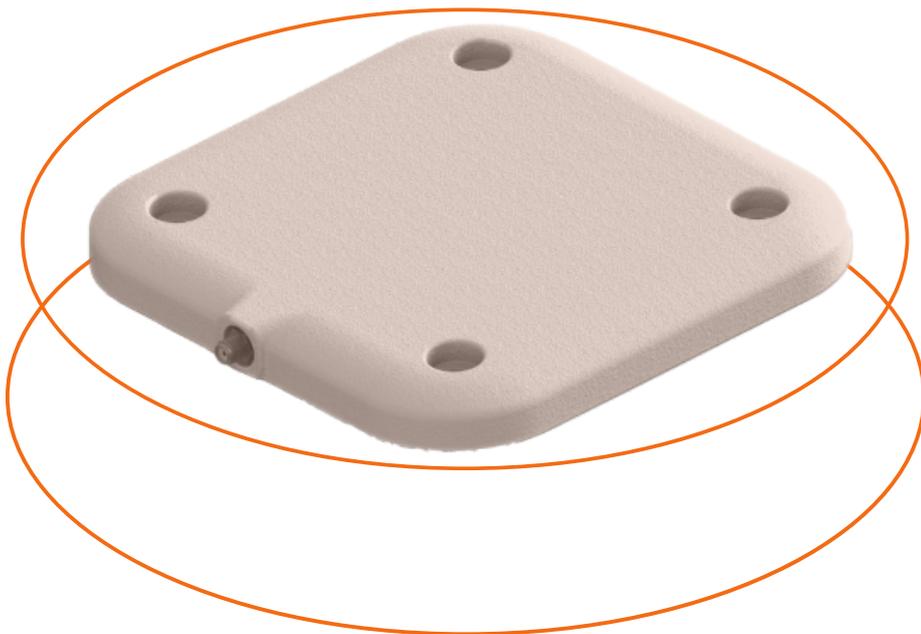


A5020 Product Guide

A5020 Slimline Antenna Family



High levels of performance and durability in an aesthetically superior form

Table of Contents

- 03** INTRODUCTION
- 04** A5020 FAMILY OVERVIEW
- 05** ANTENNA SELECTION GUIDE
 - 05** Antenna Read Range
 - 05** Antenna Radiation Pattern
 - 06** Applications
- 08** ANTENNA DETAILS
 - 08** A5020 Near Field
 - 09** A5020 Mid Range
 - 10** A5020 Circularly Polarized
 - 11** A5020 Linear Extreme
- 12** MOUNTING OPTIONS
- 13** CABLES
- 14** ORDER INFORMATION
- 15** FURTHER INFORMATION
 - 15** Environmental Tests
 - 16** Product Drawings
 - 21** Disclaimers



Introduction

At Times-7, our customers come first. This is why we're always innovating to bring you the best products and solutions for your applications. Our A5020 antennas are a SlimLine™ multipurpose series consisting of the Circular Polarized, Near Field and our new models, the Mid-Range and Linear Extreme antenna. The Times-7 team is excited to bring you this range of antennas and work with you to make your implementations successful.

A5020 Design Criteria

The A5020 Circular Polarized is one of our best-selling antennas because it was designed to be robust yet compact, making it a valuable component of a large variety of applications. In designing the A5020 family, we have stayed true to our responsive, reliable, and innovative values. We have listened intently and designed a reliable antenna based on your feedback. You told us you valued:

1. A slim antenna that can be used inside or out.
2. An IP68 rated antenna to ensure performance in wet and dirty locations.
3. A robust antenna that can withstand the rigour of industrial environments.
4. An easy to mount antenna using standard VESA mounts.
5. A good looking antenna that blends into the background.

The robust nature and superior performance of these antennas allow you to quickly and accurately track inventory and assets. Our robust RAIN RFID A5020 antennas offer the high performance and range needed for high traffic tracking with precision.



Key Benefits

- > Compact size for non-obstructive operation.
- > Flexible and easy mounting options.
- > High ingress protection for dirty and wet environments.
- > Suitable for different environmental conditions.
- > Easy to store and transport.

Why use an A5020 antenna?

Our A5020 range of antennas offers versatility and high performance. They meet the criteria needed for diverse applications and environments, including outdoor, industrial, and customer-facing scenarios.

