



## PUP\_EN9C\_T1R2

PUP\_EN9C\_T1R2 (Figure 1) is an X Band radar development platform with one transmitting and two receiving channels.

PUP\_EN9C\_T1R2, with removable mounting brackets, is sold with three small sized patch antennas (Figure 2). Users can purchase third party standard gain horn antennas for better performances.



Figure 1. PUP\_EN9C\_T1R2



Figure 2. X Band Patch Antennas

Besides range, velocity, and DOA measurements, PUP\_EN9C\_T1R2 can be configured as interferometric radar using longer RF cables (0.5-1m) for vibration estimation and detection.

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 an four-channel LVDS (low-voltage differential signaling) 50Msps pipeline ADC module and connects the user's computer with a high speed (up to 480Mb/s) USB interface.

This platform comes with a 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 the source code of your own projects.

This platform works between 9.6GHz and 10GHz and is expandable to 9.2GHz-10.2GHz. The detectable range is approximately 25 meters for people and 70 meters for medium-sized vehicles.

Raw data can be recorded for post-processing.

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## SPECIFICATIONS

Specification	Minimum	Typical	Maximum
Channels		1x Transmitters, 2x Receivers	
Antennas		3x External Antennas	
Modulations		FMCW, CW	
Typical Frequency Range	9.6GHz		10GHz
Expandable Frequency Range	9.2GHz		10.2GHz
Sweep Time		0.5ms, 1ms, 2ms, 4ms, 8ms	
Sample Per Sweep		128,256,512,1024,2048,4096	
Tuning Voltage	0		5V
Tuning Sensitivity		250MHz/v	
Transmitting Power (9.6-10.2GHz)	19dBm	20dBm	21dBm
SSB Phase Noise @1MHz offset		-109dBc	
Noise Figure		1.8dB	
Maximum Input power		10dBm	
IIP <sub>1</sub> dB		-2dBm	
Supply Voltage	5.75V	6V	6.25V
Supply Current		1800mA	
Operation Temperature	-40°C		85°C
Dimensions		L:160mm, W:125mm, H:32mm	
Weight		20oz/16oz with/without mounting brackets	

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