



<b>Product Name</b>	GAOTek Air-Engine Indoor Enterprise WIFI
<b>Product SKU</b>	GAOTek-EWIFI-160
<b>Product URL</b>	<a href="https://gaotek.com/product/gaotek-air-engine-indoor-enterprise-wifi-2/">https://gaotek.com/product/gaotek-air-engine-indoor-enterprise-wifi-2/</a>

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## 1. Product Overview

GAOTek AirEngine 5762-16W is a Wi-Fi 6 (802.11ax) wall plate access point (AP). It can simultaneously provide services on 2.4 GHz (2x2 MIMO) and 5 GHz (2x2 MIMO) frequency bands, achieving a device rate of up to 2.975 Gbps. It has built-in butterfly-pattern smart antennas with innovative dual-beam design that ensure evenly distributed, optimal signal strength in multiple rooms. For this reason, a single AP suffices for two or three rooms, greatly reducing the number of required APs and also slashing the overall network construction cost and energy consumption. The AirEngine 5762-16W excels in multi-room, multi-partition scenarios, such as student dormitories and hotel guest rooms.



AirEngine 5762-16W

- Dual-radio mode: 2.4 GHz (2x2 MIMO) + 5 GHz (2x2 MIMO), achieving rates of up to 575 Mbps and 2.4 Gbps, respectively, and 2.975 Gbps for the device
- 1 x GE electrical port
- Built-in butterfly-pattern smart antennas
- USB port for external IoT expansion (supporting protocols such as ZigBee and RFID)
- Bluetooth serial interface-based O&M through built-in Bluetooth and CloudCampus APP
- Fat, Fit, and cloud working modes



## 2. Feature Descriptions

### Wi-Fi 6 (802.11ax) standard

As the latest generation Wi-Fi standards of IEEE 802.11, 802.11ax improves user experience in high-density access scenarios and supports 2.4 GHz and 5 GHz frequency bands.

- MU-MIMO on both the 2.4 GHz and 5 GHz frequency bands, allowing an AP to transmit data to and receive data from multiple STAs simultaneously and multiplying the utilization of radio spectrum resources.
- 1024-QAM modulation, improving data transmission efficiency by 25% compared with 802.11ac (256-QAM).
- OFDMA scheduling enables multiple users to receive and send information at the same time, reducing latency and improving network efficiency.
- Spatial reuse (SR) technology uses basic service set (BSS) coloring to enable APs and STAs to distinguish BSSs, minimizing co-channel interference.
- The target wake time TWT allows APs and STAs to negotiate the sleep and wake time with each other, thereby improving the battery life of the STAs.

### MU-MIMO

The AP supports MU-MIMO and supports a maximum of four spatial streams, two spatial streams at 2.4 GHz (2x2 MIMO) and two spatial streams at 5 GHz (2x2 MIMO). The MU-MIMO technology enables an AP to send data to multiple STAs simultaneously, which doubles the radio spectrum resource usage, increases the number of access users and bandwidth, and improves user experience in high-density access scenarios.

### Butterfly-pattern smart antenna technology

The innovative dual-beam design of antennas enhances signal coverage for neighbouring rooms. The unique antenna element design greatly improves the gain and bandwidth, achieving more accurate signal coverage in larger areas and interference suppression. Additionally, the angle polarization solution minimizes wall penetration loss of signal. All these strengths help to bring seamless and smooth wireless network access experience to users.



## High-speed access

The AP supports 160 MHz frequency bandwidth, which increases the number of available data subcarriers and expands transmission channels. In addition, the AP uses 1024-QAM modulation and MU-MIMO to achieve a rate of up to 0.575 Gbps at 2.4 GHz radio, 2.4 Gbps at 5 GHz radio, and 2.975 Gbps for the device.