Our A5020 antennas blend beautifully into any customer environment. They are also rugged, with a high IP68 rating that can be used in extreme weather conditions.

The slim and compact design allows these antennas to fit into small spaces. The flush and VESA mounting options make installation and mounting simple.



A5020 Family Overview

The A5020 series: Attractive, rugged and versatile.



A5020 NF

A5020 MR

A5020 CP

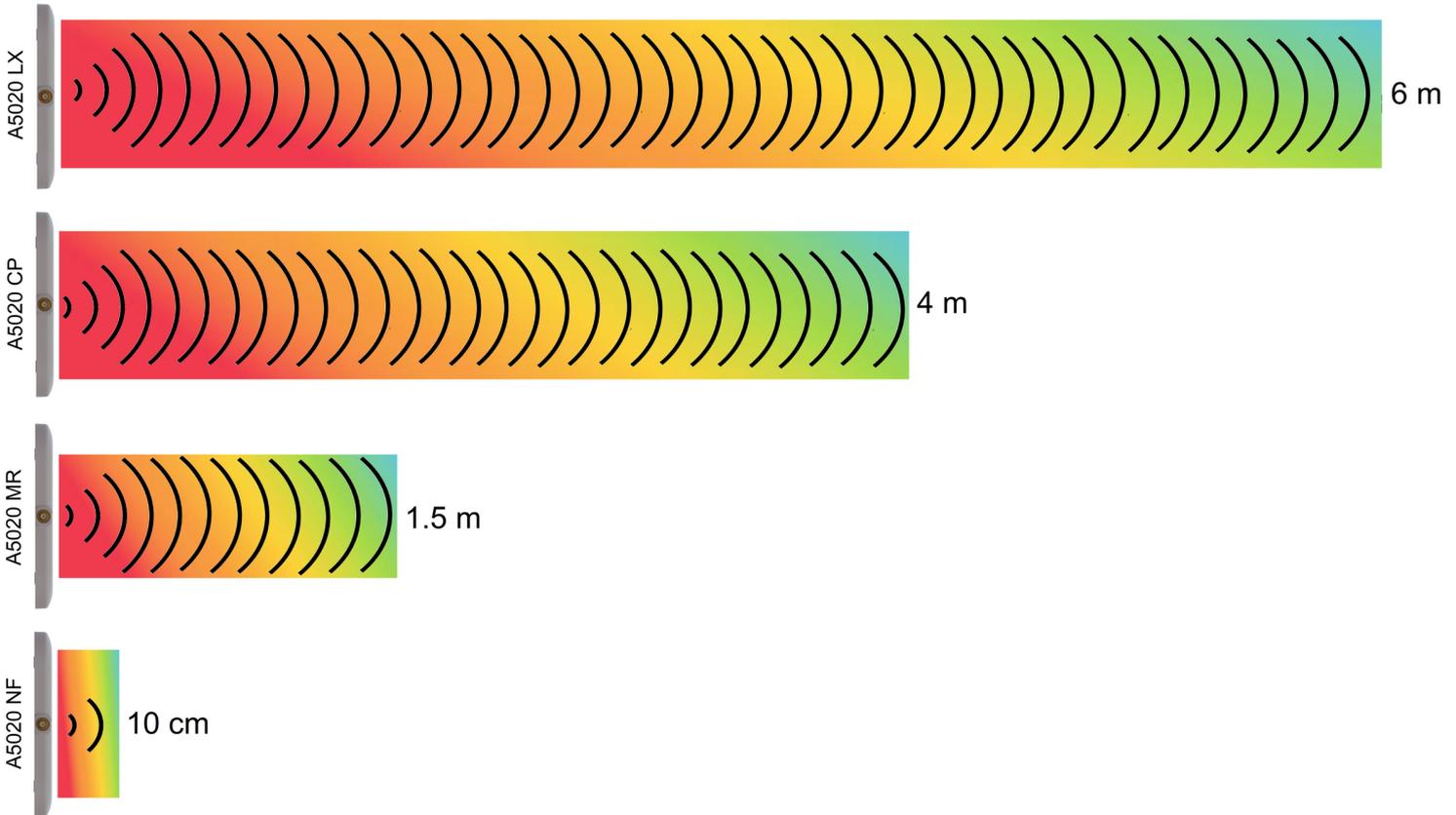
A5020 LX

| Common Design Features | | | | |
|--|-----------------------|---------------------------------|---------------------|---------------------------------|
| Supports flush and VESA mounting | ✓ | ✓ | ✓ | ✓ |
| SMA female / side connector | ✓ | ✓ | ✓ | ✓ |
| A5020 flush screws | ✓ | ✓ | ✓ | ✓ |
| UV resistant and fire-retardant | ✓ | ✓ | ✓ | ✓ |
| Anti-static protection | ✓ | ✓ | ✓ | ✓ |
| Environmental and Operating Features | | | | |
| IP68 Environment Rating | ✓ | ✓ | ✓ | ✓ |
| Operating/Storage Temperature -30° to +65°C / -22° to +149°F | ✓ | ✓ | ✓ | ✓ |
| IP69K Environmental Rating | ✗ | ✗ | ✗ | ✓ |
| Operating/Storage Temperature -90° to +65°C / -130° to +149°F | ✗ | ✗ | ✗ | ✓ |
| Specifications and Performance | | | | |
| Nominal Impedance 50 Ω | ✓ | ✓ | ✓ | ✓ |
| Maximum Power Input 3W | ✓ | ✓ | ✓ | ✓ |
| Polarization – Right Hand Circular | Not applicable | ✓ | ✓ | ✗ |
| Polarization - Vertical Linear | Not applicable | ✗ | ✗ | ✓ |
| Far Field Beam width | Not applicable | 115° in XZ and 105° in YZ plane | 105° in both planes | 100° in XZ and 105° in YZ plane |
| Gain | Equivalent to -30 dBi | -3 dBiC typical | 5 dBiC typical | 5 dBi typical |
| Color and Physical Dimensions | | | | |
| Color | White | White | White | Grey |
| Dimensions: 150.7 x 149.4 x 14.5mm 5.93" x 5.88" x 0.57" | ✓ | ✓ | ✓ | ✓ |
| Boxed: 180 x 155 x 25mm 7.09" x 6.10" x 0.98" | ✓ | ✓ | ✓ | ✓ |

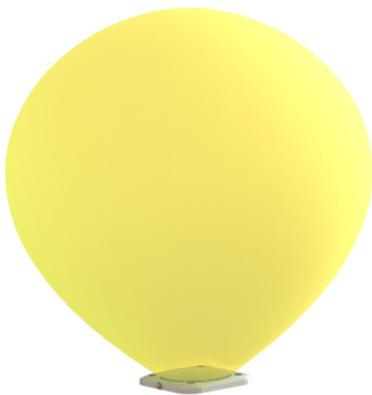
Selection Guide

