Huawei

WLAN Outdoor APs

Antenna

Datasheet

Contents

1 Antenna Description

WLAN antennas are described as follows:

- Radio frequency band

WLAN works on ISM bands: 2.4 GHz and 5 GHz. Antennas can be classified into 2.4 GHz, 5 GHz, and 2.4 GHz & 5 GHz antennas by frequency band support.

- Polarization

WLAN antennas are classified into single-polarized and dual-polarized antennas by polarization. A single-polarized antenna provides one radio port, and a dual-polarized antenna provides two.

- Antenna gain

Antenna gain is a key parameter for measuring the coverage capability of an antenna. For the same type of antennas, a higher-gain antenna supports a higher coverage distance and better effect.

- Radiation

WLAN antennas support omnidirectional and directional radiation patterns. Omnidirectional antennas are applicable to indoor coverage scenarios, and directional antennas to outdoor coverage scenarios. Directional antennas can also be deployed indoors, such as large convention centers, conference centers, airports, and stations.

- Beamwidth

An antenna has horizontal beamwidth and vertical beamwidth, forming a horizontal lobe angle and a vertical lobe angle, respectively. In most cases, the beamwidth is the angular separation between the points in the main lobe where the radiated power has fallen by 3 dB (half-power) below that on the center line of the lobe. The beamwidth is also called the half-power beamwidth.

- Coverage distance

The coverage distance of an antenna is the valid coverage distance of wireless services. An omnidirectional antenna supports a coverage distance of 100–200 m, and a directional antenna supports over 200 m.

- Installation mode

Antennas can be directly connected to APs or mounted on a wall, ceiling, or pole. The pole mounting mode is the mainstream mode.

2 Selection Policy

Before determining an AP model and antenna, consider the basic principles and port types of APs and antennas.

Table 2-1 Basic principles

No.	Factors of Consideration	Description
1	Usage scenario and purpose	• Indoor scenarios: Use indoor APs and antennas to provide signal coverage. • Outdoor scenarios: Use outdoor APs and antennas with a high Ingress Protection (IP) grade and certain surge protection capability to provide signal coverage and bridge backhaul. • Rail transportation scenarios: – Train-ground communications: Use outdoor APs and antennas with a high IP grade and certain anti-vibration capability. – Compartment coverage: Use indoor APs and antennas with certain anti-vibration capability to provide signal coverage. – Station platform coverage: Use the same APs as the common outdoor and indoor scenarios.
2	Local standards and regulations	The transmit power and maximum gain of antennas must strictly comply with local standards and regulations. For the rail transportation scenarios, the performance, environment adaptability, and anti-vibration capability of the antennas must also confirm to requirements of the related railway authorities.
3	Coverage/Backhaul area and distance	• Coverage: Directional antennas are recommended for long and narrow areas while omnidirectional antennas are recommended for round and square areas. • Backhaul: Directional antennas are usually used. If the backhaul distance is long, high-gain antennas should be used; if the backhaul target is concentrated, small-angle antennas should be used.
4	Transmission frequency for radio signals	• Coverage: To implement 2.4 and 5G signal coverage, use 2.4G and 5G antennas separately in the same area or use dual-band antennas. • Backhaul: The 2.4G antennas are not used for backhaul.
5	Construction cost and simplicity	An external directional antenna usually has a large size and needs to be connected to the AP's radio interface through a feeder cable. Compared to a built-in antenna and whip antenna directly installed on an AP, installing an external directional antenna requires higher construction cost and may affect indoor simplicity. To further simplify cable layout (especially in coverage scenarios) without compromising signal quality, you are advised to use built-in or whip antennas directly installed on APs.

Table 2-2 Port types of APs and antennas

No.	Product Type	Product Model	Port Type	Remarks
1	802.11n outdoor AP	AP6510DN	4 x Type-N Female	Dual bands, two spatial streams
2		AP6610DN	4 x Type-N Female	Dual bands, two spatial streams

No.	Product Type	Product Model	Port Type	Remarks
3	802.11ac outdoor AP	AP8130DN	6 x Type-N Female	Dual bands, three spatial streams
4		AP8150DN	4 x Type-N Female	Dual bands, two spatial streams
5	Outdoor omnidirectional antenna	27010215	1 x Type-N Female	2.4 GHz single-polarized antenna
6		27010913	1 x Type-N Female	2.4 GHz single-polarized antenna
7		27011332	1 x Type-N Female	2.4 GHz single-polarized antenna
8		27011333	1 x Type-N Female	5 GHz single-polarized antenna
9		27011668	1 x Type-N Female	2.4 GHz & 5 GHz single-polarized antenna
10	Outdoor 2.4 GHz directional antenna	27010219	1 x Type-N Female	2.4 GHz single-polarized antenna
11		27010902	1 x Type-N Female	2.4 GHz single-polarized antenna
12		27010223	1 x Type-N Female	2.4 GHz single-polarized antenna
13		27010898	2 x Type-N Female	2.4 GHz dual-polarized antenna
14		27010812	2 x Type-N Female	2.4 GHz dual-polarized antenna
15		27010904	2 x Type-N Female	2.4 GHz dual-polarized antenna
16		27012544	2 x Type-N Female	2.4 GHz dual-polarized antenna
17	Outdoor 5 GHz directional antenna	27010912	1 x Type-N Female	5 GHz single-polarized antenna
18		27010889	2 x Type-N Female	5 GHz dual-polarized antenna
19		27010906	2 x Type-N Female	5 GHz dual-polarized antenna
20		27010890	2 x Type-N Female	5 GHz dual-polarized antenna
21		27011145	3 x Type-N Female	5 GHz dual-polarized antenna
22		27011016	2 x Type-N Female	5 GHz dual-polarized antenna
23	Outdoor/Indoor 2.4 GHz & 5 GHz directional antenna	27012134	6 x Type-N Female	Dual-band dual-polarized antenna

NOTE：Radio ports on outdoor APs are all Type-N Female ports. The AP6510DN/AP6610DN provides four ports: two 2.4 GHz ports and two 5 GHz ports. Each port supports two spatial streams. Select omnidirectional or directional antennas based on the target coverage area. Currently, mainly dual-polarized antennas are delivered.

3 Omnidirectional Antennas

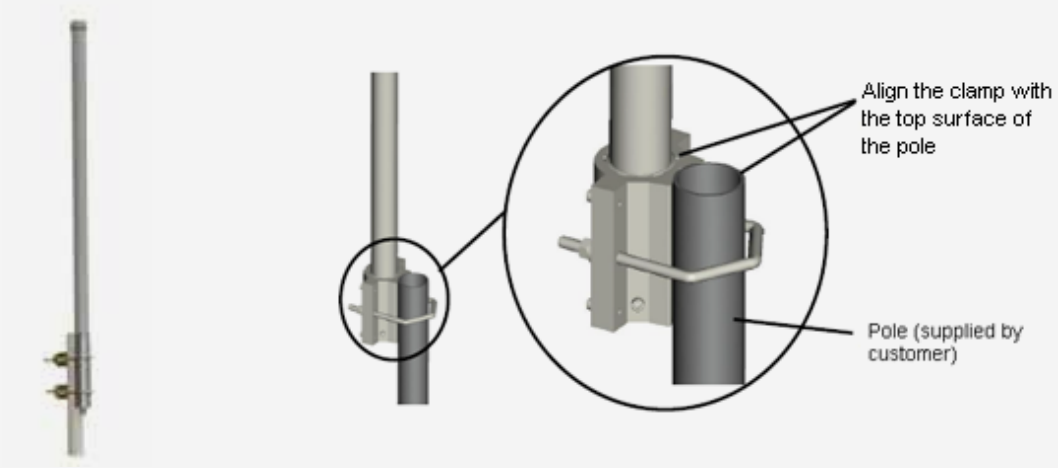
Outdoor omnidirectional antennas on sales include 2.4 GHz single-polarized omnidirectional antenna (11 dBi), 2.4 GHz single-polarized omnidirectional antenna (8 dBi), 2.4 GHz single-polarized omnidirectional antenna (3 dBi), 5 GHz single-polarized omnidirectional antenna (5 dBi), and 2.4 GHz & 5 GHz single-polarized omnidirectional antenna.

3.1 2.4 GHz Single-Polarized Omnidirectional Antenna (11 dBi)

The 27010215 antenna is an outdoor omnidirectional antenna. It is connected to an AP using a power cable and mounted on a pole. The antenna is best applied to outdoor omnidirectional coverage scenarios, such as squares and parks.

- 3.1.1 Antenna Appearance

Figure 3-1 Appearance of the 27010215 omnidirectional antenna



- 3.1.2 Technical Specifications

Table 3-1 Technical specifications of the 27010215 omnidirectional antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	11
Coverage radius (m)	230
Horizontal lobe width (degrees)	360

Item	Value
Vertical lobe width (degrees)	9
Standing wave ratio (SWR)	≤ 1.4
Polarization	Vertical polarization
Connector	N-female
Dimensions (mm)	Length < 1100
Weight (kg)	0.976
Support pole diameter (mm)	ϕ 35- ϕ 50
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

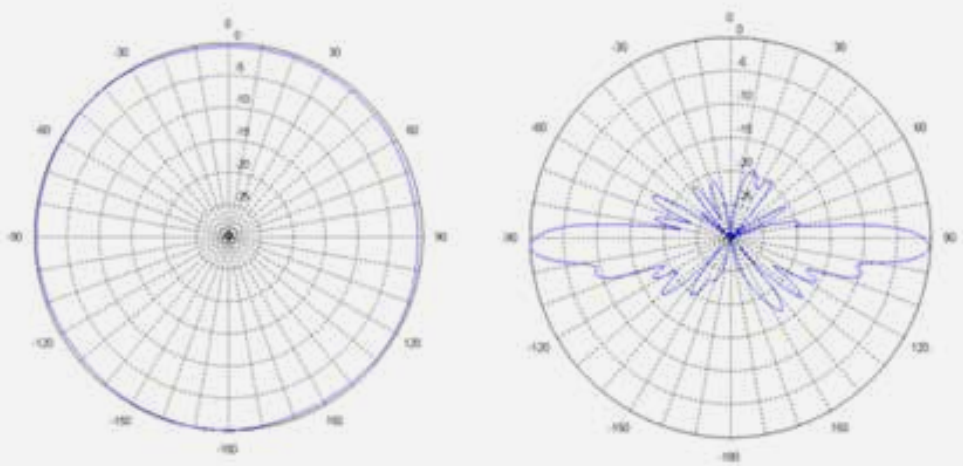
NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 3.1.3 Antenna Pattern

Figure 3-2 shows radiation patterns of the 27010215 directional antenna in the horizontal and vertical directions.

