

USER NEEDS	PRODUCT ATTRIBUTE	ENGINEERING SPECIFICATION
Viewable position	adjustment	Dof, #, 5
	location	In driver FOV, Y/N, Y, all
Fits many boats	compatibility	Attachable, # of ways to attach, 3, James
Survives boat conditions	waterproof	Waterproof depth/time, min/m, 30/1, Ghassan
Easy to understand incoming (rider to driver)	Quick recognition	Time to understand, seconds, 1, All (visual/audio)
Gets attention	noticeable	Loud enough, dB & Hz, 90 & >10,000, electronics
		High power, W, >1, electronics
Easily pressable buttons	Accessible buttons	Location/size, ergonomic/cm ² s, Y/N / >2, all
Reliably communicate with handle	Antenna placement/range	Location, has openness (Y/N), Y, Ghassan
Several products can operate independently in proximity	Several channels, changeable	Having screen/dial, Y/N, Y, all
Long battery life	Length of operation before switching batteries	
Convenient form	Not too heavy for driver to keep around	Lightweight, weight, ~500 g, all
	Unobtrusive to driver's view	Size, LxWxH, ~15cm x 8cm x 3cm, all
Easily communicate to the driver to regulate speed	Buttons with wired? transmission	Signal transmission up to 75 ft.
Driver must know when skier has fallen	Pressure sensors with wired? transmission	
Driver must be able to give coaching cues	Haptic vibration feedback with wired? transmission	
Compatible with ropes of various lengths, Easily assembled	Configuration	Handle and cable decouple from rope.
Operate under high tension	Tensile strength	≥1500 lbs.
Float on surface of water	Buoyancy	Buoyant force (pgV) must be greater than gravitational force (mg) [N].
Easy to hold	Mass	<2 lbs
High visibility in water	Color	Spotted in <2 seconds in water
Operate normally in water	Waterproof	IP68