## High Density Boost technology

GAOTek uses the following technologies to address challenges in high-density scenarios, including access problems, data congestion, and poor roaming experience:

### Smart Radio for air interface optimization

- Load balancing during smart roaming: The load balancing algorithm can work during smart roaming for load balancing detection among APs on the network after STA roaming to adjust the STA load on each AP, improving network stability.
- Intelligent DFA technology: The dynamic frequency assignment (DFA) algorithm is used to automatically detect adjacent- channel and co-channel interference, and identify any 2.4 GHz redundant radio. Through automatic inter-AP negotiation, the redundant radio is automatically switched to another mode (dual-5G AP models support 2.4G-to-5G switchover) or is disabled to reduce 2.4 GHz co-channel interference and increase the system capacity.
- Intelligent conflict optimization technology: The dynamic enhanced distributed channel access (EDCA) and airtime scheduling algorithms are used to schedule the channel occupation time and service priority of each user. This ensures that each user is assigned relatively equal time for using channel resources and user services are scheduled in an orderly manner, improving service processing efficiency and user experience.

### Air interface performance optimization

In high-density scenarios where many users access the network, increased number of low-rate STAs consumes more resources on the air interface, reduces the AP capacity, and lowers user experience. Therefore, GAOTek APs will check the signal strength of STAs during access and rejects access from weak-signal STAs. At the same time, the APs monitor the rate of online STAs in real time and forcibly disconnect low-rate STAs so that the STAs can re-associate with APs that have stronger signals. The terminal access control technology can increase air interface use efficiency and allow access from more users.

### 5G-prior access (band steering)

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The APs support both 2.4 GHz and 5 GHz frequency bands. The 5G-prior access function enables an AP to steer STAs to the 5 GHz frequency band first, which reduces load and interference on the 2.4 GHz frequency band, improving the user experience.

## **Wired and wireless dual security guarantee**

To ensure data security, GAOTek APs integrate wired and wireless security measures and provide comprehensive security protection.

## **Authentication and encryption for wireless access**

The APs support WEP, WPA/WPA2-PSK, WPA3-SAE, WPA/WPA2-PPSK, WPA/WPA2/WPA3-802.1X, and WAPI

Authentication/encryption modes ensure the security of the wireless network. The authentication mechanism is used to authenticate user identities so that only authorized users can access network resources. The encryption mechanism is used to encrypt data transmitted over wireless links to ensure that the data can only be received and parsed by expected users.

## **Rogue device monitoring**

GAOTek APs support WIDS/WIPS, and can monitor, identify, defend, counter, and perform refined management on the rogue devices, to provide security guarantees for air interface environment and wireless data transmission.

## **Wired access authentication and encryption for the AP**

The AP access control ensures validity of APs. The CAPWAP link protection and DTLS encryption provide security assurance, improving data transmission security between the AP and the WLAN AC.

## **Automatic radio calibration**

Automatic radio calibration allows an AP to collect signal strength and channel parameters of surrounding APs and generate an AP topology according to the collected data. Based on the interference caused by authorized APs, rogue APs, and No Wi-Fi Aps and their loads, each AP automatically adjusts its transmit power and working channel to make the network operate at the optimal performance. In this way, network reliability and user experience are improved.

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## Leader AP

The leader AP integrates some WLAN AC functions and can be used to manage Fit APs in small- and medium-sized enterprises and stores, implementing WLAN AC-free access not requiring licenses and saving customer investment.

## Cloud-based management

The AP can be managed via cloud, then no need to deploy a WLAN AC and an authentication server. In cloud-based management mode, abundant authentication functions, such as pre-shared key (PSK) authentication, Portal authentication, SMS authentication, and social media authentication, can be implemented. This mode significantly simplifies the networking and reduces the capital expenditure (CAPEX). In addition, multiple advanced functions, such as online cloud-based network planning, cloud-based deployment, cloud-based inspection, and cloud-based O&M, can be implemented through GAOTek cloud management platform. In multi-branch deployment scenarios, cloud APs are pre-configured on the cloud management platform firstly. Then on site, you only need to power on the cloud APs and connect them to switch ports, then scan the QR code to implement AP plug-and-play. Pre-configurations are automatically delivered to devices, greatly shortening the network deployment time. The cloud management platform can monitor the network status, device status, and terminal connection status of all sites of a tenant in a comprehensive and intuitive manner to learn the network and service running status in real time.