Figure 3-2 Radiation pattern of the 27010215 directional antenna



3.2 2.4 GHz Single-Polarized Omnidirectional Antenna (8 dBi)

The 27010913 antenna is an outdoor 2.4 GHz directional antenna that provides high gains. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

- 3.2.1 Antenna Appearance

Figure 3-3 Appearance of the 27010913 omnidirectional antenna

- 3.2.2 Technical Specifications

Table 3-2 lists technical specifications of the 27010913 omnidirectional antenna.

Table 3-2 Technical specifications of the 27010913 omnidirectional antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	8
Coverage radius (m)	170
Horizontal lobe width (degrees)	360
Vertical lobe width (degrees)	11.5
Standing wave ratio (SWR)	≤ 1.5
Polarization	Cross polarization
Connector	N-female
Dimensions (mm)	Diameter x Length: Φ29 x 720

Item	Value
Weight (kg)	0.5
Support pole diameter (mm)	ϕ 48– ϕ 135
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

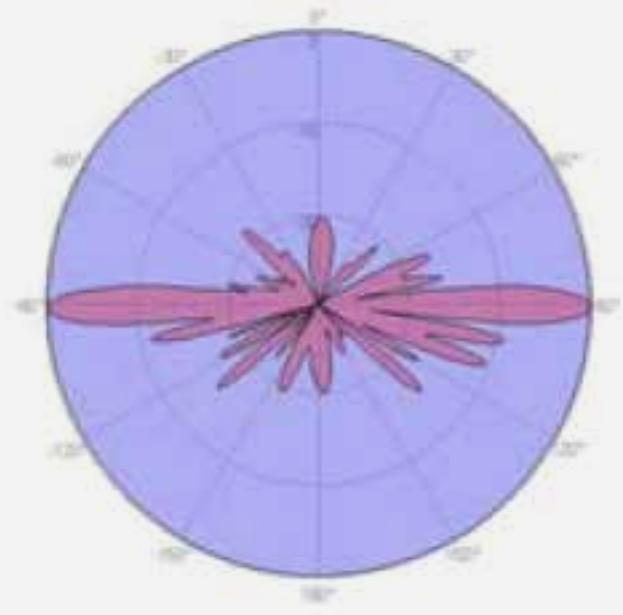
NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 3.2.3 Antenna Pattern

Figure 3-4 shows radiation patterns of the 27010913 directional antenna in the horizontal (in blue) and vertical directions (in red).

Figure 3-4 Radiation pattern of the 27010913 directional antenna



3.3 2.4 GHz Single-Polarized Omnidirectional Antenna (3 dBi)

27011332 antennas are directly installed on APs.

- 3.3.1 Antenna Appearance

Figure 3-5 Appearance of the 27011332 antenna

- 3.3.2 Technical Specifications

Table 3-3 lists technical specifications of the 27011332 antenna.

Table 3-3 Technical specifications of the 27011332 antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	3
Coverage radius (m)	110
Horizontal lobe width (degrees)	360
Vertical lobe width (degrees)	32
Standing wave ratio (SWR)	≤ 2
Polarization	Vertical polarization
Connector	N-male
Dimensions (mm)	Length: 280 ± 3

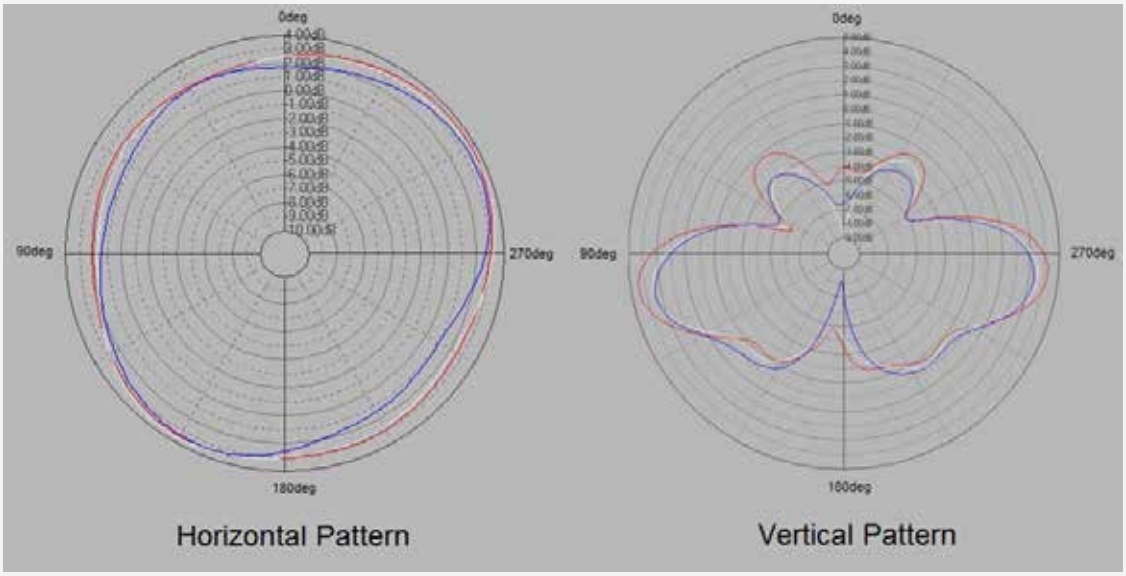
Item	Value
Weight (g)	218 ± 10
Mounting mode	Connected to APs
Applicable AP	AP6510DN and AP6610DN

NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 3.3.3 Antenna Pattern

Figure 3-6 Radiation pattern of the 27011332 antenna



3.4 5 GHz Single-Polarized Omnidirectional Antenna

27011333 antennas are directly installed on APs.

- 3.4.1 Antenna Appearance

Figure 3-7 shows the appearance of the 27011333 antenna.

Figure 3-7 Appearance of the 27011333 antenna

- 3.4.2 Technical Specifications

Table 3-4 lists technical specifications of the 27011333 antenna.

Table 3-4 Technical specifications of the 27011333 antenna

Item	Value
Frequency (MHz)	5150–5850
Gain (dBi)	5
Coverage radius (m)	120
Backhaul distance (m)	650
Horizontal lobe width (degrees)	360
Vertical lobe width (degrees)	20
Standing wave ratio (SWR)	≤ 2
Polarization	Vertical polarization
Connector	N-male

Item	Value
Dimensions (mm)	Length: 280 ± 3
Weight (g)	218 ± 10
Mounting mode	Connected to APs
Applicable AP	AP6510DN/AP6610DN

NOTE:

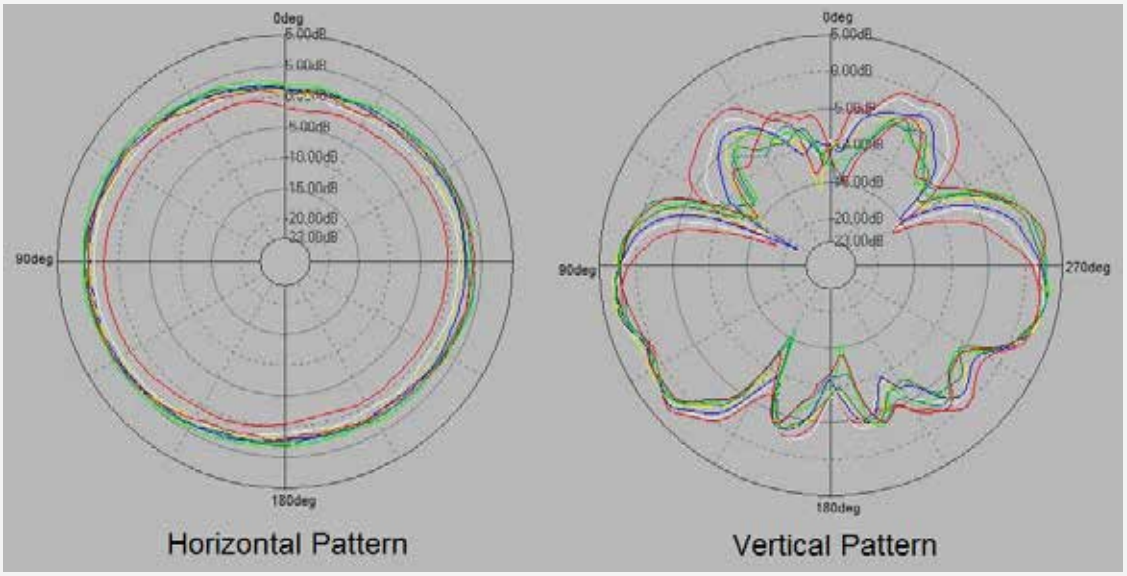
The coverage distance and backhaul distance are reference values in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 3.4.3 Antenna Pattern

Figure 3-8 shows radiation patterns of the 27011333 antenna in the horizontal and vertical directions.

Figure 3-8 Radiation pattern of the 27011333 antenna



3.5 2.4 Hz & 5 GHz Single-Polarized Omnidirectional Antenna

27011668 antennas are directly installed on APs.

- 3.5.1 Antenna Appearance

Figure 3-9 shows the appearance of the 27011668 antenna.

