SubWAVE™ : Technical Benchmark – brief version

Revised: August 2021

	SUBWAVE™ MINI-ZONE	SUBWAVE™ ZONE	SUBWAVE™ CONTINUOUS	BLE (BLUETOOTH LOW ENERGY)	RFID	WIFI	UWB	4G LTE	GPS REPEATERS
ABOUT	Mini-zones for local GPS initialization	Positioning in large zones for tunnels	Accurate navigation within tunnels	Accurate navigation within small covered areas	Gate per gate navigation	Approximate navigation indoor	High precision positioning in within defined areas	Approximate positioning	Mini-zones for local GPS initialization
UNIVERSALITY SOFTWARE	Yes, global standard for navigation and positioning	Yes, global standard for navigation and positioning	Yes, global standard for navigation and positioning	No, requires specific software	No, requires specific software	No, requires specific software	No, requires specific software	No, requires specific software	Yes, global standard for navigation and positioning
UNIVERSALITY HARDWARE	Compatible with all GPS-enabled devices	Compatible with all GPS-enabled devices	Compatible with all GPS-enabled devices	Requires BLE-compatible device	Requires RFID readers	Requires WiFi-compatible device	Requires specific UWB device	Requires 4G compatible device	Compatible with all GPS-enabled devices
ACCURACY	Down to sub-meter (< 3 feet)	Half of the zone size, usually tens of meters	Sub-2m with any standard GPS receiver Up to 20cm with specific receivers	2m	3-10 meters	50-70 meters	20cm	50-70 meters	Only broadcast the location of the receiving antenna. Altitude is problematic.

SEAMLESS INDOOR/OUTDOOR TRANSITION	Yes	Yes	Yes	No	No	Limited to outdoor external WiFi availability	No	Yes but kilometer-accuracy outdoor	Yes
SETUP	Simple kit, using existing receivers	Kit setup, using existing receivers and existing antennas	Kit setup, using existing receivers and existing antennas	Complex kit with both receivers and emitters	Complex kit with both receivers and emitters	Kit setup with limited reach	Complex kit with both receivers and emitters	Telecom Standard	Simple kit, using existing receivers
MAINTENANCE IN TUNNEL	Low	Low to none (when leveraging existing leaky feeders)	Low to None (when leveraging existing leaky feeders)	High (limited reach)	High (limited reach)	High (limited reach)	High (limited reach)	Standard	Low
BLIND SPOT INTO THE GALLERIES (= LACK OF COVERAGE DUE TO TOPOGRAPHY)	N/A	None	None	Frequent	Very Frequent	Possible	Common	Possible	N/A
RECEIVERS	PMR device, vehicle navigation systems, smartphones, Standard, Trackers	PMR device, vehicle navigation systems, smartphones, Standard, Trackers	PMR device, vehicle navigation systems, smartphones, Standard, Trackers	Specific BLE enabled receivers or smartphone with proprietary software	Custom Receiver	Smartphone with proprietary software and specific tags	Specific UWB enabled receivers or smartphone with proprietary software	4G Smartphone or other device with specific software.	PMR device, vehicle navigation systems, smartphones, Standard, Trackers

Conclusion

The **SubWAVE** technology allows to cover all geolocation needs, thanks to deep **accuracy** and **seamless** indoor/outdoor with the great advantage to get full compatibility with **existing cable infrastructures** (leaky feeder, optical fiber, coax cable) and also all existing & future **GPS receivers**.
Also, this technology has very low maintenance, no interruption and no interference with your current technologies & telecoms.

Other technologies (BLE, RFID, WiFi, UWB, 4G LTE) lead to great use cases through good accuracy and well-known protocols, whereas they also have a lack of compatibility with existing GPS receivers and the challenges they represent in term of infrastructure required, accuracy, and without any signal interruption.