RUCKUS
an ARRIS company

Q710 LTE
Access Point
User Guide

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- o Reorient or relocate the receiving antenna.

- o Increase the separation between the equipment and receiver.

- o Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- o Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Professional Installation is required.

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https://www.ruckuswireless.com/

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Contents

Preface

Document conventions

The following tables list the text and notice conventions that are used throughout this guide.

Text formatting conventions such as boldface, italic, or Courier font may be used to highlight specific words or phrases.

TABLE 1 Text conventions

Convention	Description	Example
monospace	Identifies command syntax examples.	`device(config)# interface ethernet 1/1/6`
bold	User interface (UI) components such as screen or page names, keyboard keys, software buttons, and field names	On the **Start** menu, click **All Programs**.
italic text	Publication titles	Refer to the *Ruckus Small Cell Release Notes* for more information

Notes, Cautions, and Warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE
A Note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

CAUTION
A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.

DANGER
A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Command Syntax Conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
italic text	Identifies a variable.
[ ]	Syntax components displayed within square brackets are optional.
	Default responses to system prompts are enclosed in square brackets.
{x| y| z}	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
x|y	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, *member*[*member*...].
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

Document feedback

Ruckus is interested in improving its documentation and welcomes your comments and suggestions. You can email your comments to

Ruckus at: docs@ruckuswireless.com

When contacting us, please include the following information:

- Document title and release number
- Document part number (on the cover page)
- Page number (if appropriate)
- For example:
  - Ruckus Small Cell Alarms Guide SC Release 1.3
  - Part number: 800-71306-001
  - Page 88

Ruckus Product Documentation Resources

Visit the Ruckus website to locate related documentation for your product and additional Ruckus resources.

Release Notes and other user documentation are available at https://support.ruckuswireless.com/documents. You can locate documentation by product or perform a text search. Access to Release Notes requires an active support contract and Ruckus Support Portal user account. Other technical documentation content is available without logging into the Ruckus Support Portal.

White papers, data sheets, and other product documentation are available at https://www.ruckuswireless.com.

Online Training Resources

To access a variety of online Ruckus training modules, including free introductory courses to wireless networking essentials, site surveys, and Ruckus products, visit the Ruckus Training Portal at https://training.ruckuswireless.com.

Contacting Ruckus Customer Services and Support

The Customer Services and Support (CSS) organization is available to provide assistance to customers with active warranties on their Ruckus Networks products, and customers and partners with active support contracts.

For product support information and details on contacting the Support Team, go directly to the Support Portal using https://support.ruckuswireless.com, or go to https://www.ruckuswireless.com and select **Support**.

What Support Do I Need?

Technical issues are usually described in terms of priority (or severity). To determine if you need to call and open a case or access the selfservice resources use the following criteria:

- Priority 1 (P1)—Critical. Network or service is down and business is impacted. No known workaround. Go to the **Open a Case** section.
- Priority 2 (P2)—High. Network or service is impacted, but not down. Business impact may be high. Workaround may be available. Go to the **Open a Case** section.
- Priority 3 (P3)—Medium. Network or service is moderately impacted, but most business remains functional. Go to the **Self-Service Resources** section.
- Priority 4 (P4)—Low. Request for information, product documentation, or product enhancements. Go to the **Self-Service Resources** section.

Open a Case

When your entire network is down (P1), or severely impacted (P2), call the appropriate telephone number listed below to get help:

- Continental United States: 1-855-782-5871
- Canada: 1-855-782-5871
- Europe, Middle East, Africa, and Asia Pacific, toll-free numbers are available at https://support.ruckuswireless.com/contact-us and Live Chat is also available.

Self-Service Resources

The Support Portal at https://support.ruckuswireless.com/contact-us offers a number of tools to help you research and resolve problems with your Ruckus products, including:

- Technical Documentation—https://support.ruckuswireless.com/documents
- Community Forums—https://forums.ruckuswireless.com/ruckuswireless/categories
- Knowledge Base Articles—https://support.ruckuswireless.com/answers
- Software Downloads and Release Notes—https://support.ruckuswireless.com/software
- Security Bulletins—https://support.ruckuswireless.com/security

- Contacting Ruckus Customer Services and Support

Using these resources will help you to resolve some issues and will provide TAC with additional data from your troubleshooting analysis if you still require assistance through a support case or RMA. If you still require help, open and manage your case at https://support.ruckuswireless.com/case management

About this Document

Introduction

This is a Ruckus Small Cell (RSC) setup guide authored to enable readers to onboard RSCs with the help of Ruckus Cloud Management system.

After successful setup and commissioning, Ruckus APs are capable of transmitting on 10 or 20 MHz bandwidth TDD-LTE channels and providing wireless coverage to compatible LTE devices.

The goal for this document is to help users configure and setup a Q710 AP and successfully register and attach a user-equipment (UE) to be able to browse the internet.

This document can be divided broadly into following two sections:

- Hardware installation for Q710 APs
- Commissioning of APs using Ruckus Cloud

Each AP could be powered by either a managed PoE+ switch or PoE injector (PoE+ advisable) or DC power adaptor shipped within the AP box, whichever is available.

APs are by default configured to send dhcp requests when powered up and successful bootup is complete. APs rely on an external dhcp server to provide each AP, a routable IP address which will enable it to route and send connection requests to:

1. EMS (Ruckus Cloud)
2. Network (EPC)
3. SAS
4. Timing source (Master AP or GPS)

IP connectivity to 1, 2, 3, and PTP timing phase and frequency lock (4) is mandatory for an AP to be able to provide LTE service. A disruption of connection with any one may lead to a service outage.

