

Amphenol® RF



RF Antenna Solutions Guide

Enabling IoT Technology

Table of Contents

About Amphenol RF	3
Overview	4
External Antennas	5
FPC and PCB Antennas	11
NFC Antennas	14
Embedded Chip Antennas	17
Embedded GNSS & GPS Antennas	21
RFID Patch Antennas	25
Embedded Spring Antennas	25



ABOUT AMPHENOL RF

Amphenol RF, a division of Amphenol Corporation, is the largest manufacturer of radio frequency connectors, coaxial adapters and RF cable assemblies in the world.

With a global team of experienced engineers, Amphenol RF is able to offer the broadest portfolio of standard RF products on the market today.

As a leader in design and manufacturing of RF interconnect products, our dedicated team of engineers specialize in custom product development to meet the challenges of design-specific constraints.

GLOBAL PRESENCE



With a global presence, Amphenol RF has experienced engineers and production capabilities in multiple regions across the globe. Our experienced cross-functional teams oversee the entire process from the initial design through delivery, and beyond.

Amphenol RF has a global footprint of operations in North America, Europe and Asia.

ANTENNAS OVERVIEW

RF (Radio Frequency) antennas are crucial components in wireless communication systems, playing a fundamental role in transmitting and receiving electromagnetic waves in the radio frequency spectrum.

These antennas are designed to efficiently radiate or capture RF signals, enabling various wireless technologies such as radio broadcasting, Wi-Fi, cellular networks, satellite communication and RFID systems, among others.

RF antennas serve as the interface between electronic devices and the surrounding electromagnetic environment. They are responsible for converting electrical signals into electromagnetic waves for transmission, or vice versa, for reception. Depending on their design and characteristics, RF antennas can focus, direct, or disperse radio waves in specific directions to optimize communication.

RF antennas cover a wide range of frequencies within the radio spectrum, typically from a few kilohertz (kHz) to several gigahertz (GHz). Different applications require antennas tuned to specific frequency bands, such as AM and FM radio bands, VHF and UHF television bands, cellular frequencies, and more.

RF antennas come in various shapes and sizes, each tailored to suit specific applications. Some common types include:

ANTENNA ELECTRICAL CONCEPT

- Dipole
- Monopole
- Loop
- IFA
- PIFA

INTERNAL AND EXTERNAL ANTENNAS

- Flexible Printed Circuit (FPC) and Printed Circuit Board (PCB)
- Near Field Communication (NFC)
- Embedded Chip
- Embedded GNSS and GPS Patch
- Swivel
- Bar
- Stick
- Connector Mount
- Adhesive Mount
- IP65-68

RF antennas are indispensable components in modern wireless communication systems, enabling the efficient exchange of information across a wide range of frequencies and applications. Their design and characteristics are tailored to the specific needs of each application, allowing for reliable and high-performance wireless communication.



They are available in a variety of configurations to meet the needs of design specific requirements for applications such as:

- Mobile Phone (4G, LTE, 5G-FR1, WiFi, Bluetooth)
- Laptop/Tablet (4G, LTE, 5G-FR1, WiFi, Bluetooth)
- Access Point (WiFi, Bluetooth)
- Active/Switchable Antennas
- NFC Antenna (Wireless Charging)
- 5G-FR1, UWB
- FM Antenna
- CMMB Antenna
- Wireless Charged Antenna
- Automotive Antennas (Cellular, FM, WiFi, Bluetooth)
- GPS/GNSS Antenna

EXTERNAL ANTENNAS

External antennas, as the name suggests, are antennas mounted outside of electronic devices or structures to enhance wireless communication. They are a vital component in various applications, including cellular networks, Wi-Fi routers, satellite communication, and more. These antennas come in diverse shapes and sizes, from the familiar external antennas on Wi-Fi routers to large parabolic dishes for long-distance communication. External antennas are employed to extend signal range, improve signal quality, and overcome obstacles or interference. They are especially useful in environments with weak or obstructed signals, such as rural areas or densely populated urban settings, as they can significantly enhance the performance and reliability of wireless communication systems.



FEATURES AND BENEFITS

- Familiar RF interface connections (SMA, RP-SMA, N-Type)
- Single, dual and wideband options
- Common antennas applications are supported
- Straight and swivel whip style designs
- Panel and external mounted cable designs
- Waterproof IP67 configurations available

APPLICATIONS

- ACCESS POINT
- RADIO
- NAVIGATION
- ROUTERS/GATEWAY/MESH
- SET-TOP BOX
- SURVEYING EQUIPMENT
- SECURITY CAMERAS

ORDERING INFORMATION

EXTERNAL ANTENNAS



SMA
ST1228-30-001-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 7.2
Return Loss (dB)	< -10 • < -10
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.4/-1.2 • 2.5/-3.2
Efficiency, Average (%)	75 • 48
Length (mm)	172.5
Diameter (mm)	12.9
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-30 to 75
RoHS	RoHS Compliant
IP Rating	Not Rated



N-TYPE
ST1226-41-301-B

Frequency Range (GHz)	2.4 - 2.5 • 4.9 - 7.2
Return Loss (dB)	< -10 • < -10
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.7/-1.0 • 6.3/-1.5
Efficiency, Average (%)	79 • 71
Length (mm)	215
Diameter (mm)	20
Mechanical Feature	N/A
Temperature Range (°C)	-30 to 70
RoHS	RoHS Compliant
IP Rating	IP67



RP-SMA
ST1228-30-502-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 7.2
Return Loss (dB)	< -10 • < -10
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.7/-1.4 • 4.4/-2.0
Efficiency, Average (%)	73 • 63
Length (mm)	133.5
Diameter (mm)	10
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 80
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST1228-30-001-B

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 7.2
Return Loss (dB)	< -10 • < -10
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.7/-1.4 • 4.4/-2.0
Efficiency, Average (%)	73 • 63
Length (mm)	162
Diameter (mm)	13
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



RP-SMA
ST1256-32-501-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 7.2
Return Loss (dB)	< -9.5 • < -9.5
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.2/-2.9 • 0.9/-4.3
Efficiency, Average (%)	51 • 37
Length (mm)	162
Diameter (mm)	60
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 80
RoHS	RoHS Compliant
IP Rating	Not Rated



RP-SMA
ST1228-30-501-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.825 • 5.925 - 7.125
Return Loss (dB)	< -10 • < -10 • < -5
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.5/-0.7 • 4.0/-1.2 • 4.2/-1.6
Efficiency, Average (%)	85 • 75 • 70
Length (mm)	123.7 (bent)
Diameter (mm)	12.7
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-30 to 70
RoHS	RoHS Compliant
IP Rating	IP67



RP-SMA
ST1228-40-501-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.825 • 5.925 - 7.125
Return Loss (dB)	< -10 • < -10 • < -6
Max Input Power (W)	1
Gain, Peak/Average (dB)	4.4/-1.3 • 4.1/-1.3 • 4.7/-1.2
Efficiency, Average (%)	74 • 73 • 76
Length (mm)	203 (bent)
Diameter (mm)	12.7
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-30 to 70
RoHS	RoHS Compliant
IP Rating	IP67



