

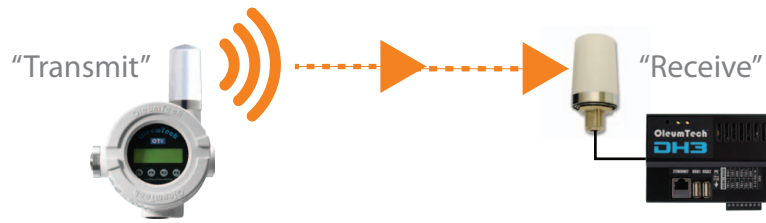
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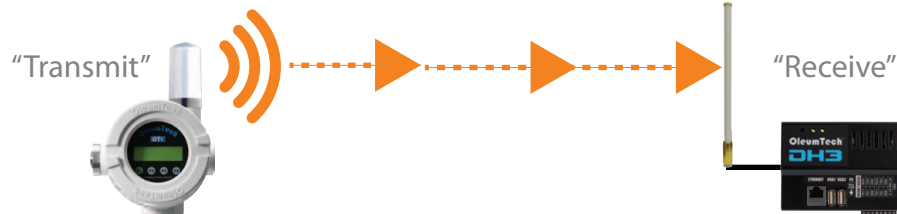
# 1. MAXIMUM RF RANGE


## Transmitter to Gateway

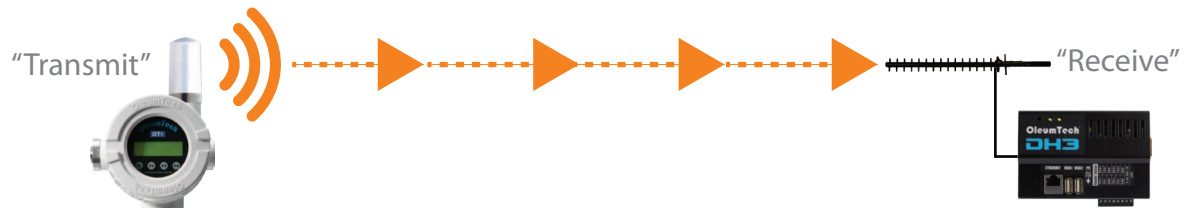
2.4 GHz @ 250,000 bit RATE




BULKHEAD ANTENNA, 3 dBi	TRANSMITTER TX POWER	GATEWAY TX POWER	RF RANGE*
 <p>3 dBi</p> <p>SA2400-AK2 Kit</p>	10 dBm / 25 mW	10 dBm / 25 mW	425 m / 0.3 mi / 1394 ft
	18 dBm / 63 mW	18 dBm / 63 mW	1.06 km / 0.7 mi / 3478 ft



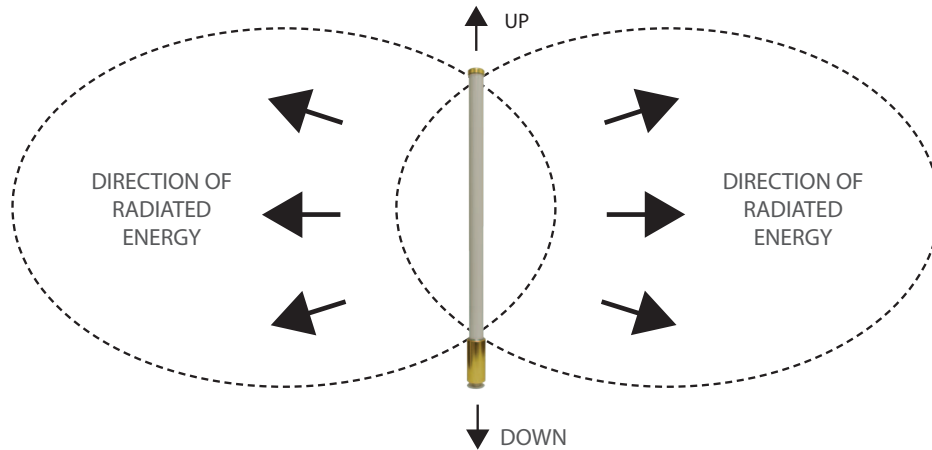
OMNI ANTENNA 24-IN, 8 dBi	TRANSMITTER TX POWER	GATEWAY TX POWER	RF RANGE*
 <p>8 dBi</p> <p>SA2400-AK4 Kit</p>	10 dBm / 25 mW	10 dBm / 25 mW	700 m / 0.4 mi / 2297 ft
	18 dBm / 63 mW	18 dBm / 63 mW	1.9 km / 1.2 mi / 6234 ft



YAGI ANTENNA, 16 dBi	TRANSMITTER TX POWER	GATEWAY TX POWER	RF RANGE*
 <p>16 dBi</p> <p>SA2400-AK3 Kit</p>	10 dBm / 25 mW	10 dBm / 25 mW	1.9 km / 1.2 mi / 6234 ft
	18 dBm / 63 mW	18 dBm / 63 mW	7 km / 4.3 mi / 22966 ft

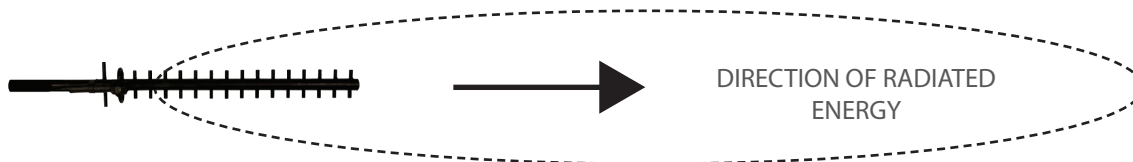
\*Field tested with clear line of sight with antennas raised to 9 to 15 ft above ground at sea level (tested for point-to-point values only). Actual wireless RF range may vary depending on location, antenna and cable setup, and line of sight. Graphs not to scale.

## OMNI DIRECTIONAL ANTENNA



An omni directional antenna focus its energy equally in all directions. It typically has lesser range than a yagi antenna of similar gain. Omni antennas are used in point-to-multipoint applications. Because it distributes its energy in more of a radial shape, be sure you have the main part is oriented straight up and down (perpendicular to the ground), with the feed line pointed towards the ground.

## DIRECTIONAL YAGI ANTENNA



A yagi directional antenna focuses its energy to one particular direction. In a point-to-point application, it is ideal to use Yagi antennas at both locations for extended range and better signal strength. A yagi antenna must be properly set up so that its radiated signal can be targeted toward the desired direction of RF communication.

## ANTENNA INSTALLATION BEST PRACTICES

- Use high quality antenna cables.
- Always weather-proof the cable connection.
- When possible, have at least 10 ft of ground clearance for optimal RF performance.
- Have at least 10 ft of vertical separation with other antennas.
- If using a NEMA-X enclosure the hole for the antenna wire or antenna should be made at the bottom of the enclosure to prevent from water ingress.