Each AP can be configured to:

- Obtain its timing information from the GPS satellites and then assume the role of a Master PTP source for other APs in the network.
- Assume a PTP slave role and obtain its timing information from another AP that is the designated Master (that's IP reachable) for that venue.

For the AP to obtain timing via GPS and/or function as Master timing source, place the AP such that it has direct line-of-sight with open sky or as close to the outside facing windows or doors as possible.

> **NOTE**
> The terms Ruckus Small Cell (RSC) and Access Point (AP) imply the same meaning and may be used interchangeably through this guide.

Abbreviations

The following table describes the abbreviations used in the document.

TABLE 2 Abbreviations

Abbreviation	Description
AP	Access Point
EMS	Element Management System
EPC	Evolved Packet Core
GPS	Global Positioning System
MME	Mobility Management Entity
RSC	Ruckus Small Cell

Physical Installation of Q710

Q710 AP Installation

This section covers steps involved in assembling and installing a Q710 Access Point (AP) on strand mounts.

This Quick Setup Guide provides step-by-step instructions on how to set up your Ruckus Small Cell Q710 AP. After completing the steps described in this guide, you will be able to place the Q710 at your site and provide LTE wireless network access to users.

FIGURE 1 Ruckus SmartCell™ Q710 Access Point

Before You Begin

The AP box shipped to you must be come with everything required to mount and power up the AP. Check the package contents as follows:

- SmartCell Q710 Access Point
- Mounting Bracket
- 4 Bracket Screws (Phillips #2)
- 2 Wall Mounting Screws (Phillips #2)
- 2 Wall Anchors
- US AC/DC Adapter
- This Quick Setup Guide

Mounting Instructions

The AP can be mounted to a drop-ceiling T-bar or flat surface.

Mounting on a Drop-Ceiling T-Bar

The factory-supplied mounting bracket allows you to attach the AP to drop-ceiling T-bars.

Perform the following steps to mount the AP to drop-ceiling T-bar.

1. Attach the bracket to the AP at [A] using included bracket screws, if not already attached.

2. Lift the AP with the bracket facing the drop-ceiling and position the Studs [B] on the bracket slightly offset from either side of the T-bar.

3. Gently turn the AP clockwise until the Studs slip over the T-bar and both clasps [C] snap in place against the T-bar.

FIGURE 2 AP Mounting Bracket

FIGURE 3 AP Securely Attached to T-bar

NOTE
In order to properly support AP's weight, make sure that AP is mounted at the intersection of two rails and not along a single rail.

4. To unmount the AP, simply press down on the two clasps [C] and gently turn the AP counter-clockwise until it comes off.

Mounting on a Flat Surface

The factory-supplied mounting screws and plastic wall anchors allow you to attach the AP to a wall or ceiling. Perform the following steps to mount the AP to a flat surface.

1. Attach the bracket to the AP using the included Bracket screws.

2. Use the Mounting Template on the last page of this Quick Setup Guide to mark the locations for two drill holes on the mounting surface.

3. Use a 4.75mm (3/16") drill bit to drill holes approximately 25mm (1") deep into the mounting surface.

4. Insert the factory-supplied anchors and mounting screws into the mounting surface, leaving approximately 6 mm (1/4") of the screw heads protruding for the AP bracket.

5. Place the AP and bracket onto the mounting screws so that the screw heads enter the Keyholes [D] on the AP bracket and gently push down.

Making the Connections

Be sure to use a Cat 5e or better Ethernet cable with non-booted connectors (see Figure 4). If using PoE, attach one of the Ethernet cable to an 802.3at Type 2-certified switch or PoE injector (sold separately). Attach the other end of the Ethernet cable to the leftmost Ethernet port [E] on the AP as shown in Figure 5. If using an AC/DC adapter, connect it to the power port [F] in Figure 5 and to an electrical outlet.

FIGURE 4 Non-booted Ethernet Connector

FIGURE 5 Port Locations
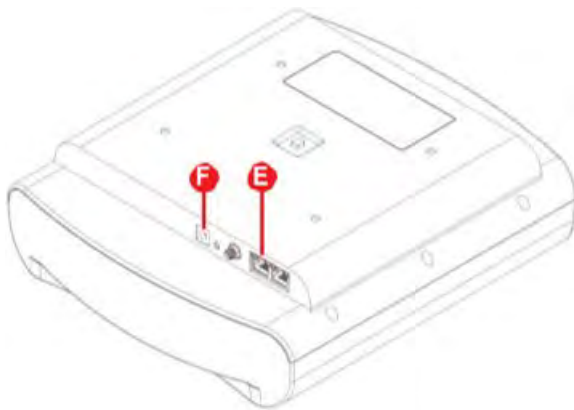
Check the LED Lights

Once connected, the AP will power on and automatically connect to the Ruckus Cloud over the Internet to configure itself. You will see some activity and after 2-5 minutes all lights should turn solid Green or solid Amber. If any light is off or flashing, see the following table for troubleshooting:

TABLE 3 Troubleshooting Table for LED Lights

LED	Troubleshooting
PWR	Check Power, Ethernet connections and PoE switch.
EMS	Check Internet connection and network settings.
EPC	Check Internet connection and network settings.
SYNC	Make sure at least one of the APs in the network is near an unobstructed window for a good GPS signal.

TABLE 3 Troubleshooting Table for LED Lights (continued)

LED	Troubleshooting
LTE	Use the Ruckus Cloud.

Factory Resetting Q710 AP

In case the AP fails to connect to the Cloud, do Factory Reset for the AP by long-press-hold action for up to 20 seconds on to the Reset button provided right beside the GPS connector.

(Once connected to the Cloud, Factory Reset can be performed via Edit AP drop-down as well)

Support

In case you run into any issue and you need help, please call us or email us: at http://support.ruckuswireless.com