SMA
ST1222-30-001-A
RP-SMA
ST1222-30-501-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85 • 5.925 - 7.125
Return Loss (dB)	< -10
Max Input Power (W)	5
Gain, Peak/Average (dB)	1.7/-2.4 • 3.5/-1.2 • 4.4/-1.1
Efficiency, Average (%)	57 • 79 • 77
Length (mm)	136 • 114 (bent)
Diameter (mm)	10
Mechanical Feature	Hinged
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



N-TYPE
ST0426-41-301-B

Frequency Range (GHz)	0.6 - 0.96 • 1.55 - 6
Return Loss (dB)	< -5.1 • < -5.1
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.8/-3.5 • 3.2/-4.7
Efficiency, Average (%)	45 • 34
Length (mm)	215
Diameter (mm)	20
Mechanical Feature	N/A
Temperature Range (°C)	-30 to 70
RoHS	RoHS Compliant
IP Rating	IP67

ORDERING INFORMATION

EXTERNAL ANTENNAS



SMA
ST0456-32-001-A

Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 5.95
Return Loss (dB)	< -6 • < -7.4
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.2/-3.2 • 0.9/-6.3
Efficiency, Average (%)	47 • 23
Length (mm)	162
Diameter (mm)	60
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 80
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0428-31-001-A
RP-SMA
ST0428-31-501-A

Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 2.2 • 2.3 - 2.7 • 3.3 - 3.8 • 5.15 - 5.95
Return Loss (dB)	< -7 • < -10 • < -7 • < -10 • < -7
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.9/-4.0 • 2.3/-2.2 • 2.3/-2.3 • 2.0/-1.7 • 4.7/-2.1
Efficiency, Average (%)	41 • 61 • 60 • 60 • 61
Length (mm)	134 • 115 (bent)
Diameter (mm)	10
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST1326-30-001-A
RP-SMA
ST1326-30-501-A

Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 2.2 • 2.3 - 2.7 • 3.3 - 3.8 • 5.15 - 5.95
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain, Peak/Average (dB)	5.0/-4.6 • 4.0/-2.1 • 4.0/-2.4 • 3.2/-2.0 • 3.2/-2.0
Efficiency, Average (%)	35 • 63 • 57 • 58 • 58
Length (mm)	151 • 128 (bent)
Diameter (mm)	1
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0326-40-001-B
RP-SMA
ST0326-40-501-B

Frequency Range (GHz)	0.698 - 0.8 • 0.8 - 0.96 • 1.71 - 2.17 • 2.3 - 2.69 • 3.3 - 5.0 • 5.15 - 5.925
Return Loss (dB)	< -3 • < -7 • < -7 • < -7 • < -7 • < -5
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.0/-4.2 • 3.2/-4.6 • 3.1/-1.3 • 3.2/-1.2 • 5.5/-1.5 • 5.5/-2.6
Efficiency, Average (%)	38 • 35 • 75 • 75 • 71 • 55
Length (mm)	220 (bent)
Diameter (mm)	13
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 65
RoHS	RoHS Compliant
IP Rating	N/A



SMA
ST0428-31-002-A

Frequency Range (GHz)	0.617 - 0.95 • 1.42 - 1.52 • 1.71 - 2.69 • 3.3 - 5.0 • 5.15 - 5.925
Return Loss (dB)	< -6 • < -7 • < -7 • < -7 • < -7
Max Input Power (W)	1
Gain, Peak/Average (dB)	1.8/-3.8 • 2.2/2.8 • 3.3/-1.7 • 3.0/-1.9 • 3.8/-2.6
Efficiency, Average (%)	42 • 52 • 68 • 65 • 55
Length (mm)	142 (bent)
Diameter (mm)	13
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	N/A



RP-SMA
ST0228-30-503-A

Frequency Range (GHz)	5.85 - 5.925 GHz
Return Loss (dB)	< -9.5
Max Input Power (W)	1
Gain, Peak/Average (dB)	5.6/-1.5
Efficiency, Average (%)	70
Length (mm)	169
Diameter (mm)	13
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 80
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0428-40-001-B

Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 5.9
Return Loss (dB)	< -6 • < -6
Max Input Power (W)	1
Gain, Peak/Average (dB)	4.1/-2.7 • 4.8/-1.7
Efficiency, Average (%)	54 • 68
Length (mm)	222
Diameter (mm)	12.9
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-30 to 75
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0226-30-002-A
RP-SMA
ST0226-30-502-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85
Return Loss (dB)	< -10
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.0/-0.6 • 3.4/-1.3
Efficiency, Average (%)	86 • 75
Length (mm)	109 • 88 (bent)
Diameter (mm)	10
Mechanical Feature	Hinged
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0228-30-002-A
RP-SMA
ST0228-30-502-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain, Peak/Average (dB)	2.7/-0.5 • 4.0/-0.6
Efficiency, Average (%)	89 • 87
Length (mm)	109 • 88 (bent)
Diameter (mm)	10
Mechanical Feature	Hinged
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated

ORDERING INFORMATION

EXTERNAL ANTENNAS



SMA
ST0228-30-001-A
RP-SMA
ST0228-30-501-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85
Return Loss (dB)	<-10
Max Input Power (W)	2
Gain, Peak/Average (dB)	2.0/1.6 • 3.0/-1.1
Efficiency, Average (%)	75 • 78
Length (mm)	196 • 166 (bent)
Diameter (mm)	10
Mechanical Feature	Hinged
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



RP-SMA
ST0226-40-501-B

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85
Return Loss (dB)	<-10 • <-10
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.5/-1.7 • 5.7/-1.8
Efficiency, Average (%)	68 • 67
Length (mm)	200
Diameter (mm)	13
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	IP65



SMA
ST0230-31-001-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85
Return Loss (dB)	<-10 • <-10
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.2/-3.1 • 2.0/-3.7
Efficiency, Average (%)	50 • 43
Length (mm)	105.1
Diameter (mm)	30.1
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	IP67



RP-SMA
ST0226-10-501-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85
Return Loss (dB)	<-6 • <-7.4
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.5/-1.9 • 2.2/-2.0
Efficiency, Average (%)	65 • 63
Length (mm)	47.5
Diameter (mm)	10
Mechanical Feature	N/A
Temperature Range (°C)	-20 to 70
RoHS	RoHS Compliant
IP Rating	IP65



N-TYPE
ST0226-41-301-B

Frequency Range (GHz)	2.4 - 2.5 • 4.9 - 5.825
Return Loss (dB)	<-9 • <-9
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.5/-1.3 • 6.0/-2.0
Efficiency, Average (%)	75 • 64
Length (mm)	215
Diameter (mm)	20
Mechanical Feature	N/A
Temperature Range (°C)	-30 to 70
RoHS	RoHS Compliant
IP Rating	IP67



