# Radar Doppler Operational reqs >> Performances&Budget

| Operational Requirement | Value |
|---|---|
| **Altitude envelope** | *10m < H < 6500 m (2500 m [1] )* |
| **Velocity envelope** | *0 m/s < V (vertical) < 115 m/s (90 m/s [1] )* |
| **Acceleration** | *ax < 9.3 m/s2; ay, az < 2.65 m/s2* |
| **Jerk** | *jx < 93 m/s3; jy, jz < 26.5 m/s3* |
| **Off-nadir angle range** | *± 45° (vehicle pointing variation)* |

[1] Range in which the performances are requested
[2] 4 beams are implemented for the actual application which ask for 4 independent measures.

| Design Parameters | Value |
|---|---|
| *Carrier Frequency* | *F0 = 35.76 GHz* |
| *Antenna Beams* | *4 [2]* |
| *TX Peak Power* | *1 W* |
| *TX BW* | *200 MHz* |
| *Pulse width* | *20 ÷2560 ns* |
| *PRI* | *10 ÷ 240 usec* |
| *RX signal BW* | *50 MHz* |
| *Antenna Directivity* | *>34 dB* |
| *Antenna sidelobe level* | *<-35 dB* |
| *Antenna beam aperture* | *< 3 deg* |

| Qualified Performances [3] | Value |
|---|---|
| *Measure Refresh rate* | *20 Hz (50ms)* |
| *Velocity measurement accuracy* | *±0,2m/s + 0,05% of the current velocity* |
| *Altitude measurement accuracy* | *±0,4m + 0,05% of the current altitude* |
| *Dynamic Range* | *-95 dBm – 0 dBm* |

| Budget | Value |
|---|---|
| *Mass* | *10 kg [4]* |
| *Volume* | *Ø680 mm x 120mm* |
| *PW consumption* | *55W (unregulated bus 22V-36V)* |

[3] The performances are achieved by each single antenna's measure
[4] In case a single measure is needed the mass can be reduced to 6-7 Kg (no need for beam switch assembly)

Space