Figure 3-9 Appearance of the 27011668 antenna

- 3.5.2 Technical Specifications

Table 3-5 Technical specifications of the 27011668 antenna

Item	Value	
	2.4G	5G
Frequency (MHz)	2400–2500	5150–5850
Gain (dBi)	4	7
Coverage radius (m)	120	150
Backhaul distance (m)	–	900
Horizontal lobe width (degrees)	360	360
Vertical lobe width (degrees)	33	22
Standing wave ratio (SWR)	≤ 2	≤ 2
Polarization	Single polarization	

Item	Value	
	2.4G	5G
Connector	N-male	
Dimensions (mm)	Diameter x Length: ϕ 23.8 x 275	
Weight (g)	106	
Mounting mode	Connected to APs	
Applicable AP	AP8130DN/AP8150DN	

NOTE:

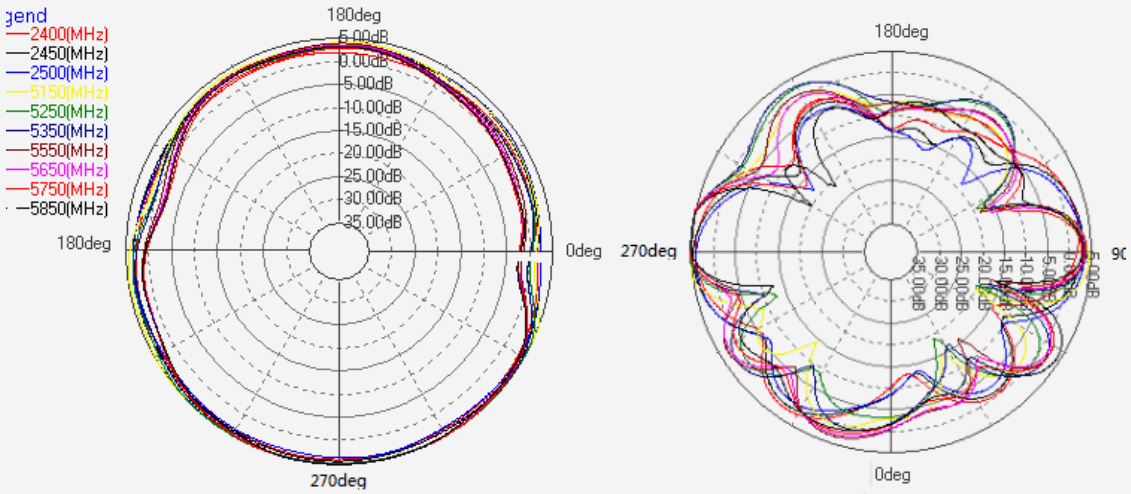
The coverage distance and backhaul distance are reference values in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 3.5.3 Antenna Pattern

Figure 3-10 shows radiation patterns of the 27011668 antenna in the horizontal and vertical directions.

Figure 3-10 Radiation pattern of the 27011668 antenna



Horizontal Pattern Vertical Pattern

4 Directional Antennas-2.4 GHz

Outdoor 2.4 GHz directional antennas on sales include single-polarized directional antennas (three models) and two types of dual-polarized directional antennas (four models).

4.1 Single-Polarized Directional Antenna (120°)

The 27010219 antenna is an outdoor 2.4 GHz directional antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

- 4.1.1 Antenna Appearance

Figure 4-1 shows the appearance of the 27010219 directional antenna.

Figure 4-1 Appearance of the 27010219 directional antenna

- 4.1.2 Technical Specifications

Table 4-1 lists technical specifications of the 27010219 directional antenna.

Table 4-1 Technical specifications of the 27010219 directional antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	15.5
Coverage distance (m)	340
Horizontal lobe width (degrees)	120

Item	Value
Vertical lobe width (degrees)	7
Standing wave ratio (SWR)	≤ 1.5
Polarization	Vertical polarization
Connector	N-female
Dimensions (mm)	H x W x D: 970 x 140 x 58
Weight (kg)	4.5
Support pole diameter (mm)	ϕ 45.5– ϕ 75
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

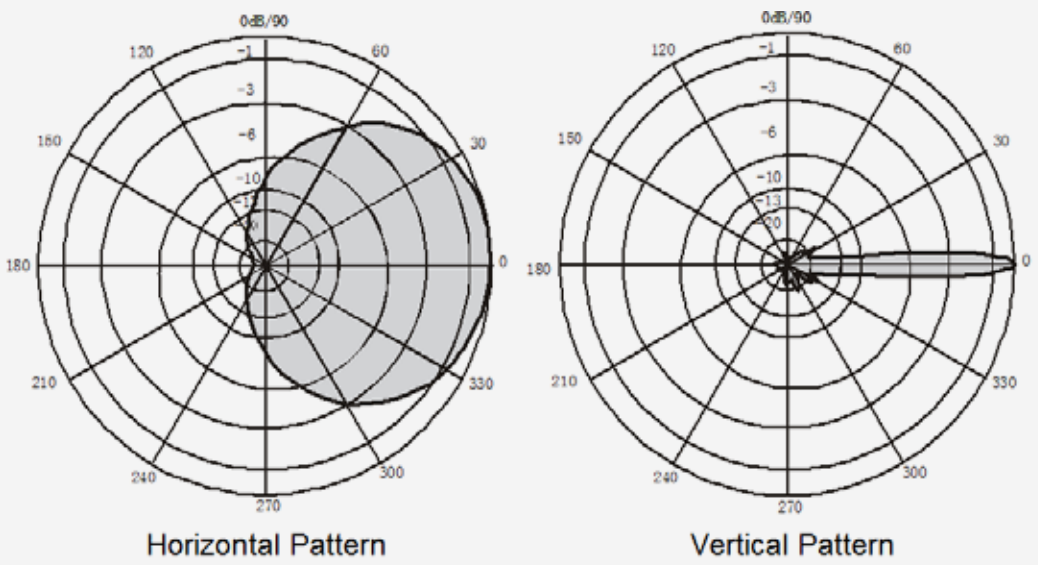
NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 4.1.3 Antenna Pattern

Figure 4-2 shows radiation patterns of the 27010215 directional antenna in the horizontal and vertical directions.

Figure 4-2 Radiation pattern of the 27010215 directional antenna



4.2 Single-Polarized Directional Antenna (110°)

The 27010902 antenna is an outdoor antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

- 4.2.1 Antenna Appearance

Figure 4-3 shows the appearance of the 27010902 directional antenna.

Figure 4-3 Appearance of the 27010902 directional antenna

- 4.2.2 Technical Specifications

Table 4-2 lists technical specifications of the 27010219 directional antenna.

Table 4-2 Technical specifications of the 27010902 directional antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	14.5
Coverage distance (m)	310
Horizontal lobe width (degrees)	110
Vertical lobe width (degrees)	6
Standing wave ratio (SWR)	≤ 1.5
Polarization	Vertical polarization
Connector	N-female
Dimensions (mm)	H x W x D: 1140 x 114 x 54

Item	Value
Weight (kg)	3.4
Support pole diameter (mm)	ϕ 48– ϕ 135
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

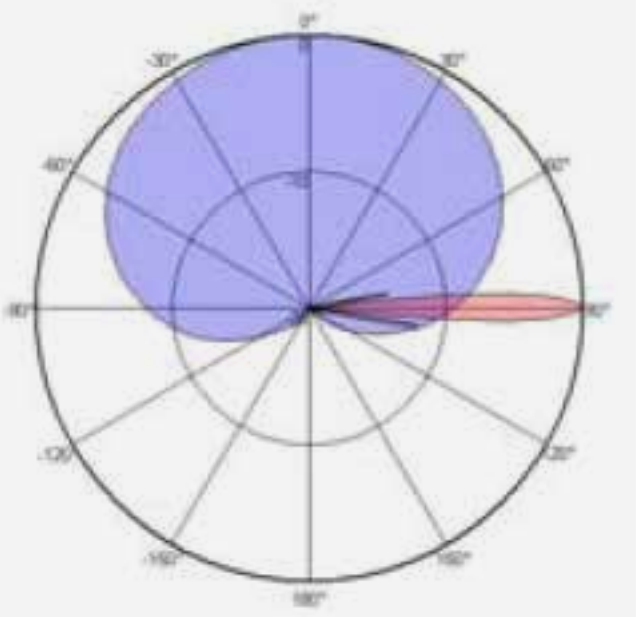
NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 4.2.3 Antenna Pattern

Figure 4-4 shows radiation patterns of the 27010898 directional antenna in the horizontal and vertical directions.

Figure 4-4 Radiation pattern of the 27010902 directional antenna



4.3 Single-Polarized Directional Antenna (90°)

27010223 directional antennas are applicable in outdoor scenarios.

The 27010223 antenna is an outdoor 2.4 GHz directional antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

- 4.3.1 Antenna Appearance

Figure 4-5 shows the appearance of the 27010223 directional antenna.

Figure 4-5 Appearance of the 27010223 directional antenna

- 4.3.2 Technical Specifications

Table 4-3 lists technical specifications of the 27010223 directional antenna.

Table 4-3 Technical specifications of the 27010223 directional antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	17
Coverage distance (m)	390
Horizontal lobe width (degrees)	90
Vertical lobe width (degrees)	7
Standing wave ratio (SWR)	≤ 1.5
Polarization	Vertical polarization
Connector	N-female

Item	Value
Dimensions (mm)	H x W x D: 970 × 140 × 58
Weight (kg)	5
Support pole diameter (mm)	ϕ 50– ϕ 115
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN//AP8150DN

NOTE:

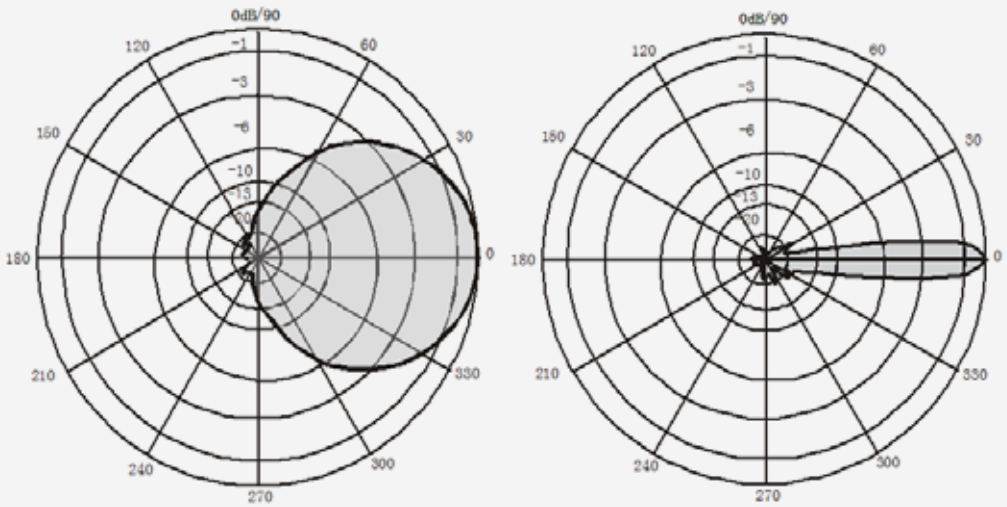
The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 4.3.3 Antenna Pattern

Figure 4-6 shows radiation patterns of the 27010223 directional antenna in the horizontal and vertical directions.