The antenna selection guide will help to break down which type of beam shape is right for your application. Once you have selected the correct beam shape you can easily determine which A5020 antenna is the right fit for you.

Antenna Read Range



A5020 Radiation Pattern



- The A5020 family has a consistent beam shape that retains its relative symmetry across the reader power range.
- Using innovative design improves the overall antenna performance, reliability, accuracy and ensures the beam shape remains true at all power levels.

Selection Guide

The antennas in the A5020 family are all versatile and can be used in customer-facing and indoor /outdoor applications. However, each member of the family has been designed with specific applications in mind. The following are examples of where you may choose a specific A5020 variant.

Applications

Near Field Applications - A5020 NF



Direct Contact Reads

The A5020 NF antenna is best used when you only want to read things that come in direct contact with the antenna. To record a high-value precision instrument or tool usage, it would need to be scanned before the lock can be released. Only an antenna with a proximity reader and no far-field reading ability is suitable for these needs.



Tap 'n Go and touch applications

The A5020 NF antenna impresses with an extremely close read range of 10 cm / 4" from the antenna's surface, suitable for purchase and payment applications. Although the A5020 NF cannot read credit/debit cards equipped with HF RFID, it is widely used to scan proprietary UHF badges to purchase goods. For example, employees can scan their badges to pay for food bought from their cafeteria.

Mid Range Applications - A5020 MR



Kiosk / Self Check Out / POS

The A5020 MR antenna's lower gain RF radiation can be confined to a smaller zone while operating at low power. The antenna is best suited for kiosks and POS applications where a confined read zone is a key requirement. The antenna is aesthetically appealing and fits into every environment.