## 3. Basic Specifications

### Fat/Fit AP mode

Item	Description
WLAN features	Compliance with IEEE 802.11ax and compatibility with IEEE 802.11a/b/g/n/ac/ac Wave 2 Maximum ratio combining (MRC) Space time block code (STBC) Cyclic Delay Diversity (CDD)/Cyclic Shift

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Diversity (CSD) Beamforming

Multi-user multiple-input multiple-output (MU-MIMO) Orthogonal frequency division multiple access (OFDMA)

Compliance with 1024-quadrature amplitude modulation (QAM) and compatibility with 256-QAM, 64-QAM, 16-QAM, 8-QAM, quadrature phase shift keying (QPSK), and binary phase shift keying (BPSK)

Target wake time (TWT)

Low-density parity-check (LDPC)

Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx)

802.11 dynamic frequency selection (DFS)

Short guard interval (GI) in 20 MHz, 40 MHz, 80 MHz and 160 MHz modes

Priority mapping and scheduling that are compliant with Wi-Fi multimedia (WMM) to implement priority-based data processing and forwarding

Automatic and manual rate adjustment (the rate is adjusted automatically by default) WLAN channel management and channel rate adjustment

NOTE

*For detailed management channels, see the Country Codes & Channel Compliances.*

Automatic channel scanning and interference avoidance Service set identifier (SSID) hiding

Signal sustain technology (SST)

Unscheduled automatic power save delivery (U-APSD)

Control and Provisioning of Wireless Access Points (CAPWAP) in Fit AP mode Extended Service Set (ESS) in Fit AP mode

Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular networks Multi-user call admission control (CAC)

802.11k and 802.11v smart roaming

802.11r fast roaming ( $\leq 50$  ms)





Network features	<p>Compliance with IEEE 802.3ab</p> <p>Auto-negotiation of the rate and duplex mode and automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)</p> <p>Compliance with IEEE 802.1q SSID-based VLAN assignment</p> <p>VLAN trunk on uplink Ethernet ports</p> <p>Management channel of the AP uplink port in tagged and untagged mode DHCP client, obtaining IP addresses through DHCP</p> <p>Tunnel data forwarding and direct data forwarding STA isolation in the same VLAN</p> <p>IPv4/IPv6 access control lists (ACLs) Link Layer Discovery Protocol (LLDP)</p> <p>Uninterrupted service forwarding upon CAPWAP channel disconnection in Fit AP mode Unified authentication on the AC in Fit AP mode</p> <p>AC dual-link backup in Fit AP mode</p> <p>Network Address Translation (NAT) in Fat AP mode IPv6 in Fit AP mode</p> <p>Telemetry in Fit AP mode, quickly collecting AP status and application experience parameters IPv6 Source Address Validation Improvements (SAVI)</p> <p>Multicast Domain Name Service (mDNS) gateway protocol</p>
QoS features	<p>Priority mapping and scheduling that are compliant with WMM to implement priority-based data processing and forwarding</p> <p>WMM parameter management for each radio WMM power saving</p> <p>Priority mapping for upstream packets and flow-based mapping for downstream packets Queue mapping and scheduling</p> <p>User-based bandwidth limiting</p> <p>Adaptive bandwidth management (automatic bandwidth adjustment based on the user quantity and radio environment) to improve user experience</p> <p>Airtime scheduling</p>



Air interface HQoS scheduling Intelligent multimedia scheduling

Security features

- Open system authentication
- WEP authentication/encryption using a 64-bit, 128-bit, 152-bit or 192-bit encryption key
- WPA2-PSK authentication and encryption (WPA2-Personal)
- WPA2-802.1X authentication and encryption (WPA2-Enterprise)
- WPA3-SAE authentication and encryption (WPA3-Personal)
- WPA3-802.1X authentication and encryption (WPA3-Enterprise)
- WPA-WPA2 hybrid authentication
- WPA2-WPA3 hybrid authentication
- WPA2-PPSK authentication and encryption in Fit AP mode
- WAPI authentication and encryption
- Wireless intrusion detection system (WIDS) and wireless intrusion prevention system (WIPS), including rogue device detection and containment, attack detection and dynamic blacklist, and STA/AP blacklist and whitelist
- 802.1X authentication, MAC address authentication, and Portal authentication
- DHCP snooping
- Dynamic ARP Inspection (DAI)
- IP Source Guard (IPSG)
- 802.11w Protected Management Frames (PMF)
- DTLS encryption



