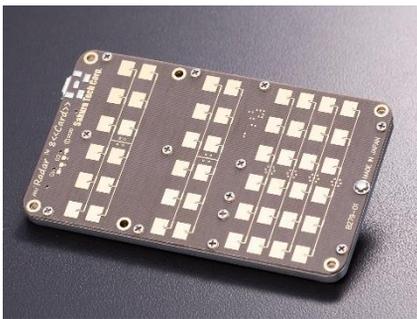


Card-size 24GHz FMCW MIMO Radar Platform

Overview

- 24GHz FMCW MIMO Radar sensor
- Tx 2ch, Rx 4ch / 8ch virtual array
- Business Card size, right-weight Module
- Support both distance and Vital Sign data
- microUSB interface



Features

- Contactless sensing even when Blankets and Clothing exit, and no-affect Brightness
- Simultaneous and Multiple target detection

Specifications

- Frequency: 24GHz
- Certification: ARIB-T73 (Japan)
- Tx Power: -4/2/8 dBm (selectable)
- # of Antenna: Tx 2, Rx 4 MIMO
- FoV : Elevation $\pm 8^\circ$ / Azimuth $\pm 45^\circ$
- Resolution: Distance 0.8m / Azimuth 13°
- Size (mm): 92 x 55 x 5
- Signal processing: External PC
- Power: DC+5V, <1.1A (USB Bus Power)

Applications

- Care Services
Simultaneous multiple people monitoring of Vital Sign Monitoring, Heart and Respiration rates even Blankets and Clothing exist
- Security
 - Intrusion detection
 - Avoidance detection
 - Human detection over a wall (note) in visible and in dark-night.
- Construction field
 - People detection of prohibits area
- Parking / Multi storey Car Park
 - Intrusion detection
 - Child Presence Detection
- Backward Monitoring
Prevention of a collision with a vehicle approaching from behind, or blind spot.

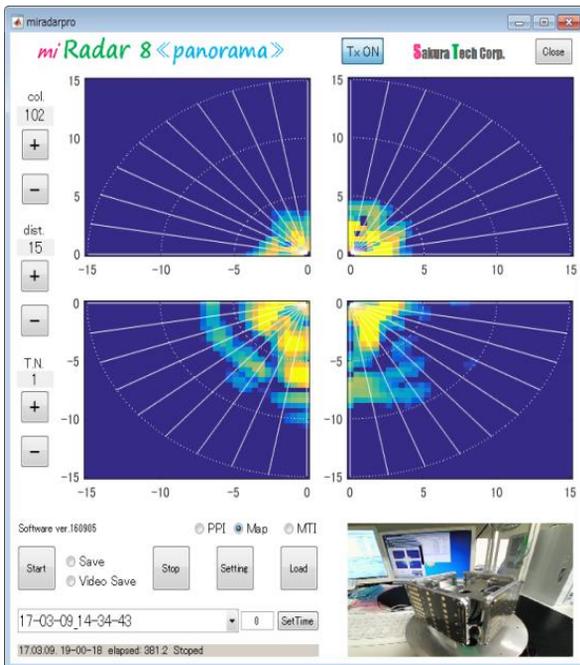
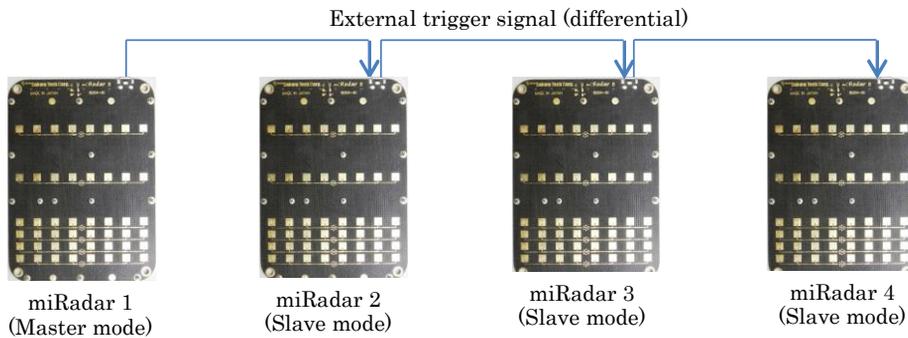


Evaluation software (Professional Version) (B279-SW004)

Although four miRadar8 modules can detect targets in an entire circumference (360°), simultaneously operating multiple radars at close range will generally produce radio wave interference. To prevent this, coordinating operation can be controlled to output transmissions of multiple miRadar8 with their timing shifted so they do not overlap.



Connecting external trigger I/O signals enables multiple miRadars to operate in synchronization. miRadar1 is set to master mode because it does not have an external trigger signal input. miRadar2, 3, and 4 are set to slave mode, which operates in synchronization by an external trigger signal input. Please contact us to order a trigger signal cable.



Evaluation software (Professional Version) is a Matlab execution file that controls coordinating operation for a maximum of four miRadar8 and displays processing results.

A chart for the following data can be displayed:
(1) Color mapping data after azimuth detection processing
(2) PPI data symbolized from azimuth detection results.