RP-SMA
ST0227-41-501-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.825
Return Loss (dB)	<-10 • <-10
Max Input Power (W)	2
Gain, Peak/Average (dB)	3.0/-2.4 • 2.0/-5.2
Efficiency, Average (%)	57 • 30
Length (mm)	115 (cable)
Diameter (mm)	22
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 65
RoHS	RoHS Compliant
IP Rating	N/A



SMA
ST0228-30-003-A

Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.82
Return Loss (dB)	<-10 • <-10
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.1/-1.2 • 3.1/-1.5
Efficiency, Average (%)	76 • 70
Length (mm)	172.5
Diameter (mm)	12.9
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-30 to 75
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0428-41-001-A

Frequency Range (GHz)	0.7 - 0.96 • 1.7 - 5.8
Return Loss (dB)	<-4.4 • <-5.1
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.1/-4.5 • 4.7/-3.0
Efficiency, Average (%)	36 • 50
Length (mm)	230
Diameter (mm)	13
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 70
RoHS	RoHS Compliant
IP Rating	IP66



SMA
ST0430-31-001-A

Frequency Range (GHz)	0.7 - 0.96 • 1.7 - 5.0
Return Loss (dB)	<-6 • <-6
Max Input Power (W)	1
Gain, Peak/Average (dB)	4.6/-2.7 • 2.4/-3.5
Efficiency, Average (%)	54 • 45
Length (mm)	105.1
Diameter (mm)	30.1
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	IP67

ORDERING INFORMATION

EXTERNAL ANTENNAS



SMA
ST0457-20-001-A
RP-SMA
ST0457-20-501-A

Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 2.2 • 2.3 - 2.7 • 3.3 - 3.8
Return Loss (dB)	*GP needed, <-5
Max Input Power (W)	10
Gain, Peak/Average (dB)	0.8/-2.6 • 3.7/-1.3 • 3.2/-1.7 • 2.0/-2.9
Efficiency, Average (%)	60 • 75 • 68 • 54
Length (mm)	72 • 40 (bent)
Diameter (mm)	10
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0356-32-001-A
RP-SMA
ST0356-32-501-A

Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 2.2 • 2.3 - 2.7
Return Loss (dB)	<-7 • <-8 • <-10
Max Input Power (W)	2
Gain, Peak/Average (dB)	3.0/-2.7 • 1.7/-3.3 • 2.2/-3.6
Efficiency, Average (%)	55 • 47 • 44
Length (mm)	170 • 1000 (cable)
Diameter (mm)	83x48
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0330-31-002-1
RP-SMA
ST0330-31-502-1

Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 2.2 • 2.3 - 2.7
Return Loss (dB)	<-5 • <-10 • <-10
Max Input Power (W)	2
Gain, Peak/Average (dB)	0.6/-2.8 • 0.2/-5.4 • 1.6/-5.8
Efficiency, Average (%)	55 • 29 • 27
Length (mm)	115 • 1000 (cable)
Diameter (mm)	10
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	IP67



SMA
ST0326-30-004-A
RP-SMA
ST0326-30-504-A

Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 2.2 • 2.3 - 2.7
Return Loss (dB)	<-5 • <-10 • <-10
Max Input Power (W)	1
Gain, Peak/Average (dB)	4.7/-3.7 • 4.0/-1.5 • 4.1/-1.2
Efficiency, Average (%)	43 • 71 • 76
Length (mm)	151 • 128 (bent)
Diameter (mm)	10
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



N-TYPE
ST0326-41-301-B

Frequency Range (GHz)	0.69 - 0.96 • 1.72 - 2.7
Return Loss (dB)	<-6 • <-10
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.1/-2.0 • 2.9/-1.7
Efficiency, Average (%)	62 • 67
Length (mm)	215
Diameter (mm)	20
Mechanical Feature	N/A
Temperature Range (°C)	-30 to 70
RoHS	RoHS Compliant
IP Rating	IP67



SMA
ST0330-31-001-A

Frequency Range (GHz)	0.7 - 0.96 • 1.7 - 2.7
Return Loss (dB)	<-6 • <-10
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.8/-2.4 • 3.2/-3.1
Efficiency, Average (%)	57 • 49
Length (mm)	105.1
Diameter (mm)	30.1
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	IP67



SMA
ST0126-30-501-A

Frequency Range (GHz)	2.4 - 2.5
Return Loss (dB)	<-10
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.0/-1.2
Efficiency, Average (%)	77
Length (mm)	130
Diameter (mm)	10
Mechanical Feature	N/A
Temperature Range (°C)	-20 to 65
RoHS	RoHS Compliant
IP Rating	IP65



SMA
ST0128-30-501-A

Frequency Range (GHz)	2.4 - 2.5
Return Loss (dB)	<-10
Max Input Power (W)	1
Gain, Peak/Average (dB)	5.0/-1.1
Efficiency, Average (%)	77
Length (mm)	194
Diameter (mm)	13
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	Not Rated



N-TYPE
ST0504-22-201-B

Frequency Range (GHz)	1561 MHz • 1575.42 MHz • 1602 MHz
Return Loss (dB)	<-10 • <-10 • <-10
Max Input Power (W)	2
Gain, Peak/Average (dB)	3.5 • 4.8
Efficiency, Average (%)	86 • 88
Length (mm)	84
Diameter (mm)	66.5
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant
IP Rating	IP67

ORDERING INFORMATION

EXTERNAL ANTENNAS



RP-SMA
ST0628-40-501-B

Frequency Range (GHz)	860 - 876 MHz • 902 - 928 MHz
Return Loss (dB)	< -10 • < -10
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.0/-2.0 • 2.4/-1.5
Efficiency, Average (%)	63 • 71
Length (mm)	222
Diameter (mm)	12.9
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-30 to 75
RoHS	RoHS Compliant
IP Rating	Not Rated



N-TYPE
ST0626-41-301-B

Frequency Range (GHz)	902 - 928 MHz
Return Loss (dB)	< -14
Max Input Power (W)	200
Gain, Peak/Average (dB)	2.5/-0.6
Efficiency, Average (%)	86
Length (mm)	240.6
Diameter (mm)	27
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 70
RoHS	RoHS Compliant
IP Rating	IP67



SMA
ST0628-30-001-A

Frequency Range (GHz)	868 - 915 MHz
Return Loss (dB)	< -8
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.4/-0.8
Efficiency, Average (%)	83
Length (mm)	160
Diameter (mm)	13
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 70
RoHS	RoHS Compliant
IP Rating	Not Rated



SMA
ST0628-30-002-A

Frequency Range (GHz)	863 - 873 MHz
Return Loss (dB)	< -7
Max Input Power (W)	1
Gain, Peak/Average (dB)	1.9/-5.0
Efficiency, Average (%)	32
Length (mm)	109
Diameter (mm)	10
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-40 to 70
RoHS	RoHS Compliant
IP Rating	IP67