Maintenance features	<p>Unified management and maintenance on the AC in Fit AP mode</p> <p>Automatic login and configuration loading, and plug-and-play (PnP) in Fit AP mode</p> <p>Batch upgrade in Fit AP mode</p> <p>Telnet</p> <p>STelnet using SSHv2</p> <p>SFTP using SSHv2</p> <p>Remote wireless O&amp;M through the Bluetooth serial interface</p> <p>Web-based local AP management through HTTP or HTTPS in Fat AP mode</p> <p>Real-time configuration monitoring and fast fault locating using the NMS SNMP v1/v2/v3 in Fat AP mode</p> <p>System status alarm</p> <p>Network Time Protocol (NTP) in Fat AP mode</p>
Locating service	<p>NOTE</p> <p><i>The AP supports the locating service only in Fit AP mode.</i></p> <p>Wi-Fi terminal location</p> <p>Working with a location server to locate rogue devices</p>

### Cloud-based management mode

Item	Description
WLAN features	<p>Compliance with IEEE 802.11ax and compatibility with IEEE 802.11a/b/g/n/ac/ac Wave 2</p> <p>Maximum ratio combining (MRC)</p> <p>Space time block code (STBC)</p> <p>Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD) Beamforming</p> <p>Multi-user multiple-input multiple-output (MU-MIMO) Orthogonal frequency division multiple access (OFDMA)</p> <p>Compliance with 1024-quadrature amplitude modulation (QAM) and compatibility with 256-QAM, 64-QAM, 16-QAM, 8-QAM, quadrature phase shift keying (QPSK), and binary phase shift keying (BPSK)</p> <p>Target wake time (TWT)</p>

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Low-density parity-check (LDPC)  
Frame aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx)  
802.11 dynamic frequency selection (DFS)  
Priority mapping and scheduling that are compliant with Wi-Fi multimedia (WMM) to implement priority-based data processing and forwarding  
Automatic and manual rate adjustment (the rate is adjusted automatically by default) WLAN channel management and channel rate adjustment

NOTE

*For detailed management channels, see the Country Codes & Channel Compliances.*

Automatic channel scanning and interference avoidance  
Service set identifier (SSID) hiding  
Signal sustain technology (SST)  
Unscheduled automatic power save delivery (U-APSD)

Network features

Compliance with IEEE 802.3ab  
Auto-negotiation of the rate and duplex mode and automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)  
Compliance with IEEE 802.1q SSID-based VLAN assignment  
DHCP client, obtaining IP addresses through  
DHCP STA isolation in the same VLAN  
Access control lists (ACLs)  
Unified authentication on the Cloud management platform  
Network Address Translation (NAT)



QoS features	<p>Priority mapping and scheduling that are compliant with WMM to implement priority-based data processing and forwarding</p> <p>WMM parameter management for each radio WMM power saving</p> <p>Priority mapping for upstream packets and flow-based mapping for downstream packets Queue mapping and scheduling</p> <p>User-based bandwidth limiting Airtime scheduling</p> <p>Air interface HQoS scheduling</p>
Security features	<p>Open system authentication</p> <p>WEP authentication/encryption using a 64-bit, 128-bit, 152-bit or 192-bit encryption key WPA2-PSK authentication and encryption (WPA2-Personal)</p> <p>WPA2-802.1X authentication and encryption (WPA2-Enterprise) WPA3-SAE authentication and encryption (WPA3-Personal) WPA3-802.1X authentication and encryption (WPA3-Enterprise)</p> <p>WPA-WPA2 hybrid authentication</p> <p>WPA2-WPA3 hybrid authentication</p> <p>802.1X authentication, MAC address authentication, and Portal authentication DHCP snooping</p> <p>Dynamic ARP Inspection (DAI)</p> <p>IP Source Guard (IPSG)</p>