Figure 4-6 Radiation pattern of the 270102235 directional antenna



4.4 Dual-Polarized Directional Antenna (65°)

27010898 directional antennas are applicable in outdoor scenarios.

The 27010898 antenna is an outdoor 2.4 GHz directional antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

- 4.4.1 Antenna Appearance

Figure 4-7 shows the appearance of the 27010898 directional antenna.

Figure 4-7 Appearance of the 27010898 directional antenna

- 4.4.2 Technical Specifications

Table 4-4 lists technical specifications of the 27010219 directional antenna.

Table 4-4 Technical specifications of the 27010898 directional antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	16.5
Coverage distance (m)	370
Horizontal lobe width (degrees)	65
Vertical lobe width (degrees)	7.5
Standing wave ratio (SWR)	≤ 1.5
Polarization	Cross polarization
Connector	2 x N-female

Item	Value
Dimensions (mm)	H x W x D: 875 x 176 x 63
Weight (kg)	4.5
Support pole diameter (mm)	ϕ 48– ϕ 135
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

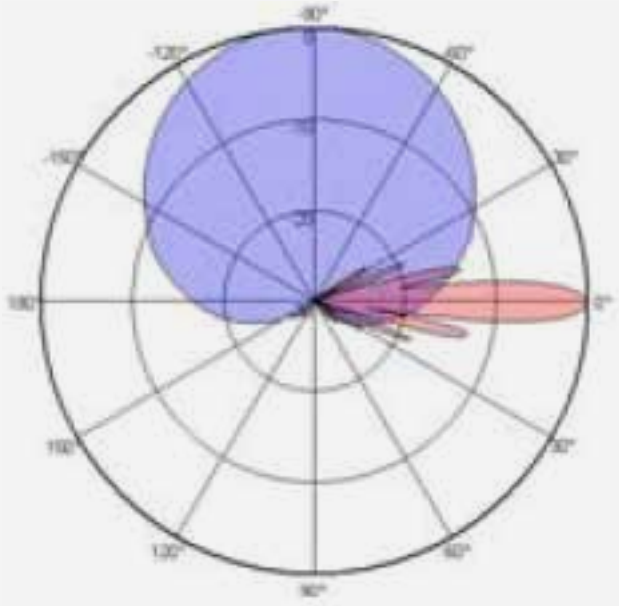
NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 4.4.3 Antenna Pattern

Figure 4-8 shows radiation patterns of the 27010898 directional antenna in the horizontal and vertical directions.

Figure 4-8 Radiation pattern of the 27010898 directional antenna



4.5 Dual-Polarized Directional Antenna (60°)

27010812 directional antennas are applicable in outdoor scenarios.

The 27010812 antenna is an outdoor dual-polarized antenna. It is connected to an AP using a feeder cable and mounted on a pole to provide outdoor directional coverage. The antenna is best applied to directional coverage scenarios, such as squares, streets, and corridors.

- 4.5.1 Antenna Appearance

Figure 4-9 Appearance of the 27010812 directional antenna

- 4.5.2 Technical Specifications

Table 4-5 lists technical specifications of the 27010812 directional antenna.

Table 4-5 Technical specifications of the 27010812 directional antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	12
Coverage distance (m)	250
Horizontal lobe width (degrees)	60
Vertical lobe width (degrees)	30
Standing wave ratio (SWR)	≤ 1.45
Polarization	Cross polarization
Connector	2 x N-female

Item	Value
Dimensions (mm)	H x W x D: 250 x 155 x 60
Weight (kg)	< 1
Support pole diameter (mm)	ϕ 30– ϕ 114
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

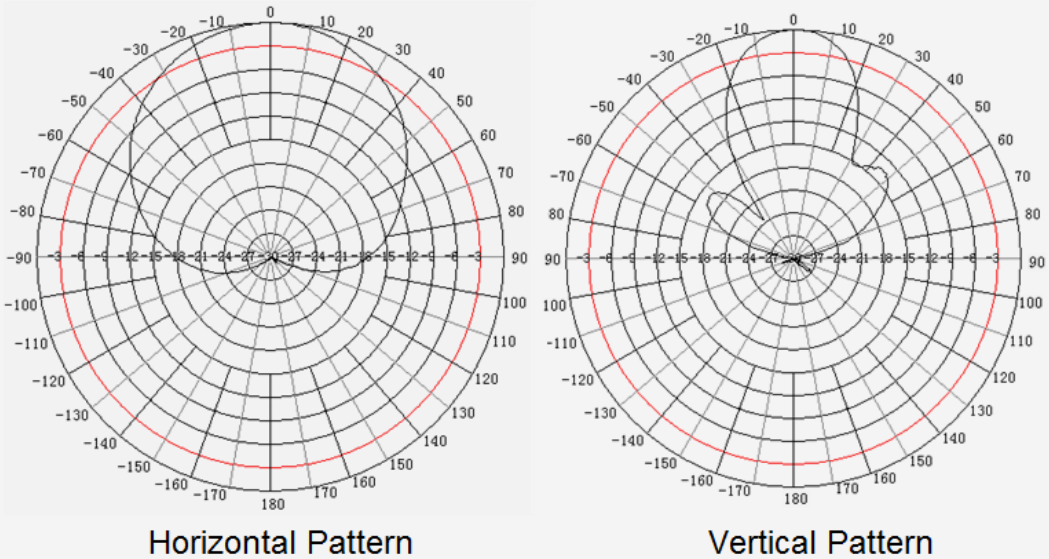
NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 4.5.3 Antenna Pattern

Figure 4-10 shows radiation patterns of the 27010812 directional antenna in the horizontal and vertical directions.

Figure 4-10 Radiation pattern of the 27010812 directional antenna



4.6 Dual-Polarized Directional Antenna (30°)

The 27010904 antenna is an outdoor 2.4 GHz directional antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

- 4.6.1 Antenna Appearance

Figure 4-11 shows the appearance of the 27010902 directional antenna.

Figure 4-11 Appearance of the 27010904 directional antenna

- 4.6.2 Technical Specifications

Table 4-6 lists technical specifications of the 27010219 directional antenna.

Table 4-6 Technical specifications of the 27010904 directional antenna

Item	Value
Frequency (MHz)	2400–2500
Gain (dBi)	14
Coverage distance (m)	300
Horizontal lobe width (degrees)	30
Vertical lobe width (degrees)	30
Standing wave ratio (SWR)	≤ 1.5
Polarization	Cross polarization
Connector	2 x N-female

Item	Value
Dimensions (mm)	H x W x D: 250 × 250 × 25
Weight (kg)	0.6
Support pole diameter (mm)	ϕ 30– ϕ 114
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

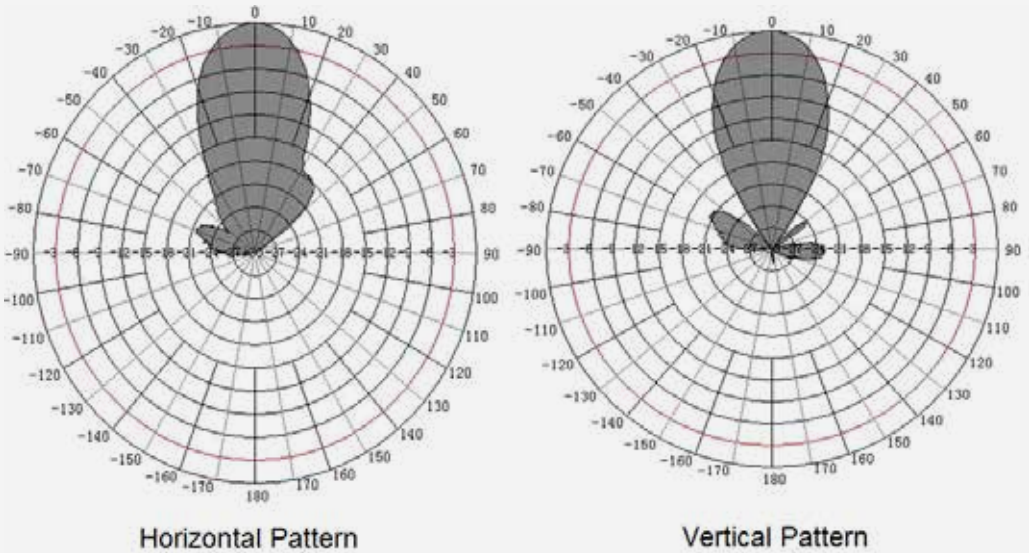
NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 4.6.3 Antenna Pattern

Figure 4-12 shows radiation patterns of the 27010904 directional antenna in the horizontal and vertical directions.

Figure 4-12 Radiation pattern of the 27010904 directional antenna



4.7 Dual-Polarized Directional Antenna (18°)

The 27012544 antenna is an outdoor directional antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

- 4.7.1 Antenna Appearance

Figure 4-13 shows the appearance of the 27012544 antenna.

