

RD2426 User Manual



Revision Record

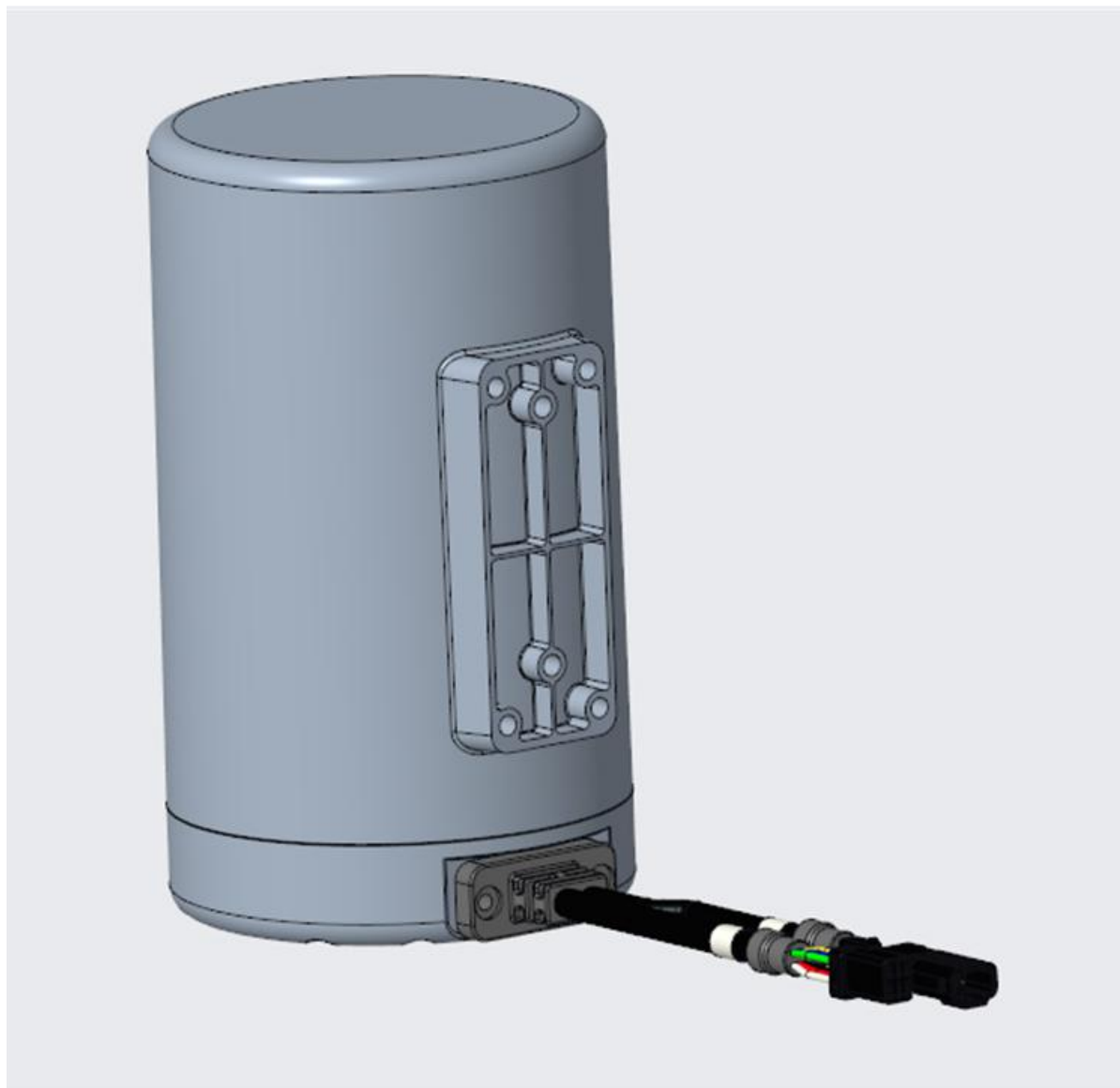
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1. PREVIEW



2. INTRODUCTION

RD2426 is a MIMO radar that can swing. It is used in the UAV platform to detect the distance, speed and azimuth of obstacles and output point cloud images. The UAV uses the radar point cloud data to build a real-time 3D map, perceive the objects in the front of the UAV and independent avoidance of obstacles.

