PUP_SO24P_T2R2

PUP_SO24P_T2R2 (Figure 1) is a single board MIMO radar evaluation kit. It works at K band with two transmitting and two receiving channels.

Figure 1. PUP_SO24P_T2R2

Two transmitter antennas and two receiver antennas are configured as MIMO array (Figure 2). Three-dimensional signals can be extracted from the receivers.

Besides target distance and speed, this model can be used to measure the direction of arrival (DOA) in both vertical and horizontal directions. It is suitable for target tracking, occupancy sensing, fall detection, gesture sensing, and many other uses.

The RF front-end frequency sweep is implemented with a phase-locked loop (PLL) to achieve linearity of frequency modulations. The FPGA-based controller connects the front end with a four-channel LVDS (low-voltage differential signaling) 65Msps pipeline ADC module and connects the user's computer with a high speed (up to 480Mb/s) USB interface.

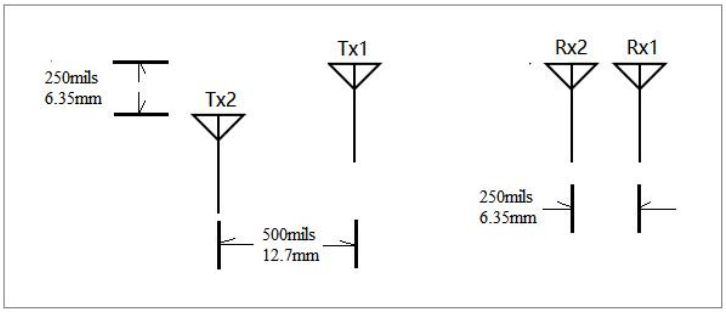

Figure 2. antenna array

The kit comes with user-friendly Matlab GUI (graphical user interface) source code. It is also an example of the working process, data format, and signal processing that can be quickly converted to code in your projects.

The kit works between 24GHz and 25GHz and is expandable to 23.5GHz-26GHz. The detectable range is approximately 25 meters for people and 60 meters for a medium-sized vehicle.

Raw data can be recorded for post-processing.

SPECIFICATIONS

Specification	Minimum	Typical	Maximum
Channels		2x Transmitters, 2x Receivers	
Antennas		4x On Board Patch Antennas	
Modulations		FMCW, CW	
Typical Frequency Range	24GHz		25GHz
Expandable Frequency Range	23.5GHz		26GHz
Sweep Time		0.5ms, 1ms, 2ms, 4ms, 8ms	
Sample Per Sweep		128,256,512,1024,2048,4096	
Tuning Voltage	0		4V
Tuning Sensitivity		0.8GHz/v	
Transmitting Power	16dBm	17dBm	18dBm
SSB Phase Noise @1MHz offset		-99dBc	
Noise Figure		12dB	
Maximum Input power		5dBm	
IIP_1dB		-12dBm	
Supply Voltage	5.75V	6V	6.25V
Supply Current		1100mA	
Operation Temperature	-40°C		85°C
Dimensions		L: 130mm, W: 102mm, H: 15mm	