Figure 4-13 Appearance of the 27012544 antenna

- 4.7.2 Technical Specifications

Table 4-7 Technical specifications of the 27012544 antenna

Item	Value
Frequency (MHz)	2300–2700
Gain (dBi)	18
Coverage distance (m)	420
Horizontal lobe width (degrees)	18
Vertical lobe width (degrees)	18
Standing wave ratio (SWR)	1.7 typical 2.0 maximum
Polarization	Horizontal polarization and vertical polarization

Item	Value
Connector	2 x N-female
Dimensions (mm)	H x W x D: 368 x 368 x 40
Weight (kg)	1.600
Support pole diameter (mm)	ϕ41–ϕ58
Mounting mode	Wall mounting or pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

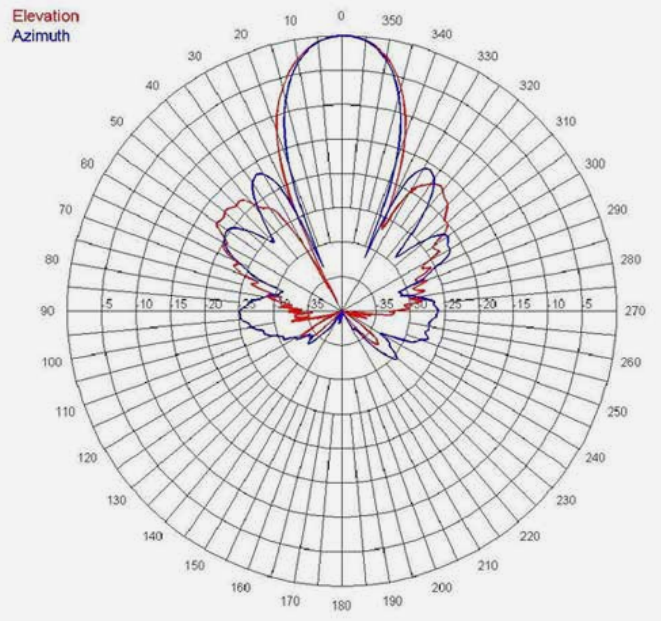
NOTE:

The coverage distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments. There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 4.7.3 Antenna Pattern

Figure 4-14 shows radiation patterns of the 27012544 antenna in the horizontal and vertical directions.

Figure 4-14 Radiation pattern of the 27012544 antenna



5 Directional Antennas-5 GHz

Outdoor 5 GHz directional antennas on sales include the single-polarized directional antenna (one model) and two types of dual-polarized directional antennas (five models).

5.1 Single-Polarized Directional Antenna (100°)

The 27010912 antenna is an outdoor 5 GHz directional antenna that provides high gains. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.
In bridging scenarios, installation positions should not exceed wireless bridge transmission distances.

- 5.1.1 Antenna Appearance

Figure 5-1 Appearance of the 27010912 directional antenna

- 5.1.2 Technical Specifications

Table 5-1 lists technical specifications of the 27010912 directional antenna.
Table 5-1 Technical specifications of the 27010912 directional antenna

Item	Value
Frequency (MHz)	5150–5850
Gain (dBi)	16
Coverage distance (m)	340
Backhaul distance (m)	3500

Item	Value
Horizontal lobe width (degrees)	100
Vertical lobe width (degrees)	5.5
Standing wave ratio (SWR)	≤ 1.7
Polarization	Vertical polarization
Connector	N-female
Dimensions (mm)	H x W x D: 547 x 250 x 18
Weight (kg)	1.8
Support pole diameter (mm)	ϕ 48– ϕ 135
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

NOTE:

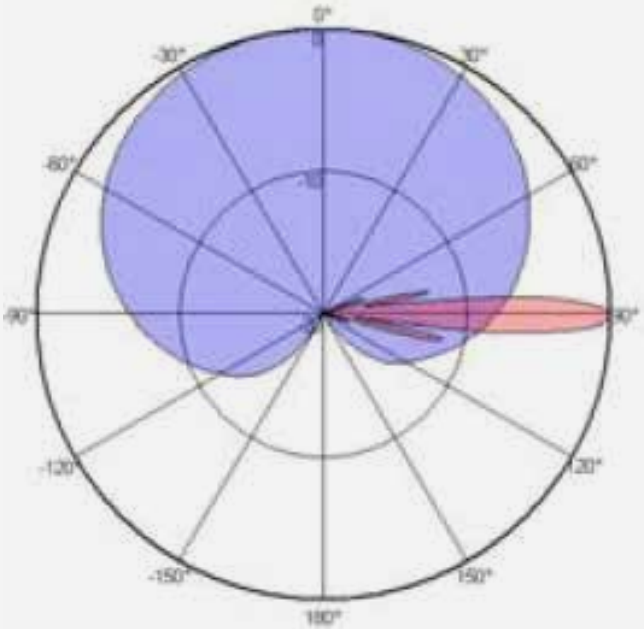
The coverage distance and backhaul distance are reference values in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 5.1.3 Antenna Pattern

Figure 5-2 shows radiation patterns of the 27160363 directional antenna in the horizontal (in blue) and vertical directions (in red).

Figure 5-2 Radiation pattern of the 27010912 directional antenna



5.2 Dual-Polarized Directional Antenna (60°)

The 27010889 antenna is an outdoor antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

In bridging scenarios, installation positions should not exceed wireless bridge transmission distances.

- 5.2.1 Antenna Appearance

Figure 5-3 Appearance of the 27010889 directional antenna

- 5.2.2 Technical Specifications

Table 5-2 Technical specifications of the 27010889 directional antenna

Item	Value
Frequency (MHz)	5150–5850
Gain (dBi)	11.5
Coverage distance (m)	230
Backhaul distance (m)	2000
Horizontal lobe width (degrees)	60
Vertical lobe width (degrees)	30
Standing wave ratio (SWR)	≤ 1.8
Polarization	Cross polarization
Connector	2 x N-female

Item	Value
Dimensions (mm)	H x W x D: 230 × 145 × 55
Weight (kg)	1.300
Support pole diameter (mm)	ϕ 35– ϕ 114
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

NOTE:

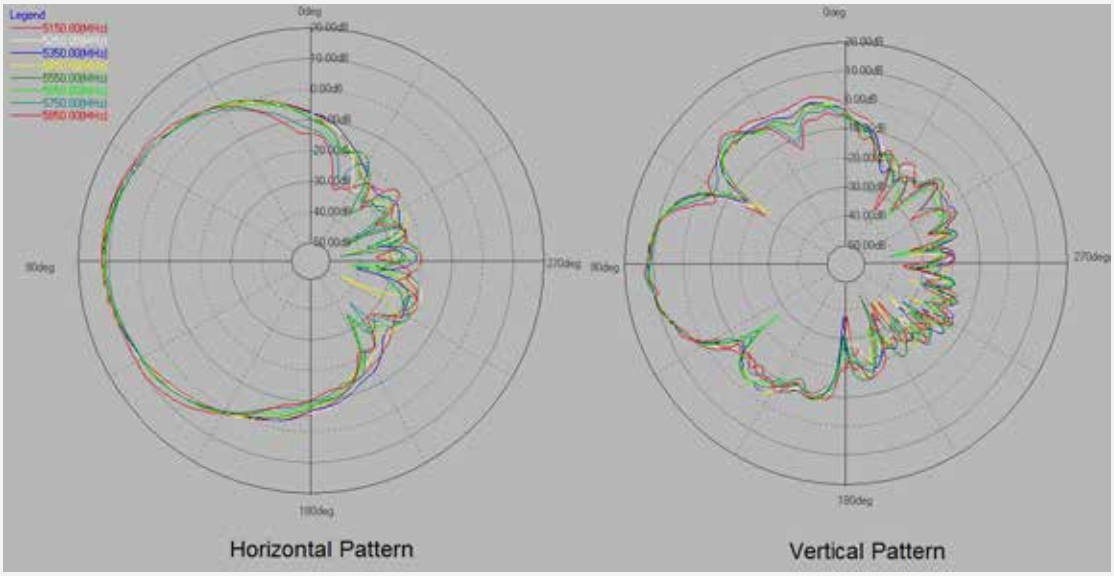
The coverage distance and backhaul distance are reference values in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 5.2.3 Antenna Pattern

Figure 5-4 shows radiation patterns of the 27010889 directional antenna in the horizontal and vertical directions.

Figure 5-4 Radiation pattern of the 27010889 directional antenna



5.3 Dual-Polarized Directional Antenna (32°)

The 27010906 antenna is an outdoor 5 GHz directional antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

In bridging scenarios, installation positions should not exceed wireless bridge transmission distances.

- 5.3.1 Antenna Appearance

Figure 5-5 Appearance of the 27010906 directional antenna

- 5.3.2 Technical Specifications

Table 5-3 Technical specifications of the 27010906 directional antenna

Item	Value
Frequency (MHz)	5150–5850
Gain (dBi)	14
Coverage distance (m)	280
Backhaul distance (m)	3000
Horizontal lobe width (degrees)	32
Vertical lobe width (degrees)	32
Standing wave ratio (SWR)	≤ 1.8
Polarization	Cross polarization
Connector	2 x N-female

Item	Value
Dimensions (mm)	H x W x D: 220 x 120 x 25
Weight (kg)	0.8
Support pole diameter (mm)	ϕ30–ϕ114
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

NOTE:

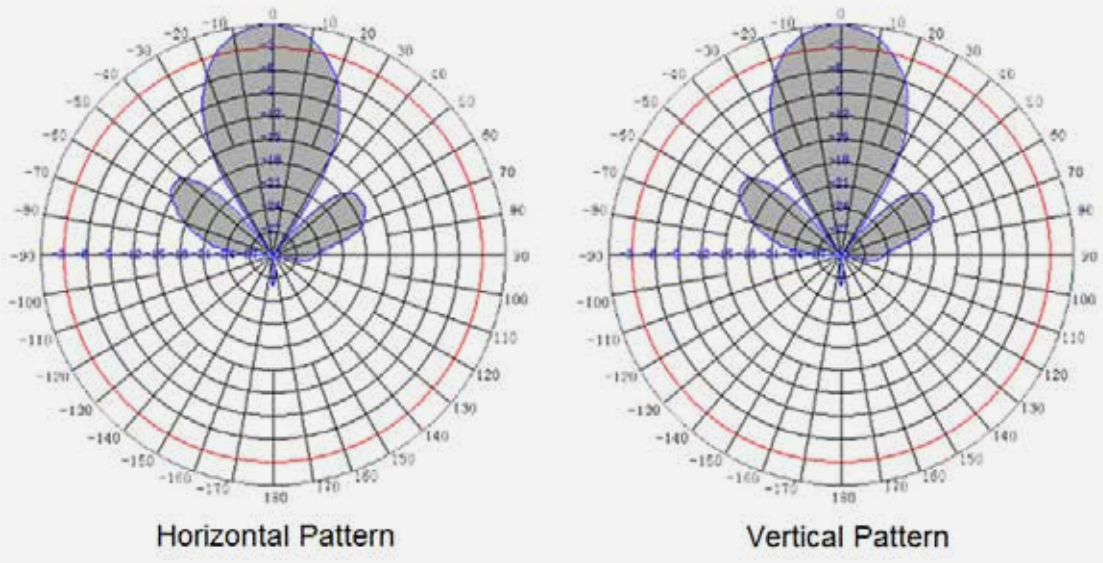
The coverage distance and backhaul distance are reference values in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 5.3.3 Antenna Pattern

Figure 5-6 shows radiation patterns of the 27010906 directional antenna in the horizontal and vertical directions.

