

5.4. External Antennas

1. Omni-directional Antenna to Omni-directional Antenna

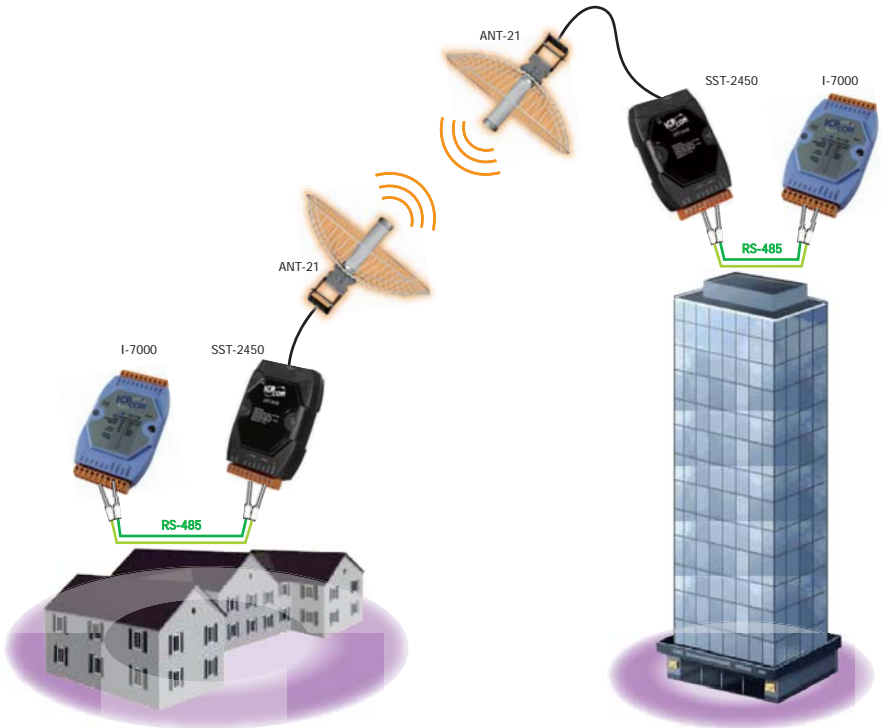
Note: As the antennas rely on line-of-sight for connection, they should be placed at the same height.



2. Omni-directional Antenna to Directional Antenna



3. Directional Antenna to Directional Antenna



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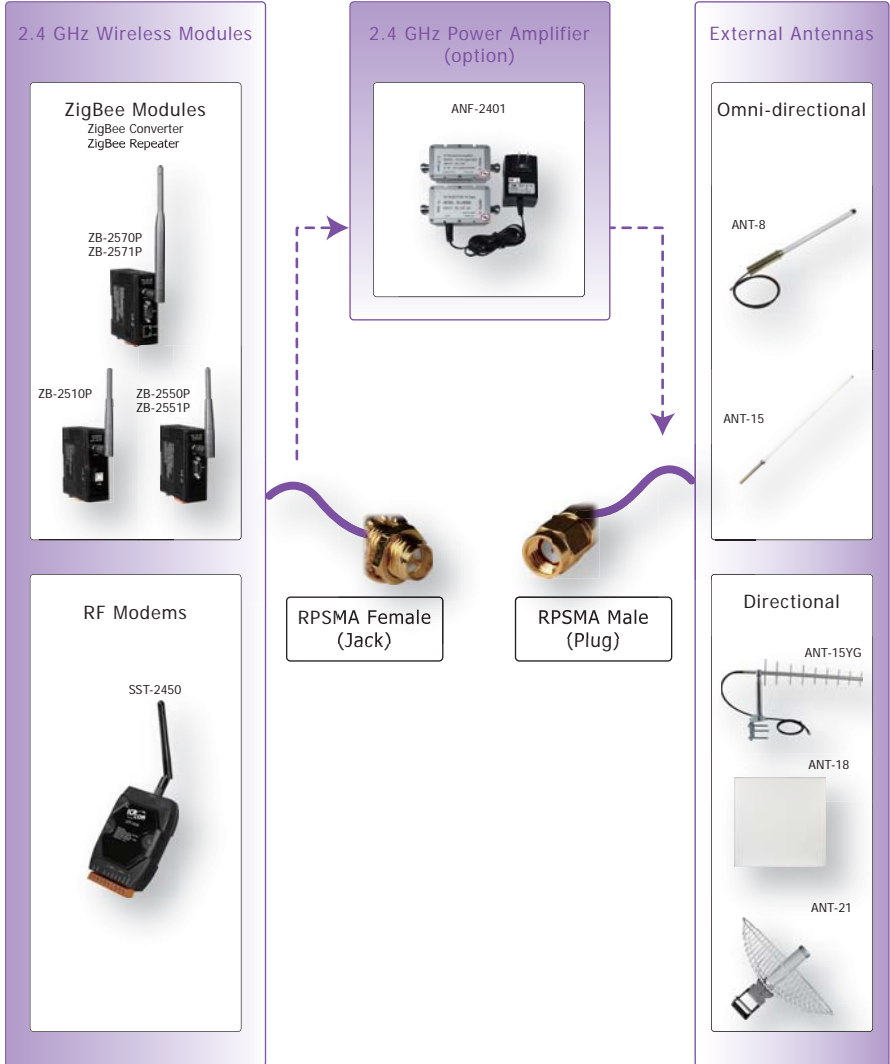
Wireless Solutions

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External Antennas

Applications

4. Connector Type for 2.4 GHz Antenna



2.4 GHz Omni-directional Antennas

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note	Page
ANT-8	1 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	8	Dipole	5-4-4
ANT-15	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	15	Dipole	5-4-4