N-TYPE
ST0626-41-302-B

Frequency Range (GHz)	863 - 873 MHz
Return Loss (dB)	< -14
Max Input Power (W)	200
Gain, Peak/Average (dB)	2.2/-0.8
Efficiency, Average (%)	82
Length (mm)	240.6
Diameter (mm)	27
Mechanical Feature	N/A
Temperature Range (°C)	-40 to 70
RoHS	RoHS Compliant
IP Rating	IP67



RP-SMA
ST0626-30-501-B

Frequency Range (GHz)	868 MHz
Return Loss (dB)	< -6
Max Input Power (W)	1
Gain, Peak/Average (dB)	3.6/-1.7
Efficiency, Average (%)	68
Length (mm)	128
Diameter (mm)	10
Mechanical Feature	N/A
Temperature Range (°C)	-20 to 65
RoHS	RoHS Compliant
IP Rating	IP65



SMA
ST0628-30-004-A

Frequency Range (GHz)	433 MHz
Return Loss (dB)	< -6
Max Input Power (W)	1
Gain, Peak/Average (dB)	0.7/-4.8
Efficiency, Average (%)	33
Length (mm)	109
Diameter (mm)	10
Mechanical Feature	Hinged w/ Swivel
Temperature Range (°C)	-10 to 60
RoHS	RoHS Compliant
IP Rating	IP67

FLEXIBLE PRINTED CIRCUIT (FPC) AND PRINTED CIRCUIT BOARD (PCB) ANTENNAS

Flexible Printed Circuit (FPC) and Printed Circuit Board (PCB) are two common types of antennas used in electronic devices. They serve the same fundamental purpose of transmitting and receiving radio frequency (RF) signals and are both essential components in electronic devices.

FPC antennas are flexible and can conform to various shapes and designs, making them suitable for applications where space is limited or irregular, such as wearables, IoT devices, and curved surfaces.

PCB antennas are flat, rigid, and are integrated directly onto the printed circuit board of electronic devices. They have a planar, board-like appearance.



FEATURES AND BENEFITS

- Ideal for IoT, Wi-Fi and LTE applications
- Dual-band, multi-band and wide-band options available
- Secure adhesive mount backing for easy install
- Flexible options for use in compact IoT devices
- Low profile design
- Reliable RF performance

APPLICATIONS

- WI-FI ENABLED LAWN MOWERS
- SMART TV'S
- SMART SPEAKERS
- NAVIGATION SYSTEMS
- DRONES
- ROUTERS
- TABLETS

ORDERING INFORMATION

INTERNAL FPC & PCB ANTENNAS



ST1124-00-401-A

Wireless Protocol	Ultra Wide Band
Frequency Range (GHz)	6.35 - 7.91 • 7.93 - 8.44
Material	FPC • PI • Adhesive 3M 367
Return Loss (dB)	<-10 • <-10
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	6.0/-0.9 • 5.1/-0.8
Efficiency/Average (%)	81 • 91
Dimensions (mm)	15 x 17.4 x 0.2
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST1124-11-401-A

Wireless Protocol	Ultra Wide Band
Frequency Range (GHz)	3.18 - 4.74 • 4.76 - 6.33 • 6.35 - 7.91 • 7.93 - 8.44
Material	FPC • PI • Adhesive 3M 367
Return Loss (dB)	<-10 • <-10 • <-10 • <-10
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	3.6/-0.7 • 4.3/-1.1 • 4.3/-1.4 • 4.5/-1.5
Efficiency/Average (%)	86 • 78 • 72 • 71
Dimensions (mm)	24.1 x 34 x 0.2
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST1125-00-401-A

Wireless Protocol	Ultra Wide Band
Frequency Range (GHz)	6.35 - 7.91 • 7.93 - 8.44
Material	FPC • PI • Adhesive 3M 367
Return Loss (dB)	<-10 • <-10
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	3.8/-1.4 • 3.7/-0.8
Efficiency/Average (%)	72 • 83
Dimensions (mm)	13.1 x 16.4 x 0.45
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST1125-11-401-A

Wireless Protocol	Ultra Wide Band
Frequency Range (GHz)	3.18 - 4.74 • 4.76 - 6.33 • 6.35 - 7.91 • 7.93 - 8.44
Material	FPC • PI • Adhesive 3M 367
Return Loss (dB)	<-10 • <-10 • <-10 • <-10
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	3.8/-0.7 • 5.0/-1.1 • 4.5/-0.9 • 4.3/-0.5
Efficiency/Average (%)	85 • 78 • 82 • 89
Dimensions (mm)	23 x 35 x 0.45
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST1225-10-401-A

Wireless Protocol	Wi-Fi 6E
Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 7.2
Material	PCB • FR-4 • Adhesive 3M 467
Return Loss (dB)	<-7 • <-6
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	2.6/4.1 • -3.5/2.0
Efficiency/Average (%)	44 • 65
Dimensions (mm)	30 x 7 x 0.85
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST1225-20-001-A

Wireless Protocol	Wi-Fi 6E
Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 7.2
Material	PCB • FR-4 • Adhesive 3M 467
Return Loss (dB)	<-10 • <-10
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	3.4/4.2 • -1.7/-1.6
Efficiency/Average (%)	68 • 70
Dimensions (mm)	50.4 x 13.8 x 0.7
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST1224-10-401-A

Wireless Protocol	Wi-Fi 6E
Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 7.2
Material	FPC • PI • Adhesive 3M 367
Return Loss (dB)	<-10 • <-10
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	2.1/3.6 • -1.2/-1.1
Efficiency/Average (%)	77 • 78
Dimensions (mm)	30 x 10 x .02
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0224-10-401-A

Wireless Protocol	Wi-Fi
Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85
Material	FPC • PI • Adhesive 3M 367
Return Loss (dB)	<-10 • <-10
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	2.1/3.1 • -1.2/-1.5
Efficiency/Average (%)	77 • 71
Dimensions (mm)	30 x 10 x 0.2
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0225-10-401-A

Wireless Protocol	Wi-Fi
Frequency Range (GHz)	2.4 - 2.5 • 5.15 - 5.85
Material	PCB • FR-4 • Adhesive 3M 467
Return Loss (dB)	<-10 • <-10
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	2.6/2.6 • -3.8/-1.6
Efficiency/Average (%)	42 • 69
Dimensions (mm)	25 x 7 x 0.85
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant

ORDERING INFORMATION

INTERNAL FPC & PCB ANTENNAS



ST0412-20-001-A

Wireless Protocol	LTE 5G-NR
Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 4.2
Material	FPC • PI • Adhesive 3M 367
Return Loss (dB)	<-6 • <-6
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	3.1/2.7 • -3.7/-2.0
Efficiency/Average (%)	41 • 63
Dimensions (mm)	95 x 15 x 0.2
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0425-20-401-A