Cabinetry and Shelves

The A5020 MR has a lower gain than the A5020 CP antenna, yet it can read across a cabinet shelf without extending its reads beyond the intended zone.

Applications

Multi-purpose applications - A5020 CP



Retail

The A5020 CP is a rugged antenna meaning it is ideal for asset tracking and encoding RFID tags. This antenna has a typical read range distance of 4m allowing manufacturers, wholesalers and retailers, for example, to track their inventory throughout the supply chain, from the warehouse shelves all the way to the sales floor.



Waste Management

The A5020 is IP68 rated, meaning it is suitable for permanent outdoor installations. The 'all-plastic' housing prevents the antenna from corroding. The antenna can also be cleaned with cleaning agents. The ~100° beamwidth of the A5020 antenna makes applications like wheelie bin detection straightforward. The physical size of the antenna is small, and thus installation in waste management trucks is hassle-free.

For Extreme Environment Applications - A5020 LX



Deep Freezer (-90°C)

The A5020 LX can operate at low-temperature extremes. High-value pharmaceutical assets can be tracked in fridges and freezers using the A5020 LX antenna. The slim design maximizes the usable space inside of a refrigerator. The antenna can handle general-purpose cleaning agents and is water-resistant. The grey colored A5020 LX antenna is suitable for hospitals, medical laboratories, research industries and pharmaceutical laboratories.



Food, Meat and Chemical Manufacturing Processes

The A5020 LX is IP69K rated, so it can survive high-pressure water cleaning, which is often done in food processing industries. The antenna cover is also resistant to general-purpose chemicals.

A5020 Near Field

Ultra-Rugged, Low Profile Near Field Antenna

IP68 rated for tap 'n go applications

The A5020 Near Field is designed to operate in 'tap 'n go' environments where only objects that come into close contact with the antenna will be tracked. This prevents stray reads and is ideal for situations where accuracy is paramount, like access control and point of sale. It is specifically tuned to read-only in the near field zone of 0.1 meters (4 inches).

The A5020 range is built to Times-7's high standard for quality and ruggedness. Being rated IP68 the A5020 NF can also be used for permanent outdoor applications. As well as being durable, its pleasing and timeless design blends beautifully with most interiors and makes the A5020 NF very suitable for customer-facing environments



A5020 NF

Ordering Information

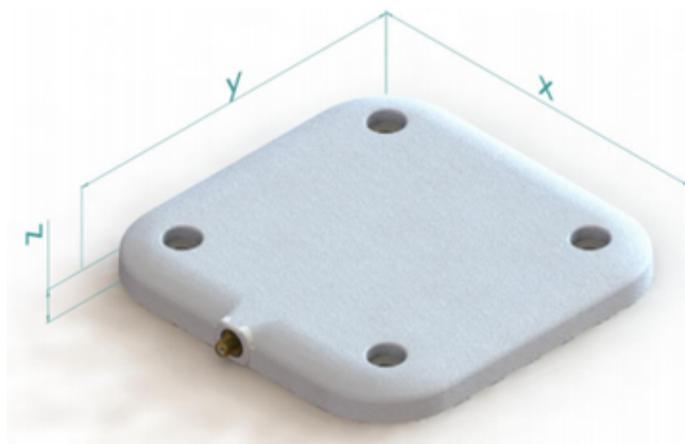
Please quote product code, band and part no when ordering

| Antenna Product Code | Band | Part No. |
|----------------------|------------------|----------|
| A5020 NF | 865-928 MHz / WB | 72057 |

A5020 NF Specifications

| | | | |
|----------------------|---|-----------------------------------|---|
| Polarization | Not Applicable | Operating and Storage temp | -30° to +65°C / -22° to +149°F |
| Dimensions | 150.7 mm x 149.4 mm x 14.5 mm 5.93" x 5.88" x 0.57" | Environmental rating | IP68 |
| Connector | SMA female (Jack) / side connector | Random Material | UV Resistant and Fire-Retardant WHITE ABS |
| Far Field Gain | Equivalent to -30 dBi | Axial Ratio | Not Applicable |
| Far Field Beam width | Not Applicable | Boxed unit Dimensions (L x W x D) | 180 mm x 155 mm x 25 mm 7.09" x 6.10" x 0.98" |
| Nominal Impedance | 50 Ω | VSWR: | 1.4 typical |
| Antenna Detection | 100 Ω resistance | Front to back | Not Applicable |
| Maximum Input Power | 3 W | Frequency range | 865-928 MHz (ETSI & FCC) |
| Weight | Net: 0.18 kg / 0.38 lbs. Gross: 0.23kg / 0.5 lbs. | A5020 Flush Screws | 30mm 8g Phillips, white colored wood screws |
| Mounting Options | Flush or 100 x 100 mm VESA mount | | |

