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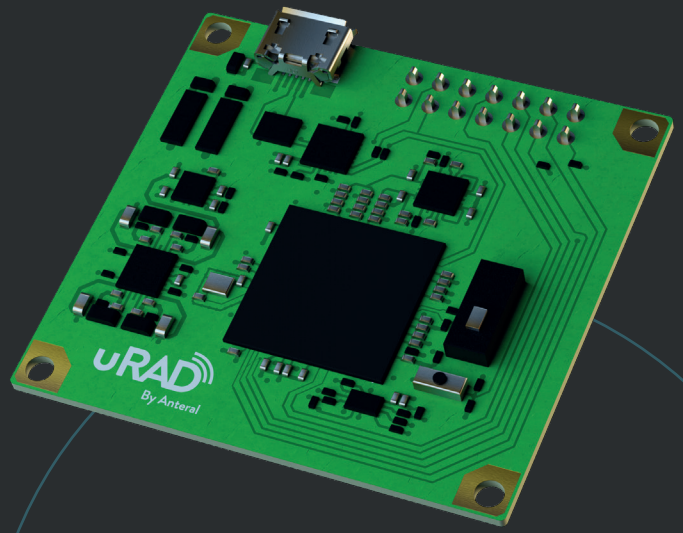

uRAD Automotive v2.0

77 GHz radar, velocity and 3D positioning

DESCRIPTION

uRAD Automotive v2.0 is a **millimeter wave radar sensor** which presents outstanding measurement capabilities in a very compact size. Based on the **AWR1843AOP chip of Texas Instruments**, uRAD detects range, velocity and angle of objects with unprecedented accuracy and robustness.

Working at the **76-81 GHz frequency band**, uRAD exhibits up to three times higher spatial and velocity resolution than others solutions in the market. Connect uRAD and discover the power of radar technology for automotive and smart cities applications!

APPLICATIONS

uRAD is conceived as an evaluation platform to develop new and innovative applications. Leverage the open and free software of Texas Instruments to develop your own projects. You will have access to many laboratories to test different applications from the beginning.

Thanks to uRAD, you will be able to develop and create **applications** as:

- POINTS CLOUD VISUALIZER
- OBSTACLE DETECTION
- AUTOMATED PARKING
- GESTURE RECOGNITION
- LEVEL SENSING
- SHORT AND MEDIUM RANGE RADAR
- ROBOTICS
- TRAFFIC MONITORING
- VITAL SIGNS

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OPERATING CONDITIONS

Parameter	Typical value	Notes
Supply voltage	4.5 - 5.5 V	By USB or 10-pin connector
Supply current	340 mA	Depend on the application
Operating temperature	-20 to +85 ºC	

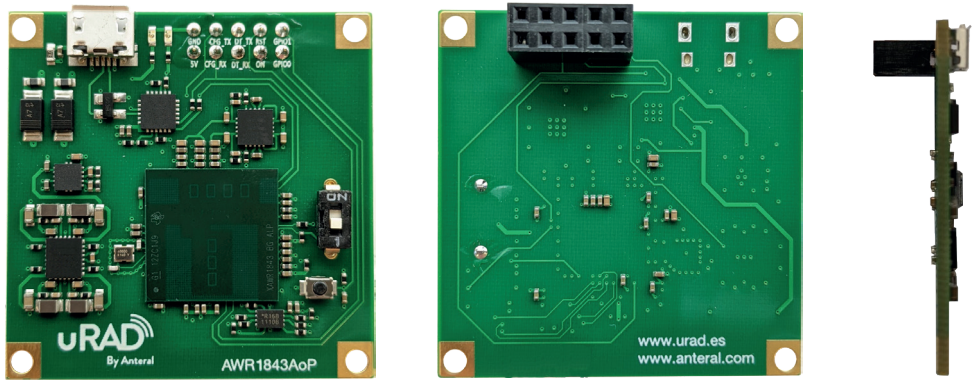
RF PARAMETERS

Parameter	Typical value	Notes
Frequency bandwidth	76 - 81 GHz	
Output power	16 dBm	EIRP (including antenna gain)
Number of transmitter antennas	3	Antenna on package
Number of receiver antennas	4	Antenna on package
Azimuthal field of view	160	deg
Elevation field of view	160	deg

DIMENSIONS

Parameter	Typical value
Dimensions	42 x 42 x 10 mm
Weight	5 gr

OUTLINE



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PERFORMANCE

Parameter	
Mode of operation	Frequency Modulated Continuous Wave
Output data	Distance, velocity, angle and SNR (signal to noise ratio)
Distance range Distance accuracy Distance resolution	70 m (car), 40m (people) ±1 mm 5 cm
Velocity range Velocity accuracy Velocity resolution	45 m/s ±0.15 m/s 0.06 m/s
Angle accuracy Azimuthal angle resolution Elevation angle resolution	1 deg 30 deg 38 deg

Distance and velocity range, accuracy and resolution values depend on the configuration parameters of the transmitted waveform.

Resolution indicates de minimum distance, velocity or angle that two targets with similar reflectivity must be separated to be discerned as a single target each one.

OTHER

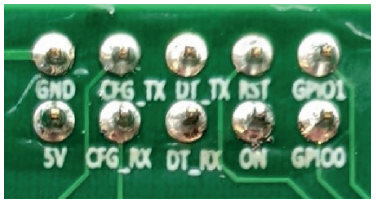
uRAD team, as experts in radar technology, also develops custom software and firmware to exploit the most out of capabilities of our radars.

Contact us at **contact@urad.es** if you want to know more about these additional services.

COMMUNICATION

The board has two different connections:

- Micro USB connector: power, upload firmware, send configuration, receive data.
- Female 10-Pin header connector: power, send configuration, receive data, reset, ON/OFF and GPIOs.



1: GND
2: 5V
3: UART TX config
4: UART RX config
5: UART TX data
6: UART RX data
7: Reset
8: ON/OFF
9: GPIO1
10: GPIO0

SOFTWARE AND FIRMWARE

uRAD core is the AWR1843AOP chip of Texas Instruments. Therefore, you have access to all software and documentation available about it:

- Flash any firmware, including the mmWave SDK by the USB connector.
- Or create your own firmware with Code Composer Studio and upload it.
- Test any already programmed application laboratory in your computer by the USB or 10-pin connector.
- Use (configure and get data) with the USB or 10-pin connector.

Moreover, with the purchase it is also included:

- Standard firmware for point cloud detection.
- Open libraries in Python for configuring and getting results.
- Examples of use.
- Support by our radar experts regarding any doubt you have about radar configuration.

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