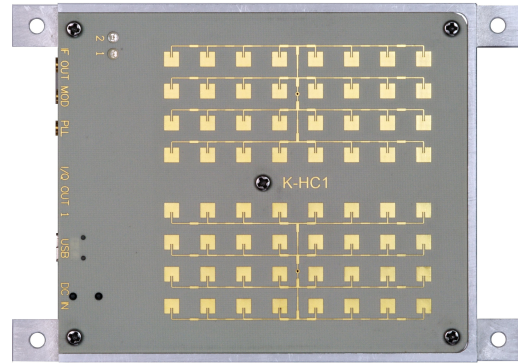


K-HC1 RADAR TRANSCEIVER

Features

- K-Band Superhet Transceiver System
- Highest Sensitivity Receiver with Integrated IF Amp
- Dual 32 Patch Antenna with 25°/12° Aperture
- PLL Controlled Precision Transmitter
- I/Q IF Doppler Output
- IF Amplitude Output
- USB Configurable Transmitter Modes
- Rugged and Compact Construction



Applications

- Long Range Traffic Measurement and Supervision
- Long Range Alarm Systems
- Object Speed Measurement Systems
- Measurement and Research Applications
- Industrial Sensors

Description

K-HC1 is a high-end Radar transceiver with an asymmetrical narrow beam for long distance detectors.

It includes a low phase noise, PLL controlled transmitter and a superhet receiver with 10MHz IF. This architecture results in a superb noise figure of 4dB and an overall sensitivity of -164dBc @BW=1kHz.

The Module can be used as sensitive Doppler sensor with I/Q output for speed and directional detection of moving objects.

External MMCX input allows using external oscillator for multi module operation or low noise carrier. Modulation input may be used for FM or AM.

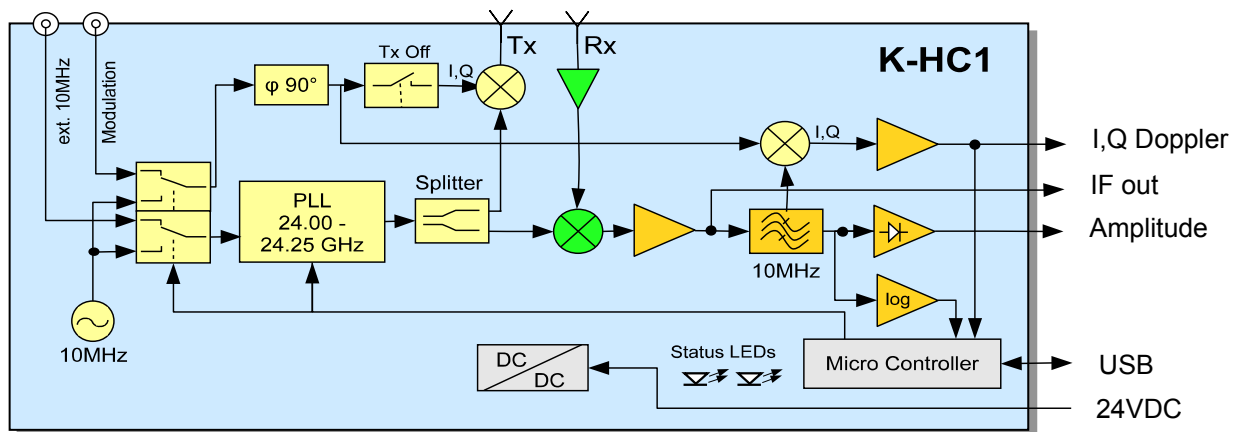


Fig. 1: K-HC1 Superhet Structure

K-HC1 RADAR TRANSCEIVER

Characteristics

Parameter	Conditions / Notes	Symbol	Min	Typ	Max	Unit
Operating conditions						
Supply Voltage		V_{cc}	15	24	30	V
Supply Current		I_{cc}		220		mA
Operating temperature		T_{St}	-20		+60	°C
Storage temperature		T_{sp}	-20		+80	°C
Transmitter						
LO frequency (PLL)		f_{LO}	23.500		24.500	GHz
Transmitter frequency	LO frequency + SSB-Modulator Input	f_{TX}	23.510		24.510	GHz
Frequency step width	PLL Step-width	Δf		1		MHz
Output Power	EIRP @ 24.000 .. 24.250GHz	P_{TX}	+15		+20	dBm
Frequency Range		f_{SSB}	9.0		11.0	MHz
Input Power	Transmitter fully modulated	P_{SSB}	+5		+15	dBm
Antenna						
Antenna Gain	$f_{TX}=24.125GHz$	G_{Ant}		17.5		dBi
Polarisation	Connectors on the right side			Vertical		
Horizontal -3dB beamwidth	E-Plane	W_{θ}		25		°
Vertical -3dB beamwidth	H-Plane	W_{θ}		12		°
Receiver						
Receiver sensitivity	$f_{IF}=500Hz, B=1kHz, S/N=6dB$	P_{RX}		-144		dBm
Overall sensitivity	$f_{IF}=500Hz, B=1kHz, S/N=6dB$	D_{system}		-164		dBc
PLL Input						
Frequency Range		f_{PLL}	9.0		11.0	MHz
IF Output						
Frequency Range		f_{IF}	0.01		100	MHz
Output Impedance		R_{IF}		50		Ω
Noise Floor	Bandwidth filtered to 100MHz	N_{IF}		-130		dBm/Hz
Doppler Output						
Frequency Range		$f_{Doppler}$	3		15k	Hz
Noise Floor	B=10kHz, RX-Antenna covered	$N_{Doppler}$		-96		dBV/Hz
AM Output						
Frequency Range		f_{AMout}	0		3k	Hz
Noise Floor	B=10kHz, RX-Antenna covered	N_{AM}		-109		dBV/Hz
Host Interface						
USB				VCP (virtual COM Port)		
Body						
Outline Dimensions				110*77*19		mm
Weight				182		g