Antenna Planes:



A5020 Mid Range

Ultra-Rugged, Low Profile Mid Range Antenna

IP68 rating for permanent indoor / outdoor use

Equipped with the familiar and industry-leading Times-7 SlimLine™ profile, the A5020 MR offers a compact footprint of only 150 mm / 5.9-inch square in a very smart-looking design. The A5020 MR is designed to operate in complex and busy environments where stray reads risk productivity and accuracy. It is specifically tuned to read beyond the near field zone, ensuring that things in the mid-range proximity of up to 1.5m are accurately tracked while ignoring items further away.

The A5020 range is built to Times-7's high standard for quality and ruggedness. Being rated IP68, the A5020 MR can also be used for permanent outdoor applications.



A5020 MR

Ordering Information

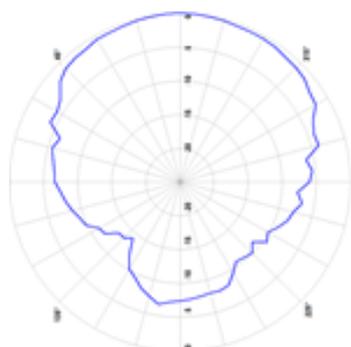
Please quote product code, band and part no when ordering

| Antenna Product Code | Band | Part No. |
|----------------------|--------------------|----------|
| A5020 MR | 902-928 MHz / FCC | 72388 |
| A5020 MR | 865-868 MHz / ETSI | 72389 |

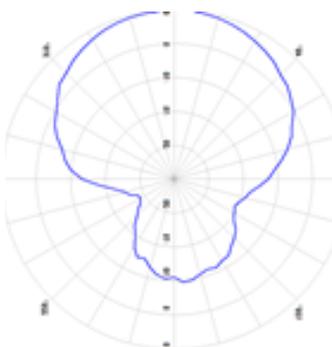
A5020 MR Specifications

| | | | |
|----------------------|---|-----------------------------------|---|
| Polarization | RHCP (Right Hand Circular Polarized) | Operating and Storage temp | -30° to +65°C / -22° to +149°F |
| Dimensions | 150.7 mm x 149.4 mm x 14.5 mm 5.93" x 5.88" x 0.57" | Environmental rating | IP68 |
| Connector | SMA female (Jack) / side connector | Random Material | UV Resistant and Fire-Retardant WHITE ABS |
| Far Field Gain | -3 dBiC typical | Axial Ratio | 2.5 dB typical |
| Far Field Beam width | 115° in XZ and 105° in YZ plane | Boxed unit Dimensions (L x W x D) | 180 mm x 155 mm x 25 mm 7.09" x 6.10" x 0.98" |
| Nominal Impedance | 50 Ω | VSWR: | 1.8 typical |
| Antenna Detection | 10K Ω resistance | Front to back | -8 dB |
| Maximum Input Power | 3 W | Frequency range | 865-868 MHz (ETSI) / 902-928 MHz (FCC) |
| Weight | Net: 0.20kg / 0.44 lbs. Gross: 0.25kg / 0.55 lbs. | A5020 Flush Screws | 30mm 8g Phillips, white colored wood screws |
| Mounting Options | Flush or 100 x 100 mm VESA mount | | |

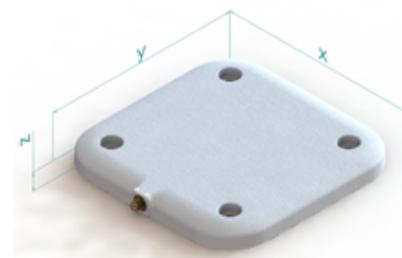
Radiation Pattern and Antenna Planes



XZ Plane



YZ Plane



A5020 Circular Polarized

Ultra-Rugged, Low Profile Multi Purpose Antenna

IP68 rated in a compact and smart design.