3. SPECIFICATIONS

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
System Features					
Frequency		24.05	-	24.25	Ghz
Output Power (EIRP)		-	17	-	dBm
Radiation Power		-	50	-	mW
Modulation Mode		FMCW			
Swing Speed		-	3	-	Hz
Measure Features					
Range	@FOV: azimuth $\pm 40^\circ$, elevation $\pm 45^\circ$	1.5	-	25	m
Range Accuracy	point target		± 0.1		m
Speed	"-" means faraway from target , "+" means close to target	-13	-	13	m/s

Speed Accuracy	Point target		±0.1		m/s
Angle	Azimuth	-40	-	+40	°
	Elevation	-45	-	45	°
Angle Accuracy	point target		±1		°
Multiple Targets Resolution					
Range Resolution	point target, and 1.5~2 times of resolution can distinguish tow targets		0.3		m
Speed Resolution			0.8		m/s
Angle Resolution	Point target in FOV		9.5		°
Antenna Features					
TX Antenna		-	2	-	NA
RX Antenna		-	6	-	NA
TX Antenna Gain		-	-	17.4	dB
RX Antenna Gain		-	-	15	dB
TX Bean Width	Azimuth@3dB	-	10	-	°
	Elevation@3dB	-	45	-	°
RX Bean Width	Azimuth@3dB	-	10	-	°
	Elevation@3dB	-	72	-	°
TX Sidelobe Level		-	-	-19.6	dB
RX Sidelobe Level		-	-	-20	dB

Interface Features					
CAN Interface	CAN-FD speed	-	4	-	Mbps
UART Interface	Baudrate	-	115200	-	Baud/s
Structure Features					
Size	Long*width*high	94.4*88.9*138.5			mm
Height		-	174.3	-	g
Material	PBT+CF				

4. OPERATING CONDITIONS

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operation Voltage	DC	30	50	60	V
Power Consumption	@50V	-	6.5	-	W
Working Temperature		-20	+25	+70	°
Storage Temperature		-40	25	+105	°
Impact	500m/s ² @6 ms half-sine(10 x shock each in +/-X/Y/Z dir.)				
Vibration	20m/s ² peak at 10Hz/0.14m/s ² peak at 1000Hz				
level of protection	IP67				

5. EXTERNAL INTERFACE

WIRE GROUP	PIN	WIRE	PIN NAME	FUNTION
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	NUMBER	COLOR		
6 PINs Plug	1	Green	CAN_L	CAN Bus low level
	2	Blue	CAN_H	CAN Bus high level
	3	Yellow	SYNC	Data Synchronization
	4	White	NC	No define
	5	Red	BAT+	Positive Power Input
	6	Black	BAT-	Negative Power Input
4 PINs Plug	1	Green	UART_TX	UART TXD signal
	2	Blue	UART_RX	UART RXD signal
	3	Red	PWR	5V Power output
	4	Black	GND	5V Power Ground

6. LED INSTRUCTIONS

NAME	COLOR	FUNCTION	GRAPHIC
PWR	Green	Power supply indicating,always on	
RUN	Green	RF running,flash fast	
		Updating the firmware with UART,flash slowly	
		Updating the firmware with CAN,flash fast	
SYS	Green	System running well, flash in 1Hz	

		frequency	
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FCC Statement:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- - Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- - Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device meets all the other requirements specified in [Part15C, Section 15.249](#) of the FCC Rules.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance **20cm** between the radiator & your body.

This device is intended only for OEM integrators under the following conditions:

1) The antenna must be installed such that 20 cm is maintained between the antenna and users,

and

2) The transmitter module may not be co-located with any other transmitter or antenna.

The OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for reevaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) or being used in a portable condition will need a separate reassessment through a class II permissive change application or new certification.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that **20 cm** may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: “**Contains FCC ID: 2A46G-RD2426**”. The grantee's FCC ID can be used only when all FCC compliance requirements are met.

The end product shall bear the following 15.19 statement: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

OEM/Host manufacturer responsibilities

Must use the device only in host devices that meet the FCC/ISED RF exposure category of mobile, which means the device is installed and used at distances of at least 20cm from persons.

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment.

Additional text needed for the host product manufacturer to provide to end users in their end-product manuals. If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).