Figure 5-6 Radiation pattern of the 27010906 directional antenna



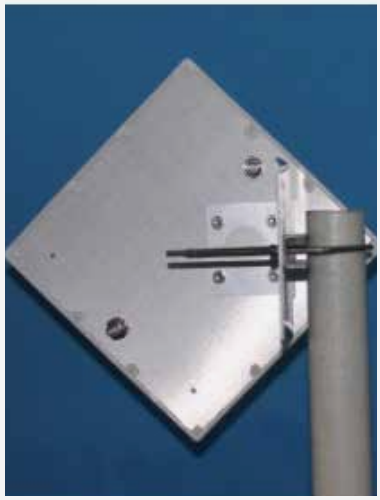
5.4 Dual-Polarized Directional Antenna (15°)

The 27010890 antenna is an outdoor antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

In bridging scenarios, installation positions should not exceed wireless bridge transmission distances.

- 5.4.1 Antenna Appearance

Figure 5-7 Appearance of the 27010890 directional antenna



- 5.4.2 Technical Specifications

Table 5-4 Technical specifications of the 27010890 directional antenna

Item	Value
Frequency (MHz)	5150–5850
Gain (dBi)	19
Coverage distance (m)	440
Backhaul distance (m)	4500
Horizontal lobe width (degrees)	15
Vertical lobe width (degrees)	15
Standing wave ratio (SWR)	≤ 1.8
Polarization	Cross polarization
Connector	2 x N-female

Item	Value
Dimensions (mm)	H x W x D: 250 x 250 x 25
Weight (kg)	1.300
Support pole diameter (mm)	ϕ35–ϕ114
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

NOTE:

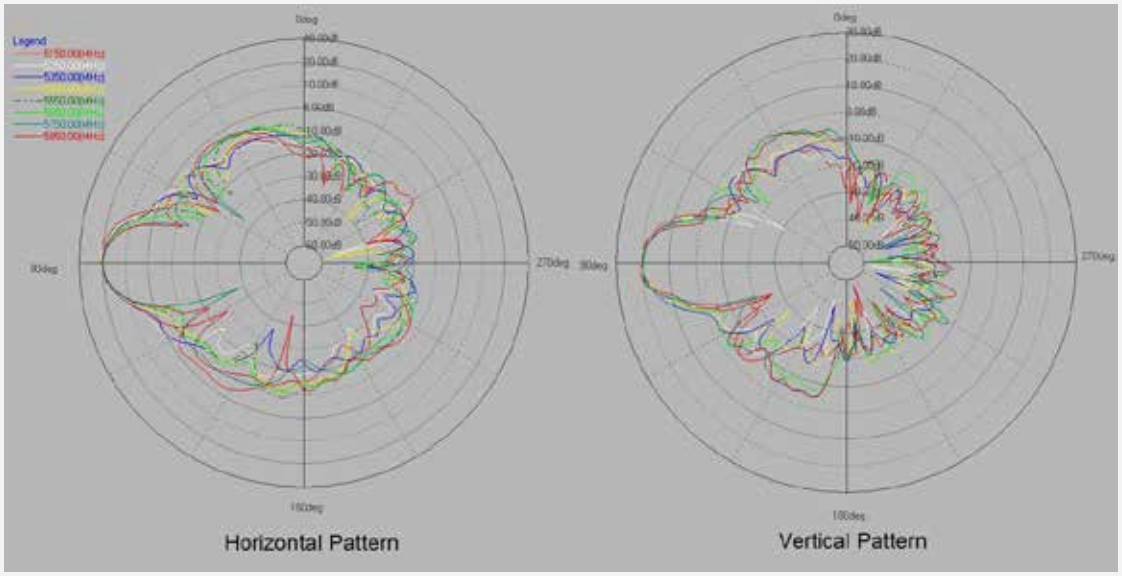
The coverage distance and backhaul distance are reference values in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 5.4.3 Antenna Pattern

Figure 5-8 shows radiation patterns of the 27010890 directional antenna in the horizontal and vertical directions.

Figure 5-8 Radiation pattern of the 27010890 directional antenna



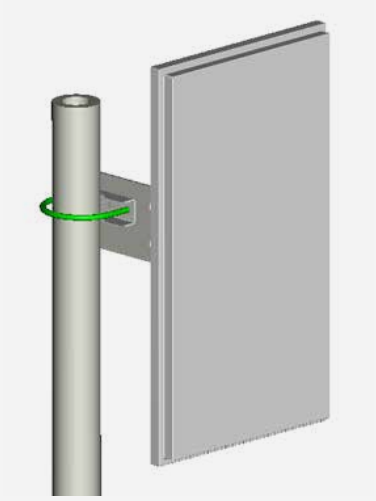
5.5 Dual-Polarized Directional Antenna (15° Triple Ports)

The 27011145 antenna is an outdoor directional antenna. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

In bridging scenarios, installation positions should not exceed wireless bridge transmission distances.

- 5.5.1 Antenna Appearance

Figure 5-9 Appearance of the 27011145 antenna



- 5.5.2 Technical Specifications

Table 5-5 lists technical specifications of the 27011145 antenna.

Table 5-5 Technical specifications of the 27011145 antenna

Item	Value
Frequency (MHz)	5150–5850
Gain (dBi)	19
Coverage distance (m)	440
Backhaul distance (m)	4500
Horizontal lobe width (degrees)	15
Vertical lobe width (degrees)	15
Standing wave ratio (SWR)	≤ 2
Polarization	Vertical & horizontal & vertical polarization

Item	Value
Connector	3 x N-female
Dimensions (mm)	H x W x D: 450 x 245 x 30
Weight (kg)	1.400
Support pole diameter (mm)	ϕ 30– ϕ 114
Mounting mode	Pole Mounting
Applicable AP	AP8130DN

NOTE:

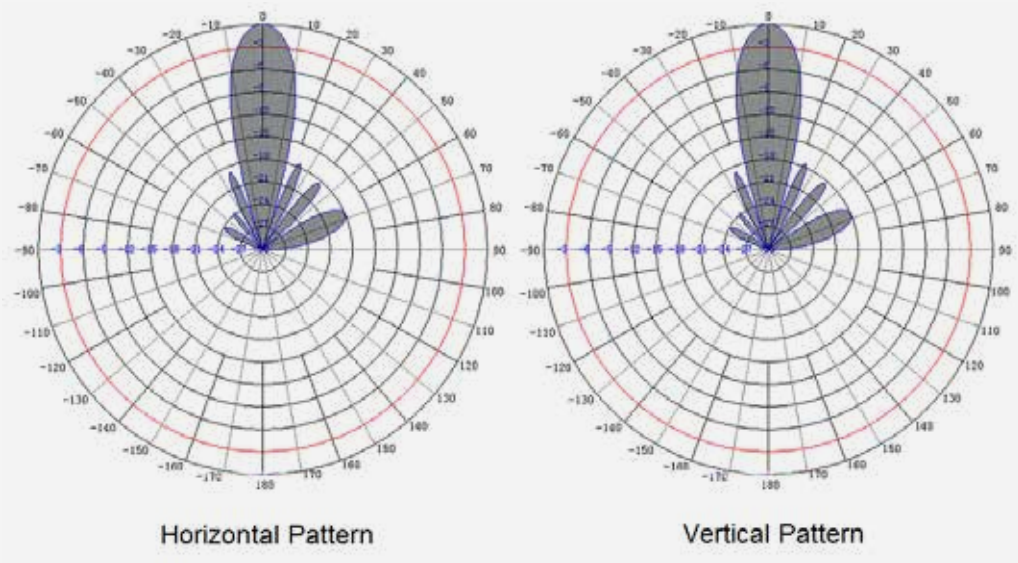
The coverage distance and backhaul distance are reference values in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 5.5.3 Antenna Pattern

Figure 5-10 shows radiation patterns of three ports on the 27011145 antenna in the horizontal and vertical directions.

Figure 5-10 Radiation pattern of the 27011145 antenna



5.6 Dual-Polarized Directional Antenna (9°)

27011016 directional antennas are applicable in outdoor scenarios.

The 27011016 antenna is an outdoor 5 GHz directional antenna that provides high gains. To obtain better performance and wider coverage, the antenna should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops. Its transmit end should not be blocked by obstacles.

In bridging scenarios, installation positions should not exceed wireless bridge transmission distances.