Equipped with the familiar and industry-leading Times-7 ultra-low profile, the A5020 CP offers a compact footprint of only 150 mm / 5.9-inch square in a very smart-looking design. With a significantly improved radiation pattern than most other antennas of similar size in the market, the A5020 CP antenna creates a new benchmark for multi-purpose UHF RFID antennas.

The A5020 range is built to Times-7's high standard for quality and ruggedness. Being rated IP68, the A5020 CP can be used for permanent outdoor applications. As well as being durable, its pleasing and timeless design blends beautifully with most interiors and makes the A5020 CP very suitable for customer-facing environments.



A5020 CP

Ordering Information

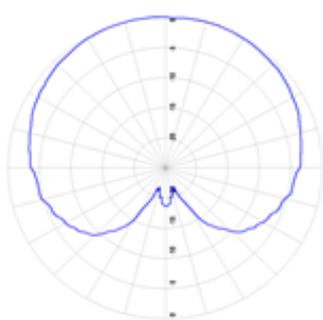
Please quote product code, band and part no when ordering

| Antenna Product Code | Band | Part No. |
|----------------------|--------------------|----------|
| A5020 CP | 902-928 MHz / FCC | 60010 |
| A5020 CP | 865-868 MHz / ETSI | 60011 |

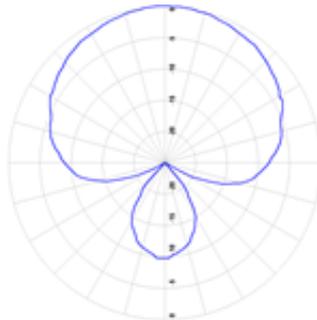
A5020 CP Specifications

| | | | |
|----------------------|--|-----------------------------------|---|
| Polarization | RHCP (Right Hand Circular Polarized) | Operating and Storage temp | -30° to +65°C / -22° to +149°F |
| Dimensions | 150.7 mm x 149.4 mm x 14.5 mm 5.93" x 5.88" x 0.57" | Environmental rating | IP68 |
| Connector | SMA female (Jack) / side connector | Random Material | UV Resistant and Fire-Retardant WHITE ABS |
| Far Field Gain | 5 dBiC typical | Axial Ratio | 2 dB typical |
| Far Field Beam width | 105° in both planes | Boxed unit Dimensions (L x W x D) | 180 mm x 155 mm x 25 mm 7.09" x 6.10" x 0.98" |
| Nominal Impedance | 50 Ω | VSWR: | 1.4 typical |
| Antenna Detection | 10K resistance | Front to back | -10 dB typical |
| Maximum Input Power | 3 W | Frequency range | 865-868 MHz (ETSI) / 902-928 MHz (FCC) |
| Weight | Net: 0.23 kg / 0.51 lbs.; Gross: 0.28 kg / 0.62 lbs. | A5020 Flush Screws | 30mm 8g Phillips, white wood screws |
| Mounting Options | Flush or 100 x 100 mm VESA mount | | |

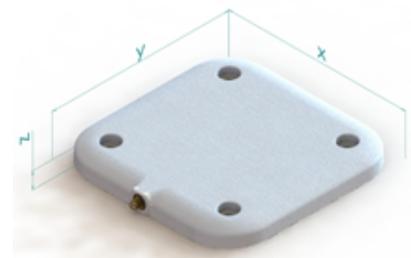
Radiation Patterns and Antenna Planes



XZ Plane



YZ Plane



A5020 Linear Extreme

Ultra-Rugged, Low Profile Extreme Antenna

IP68 and IP69K rated for medical and healthcare industries

The A5020 LX is designed to operate in environments where temperature, dirt and water levels are extreme. Being IP69k rated, it can withstand high-pressure water cleaning, making it ideal for situations where hygiene is critical, and equipment is subject to regular and intense cleaning. It has also been designed for the medical industry's need to store vaccines, organs and tissues at temperatures as low as -90C.

The A5020 range is built to Times-7's high standard for quality and ruggedness. Being rated IP69k, the A5020 LX can also be used for permanent outdoor applications.