Maintenance features	<p>Unified management and maintenance on the Cloud management platform</p> <p>Automatic login and configuration loading, and plug-and-play (PnP) Batch upgrade</p> <p>Telnet</p> <p>STelnet using SSHv2</p> <p>SFTP using SSHv2</p> <p>Remote wireless O&amp;M through the Bluetooth console port</p> <p>Web-based local AP management through HTTP or HTTPS</p> <p>Real-time configuration monitoring and fast fault locating using the NMS System status alarm</p> <p>Network Time Protocol (NTP)</p>
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## 4. Technical Specifications

Item	Description	
<b>Technical specifications</b>	Dimensions (H x W x D)	130 mm x 220 mm x 32 mm
	Weight	1.09 kg
	Interface type	1 x 10M/100M/1GE (RJ45) electrical port 1 x USB 2.0 port NOTE <ul style="list-style-type: none"> <li>The GE electrical port supports PoE input.</li> </ul>
	Bluetooth	BLE 5.0
	LED indicator	Indicates the power-on, startup, running, alarm, and fault states of the system.

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<b>Power specifications</b>	Power input	<ul style="list-style-type: none"> <li>DC: 12 V <math>\pm</math> 10%</li> <li>PoE power supply: in compliance with 802.3at/af</li> </ul> <p>NOTE</p> <p><i>In 802.3af power supply mode, some functions of the AP may be restricted, for example, the USB port is unavailable. For details, see <a href="#">Info-Finder</a>.</i></p>
	Maximum power consumption	<p>17.1 W (excluding USB)</p> <p>NOTE</p> <p><i>The actual maximum power consumption depends on local laws and regulations.</i></p>
<b>Environmental specifications</b>	Operating temperature	0°C to 40°C
	Storage temperature	-40°C to +70°C
	Operating humidity	5% to 95% (non-condensing)
	Altitude	-60 m to +5000 m
	Atmospheric pressure	53 kPa to 106 kPa
<b>Radio specifications</b>	Antenna type	Built-in butterfly-pattern smart antennas
	Antenna gain	<p>2.4 GHz: 4 dBi</p> <p>5 GHz: 6 dBi</p> <p>NOTE</p> <ul style="list-style-type: none"> <li><i>The gains above are the single-antenna peak gains.</i></li> </ul> <p><i>The equivalent antenna gain after all 2.4 GHz or 5 GHz antennas are combined is 2 dBi at 2.4 GHz, or <b>4 dBi</b> at 5 GHz.</i></p>
	Maximum number of SSIDs for each radio	$\leq$ 16



	Maximum number of users	<p>≤ 256</p> <p>NOTE</p> <p><i>The actual number of users varies according to the environment.</i></p>
	Maximum transmit power	<p>2.4 GHz: 27 dBm (combined power)</p> <p>5 GHz: 27 dBm (combined power)</p> <p>NOTE</p> <p><i>The actual transmit power depends on local laws and regulations.</i></p>
	Power increment	1 dBm
	Maximum number of non- overlapping channels	<p>2.4 GHz (2.412 GHz to 2.472 GHz)</p> <ul style="list-style-type: none"> <li>• 802.11b/g             <ul style="list-style-type: none"> <li>– 20 MHz: 3</li> </ul> </li> <li>• 802.11n             <ul style="list-style-type: none"> <li>– 20 MHz: 3</li> <li>– 40 MHz: 1</li> </ul> </li> <li>• 802.11ax             <ul style="list-style-type: none"> <li>– 20 MHz: 3</li> <li>– 40 MHz: 1</li> </ul> </li> </ul> <p>5 GHz (5.18 GHz to 5.825 GHz)</p> <ul style="list-style-type: none"> <li>• 802.11a             <ul style="list-style-type: none"> <li>– 20 MHz: 13</li> </ul> </li> <li>• 802.11n             <ul style="list-style-type: none"> <li>– 20 MHz: 13</li> <li>– 40 MHz: 6</li> </ul> </li> <li>• 802.11ac             <ul style="list-style-type: none"> <li>– 20 MHz: 13</li> </ul> </li> </ul>

