

### Appendix C: Target Catalog

<b>System</b>	<b>Function</b>	<b>Metric</b>	<b>Target</b>
Acceleration	Generate Force	Time	0 - (top speed) in 4 seconds
Deceleration	Remove Force	Distance	10.6 m

<b>System</b>	<b>Function</b>	<b>Metric</b>	<b>Target</b>
Carries Load	Generate Equal & Opposite Force	Force (Weight)	$\leq 36$ kg (95 <sup>th</sup> percentile 8-year-old girls)
Carries Load	Generate Equal & Opposite Force	Force (Weight)	$\geq 12$ kg (5 <sup>th</sup> percentile 4-year-old girls)
Fits Load	Compensate stature	Height	137 cm (95 <sup>th</sup> percentile 8-year-old boys)
Fits Load	Compensate stature	Height	88 cm (5 <sup>th</sup> Percentile 4-year-girls)

<b>System</b>	<b>Function</b>	<b>Metric</b>	<b>Target</b>
Sense Velocity	Measure Tire Speed	Frequency	300 Pulses Per Revolution (PPR)
Sense Position	Gather & Update Position Data	Frequency	80 Hz
Sense Obstacles	Measure Light Reflections	Frequency	15 Hz

<b>System</b>	<b>Function</b>	<b>Metric</b>	<b>Target</b>
Navigation	Resist Roll Motion	Angular Velocity	$\leq 2\pi \frac{rad}{sec}$
Navigation	Induced Yaw Rate	Angular Velocity	$\approx \frac{\pi}{2} \frac{rad}{sec}$

<b>System</b>	<b>Function</b>	<b>Metric</b>	<b>Target</b>
Additional	Top Speed	Velocity	4.47 m/s
Additional	Maintained Velocity	Velocity	2.17 m/s
Additional	Turning Radius	Distance	1.59 m
Additional	Battery Size	Energy	350 Joules
Additional	Simulation Runs	Iterations	50 Simulations