A5020 LX

Ordering Information

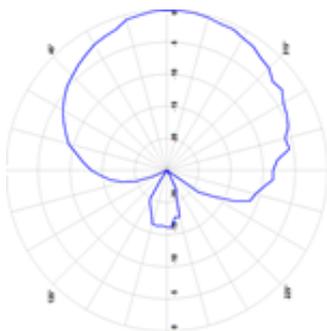
Please quote product code, band and part no when ordering

| Antenna Product Code | Band | Part No. |
|----------------------|--------------------|----------|
| A5020 LX | 902-928 MHz / FCC | 72386 |
| A5020 LX | 865-868 MHz / ETSI | 72387 |

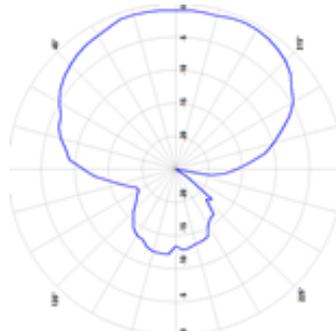
A5020 LX Specifications

| | | | |
|----------------------|--|-----------------------------------|---|
| Polarization | Vertical Linearly Polarized | Operating and Storage temp | -90° to +65°C / -130° to +149°F |
| Dimensions | 150.7 mm x 149.4 mm x 14.5 mm 5.93" x 5.88" x 0.57" | Environmental rating | IP68 and IP69K |
| Connector | SMA female (Jack) / side connector | Random Material | UV Resistant and Fire-Retardant GREY ABS |
| Far Field Gain | 5 dBi typical | Axial Ratio | Not Applicable |
| Far Field Beam width | 100° in XZ and 105° in YZ plane | Boxed unit Dimensions (L x W x D) | 180 mm x 155 mm x 25 mm 7.09" x 6.10" x 0.98" |
| Nominal Impedance | 50 Ω | VSWR: | 2.5 typical |
| Antenna Detection | 0 Ω resistance | Front to back | -12 dB |
| Maximum Input Power | 3 W | Frequency range | 865-868 MHz (ETSI) / 902-928 MHz (FCC) |
| Weight | Net: 0.23 kg / 0.51 lbs.; Gross: 0.28 kg / 0.62 lbs. | A5020 Flush Screws | 30mm 8g Phillips silver colored wood screws |
| Mounting Options | Flush or 100 x 100 mm VESA mount | | |

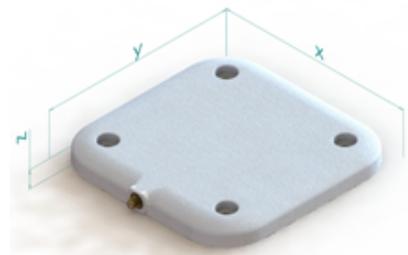
Radiation Patterns and Antenna Planes



XZ Plane



YZ Plane



Mounting Options

Information

The recessed corner mounting holes of the A5020 support 100 x 100mm VESA spaced mounting brackets, as shown in the picture. The innovative slim design of the A5020, equipped with an SMA connector, allows for totally flush mounting using the corner holes.

If drilling through the surface of the antenna is not an option, each antenna is provided with a self-adhesive rubber feet kit. These can be attached over the integrated mounting holes to stop the antenna from slipping.



The mounting holes of the A5020 support VESA spaced mounting brackets as shown in the picture.

Caution

- Ensure that only finger tightness is used for the SMA connector.
- The use of tools to tighten the connector will apply excessive force and will damage the connector.
- Avoid any load or bending force from the cable on the connector.

Connector Protection Plate

Due to the slim design of the A5020 LX, CP, MR and NF the antennas are equipped with SMA connectors. To provide the connector with extra protection, Times-7 provides Connector Protection Backplates to protect the connector from hits, especially when mounted on a bracket in free space. The backplate can be used with right-angled or straight cables.



Cable Accessories

When purchasing one of our antennas, you will need a coaxial cable to connect our antennas to a reader; just like with every other component of your RFID application, the better the quality of the selected cable, the better the performance. That's why we offer a range of high-quality, low loss cables at attractive prices. All of our standard cables are equipped with SMA to RPTNC connectors. We can also customize cables to your specific requirements for length and connectors on request.

How to choose the correct cable?



To help you select the right cable for your application, ask yourself these questions:

1. Cable loss: How much power loss is acceptable before it significantly impacts the read performance?
2. Bending radius of the cable: How flexible must the cable be?
3. Cable thickness: Ensure that the cable or cable connector is not thicker than the antenna when flush mounting an A5020 antenna.

