# SEB1&DR2C COFDM Two-way FDD Transceiver Module

-- COFDM two-way FDD(Frequency Division Duplexing) wireless Transceiver

-- Transmitting frequency band: 70MHz~4GHz, receiving frequency band: 160MHz~860MHz

-- 1 Ethernet port and 1 data uart port

-- Support bidirectional transparent data transmission via Ethernet/uart ports

-- AES256 encryption / decryption

-- Control uart for management

-- Wireless transmission delay less than 30ms
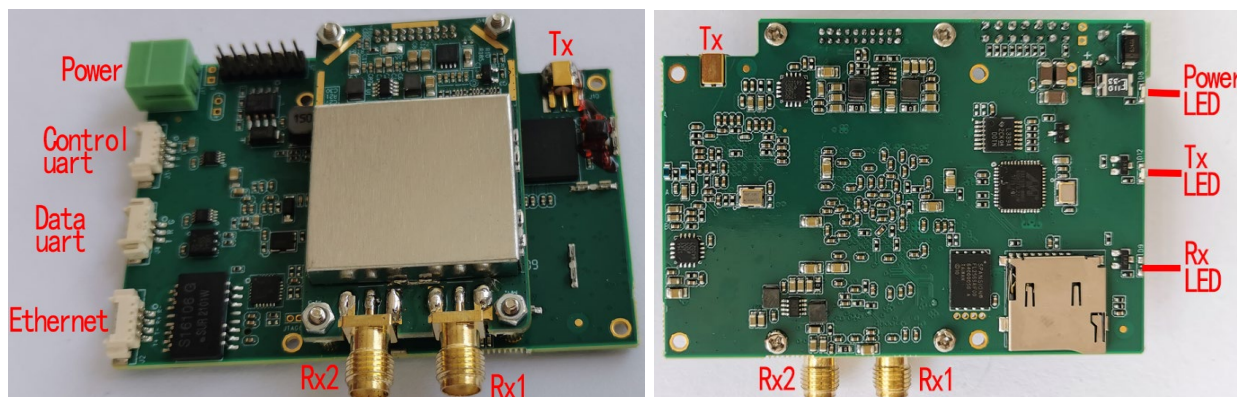
SEB1&DR2C module is a bidirectional transmission wireless link, it is composed of two independent unidirectional wireless channels, and the wireless links in both directions operate in different frequency bands. The wireless link itself does not have a handshake protocol, so when one direction of the wireless link is interrupted by interference, it does not affect the data transmission of the other direction of the wireless link. The Ethernet port supports TCP/UDP/IP protocols.

- COFDM modulation and demodulation
- Stable signal transfer in NLOS and high speedmoving;
- Adjustable working frequency, band width, transmission power, etc;
- Ethernet/uart connection for IP data/uart data broadcast transmission;
- Each direction maximum 31.67Mbps wireless transmitting bitrates;
- Wireless transmission delay less than 30ms;
- Great security by AES256 encryption.

Working diagram
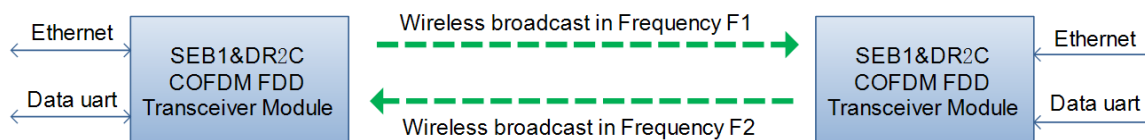
Specification:

IO

RF output	MMCX female
RF input	Two SMA female 50Ω, supporting diversity reception
TTL 3.3V control uart	4PIN PH1.25mm Connector
TTL 3.3V data uart	3PIN PH1.25mm Connector
Power in	2PIN PH2.54mm phenix Connector
Ethernet port	4PIN PH1.25mm Connector

TF-card	For firmware update
Power led	Red constant light when device is normal powered
Tx led	Green blinks on transmitting
Rx led	Green blinks on receiving