As with the Standard Version, a mechanism is provided to output processing results in files to interface them with other software. This enables software to be created for conducting post-processing of radar detection results.

Note 1) When miRadar module is connected via a USB hub, self-power feeding of 3A or more is required per four ports.

Note 2) With an increased number of modules, a PC with a higher processing capacity of Core-i7, etc., and a larger number of cores is required.

C++ USB interface SDK [Windows] (B279-OP001-01)

Visual Studio 2015 C++ edition

The instruction manual for C++ SDK is included in the USB interface library of the module. If a unique signal processing software is created, SDK is required to use the USB interface for module.

This supports Windows Visual Studio 2015. SDK is Static Library. SDK with source code for Library section is available. Please use it if necessary.

C++ USB interface SDK [Linux] (B279-OP001-02)

Linux(ubuntu x86/64) g++ edition

Linux edition for the above C++ SDK. This supports x86/x64 Ubuntu. Only Linux edition with source code is available.

Matlab SDK software (Professional Version) (B279-SW005)

This allows a system software prototype to be developed with signal processing results of multiple radars.

This SDK is a release for which Matlab p-code and m-code are mixed in the above Professional edition. The signal processing core section, etc. are in p-code and the interface section, etc. are in m-code. Adding the system software code allows prototypes to be developed in a short time.

Matlab SDK software (Pro1 Version) (B279-SW006)

Software limited to one radar processing for Professional Version of software supporting multiple radars. This allows system software prototypes to be developed with radar signal processing results of evaluation software.

This is a release for which Matlab p-code and m-code are mixed. The signal processing core section, etc. are in p-code and the interface section, etc. are in m-code. Adding the system software code allows prototypes to be developed in a short time.

System configuration (example)

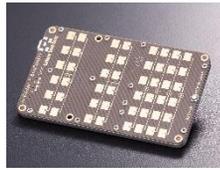
Open data platform for advanced analytics and machine learning



Sensor to Cloud



Multiple targets

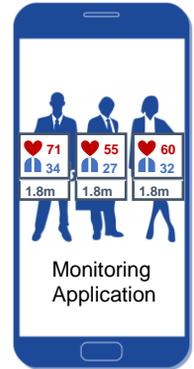


miRadar® 8 <<Card>>

USB



Radar and VSM algorithm

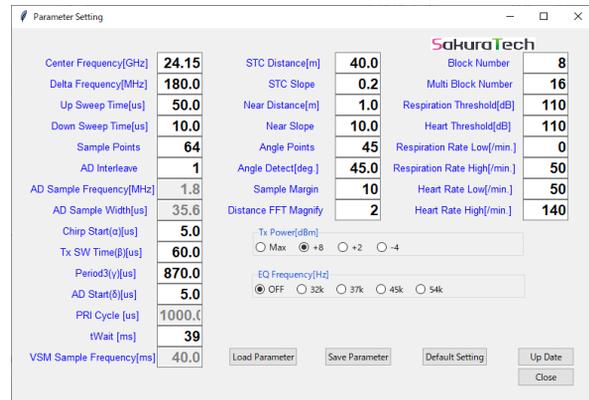
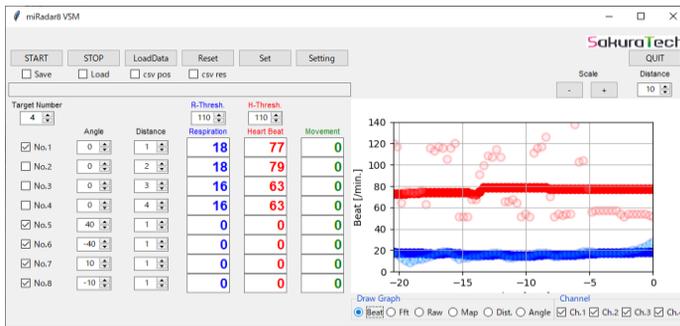


Monitoring Application

- USB data communication and USB Bus-Power
- Application software running on the PC

Software Development Kit for VSM Application (example)

- Python open source-code available for user development
- Instruction manual



Ordering Guide

Product Name	Product Number	Comments
miRadar®8 <Card>	B279-01	Card size, 24GHz FMCW MIMO Radar Platform
miRadar®8-EV2 <Card>	B279-01-EV2	Radar Evaluation hardware bundled B279-SW002
miRadar®8-VSM <Card>	B279-01-VSM	VSM Evaluation hardware bundled B279-SW007
Radar Evaluation software	B279-SW002	Radar Evaluation software
VSM Evaluation software	B279-SW007	VSM Evaluation software
VSM SDK (Matlab)	B279-SW009	SDK for VSM. Opened some source code for MATLAB / Windows
VSM SDK (Python)	B279-SW011	SDK for VSM. Python code for user development
Evaluation software (360°)	B279-SW004	360° , Evaluation software
C++ USB Interface SDK	B279-OP001-01	Windows
C++ USB Interface SDK	B279-OP001-02	Linux
Matlab SDK software	B279-SW005	360° , Development system software, multiple targets
Radar SDK software (Matlab)	B279-SW006	SDK for Radar application

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