Cable Selection

| Cable Type | Cable Length | Approx. Losses (dB) | Min. Bend Radius |
|------------|--------------|---------------------|------------------|
| T-7 195 | 2 m | 0.65 | 25mm |
| T-7 240 | 2 m | 0.39 | 30mm |
| | 4 m | 0.78 | |
| | 6 m | 1.17 | |
| | 8 m | 1.56 | |
| T-7 400 | 2 m | 0.26 | 51mm |
| | 4 m | 0.51 | |
| | 6 m | 0.77 | |
| | 8 m | 1.03 | |

For more information about our cable options view the datasheet [here](#).

Ordering Information

Ordering Information (please quote product code, band / cable type & part no.)

| Antenna Product Code | Band/ model | Part No. |
|--|----------------------|-----------------------|
| A5020 CP | 902-928 MHz / FCC | 60010 |
| A5020 CP | 865-868 MHz / ETSI | 60011 |
| | | |
| A5020 NF | 865-928 MHz / WB | 72057 |
| | | |
| A5020 MR | 902-928 MHz / FCC | 72388 |
| A5020 MR | 865-868 MHz / ETSI | 72389 |
| | | |
| A5020 LX | 902-928 MHz / FCC | 72386 |
| A5020 LX | 865-868 MHz / ETSI | 72387 |
| Cable Accessories and Product Code | Cable Type | Part No. |
| Cable 2 m, SMA to RPTNC | T7 195 /240 / 400 | 71436 / 71782 / 72042 |
| Cable 4 m, SMA to RPTNC | T7 240 / 400 | 71782 / 72043 |
| Cable 6 m, SMA to RPTNC | T7 240 / 400 | 71904 / 72044 |
| Cable 8 m, SMA to RPTNC | T7 240 / 400 | 71788 / 72045 |
| Low Temperature and Water Resistant Cable Accessories and Product Code | Cable Type | Part No. |
| Cable 2 m, RT SMA to RPTNC | T7 RG-142 type | 72395 |
| Cable 4 m, RT SMA to RPTNC | T7 RG-142 type | 72396 |
| Cable 6 m, RT SMA to RPTNC | T7 RG-142 type | 72397 |
| Cable 8 m, RT SMA to RPTNC | T7 RG-142 type | 72398 |
| Other Accessories | Compatibility | Part No. |
| Connector Protector Back Plate | A5020 LX/ CP/ MR/ NF | 72394-FG |

View the Times-7 Cable Accessory datasheet [here](#).

For additional information such as RoHS, CE, REACH, CAD models, please contact us at sales@times-7.com.

Environmental Tests

| Test | Standard | Duration | Temp | Notes |
|---|-------------------|--|----------------|--|
| IPX Dust | AS60529 - 2004 | 8 Hrs | - | Severity: Vacuum, up to -2KPa |
| IPX8 Immersion | AS60529 - 2004 | 30 Min | - | Severity: 1.5 Depth |
| Basic Vibration | IEC60068 - 2-64 | 1 Hrs per axis - 3 axis | - | Severity: Vehicle vibration 10-500 MHz 1.04g rms |
| Shock Test | MIL-STD-810G | 5 pulses/ direction- 6 direction | - | Severity: Half sine 10g, 11ms |
| Thermal Shock | IEC60068 - 2 - 14 | 5 Cycles - 2 Hrs precondition | -65 ° to +65 ° | - |
| Salt Fog | ASTMB117 | 24 Hrs | +35 ° | - |
| Extra Tests For The A5020 LX | | | | |
| Test | Standard | Duration | Temp | Notes |
| IPX Dust | IEC 60529 | 8 Hrs | - | - |
| IPX 9K High pressure steam jet cleaning | IEC 60529 | 30 seconds at each angle, 0°, 30°, 60° and 90° | - | 8000 - 1000 kPa pressure at 80°C temperature |
| Thermal storage and operation | - | 2000 + Hrs | -90 °C | Including monthly temperature cycling |

TIMES-7[®]

INTELLIGENT TRACKING | SMART TECHNOLOGY

For more information about any of the products in this guide please contact our sales team at sales@times-7.com

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