACE CONTROL,W/V1.2 SW APPLICATION
Standard Accessories					
	071-1766-XX			1	MANUAL,INSTRUCTION; RTPA2A REAL-TIME SPECTRUM ANALYZER TEKCONNECT PROBE ADAPTER,ENGLISH (standard accessory, if you ordered Option L0)
	071-1767-XX			1	CARD, QUICK REFERENCE;RTPA2A REAL-TIME SPECTRUM ANALYZER TEKCONNECT PROBE ADAPTER
	071-1776-XX			1	MANUAL,INSTRUCTION;RTPA2A REAL-TIME SPECTRUM ANALYZER TEKCONNECT PROBE ADAPTER,JAPANESE,PAPER (standard accessory, if you ordered Option L5)
	174-5218-XX			1	CABLE ASSY;MALE N CONNECTOR TO SMA
	103-0058-XX			1	ADAPTER,CONN; N FEMALE TO BNC MALE
	174-4401-XX			1	CABLE ASSY,I/O; USB, 26 AWG, 3 FT, A TO B, MALE, BLACK
	119-7017-XX			1	POWER SUPPLY; EXTERNAL, DESKTOP (W/SPECIAL MOLEX OUTPUT CONNECTOR) ; 50W, 12VDC 4.1A OUT, 90 - 254VAC 47 - 63 HZ IN; 78% EFF, UL, CSA, PSE, CCC ,SAFETY CONTROLLED
	161-0066-00			1 A0	CABLE ASSY,PWR; 3,18 AWG,250V//10A,98.0 L,STR,IEC320,RCPT X NEMA 5-15P,US,SAFETY CONTROLLED

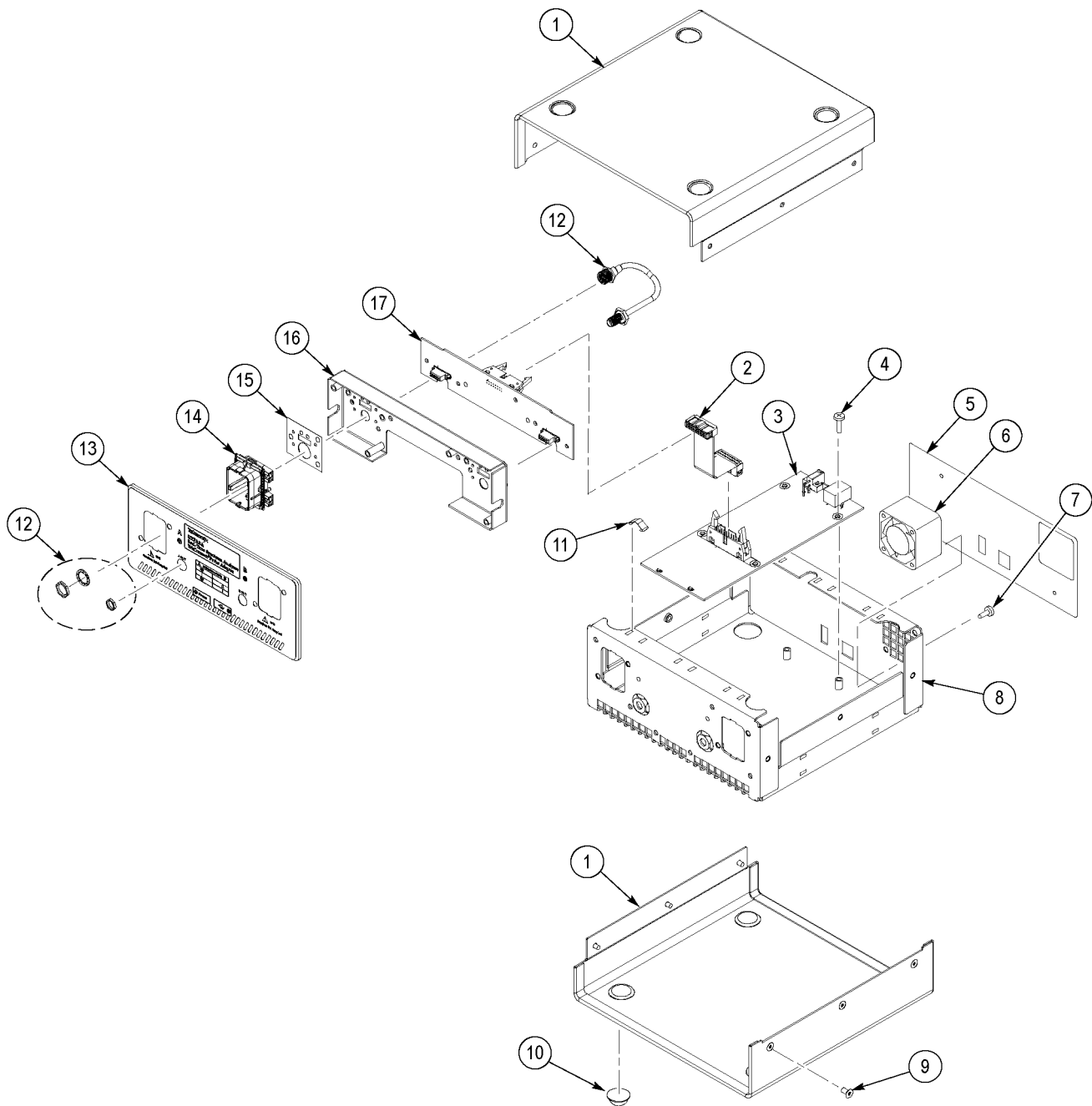


Figure 12: Exploded view

Table 16: Optional accessories

Tektronix part number	Option number	Name & description
161-0066-09	A1	CABLE ASSY,PWR; 3,0.75MM SQ,250V/10A,99.0 L,STR,IEC320,RCPT,EUROPEAN,SAFETY CONTROLLED
161-0066-10	A2	CABLE ASSY,PWR; 3,1.0 MM SQ,250V/10A,2.5 METER,STR,IEC320,RCPT X 13A,FUSED UK PLUG(13A FUSE),UNITED KINGDOM,SAFETY CONTROLLED
161-0066-13	A3	CABLE ASSY,PWR; 3,1.0 MM SQ,250V/10A,2.5 METER,STR,IEC320,RCPT,AUSTRALIA,SAFETY CONTROLLED
161-0104-08	A4	CABLE ASSY,PWR; 3,18 AWG,250/10A,98.0 L,RTANG,IEC320,RCPT X STR,NEMA 6-15P,US,SAFETY CONTROLLED
161-0154-00	A5	CA ASSY,PWR; 3,1.0MM SQ,250V/10A,2.5 METER,STR,IEC320,RCPT,SWISS,SAFETY CONTROLLED
161-0306-00	A10	CABLE ASSY,PWR; 3,1.0MM SQ,250V/10A,2.5 METER,RTANG,IEC320,RCPT,3C CERTIFICATION,CHINA;SAFETY CONTROLLED
161-A005-00	A6	CABLE ASSY,PWR; RT ANGLE, JAPANESE T MARK,SAFETY CONTROLLED