

Technical Reference

Tags for UHF Long-Range Readers

Comparing “Passive” and “Active”

AWID’s credentials (tags and cards) for all reader technologies are passive – that is, they are energized by the RF field that the reader generates, not by a battery inside the credential. For vehicles, passive tags are commonly used in gate control and automated identification applications. Active tags may be used on vehicles at high speed and in large spaces.

“Passive” Tags

All credentials (encoded cards, tags and wafers) from AWID are “passive” – that is, they have no battery to power the credentials’ internal circuits (integrated circuit and antenna assembly). A passive credential’s power is derived from the RF field that is generated by the AWID reader, with which the credential communicates like a transponder. The passive credential is completely disabled until the reader’s RF field energizes the credential’s circuits.

“Active” Tags

The tags from companies like Nedap, 3M (Sirit) and Transcore are typically “active” – that is, they contain a battery to supply the electrical power that is required to energize their internal circuits. The active tag may be in “sleep” mode, not able to transmit its programmed code until the tag is brought into the RF field that its corresponding reader generates. The active tag recognizes the communications from the reader, and the tag enters its active mode.

Comparisons – UHF Long-Range Readers

(Typical data for popular applications)	Passive Tags from AWID	Active Tags from Others
Read Range	20 feet to 30 feet	30 feet to 50 feet
Common Reading Distance (as Installed)	10 feet to 20 feet	30 feet
Vehicle Speed as Tag Passes Read Zone	15+ miles per hour	30+ miles per hour
Width of Travel Lane	12 feet to 15 feet	24 feet to 30 feet
Credential Types	All, even 0.030” graphics cards	Tags & cards -- thicker for battery
Tag Size	Thin, small area, light weight	Thicker, larger, heavier
Tag Life	No limit inherent in credentials	Depends on use (battery drain)
Reader Size	8 inches to 9-1/2 inches square	Larger; may be an array of antennas
Prices of Tags and Readers	Moderate	Higher – 2 to 3 times
Cost of Installation	Moderate	Higher – up to 2 times

Applications

Passive tags are ideal when vehicles can move in a uniform manner (travel-lane width, vehicle approach path, vehicle speed) past the reader, and when the user’s budget is restricted, and when installation space is limited.

AWID’s “HiLo” reader offers twice the space for reading tags, compared with the single UHF readers. For any AWID UHF tag type, the “HiLo” reader set is preferred for mixed cars and trucks, curved lanes, change in grade, and wide lanes.