Schréder
Experts in lightability™

SHUFFLE

WIRELESS BACKHAUL
SOLUTION

SHUFFLE is a connected, modular approach to city hardware - with its plug-and-play rotatable modules that contain pre-certified hardware, it can be configured to suit your specific needs.

KEY ADVANTAGES

- **Seamless integration in the SHUFFLE column**
- **Wireless extended fibre connections to and from a pole**
- **Plug and play installation**
- **Easy street level deployment**
- **No need for road works to add a network infrastructure**
- **Integrated beam steering antenna**
- **Multi-gigabit throughput**
- **Leading 400 metres range**

The SHUFFLE Wireless BackHaul module contains a multi-gigabit radio operating over millimetre waves. The radio is integrated into a SHUFFLE module.

This is an innovative solution for point to multi-point carrier-class systems using the uncongested unlicensed 60Ghz V-band, bringing a highly adaptive bandwidth. It includes exclusive self-aligning antennas for quick installation and long reach operations.

The SHUFFLE Wireless BackHaul system consists of two types of modules. A module that serves as an access point (Base Unit) and another as an end-point station (Terminal Unit).

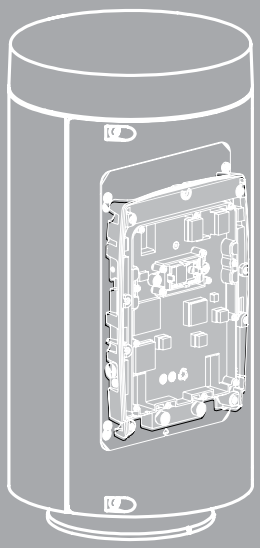
The Base Unit connects to the fibre network and wirelessly transmits the signal to the Terminal Units mounted on other SHUFFLEs. The Base Unit module can connect up to 8 Terminal Unit modules. They communicate in a 90° sector within an unobstructed line-of-sight between radios, up to 400 meters range.

Modules are made of high-grade, high-pressure, die-cast aluminium and a black protector in PC is used to conceal its contents carefully. Extruded aluminium is also used to achieve the cylindrical shape, with fasteners in stainless steel allowing a full protection against the elements. The entire module is then finished with a polyester powder coating that comes in a variety of colours offering endless possibilities.

WIRELESS BACKHAUL | CHARACTERISTICS

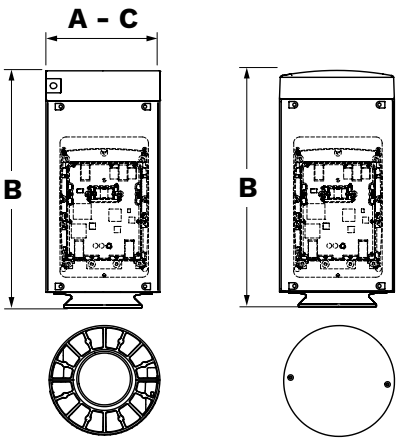
KEY FEATURES

- > **Reliable, virtually interference-free operations**
- > **Connect up to 8 SHUFFLEs from one Base Unit**
- > **Speed of up to 2.3Gbps over the air**
- > **400m auto-aligned range**
- > **AES encryption**
- > **Integrated managed PoE switch**
- > **Operates in 60GHz V band**



