# ImmersionRC 5.8GHz SpiroNET omni directional antenna

Instruction manual

## Specifications

| | | |
|---|---|---|
| Typical impedance at 5.8GHz | > | 50 Ohm |
| SWR | > | <1.35 at 5.8GHz |
| Gain | > | 0.95dBic |
| Polarization | > | Left- or Right-hand circular (LHCP, RHCP) |
| Radiation pattern | > | 360-degrees |
| Configuration | > | 4-lobe skew planar |
| Dimensions (LxWxH) | > | 108x34x34mm |
| Weight (Grams) | > | 12 grams |
| Connector | > | SMA male, or RP-SMA female |


*Fig 1. ImmersionRC 5.8GHz SpiroNET RHCP omni directional antennas.*

**Overview**

The ImmersionRC 5.8GHz SpiroNET omni directional antenna was developed to offer better multi-path rejection* than conventional whip antennas. The principle behind this hinges on the use of circular polarization rather than linear polarization. Circular polarization has the benefit that reflections change polarization and see a natural attenuation of up to >20dB due to the polarization mismatch. This is an effective means of canceling the negative effects of multi-path interference*.

ImmersionRC offers the same 5.8GHz SpiroNET omni directional antenna in different configurations, which from a specification point of view only differ from one another in terms of Left- or Right-hand circular polarization, and the use of the mating connector, SMA male or RP-SMA female. The different configurations however do differ in terms of esthetics, i.e. they use different color plastic to distinguish one from another. The different configurations are listed below:

| | | |
|---|---|---|
| Black radome > Red cable > SMA male connector | : | Right-hand circular (RHCP) |
| Grey radome > Red cable > RP-SMA female connector | : | Right-hand circular (RHCP) |
| White/black radome > Red cable > SMA male connector | : | Left-hand circular (LHCP) |

**Directions on use**

In order to gain the most benefit from using ImmersionRC's 5.8GHz SpiroNET omni directional antennas the antennas on the transmitter and the receiver need to be of the same polarization i.e. either both need to Right-hand or both need to be Left-hand polarized. Do not mix different polarization antennas as that will incur a hefty penalty in terms of range.

Both antennas should be mounted as much vertical as possible whilst making sure that the antennas have free 'view' all around. Make sure that the antenna is not blocked by parts of your model, for example the battery or parts of a carbon fiber frame, etc. In practice this means mounting the antenna high up off of the center of your model, or from the tail or front, alternatively the antenna can be mounted pointing down, as long as it is mounted vertically.

Considering the antenna will be converting electrical currents into electromagnetic fields it is good practice to keep sensitive electronics away from the antenna, as any conductive piece of material will act as an antenna and couple in the electromagnetic field potentially causing for erratic behavior. Take note that ImmersionRC's products are designed from the ground-up to be RF hardened and to work together, so using ImmersionRC products all around will yield the best results.

When connecting the antennas to a transmitter and receiver make sure the connector has the proper gender, but also the proper polarity. RP-SMA female antennas will fit on a SMA-female connector, but there is no physical contact with the inner conductor, so this configuration will not work! I.e. always combine SMA with SMA and RP-SMA with RP-SMA.

Take note that it doesn't matter which antenna is fitted to the transmitter and which antenna is fitted to the receiver, they are identical and fully interchangeable.

**Multi-path interference is the process in which reflections of the radio frequency signal emitted from the transmitter antenna off of solid objects sum at the receiver's antenna with the directly transmitted signal. Because these reflections are 180-degrees out of phase they can (partially) cancel out the signal that travels from the transmitter antenna directly. This causes for visible 'dropouts' in the audio/video signal. Multi-path rejection gives a number (in dB) of how much better the rejection of reflected signals is versus a linear polarized antenna, in this case, by using circular polarization, gains of >20dB can be had. I.e. the reflected signal sees a 20dB attenuation, which is a factor of 100x.*

**Warranty**

For warranty claims or repair requests please consult the retailer that you purchased this product from, they will be able to help you with your warranty claim or repair request.

**Package contents**

The ImmersionRC 5.8GHz SpiroNET omni directional antenna is shipped with the following items:

2pcs - ImmersionRC 5.8GHz SpiroNET omni directional antenna.

 **Directions on safety** 

ImmersionRC advocates the safe use of their products, always make sure your equipment is in proper working order, is checked prior to every flight and that you are familiar and respect the equipment's capabilities and limitations. Do NOT fly recklessly, do NOT fly near airports, freeways, towns, people, etc, basically anywhere were a equipment failure or pilot error can result in injury or damage to people and/or property.

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