- 5.6.1 Antenna Appearance

Figure 5-11 Appearance of the 27011016 directional antenna

- 5.6.2 Technical Specifications

Table 5-6 Technical specifications of the 27011016 directional antenna

Item	Value
Frequency (MHz)	5150–5850
Gain (dBi)	23
Backhaul distance (m)	6500
Horizontal lobe width (degrees)	9
Vertical lobe width (degrees)	9
Standing wave ratio (SWR)	≤ 2
Polarization	Cross polarization
Connector	2 x N-female

Item	Value
Dimensions (mm)	Diameter: ϕ400
Weight (kg)	3
Support pole diameter (mm)	ϕ40–ϕ114
Mounting mode	Pole mounting
Applicable AP	AP6510DN/AP6610DN/AP8130DN/AP8150DN

NOTE:

The backhaul distance is a reference value in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 5.6.3 Antenna Pattern

Figure 5-12 and Figure 5-13 shows radiation patterns of the 27011016 directional antenna in the horizontal and vertical directions.

Figure 5-12 Radiation pattern of the 27011016 directional antenna (horizontal polarization port)

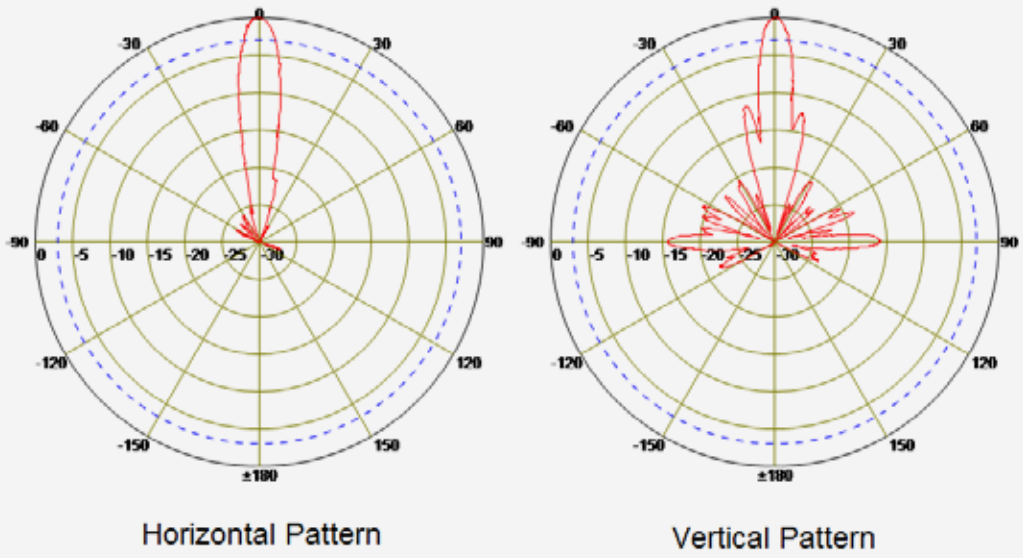
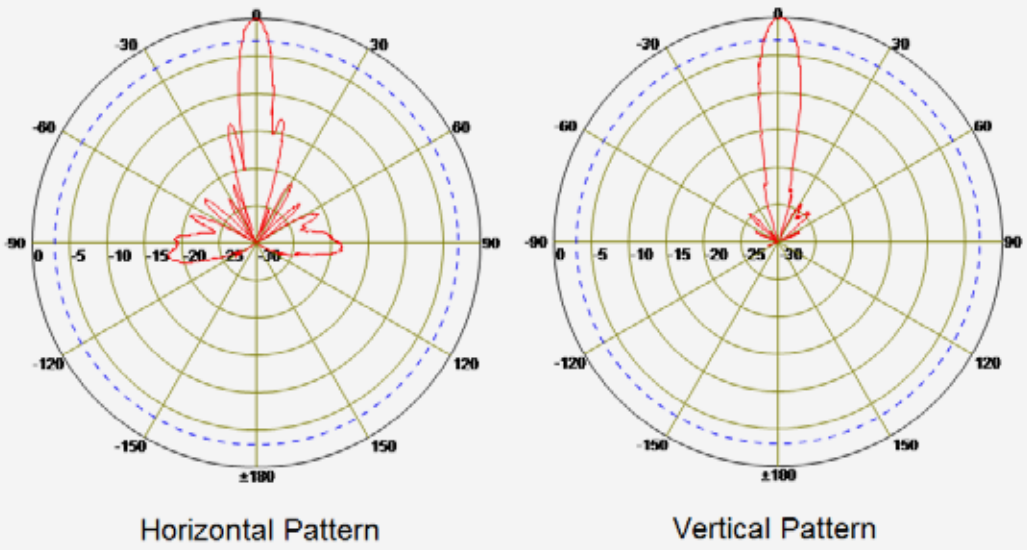


Figure 5-13 Radiation pattern of the 27011016 directional antenna (vertical polarization port)



6 Directional Antenna-2.4 GHz & 5 GHz

Only one indoor/outdoor dual-band directional antenna is on sales and supports 2.4 GHz and 5 GHz bands.

6.1 Dual-Polarized Directional Antenna (33° Triple Ports)

The 27012134 antenna is a directional antenna applicable to outdoor and indoor scenarios. When it is installed outdoors, it should be installed at high positions away from metal obstacles, for example, building tops, mountaintops, and tower tops, to obtain better performance. Its transmit end should not be blocked by obstacles.

When it is installed indoors, it applies to scenarios that require small coverage angles but long coverage distances. Typical scenarios include corridors in hospitals or airports.

In bridging scenarios, installation positions should not exceed wireless bridge transmission distances.

- 6.1.1 Antenna Appearance

Figure 6-1 Appearance of the 27012134 antenna

- 6.1.2 Technical Specifications

Table 6-1 Technical specifications of the 27012134 antenna

Item	Value	
	2.4G	5G
Frequency (MHz)	2400–2500	5150–5850
Gain (dBi)	13	13
Coverage distance (m)	300–500	300–500
Backhaul distance (m)	–	2500
Horizontal lobe width (degrees)	33	33
Vertical lobe width (degrees)	33	33
Standing wave ratio (SWR)	≤ 2	≤ 2
Polarization	Vertical polarization and ± 45-degree polarization	
Connector	6 x N-female	
Dimensions (mm)	H x W x D: 368.3 x 368.3 x 39.878	

Item	Value	
	2.4G	5G
Weight (g)	1600	
Support pole diameter (mm)	ϕ35–ϕ114	
Mounting mode	Wall mounting or pole mounting	
Applicable AP	AP8130DN	

NOTE:

The coverage distance and backhaul distance are reference values in certain conditions. Plan an appropriate distance value according to planning experience, local standards, and onsite environments.

There may be differences in the standards of different countries, so the mapping between antennas and APs shall comply with local standards. For details, refer to device access authentication information.

- 6.1.3 Antenna Pattern

The following figures show radiation patterns of the 27012134 antenna in the horizontal and vertical directions in 2.4 GHz mode and 5 GHz mode.

Figure 6-2 Radiation pattern of the 27012134 antenna (2.4 GHz, vertical polarization port)

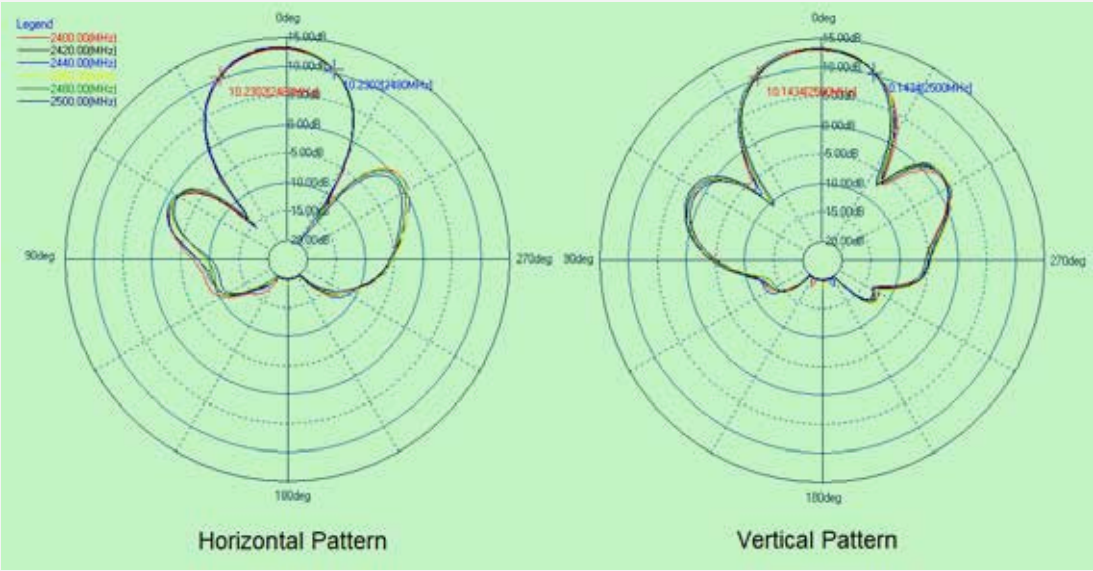


Figure 6-3 Radiation pattern of the 27012134 antenna (2.4 GHz, + 45-degree polarization port)