Wireless Protocol	LTE 5G-NR
Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 4.2
Material	PCB • FR-4 • Adhesive 3M 467
Return Loss (dB)	<-6 • <-6
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	4.2/4.2 • -3.0/-3.0
Efficiency/Average (%)	50 • 51
Dimensions (mm)	95 x 15 x 0.85
Cable Length (mm)	100 mm standard
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0324-30-401-A

Wireless Protocol	NB-IoT LTE
Frequency Range (GHz)	0.69 - 0.96 • 1.7 - 2.7
Material	N/A
Return Loss (dB)	<-6 • <-6
Power (W) 50 Ohm	1
Gain,Peak/Average (dB)	2.2/-3.6 • 3.0/-3.9
Efficiency/Average (%)	44 • 41
Dimensions (mm)	117 x 9.5 x 0.25
Cable Length (mm)	180 mm standard
Temperature Range (°C)	-30 to 70
RoHS	RoHS Compliant

NEAR FIELD COMMUNICATION (NFC)

Near Field Communication (NFC) antennas are essential components in modern wireless technology, enabling short-range, contactless communication between electronic devices. These antennas are designed to operate within the near-field region, typically within a few centimeters, facilitating data exchange, secure payments, and various other applications. NFC antennas are commonly found in smartphones, smart cards, payment terminals, and IoT devices, making them a key enabler of convenient and secure interactions, such as mobile payments, electronic access control, and data sharing. Their ability to quickly establish connections by simply bringing devices close together has led to widespread adoption in a wide range of industries, enhancing user experiences and simplifying everyday tasks.



FEATURES AND BENEFITS

- Ideal for compact IoT applications
- Adhesive mount options with and without cable
- Operates at 13.56 MHz
- Designed to support NFC-Forum wireless protocols
- Short range data transfer capabilities

APPLICATIONS

- SMART PHONES
- TABLETS
- HANDHELD GAMING SYSTEMS
- PAYMENT SYSTEMS
- TICKETING SYSTEMS
- BLUETOOTH PAIRING

ORDERING INFORMATION

NFC ANTENNAS



ST0812-00-N01-U

Frequency Range (MHz)*	13 - 15.5
Material	FPC • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 - 30
Inductance (μ H)**	2.53
Resistance (Ω)**	2.41
Self Res. Frequency (MHz)**	27.41
Q-Factor**	30.4
Dimensions (mm)	15 x 19 x 0.2
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0812-00-N02-U

Frequency Range (MHz)*	13 - 15.5
Material	FPC • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 - 30
Inductance (μ H)**	2.28
Resistance (Ω)**	2.22
Self Res. Frequency (MHz)**	29.55
Q-Factor**	31.6
Dimensions (mm)	17 x 14 x 0.2
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0815-00-N01-U

Frequency Range (MHz)*	13 - 15.5
Material	FPC • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 - 30
Inductance (μ H)**	5.64
Resistance (Ω)**	2.13
Self Res. Frequency (MHz)**	27.39
Q-Factor**	37.9
Dimensions (mm)	15 x 19 x 0.6
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0815-00-N02-U

Frequency Range (MHz)*	13 - 15.5
Material	FPC • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 - 30
Inductance (μ H)**	4.35
Resistance (Ω)**	1.83
Self Res. Frequency (MHz)**	34.17
Q-Factor**	47.7
Dimensions (mm)	17 x 14 x 0.6
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0812-00-N01-A

Frequency Range (MHz)*	13.56
Material	FPC • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 • 30
Inductance (μ H)**	2.37
Resistance (Ω)**	1.38
Self Res. Frequency (MHz)**	24.35
Q-Factor**	22.1
Dimensions (mm)	15 x 19 x 0.35
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0812-11-N01-A

Frequency Range (MHz)*	13.56
Material	FPC • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 • 30
Inductance (μ H)**	1.75
Resistance (Ω)**	1.49
Self Res. Frequency (MHz)**	93.59
Q-Factor**	56.7
Dimensions (mm)	30 x 34 x 0.35
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0812-11-N02-A
NFC FORUM

Frequency Range (MHz)*	13.56
Material	FPC • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 - 30
Inductance (μ H)**	1.54
Resistance (Ω)**	1.64
Self Res. Frequency (MHz)**	84.27
Q-Factor**	49.4
Dimensions (mm)	45 x 34 x 0.35
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0815-00-N01-A

Frequency Range (MHz)*	13.56
Material	PCB • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 - 30
Inductance (μ H)**	1.96
Resistance (Ω)**	0.88
Self Res. Frequency (MHz)**	71.04
Q-Factor**	76.2
Dimensions (mm)	15 x 19 x 1
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0815-11-N01-A

Frequency Range (MHz)*	13.56
Material	PCB • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 - 30
Inductance (μ H)**	1.74
Resistance (Ω)**	1.03
Self Res. Frequency (MHz)**	83.67
Q-Factor**	65.2
Dimensions (mm)	30 x 34 x 0.6
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant

ORDERING INFORMATION

NFC ANTENNAS



ST0815-N02-A
NFC FORUM

Frequency Range (MHz)*	13.56
Material	PCB • Ferrite • Adhesive 3M 467
Impedance (Ω)*	20 - 30
Inductance (μH)**	1.54
Resistance (Ω)**	1.12
Self Res. Frequency (MHz)**	74.05
Q-Factor**	58.3
Dimensions (mm)	45 x 34 x 0.6
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0812-21-N01-A
NFC Reader

Frequency Range (MHz)*	13.56
Material	FPCB • Ferrite
Impedance (Ω)*	20 - 30
Inductance (μH)**	1.67
Resistance (Ω)**	1.9
Self Res. Frequency (MHz)**	66.9
Q-Factor**	42.1
Dimensions (mm)	57.8 x 40.3 x 0.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0812-22-N01-A
NFC FORUM

Frequency Range (MHz)*	13.56
Material	FPCB • Ferrite
Impedance (Ω)*	20 - 30
Inductance (μH)**	2.11
Resistance (Ω)**	1.4
Self Res. Frequency (MHz)**	52.98
Q-Factor**	51.9
Dimensions (mm)	86 x 53.4 x 0.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant

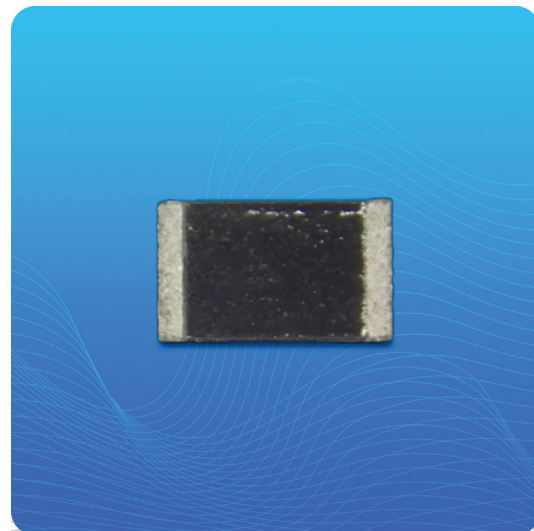


ST0824-20-401-A
NFC Reader

Frequency Range (MHz)*	13.56
Material	FPCB • Ferrite • Adhesive
Impedance (Ω)*	20 - 30
Inductance (μH)**	2.27
Resistance (Ω)**	2.05
Self Res. Frequency (MHz)**	30.37
Q-Factor**	40.4
Dimensions (mm)	55 x 17 x 0.45
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant

EMBEDDED CHIP ANTENNAS

Embedded chip antennas are compact and integrated antennas designed to be directly mounted on a printed circuit board (PCB) or embedded within electronic devices. These antennas are often used in wireless communication applications, such as Wi-Fi, Bluetooth, GPS, and IoT devices, due to their small size and ease of integration. Embedded chip antennas offer the advantage of saving space, reducing manufacturing costs, and simplifying the design process. Their performance can vary based on factors like PCB layout and surrounding components, but advancements in antenna technology have led to the development of highly efficient embedded chip antennas that provide reliable wireless connectivity in a wide range of devices, from smartphones and tablets to smart home devices and industrial sensors.



FEATURES AND BENEFITS

- Reliable RF performance up to 8.5 GHz supporting cellular (4G/5G-FR1), Wi-Fi/Bluetooth/BLE and LoRa/UWB/GNSS protocols
- SMT, surface mount on PCB
- Tape and reel packaging
- Ideal for compact IoT applications and consumer devices

APPLICATIONS

- IOT "SMART" DEVICES
- MEDICAL DEVICES
- SET-TOP BOXES AND ROUTERS
- MOBILE ELECTRONIC WALLETS
- BLUETOOTH SPEAKERS

ORDERING INFORMATION

EMBEDDED CHIP ANTENNAS



ST1247-00-001-F

Frequency Range	6.2 - 8.5 GHz
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain, Peak/Average (dB)	3.2 • -2.0
Efficiency/Average (%)	63
Dimensions (mm)	3.2 x 1.6 x 1.1
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST1143-00-N01-E

Frequency Range	3.71 - 8.44 GHz
Return Loss (dB)	< -6 • < -6
Max Input Power (W)	2
Gain, Peak/Average (dB)	3.6/-0.7 • 4.5/-1.4
Efficiency/Average (%)	85 • 72
Dimensions (mm)	8 x 6 x 0.5
Temperature Range (°C)	-40 to 125
RoHS	RoHS Compliant



ST1243-00-N01-B

Frequency Range	2.4 - 2.5 • 5.15 - 7.2 GHz
Return Loss (dB)	< -10 • < -5
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.8/-3.2 • 2.1/-3.2
Efficiency/Average (%)	48 • 48
Dimensions (mm)	3.2 x 1.6 x 0.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST1247-00-001-A

Frequency Range	2.5 • 5.15 • 7.2 GHz
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain, Peak/Average (dB)	3.1/-1.0 • 5.3/-1.1 • 5.2/-1.4
Efficiency/Average (%)	79 • 78 • 72
Dimensions (mm)	10 x 4 x 1.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0443-10-N01-B

Frequency Range	0.61 - 0.96 • 1.7 - 5.9 GHz
Return Loss (dB)	< -4 • < -4
Max Input Power (W)	5
Gain, Peak/Average (dB)	2.5/-2.5 • 3.8/-3.0
Efficiency/Average (%)	57 • 50
Dimensions (mm)	35 x 5 x 4
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0243-00-N01-B

Frequency Range	2.4 - 2.5 • 5.15 - 5.85 GHz
Return Loss (dB)	< -10 • < -10
Max Input Power (W)	2
Gain, Peak/Average (dB)	1.6/-2.0 • 2.3/-3.2
Efficiency/Average (%)	63 • 48
Dimensions (mm)	3.2 x 1.6 x 0.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0347-10-001-A

Frequency Range	0.69 - 0.96 • 1.7 - 2.2 • 2.3 - 2.7 GHz
Return Loss (dB)	< -4 • < -7 • < -8
Max Input Power (W)	1
Gain, Peak/Average (dB)	4.7/-3.4 • 3.6/-1.6 • 4.3/-0.9
Efficiency/Average (%)	46 • 69 • 81
Dimensions (mm)	40 x 8 x 3.2
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0343-10-N01-B

Frequency Range	0.69 - 0.96 • 1.7 - 2.7 GHz
Return Loss (dB)	< -6 • < -6
Max Input Power (W)	5
Gain, Peak/Average (dB)	3.5/-2.2 • 5.6/-1.2
Efficiency/Average (%)	60 • 76
Dimensions (mm)	35 x 5 x 4
Temperature Range (°C)	-40 to 85
RoHS	Non-condensing 65°C 95% RH RoHS Compliant



ST0147-00-010-A

Frequency Range	2.4 - 2.5 GHz
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain, Peak/Average (dB)	3.3 • -1.1
Efficiency/Average (%)	77
Dimensions (mm)	5 x 2 x 1
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant

ORDERING INFORMATION

EMBEDDED CHIP ANTENNAS



ST0147-00-011-A

Frequency Range	2.4 - 2.5 GHz
Return Loss (dB)	< -7
Max Input Power (W)	2
Gain,Peak/Average (dB)	3.7 - -1.0
Efficiency/Average (%)	80
Dimensions (mm)	3.05 x 1.6 x 0.55
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0243-00-N02-B

Frequency Range	2.4 - 2.5 GHz
Return Loss (dB)	< -10
Max Input Power (W)	1
Gain,Peak/Average (dB)	2.3 - -1.6
Efficiency/Average (%)	69
Dimensions (mm)	5 x 3 x 0.5
Temperature Range (°C)	-25 to 70
RoHS	RoHS Compliant



ST0243-00-N01-U

Frequency Range	2.4 - 2.5 GHz
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain,Peak/Average (dB)	3.3/-3.1
Efficiency/Average (%)	49
Dimensions (mm)	2 x 1.2 x 0.6
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0143-00-N01-F

Frequency Range	2.4 - 2.5
Return Loss (dB)	< -9
Max Input Power (W)	1
Gain,Peak/Average (dB)	2.7/-3.5
Efficiency/Average (%)	45
Dimensions (mm)	2.0 x 1.25 x 0.29
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0543-00-N07-U

Frequency Range	1.56 - 1.606
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain,Peak/Average (dB)	2.9/-1.7
Efficiency/Average (%)	67
Dimensions (mm)	3.2 x 1.6 x 0.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0543-00-N08-U

Frequency Range	1.56 - 1.59
Return Loss (dB)	< -10
Max Input Power (W)	1
Gain,Peak/Average (dB)	2.9/-1.6
Efficiency/Average (%)	70
Dimensions (mm)	3.2 x 1.6 x 0.5
Temperature Range (°C)	-25 to 70
RoHS	RoHS Compliant



