

The two videos show measurement results for radar measurement of a beehive with the antenna orientation frontally to the entrance hole (Video2) and laterally to the entry lane (Video1). The radar measurements were done with a 160-GHz radar with a mechanically flexible antenna front end, based on a low-loss dielectric waveguide. Data sampling and processing is done with a Zync7030 FPGA. The recorded data are processed with a 2D Fourier transform to obtain target range and velocity. The radar parameters for the chirp-sequence modulation is shown in the table.

sampling frequency f_s	100 MHz	number of ramps L	256
RF bandwidth B	9 GHz	ramp duration T_{ramp}	85 μs
		ramp repetition interval T_{RRI}	170 μs
range resolution ΔR	1.67 cm	velocity resolution Δv	0.022 m/s
maximum range R_{max}	63.71 m	maximum velocity $ v_{\text{max}} $	2.76 m/s

In addition to the radar data, a camera was used to visualize the measurement scenario.