Modulation / Demodulation

Modulation Formats	COFDM
Carriers	2K
Bandwidth	Configurable from 1MHz to 8MHz, step by 1KHz
FEC	1/2, 2/3, 3/4, 5/6, 7/8
Guard interval	1/32, 1/16, 1/8, ¼
Constellation	QPSK, 16QAM, 64QAM

RF Transmitted

Frequency Bands	70MHz~4GHz
Tuning Step size	1KHz
Transmission power	Configurable, maximum -5dBm(subject to frequency)

RF Received

Frequency Bands	160MHz~860MHz
Tuning Step size	1KHz
Sensitivity	-97±1dBm(BW=8MHz, QPSK, CR=2/3, GI=1/16) for one channel and add 3dBm for two channel

Monitoring and control
Comprehensive setup with Sihid Config Panel or other device via control uart (AT command).

Temperature range
Full specification: -40° to +70°C Ambient
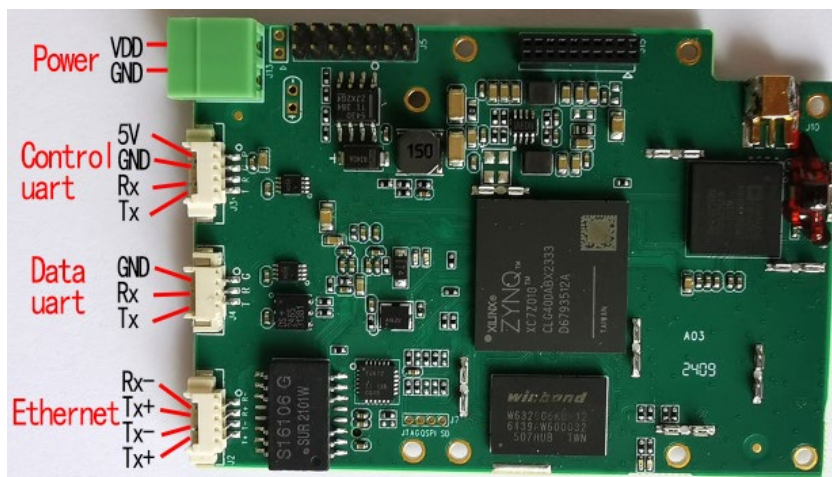Storage: –40° to +85°C

Dimensions
73x51x11mm (not including connectors out of the board)
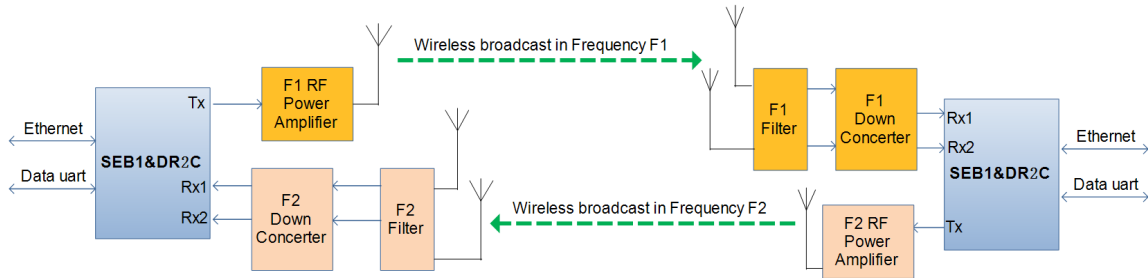
Power requirements
Input range: 7~24VDC
Power consumption: <250mA@12V

I/O Signal

Application

When customer use SEB1&DR2C module to design wireless link devices, corresponding RF amplifiers need to add to the transmission port based on application scenarios, operating frequency bands, and transmission distance requirements. The receiving port can use only one antenna for reception, or it can use two antennas for diversity reception (the sensitivity of diversity reception will be increased by about 3dB). If the operating frequency band is above 860MHz, a down converter needs to be added to the receiving port. The working frequency range between 160-860MHz does not need down converter. It is recommended that the operating frequency bands in both directions be separated by at least 100MHz, and a filter should be installed at the receiving port.

Dimension (mm)