ANT-8



Specifications

Antenna Type	
Operating Environment	Indoor or Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	9 dBi
VSWR	1.3:1 (max.)
Polarization	Linear
HPBW/Horizontal	360°
HPBW/Vertical	10°
Power Handling	15 W (max.)
Impedance	50 Ω +/-5 Ω
Cable	-
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-20 °C ~ +60 °C
Radome Material	Glass fiber
Weight	430 g
Dimensions (L x W)	420 mm x φ35 mm

Ordering Information

ANT-8	1 km, 2.4 GHz External Antenna (Omnidirectional) Gain: 8 dBi
Includes	3S004 x 1 HDF 200 Cable, 1 m N Type Male to SMA Male

Important Note: Distance data is for reference only. Actual results may be different depending on the environment.



ANT-15



Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	15 dBi
VSWR	1.3:1 (max.)
Polarization	Linear
HPBW/Horizontal	360°
HPBW/Vertical	10°
Power Handling	20 W (max.)
Impedance	50 Ω +/-5 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-20 °C ~ +60 °C
Radome Material	Glass fiber
Weight	1050 g
Dimensions (L x W)	1600 mm x 35 mm

Ordering Information

ANT-15	5 km, 2.4 GHz External Antenna (Omnidirectional) Gain: 15 dBi
Includes	3S004 x 1 HDF 200 Cable, 1 m N Type Male to SMA Male

Important Note: Distance data is for reference only. Actual results may be different depending on the environment.

2.4 GHz Directional Antennas

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note	Page
ANT-15YG	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	15	Yagi	5-4-5
ANT-18	9 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	18	Panel	5-4-6
ANT-21	15 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	21	Grid	5-4-6



Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	15 dBi
VSWR	2:1 (max.)
Polarization	Linear
HPBW/Horizontal	25°
HPBW/Vertical	18°
Power Handling	10 W (max.)
Impedance	50 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-40 °C ~ +85 °C
Radome Material	Aluminum
Weight	425 g
Dimensions (L x W x H)	325 mm x 70 mm x 15 mm

Ordering Information

ANT-15YG	5 km, 2.4 GHz External Antenna (Directional) Gain: 15 dBi
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Important Note: Distance data is for reference only. Actual results may be different depending on the environment.



ANT-18



Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Patch
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	18 dBi
VSWR	1.5:1 (max.)
Polarization	Vertical, vertical
HPBW/Horizontal	15°
HPBW/Vertical	15°
Power Handling	50 W (cw)
Impedance	50 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-40 °C ~ +80 °C
Radome Material	ABS
Weight	1600 g
Dimensions (L x W x H)	360 mm x 360 mm x 16 mm

Ordering Information

ANT-18	9 km, 2.4 GHz External Antenna (Directional) Gain: 18 dBi
Includes	3S004 x 1 HDF 200 Cable, 1 m N Type Male to SMA Male

Important Note: Distance data is for reference only. Actual results may be different depending on the environment.



ANT-21



Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	21 dBi
VSWR	1.5:1 (max.)
Polarization	Linear
HPBW/Horizontal	8°
HPBW/Vertical	5°
Power Handling	20 W (max.)
Impedance	50 Ω +/- 5 Ω
Cable	RG-58, 100 cm
Connector	N Type Female (Jack)
Environmental and Mechanical Characteristics	
Operating Temperature	-20 °C ~ +60 °C
Radome Material	ABS
Weight	2770 g
Dimensions (L x W)	610 mm x 248 mm

Ordering Information

ANT-21	15 km, 2.4 GHz External Antenna (Directional) Gain: 21 dBi
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Important Note: Distance data is for reference only. Actual results may be different depending on the environment.

Power Amplifiers

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note	Page
ANF-2401	1 W, 2.4 GHz Power Amplifier	N Type Male (Plug)	-	2.4 ~ 2.5 GHz	up to 10 dBm	-	5-4-7
ANF-2402	600 mW, 2.4 GHz Power Amplifier	RP SMA Male (Plug)	-	2.4 ~ 2.5 GHz	up to 18 dBm	-	5-4-7



Specifications

Electrical Specifications		
Frequency Range	2400 ~ 2500 MHz	
Power Consumption	1.2 A @ 12 V _{DC}	
Transmitter Amplifier		
Transmit Gain	up to 12 dBm	
Transmit Input Power	200 mW (max.)	
Receiver Amplifier		
Receive Gain	up to 10 dBm	
Environmental and Mechanical Characteristics		
Operating Temperature	-20 °C ~ +70 °C	
Weight	Amplifier	410 g
	DC Injector	185 g
Dimensions (L x W x H)	Amplifier	110 mm x 60 mm x 29 mm
	DC Injector	90 mm x 78 mm x 30 mm



Ordering Information

ANF-2401	1 W Amplifier
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Specifications

Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Lightning Protection	Direct DC ground at antenna
Power Input	+10 V _{DC} ~ +30 V _{DC}
Power Consumption	0.6 W
Transmitter Amplifier	
Transmit Gain	up to 18 dBm
Transmit Current Consumption	300 mA (max.)
Receiver Amplifier	
Receive Gain	-15 dBm typical
Receive Current Consumption	15 mA (max.)
Environmental and Mechanical Characteristics	
Operating Temperature	-40 °C ~ +70 °C
Weight	200 g
Dimensions (L x H x D)	92 mm x 76 mm x 30 mm

Ordering Information

ANF-2402	600 mW, 2.4 GHz Power Amplifier
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