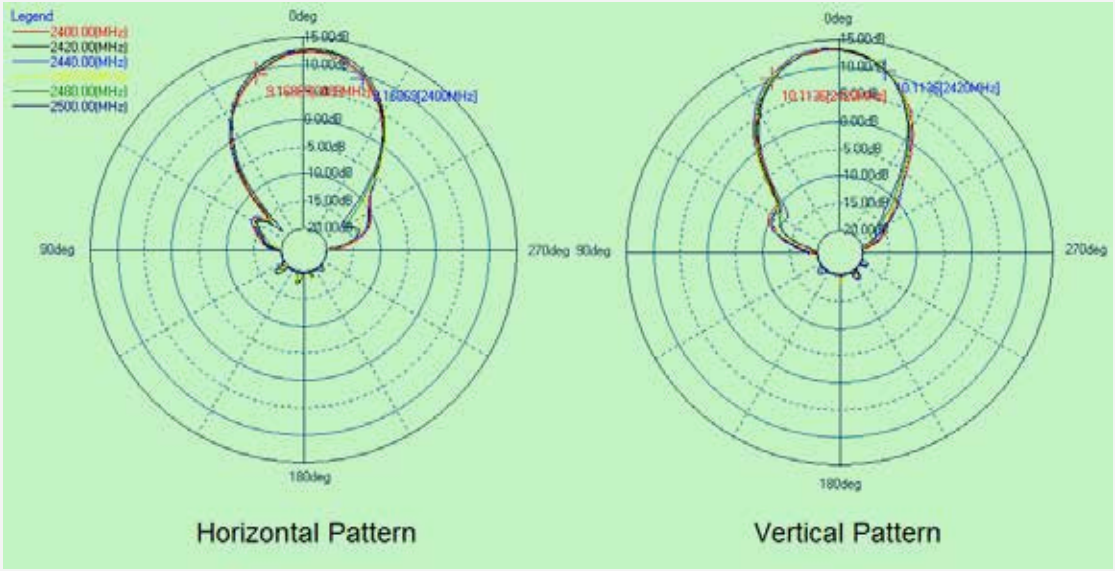


Figure 6-4 Radiation pattern of the 27012134 antenna (2.4 GHz, - 45-degree polarization port)

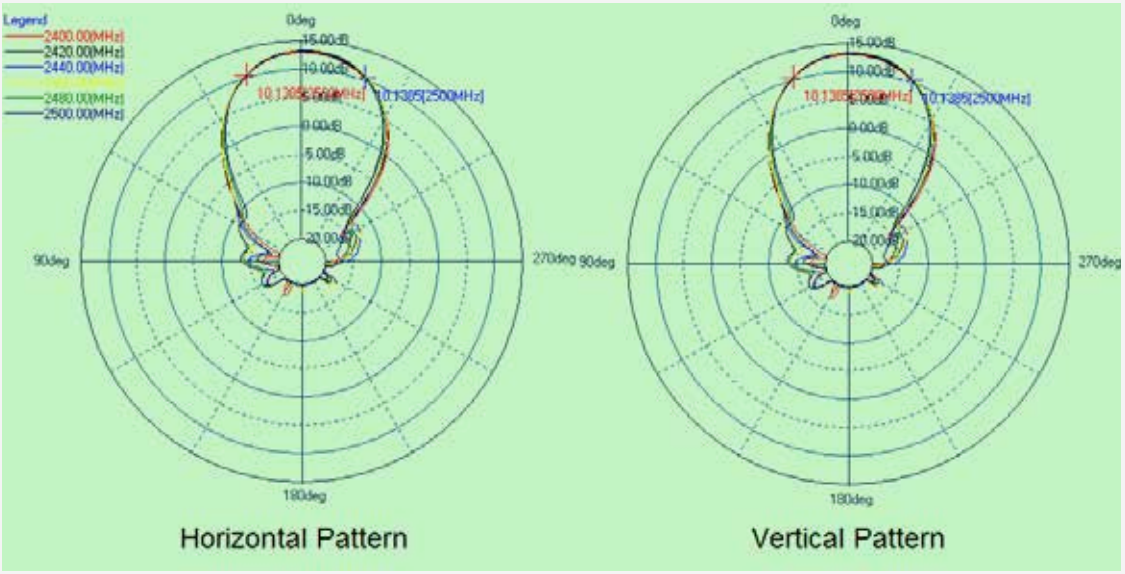


Figure 6-5 Radiation pattern of the 27012134 antenna (5 GHz, vertical polarization port)

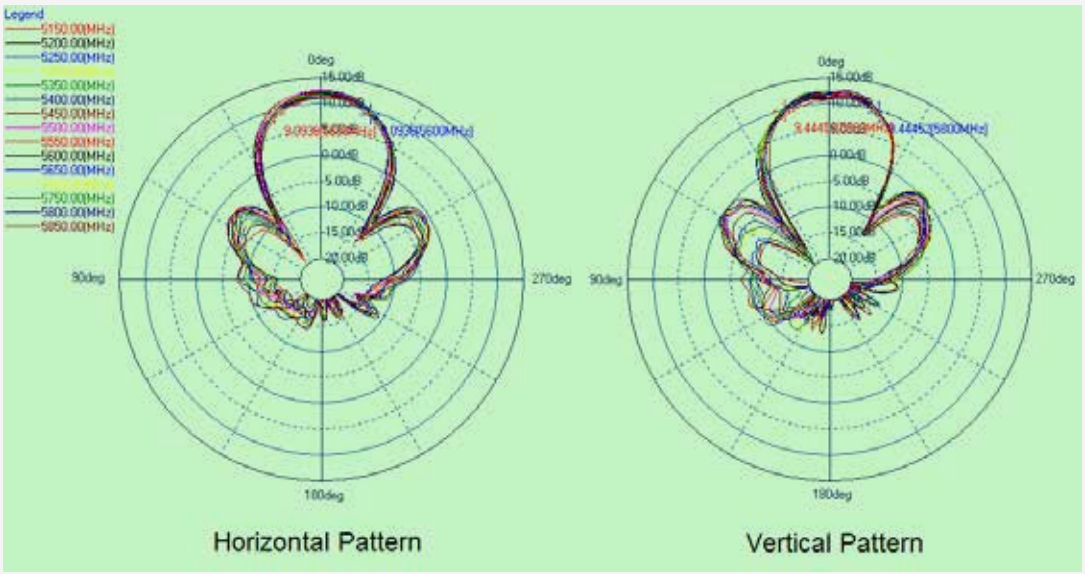


Figure 6-6 Radiation pattern of the 27012134 antenna (5 GHz, + 45-degree polarization port)

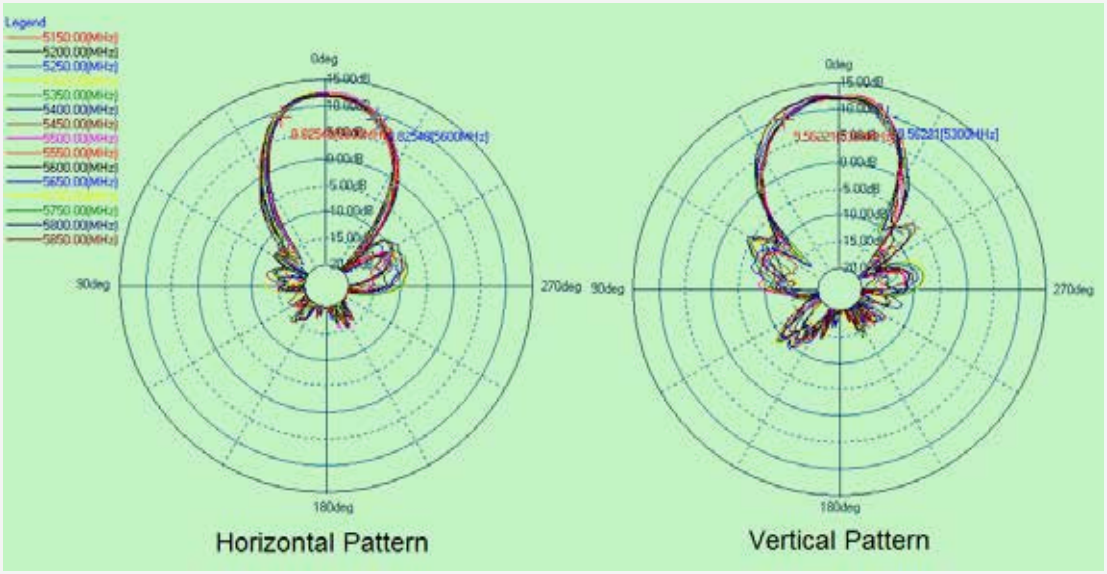
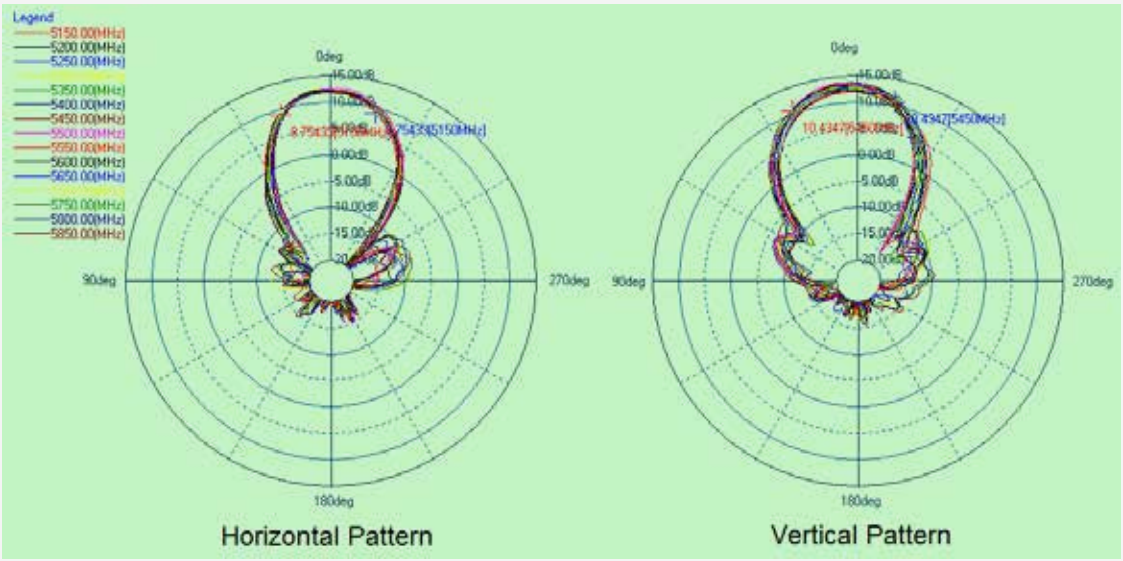


Figure 6-7 Radiation pattern of the 27012134 antenna (5 GHz, - 45-degree polarization)



HUAWEI TECHNOLOGIES CO.,LTD.
Huawei Industrial Base
Bantian Longgang
Shenzhen 518129,P.R.China
Tel: +86 755 28780808

www.huawei.com