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		<ul style="list-style-type: none"> <li>– 40 MHz: 6</li> <li>– 80 MHz: 3</li> <li>– 160 MHz: 1</li> <li>• 802.11ax               <ul style="list-style-type: none"> <li>– 20 MHz: 13</li> <li>– 40 MHz: 6</li> <li>– 80 MHz: 3</li> <li>– 160 MHz: 1</li> </ul> </li> </ul> <p>NOTE</p> <p><i>The table uses the number of non-overlapping channels supported by China as an example. The number of non-overlapping channels varies in different countries. For details, see the Country Codes &amp; Channels Compliance.</i></p>
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## 5. Standards Compliance

Item	Description		
<b>Safety standards</b>	<ul style="list-style-type: none"> <li>• UL 60950-1</li> <li>• EN 60950-1</li> <li>• IEC 60950-1</li> </ul>	<ul style="list-style-type: none"> <li>• UL 62368-1</li> <li>• EN 62368-1</li> <li>• IEC 62368-1</li> </ul>	<ul style="list-style-type: none"> <li>• GB 4943.1</li> <li>• CAN/CSA 22.2 No.60950-1</li> </ul>
<b>Radio standards</b>	<ul style="list-style-type: none"> <li>• ETSI EN 300 328</li> </ul>	<ul style="list-style-type: none"> <li>• ETSI EN 301 893</li> </ul>	<ul style="list-style-type: none"> <li>• AS/NZS 4268</li> </ul>
<b>EMC standards</b>	<ul style="list-style-type: none"> <li>• EN 301 489-1</li> <li>• EN 301 489-17</li> <li>• EN 60601-1-2</li> <li>• EN 55024</li> <li>• EN 55032</li> </ul>	<ul style="list-style-type: none"> <li>• GB 9254</li> <li>• GB 17625.1</li> <li>• GB 17625.2</li> <li>• AS/NZS CISPR32</li> <li>• CISPR 24</li> </ul>	<ul style="list-style-type: none"> <li>• IEC/EN61000-4-2</li> <li>• IEC/EN 61000-4-3</li> <li>• IEC/EN 61000-4-4</li> <li>• IEC/EN 61000-4-5</li> <li>• IEC/EN61000-4-6</li> </ul>