ST0543-00-N01-B

Frequency Range	1.176 - 1.575
Return Loss (dB)	< -9.5 - < -9.5
Max Input Power (W)	2
Gain,Peak/Average (dB)	1.8/-3.7 - 2.1/-2.3
Efficiency/Average (%)	43 - 59
Dimensions (mm)	5.0 x 3.0 x 0.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0643-00-N04-A

Frequency Range	902 - 928 MHz
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain,Peak/Average (dB)	1.6/-2.9
Efficiency/Average (%)	52
Dimensions (mm)	5 x 3 x 0.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0643-00-N02-A

Frequency Range	915 - 919 MHz
Return Loss (dB)	< -10
Max Input Power (W)	1
Gain,Peak/Average (dB)	1.8 - -1.8
Efficiency/Average (%)	65
Dimensions (mm)	5 x 3 x 0.5
Temperature Range (°C)	-25 to 70
RoHS	RoHS Compliant

ORDERING INFORMATION

EMBEDDED CHIP ANTENNAS



ST0643-00-N03-A

Frequency Range	863 - 870 MHz
Return Loss (dB)	< -10
Max Input Power (W)	2
Gain,Peak/Average (dB)	0.7/-2.5
Efficiency/Average (%)	56
Dimensions (mm)	5 x 3 x 0.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant

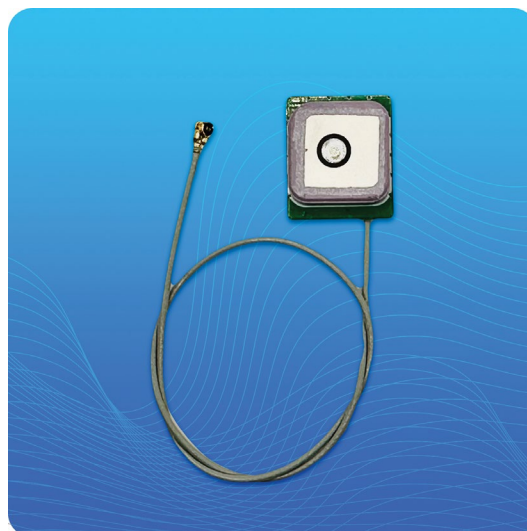


ST0643-00-N01-A

Frequency Range	433 MHz
Return Loss (dB)	< -10
Max Input Power (W)	1
Gain,Peak/Average (dB)	0.9 • -1.8
Efficiency/Average (%)	66
Dimensions (mm)	5 x 3 x 0.5
Temperature Range (°C)	-25 to 70
RoHS	RoHS Compliant

EMBEDDED GNSS AND GPS PATCH ANTENNAS

Embedded GNSS (Global Navigation Satellite System) and GPS (Global Positioning System) patch antennas are compact, specialized antennas designed to receive signals from satellite constellations for accurate positioning and navigation. These antennas are commonly integrated into electronic devices such as smartphones, tablets, and GPS-enabled wearables. Their patch antenna design, consisting of a patch element on a dielectric substrate, allows them to resonate at the GNSS/GPS frequencies and capture signals from multiple satellites. This enables devices to determine their precise geographical location, making them indispensable for applications like turn-by-turn navigation, location-based services, and asset tracking. The integration of GNSS/GPS patch antennas into small and portable devices has revolutionized the way we navigate and interact with location-based information in our daily lives.



FEATURES AND BENEFITS

- Compact and lightweight design
- Smooth SMT process
- Active antennas include LNA and cable
- Operates in multiple bands (GPS, GLONASS, Beidou)
- High-efficiency performance

APPLICATIONS

- HANDHELD AND PORTABLE NAVIGATION DEVICES
- FLEET MANAGEMENT
- IOT "SMART" DEVICES
- E-BIKE
- AUTOMOTIVE AND INFOTAINMENT
- ASSET TRACKING

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EMBEDDED GNSS/GPS ANTENNAS



ST0543-00-N02-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	-5.5 typ. • -2.0 typ.
Bandwidth (MHz)	10 • 9
Efficiency (%) @ Center Frequency	40 • 47
Axial Ratio (dB)	—
Polarization	—
Impedance (Ω)	50
Dimensions (mm)	15 x 15 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-00-N04-U

Frequency Range	1575.42 ± 1
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	-0.5 typ. • 1.0 typ.
Bandwidth (MHz)	5 • 5
Efficiency (%) @ Center Frequency	80 • 82
Axial Ratio (dB)	—
Polarization	—
Impedance (Ω)	50
Dimensions (mm)	18 x 18 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-00-N06-U

Frequency Range	1575.42 ± 1
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	-0.5 typ. • 2.0 typ.
Bandwidth (MHz)	8 • 8
Efficiency (%) @ Center Frequency	78 • 83
Axial Ratio (dB)	—
Polarization	—
Impedance (Ω)	50
Dimensions (mm)	25.1 x 25.1 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-00-404-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	-0.5 typ. • 2.0 typ.
Bandwidth (MHz)	8 • 8
Efficiency (%) @ Center Frequency	78 • 83
Axial Ratio (dB)	—
Polarization	—
Impedance (Ω)	50
Dimensions (mm)	25.1 x 25.1 x 7.4
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0543-00-405-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	-0.5 typ. • 1.0 typ.
Bandwidth (MHz)	5 • 5
Efficiency (%) @ Center Frequency	80 • 82
Axial Ratio (dB)	—
Polarization	—
Impedance (Ω)	50
Dimensions (mm)	18 x 18 x 7.1
Temperature Range (°C)	-20 to 85
RoHS	RoHS Compliant



ST0543-00-406-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	-0.5 typ. • -2.0 typ.
Bandwidth (MHz)	10 • 9
Efficiency (%) @ Center Frequency	40 • 47
Axial Ratio (dB)	—
Polarization	—
Impedance (Ω)	50
Dimensions (mm)	19 x 16 x 6.4
Temperature Range (°C)	-20 to 85
RoHS	RoHS Compliant



ST0543-00-N10-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10.9 • < -10.9
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	2.6 typ. • 3.4 typ.
Bandwidth (MHz)	3 • 4
Efficiency (%) @ Center Frequency	65 • 61
Axial Ratio (dB)	—
Polarization	—
Impedance (Ω)	50
Dimensions (mm)	15 x 15 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-00-N12-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10.9 • < -10.9
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	3.1 typ. • 4.5 typ.
Bandwidth (MHz)	4 • 4
Efficiency (%) @ Center Frequency	67 • 63
Axial Ratio (dB)	—
Polarization	—
Impedance (Ω)	50
Dimensions (mm)	18 x 18 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-00-N01-U

Frequency Range	1575.42 ± 1
Return Loss (dB)	< -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	-1 typ.
Bandwidth (MHz)	19
Efficiency (%) @ Center Frequency	68
Axial Ratio (dB)	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	15 x 15 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant

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EMBEDDED GNSS/GPS ANTENNAS



ST0543-00-N03-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	2.5 typ.
Bandwidth (MHz)	8
Efficiency (%) @ Center Frequency	72
Axial Ratio (dB)	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	18 x 18 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-00-N05-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	3.5 typ.
Bandwidth (MHz)	10
Efficiency (%) @ Center Frequency	85
Axial Ratio (dB)	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	25.1 x 25.1 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-00-401-U

Frequency Range	1575.42 ± 1
Return Loss (dB)	< -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	2.0 typ.
Bandwidth (MHz)	10
Efficiency (%) @ Center Frequency	80
Axial Ratio (dB)	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	25.1 x 25.1 x 6.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0543-00-402-U

Frequency Range	1575.42 ± 1
Return Loss (dB)	< -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	2.5 typ.
Bandwidth (MHz)	8
Efficiency (%) @ Center Frequency	72
Axial Ratio (dB)	4 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	18 x 18.5 x 4.5
Temperature Range (°C)	-20 to 85
RoHS	RoHS Compliant



ST0543-00-403-U

Frequency Range	1575.42 ± 1 • 1602 ± 5
Return Loss (dB)	< -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	-0.5 typ.
Bandwidth (MHz)	9
Efficiency (%) @ Center Frequency	65
Axial Ratio (dB)	4 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	15 x 15 x 6.7
Temperature Range (°C)	-20 to 85
RoHS	RoHS Compliant



ST0543-00-N09-U

Frequency Range	1575.42 ± 1
Return Loss (dB)	< -10.9
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	2.1 typ.
Bandwidth (MHz)	8
Efficiency (%) @ Center Frequency	69
Axial Ratio (dB)	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	15 x 15 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-00-N11-U

Frequency Range	1575.42 ± 1
Return Loss (dB)	< -10.9
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	2.8 typ.
Bandwidth (MHz)	8
Efficiency (%) @ Center Frequency	73
Axial Ratio (dB)	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	18 x 18 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0543-11-N01-U

Frequency Range	1575.42 ± 1
Return Loss (dB)	< -10.9
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	3.5 typ.
Bandwidth (MHz)	14
Efficiency (%) @ Center Frequency	84
Axial Ratio (dB)	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	25 x 25 x 4
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0785-22-001-A

Frequency Range	1561 ± 2 • 1602 ± 4
Return Loss (dB)	< -6 • < -6
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	0.5 typ. • 3.0 typ.
Bandwidth (MHz)	5 • 9
Efficiency (%) @ Center Frequency	49 • 62
Axial Ratio (dB)	–
Polarization	–
Impedance (Ω)	50
Dimensions (mm)	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant

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EMBEDDED GNSS/GPS ANTENNAS



ST0948-22-001-A

Frequency Range	1561 ± 2 • 1602 ± 4
Return Loss (dB)	< -9.5 • < -9.5
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	2.0 typ. • 3.0 typ.
Bandwidth (MHz)	5 • 9
Efficiency (%) @ Center Frequency	72 • 71
Axial Ratio (dB)	–
Polarization	–
Impedance (Ω)	50
Dimensions (mm)	N/A
Temperature Range (°C)	-40 to 80
RoHS	RoHS Compliant



ST0985-22-001-A

Frequency Range	1561 ± 2 • 1602 ± 4
Return Loss (dB)	< -6 • < -6
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	0.5 typ. • 3.0 typ.
Bandwidth (MHz)	5 • 9
Efficiency (%) @ Center Frequency	49 • 62
Axial Ratio (dB)	–
Polarization	–
Impedance (Ω)	50
Dimensions (mm)	N/A
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0543-11-N03-U

Frequency Range	1227.6 ± 1 • 1575.42 ± 1
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	4.9 typ. • 5.5 typ.
Bandwidth (MHz)	N/A
Efficiency (%) @ Center Frequency	69 • 78
Axial Ratio (dB)	3 typ. • 3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	40.2 x 40.2 x 6
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0543-11-N01-E

Frequency Range	1227.6 ± 1 • 1575.42 ± 1
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	3.1 typ. • 4.1 typ.
Bandwidth (MHz)	9 • 10
Efficiency (%) @ Center Frequency	48 • 63
Axial Ratio (dB)	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	25 x 25 x 4.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant



ST0543-11-N02-E

Frequency Range	1176.5 ± 1 • 1575.42 ± 1
Return Loss (dB)	< -10 • < -10
Gain (dBic) @ Zenith at 20 mm x 20 mm ground	2.7 typ. • 4.5 typ.
Bandwidth (MHz)	N/A
Efficiency (%) @ Center Frequency	35 • 70
Axial Ratio (dB)	3 typ. • 3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	25 x 25 x 4.5
Temperature Range (°C)	-40 to 85
RoHS	RoHS Compliant

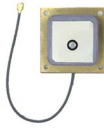
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RFID PATCH ANTENNAS



ST0684-11-402-U

Frequency Range (GHz)	915
Return Loss (dB)	< -10.9
Gain (dBic) @ Zenith	-0.35 typ.
Average Gain (dB) @ Center Frequency	-2.5
Efficiency (%) @ Center Frequency	56
Axial Ratio (dB) @ Zenith	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	49.5 × 49.5 × 7.5
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0684-11-403-U

Frequency Range (GHz)	915
Return Loss (dB)	< -15
Gain (dBic) @ Zenith	0.8 typ.
Average Gain (dB) @ Center Frequency	N/A
Efficiency (%) @ Center Frequency	33
Axial Ratio (dB) @ Zenith	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	33.0 × 33.0 × 4.8
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0684-11-401-U

Frequency Range (GHz)	868
Return Loss (dB)	< -10.9
Gain (dBic) @ Zenith	-0.8 typ.
Average Gain (dB) @ Center Frequency	-1.9
Efficiency (%) @ Center Frequency	65
Axial Ratio (dB) @ Zenith	3 typ.
Polarization	RHCP
Impedance (Ω)	50
Dimensions (mm)	49.5 × 49.5 × 7.5
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant

EMBEDDED SPRING ANTENNAS



ST0686-10-N02-U

Frequency Range	915
Return Loss (dB)	< -9.5
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.1/-2.3
Efficiency/Average (%)	59
Dimensions (mm)	36.6 × 8.3 × Ø6.0
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0686-10-N01-U

Frequency Range	868
Return Loss (dB)	< -9.5
Max Input Power (W)	1
Gain, Peak/Average (dB)	2.5/-2.3
Efficiency/Average (%)	58
Dimensions (mm)	38.8 × 8.3 × Ø6.0
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant



ST0686-20-N01-U

Frequency Range	433
Return Loss (dB)	< -9.5
Max Input Power (W)	1
Gain, Peak/Average (dB)	-0.5/-3.1
Efficiency/Average (%)	49
Dimensions (mm)	82.0 × 8.3 × Ø6.0
Temperature Range (°C)	-40 to 105
RoHS	RoHS Compliant

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