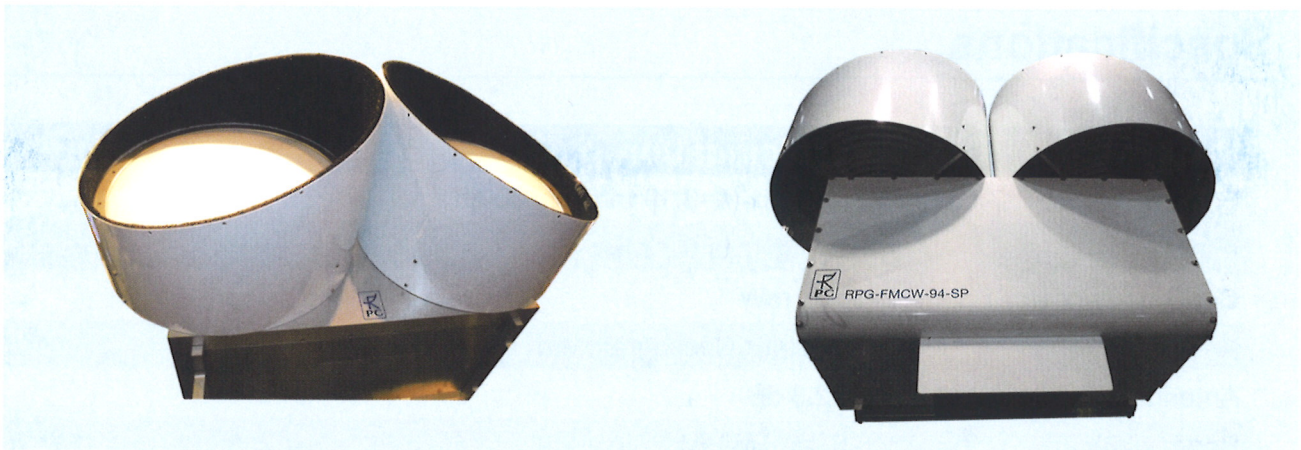
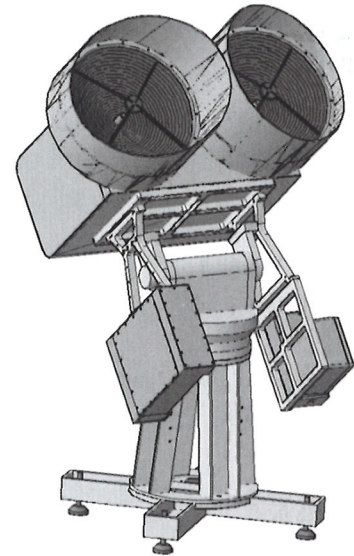


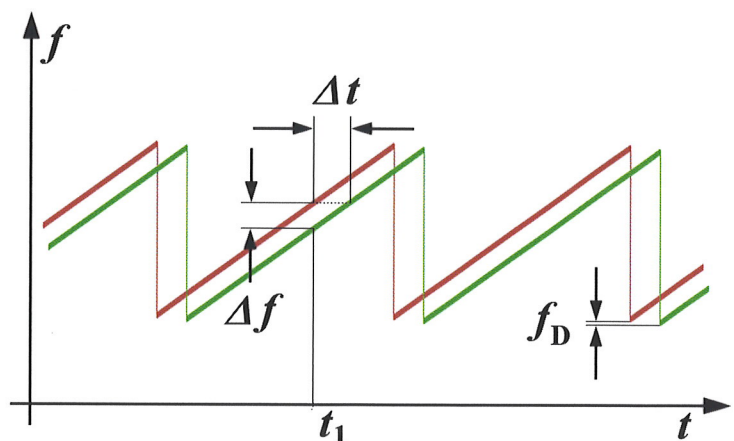
Applications

- High resolution vertical profiles of dBz
- LWC (Liquid Water Content) profiles
- 2D cloud profiles through elevation scanning velocity profiles from Doppler spectra
- Dual Polarization (DP, optional): discrimination
- between cloud droplets, rain, and snow



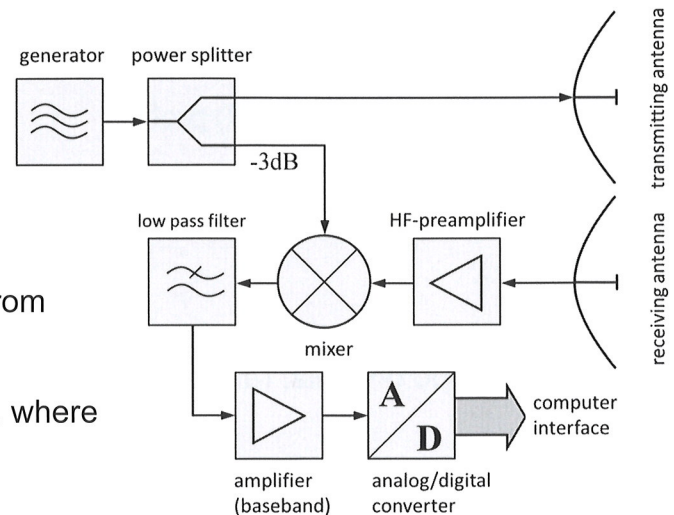
Concept

- Principle: time lag Δt between continuously emitted and received frequency chirps gives a spectrum of beat frequency Δf .
- Beat frequency spectrum contains ranging information with a resolution of $\Delta r = c/2\Delta f$.
- Doppler shift f_D provides velocity profiles.



Design

- Bi-static design with shielded and accurately levelled optics (antenna decoupling <-100 dB).
- Generated HF signal is split up into emitting and receiving branch.
- Receiving branch is mixed with signal from amplified signal received via antenna.
- Mixer down-converts signal to IF range, where it is filtered, amplified and digitized.



Specifications

Parameter	Specification
Frequency	94 GHz ($\lambda=3.19$ mm) \pm 500 MHz
IF range	0.4 MHz to 0.7 MHz
Continuous power	500 mW
Antenna type	Bi-static Cassegrain with 500 mm aperture
Antenna gain	52.3 dB
Beam width	0.45° FWHM
Dynamic range	-50 dBz to +20 dBz
Ranging	50 m to 12 km
Sampling rate	4 s
Vertical resolution	1 m (range:10 m - 600 m), 2 m (0.6 km -1.0 km), 4 m (range:1.0 km - 2.5 km), 8 m (range:2.5 km - 5.0 km), 16 m (range:5.0 km - 12.0 km),
Doppler resolution	\pm 15 cm/s
Doppler range	\pm 10 m/s
Chirp variations	7
Polarisation	V /H (optional)
Passive channels	170 GHz and 89 GHz for integral LWP detection (optional)