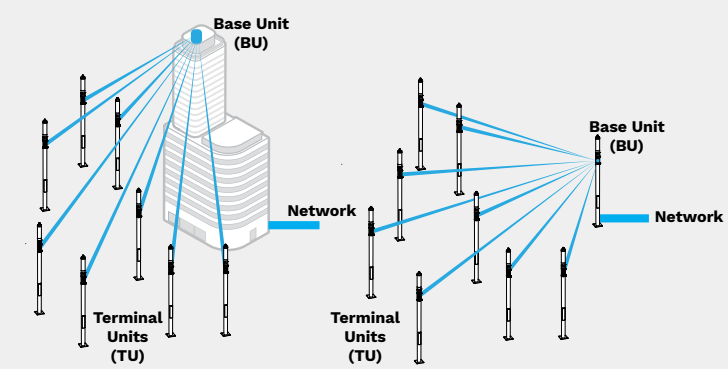
DIMENSIONS AND MOUNTING

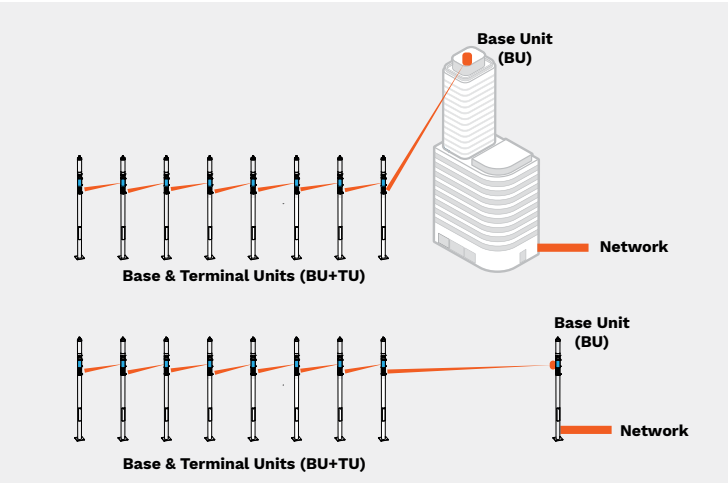
AxBxC (mm | inch)	194x403x194 | 7.6x15.9x7.6
Weight (kg | lbs)	6.3 | 13.9
Aerodynamic resistance (CxS)	0.08
Mounting possiblilities	Clamps



ALIGNMENT

For optimal coverage, point the Base Unit towards the sector centre. Terminal Units should be pointed towards the Base Unit.





WIRELESS BACKHAUL | CHARACTERISTICS

GENERAL	
Recommended installation height	3m to 6.8m | 9.8' to 22.3'
CE mark	Yes
ROHS compliant	Yes

HOUSING AND FINISH	
Housing	Aluminum
Protector	Polycarbonate
Housing finish	Polyester powder coating
Standard colour	AKZO grey 900 sanded*
Tightness level	IP 66
Impact resistance	IK 09 (polycarbonate)
*Any other RAL or AKZO colour upon request	

OPERATING CONDITIONS	
Operating temperature range (Ta)	-30°C up to 40°C / -22°F up to 104°F without wind effect (outdoor use only) -30°C up to 50°C / -22°F up to 122°F with wind effect

SHUFFLE	
SHUFFLE pole model	2 doors same side | 3 doors
SHUFFLE components	Mains box | Beyond light power supply box
	Support plate network
	Network cable
Position on pole	Any position

ELECTRICAL	
Electrical class	Class I EU, Class II EU
Nominal voltage	220-240V 50/60Hz

Wireless BackHaul	
Topologies	Point to Multi-point Point to Point
Built-in antenna	Horizontal scanning: 90° Vertical beam-width: 20°
Frequency & duplexing	57-64GHz
Channels & width	2 non-overlapping channels, 2160MHz wide
Modulation & coding	9 level of adaptive coding and modulation
Line rate (PHY)	Line rate up to 2300Mbps
Aggregate throughput max capacity (Mbps), license dependent	Mains Unit: 1800 Terminal Unit: 1000
System gain (link budget)	128.5dB (including antenna gain)
Typical reach	280-400m 900-1300ft
Terminal units (TU)	Up to 8 Terminal Units
Security	AES 128-bits
Management & provisioning	TU auto-provisioning; in-band, out-of-band management Web GUI (one-click configuration of local and remote units) & Embedded CLI; SNMPv2/3, TACACS+, RADIUS
Power supply	PoE, 10W (IEEE 802.3af) without PoE-Out, 55W with PoE-Out (IEEE 802.3at+)
PoE-out	ETH2: 26W, 802.3at
Alignment