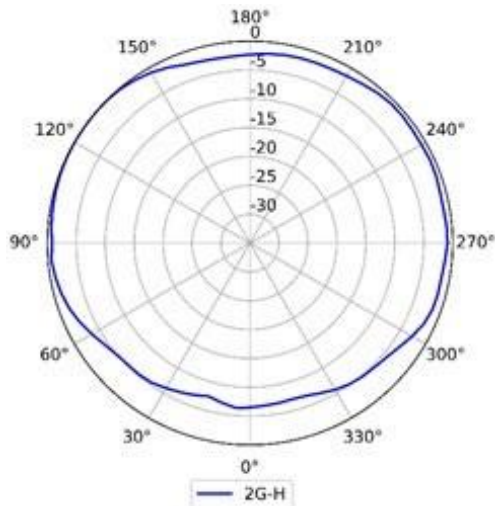
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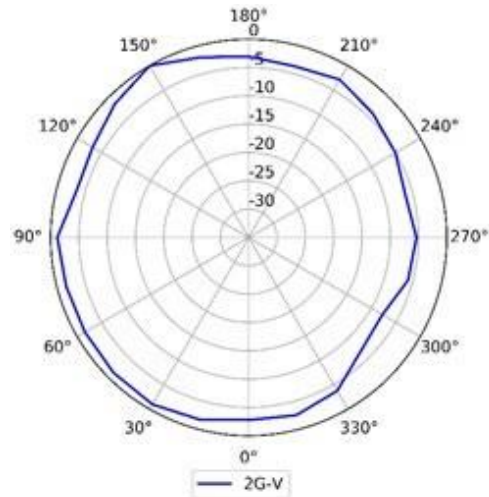
	<ul style="list-style-type: none"> <li>• EN 55035</li> </ul>	<ul style="list-style-type: none"> <li>• CISPR 32</li> <li>• CISPR 35</li> </ul>	<ul style="list-style-type: none"> <li>• ICES-003</li> </ul>
<b>IEEE standards</b>	<ul style="list-style-type: none"> <li>• IEEE 802.11a/b/g</li> <li>• IEEE 802.11n</li> <li>• IEEE 802.11ac</li> <li>• IEEE 802.11ax</li> </ul>	<ul style="list-style-type: none"> <li>• IEEE 802.11h</li> <li>• IEEE 802.11d</li> <li>• IEEE 802.11e</li> <li>• IEEE 802.11k</li> </ul>	<ul style="list-style-type: none"> <li>• IEEE 802.11v</li> <li>• IEEE 802.11w</li> <li>• IEEE 802.11r</li> </ul>
<b>Security standards</b>	<ul style="list-style-type: none"> <li>• 802.11i, Wi-Fi Protected Access (WPA), WPA2, WPA2-Enterprise, WPA2-PSK, WPA3, WAPI</li> <li>• 802.1X</li> <li>• Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP), WEP, Open</li> <li>• EAP Type(s)</li> </ul>		
<b>EMF</b>	<ul style="list-style-type: none"> <li>• EN 62311</li> </ul>	<ul style="list-style-type: none"> <li>• EN 50385</li> </ul>	
<b>RoHS</b>	<ul style="list-style-type: none"> <li>• Directive 2002/95/EC &amp; 2011/65/EU</li> </ul>	<ul style="list-style-type: none"> <li>• (EU)2015/863</li> </ul>	
<b>Reach</b>	<ul style="list-style-type: none"> <li>• Regulation 1907/2006/EC</li> </ul>		
<b>WEEE</b>	<ul style="list-style-type: none"> <li>• Directive 2002/96/EC &amp; 2012/19/EU</li> </ul>		

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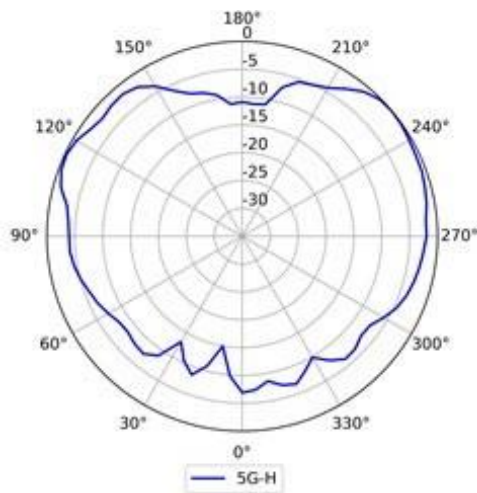
## 6. Antennas Pattern



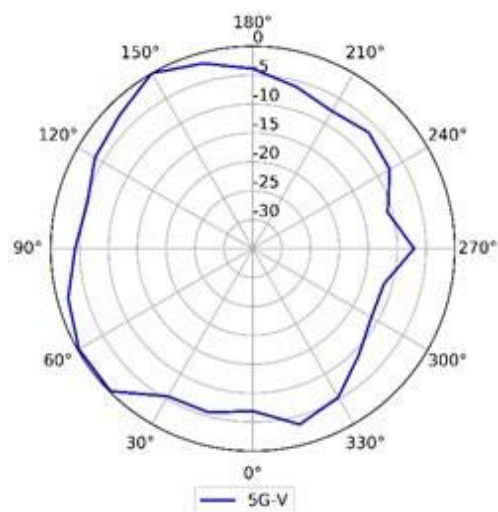
2.4 GHz (Horizontal)



2.4 GHz (Vertical)



5 GHz (Horizontal)



5 GHz (Vertical)

Contact us: [sales@gaotek.com](mailto:sales@gaotek.com)

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