# Pharos CPE Series

## Dedicated Long-Range Outdoor Wireless Networking Solution

CPE210 / CPE220 / CPE510 / CPE605 / CPE610 / CPE710

## Highlights

-Selectable bandwidth of 20/40/80 MHz for CPE710 and 5/10/20/40 MHz for other models

-Adjustable transmission power by 1 dBm

-Broad operating frequency channels ensure less wireless interference

-Passive PoE Adapter supports up to 60 meter[1] (200 feet) Power over Ethernet deployment

-TP-Link Pharos MAXtream[2] (Time-Division-Multiple-Access) technology improves product throughput, capacity and latency performance, ideal for PtMP applications.

-Centralized Management System – Pharos Control

[1] Power supply distances are based on test results under normal usage conditions. Actual power supply distance will vary as a result of 1) AP status, including transmit power, connected devices and network traffic and 2) cable properties, including type and texture.

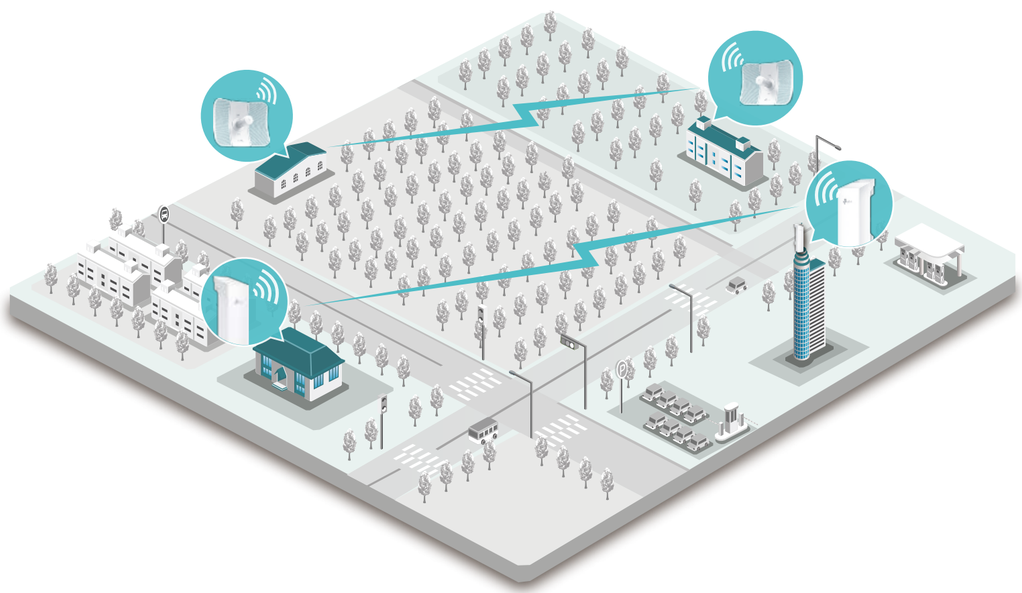
[2] CPE210 / CPE220 / CPE510 / CPE605 / CPE610 supports Maxtream.

# Typical Application

TP-Link's Outdoor CPE is dedicated to reliable solutions for outdoor wireless networking applications. With its centralized management application, it is flexible and ideal for Point-to-Point and Point-to-Multipoint applications.

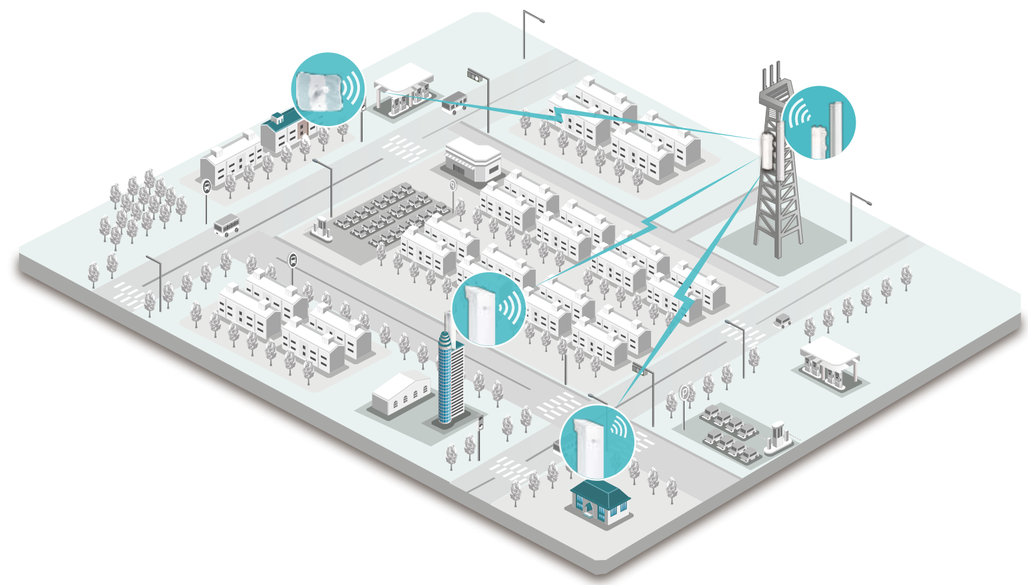
## Long-distance Wireless Connection

Using two CPEs to build a long-distance Point-to-Point wireless connection.



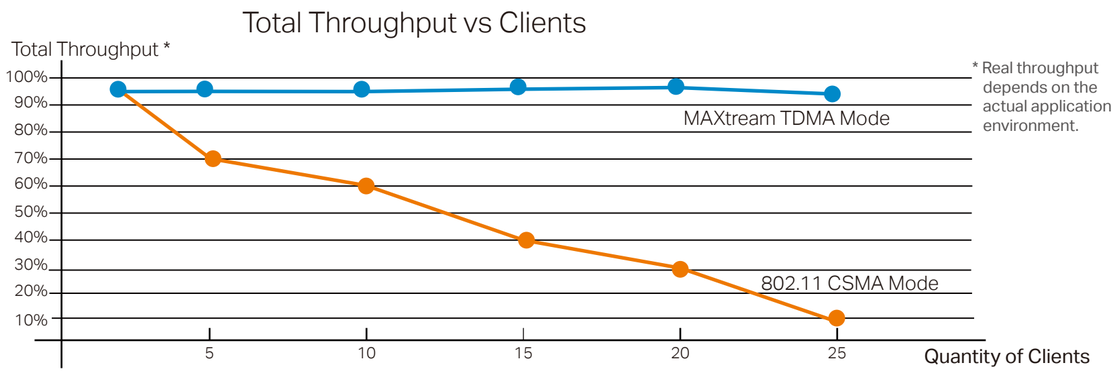
## Large-area Wireless Coverage

Using Base Station combined with Sector Antenna as the Access Point at the central station, and several CPEs as client to build a Point-to-Multipoint coverage.



# TP-Link MAXtream TDMA Technology

As network scale increases, wireless competition and collisions among outdoor devices will be so fierce that the real throughput of the network will drop, resulting in a serious impact on end-user experience, to mitigate these effects, TP-Link's Pharos series uses MAXtream[3] TDMA Technology.



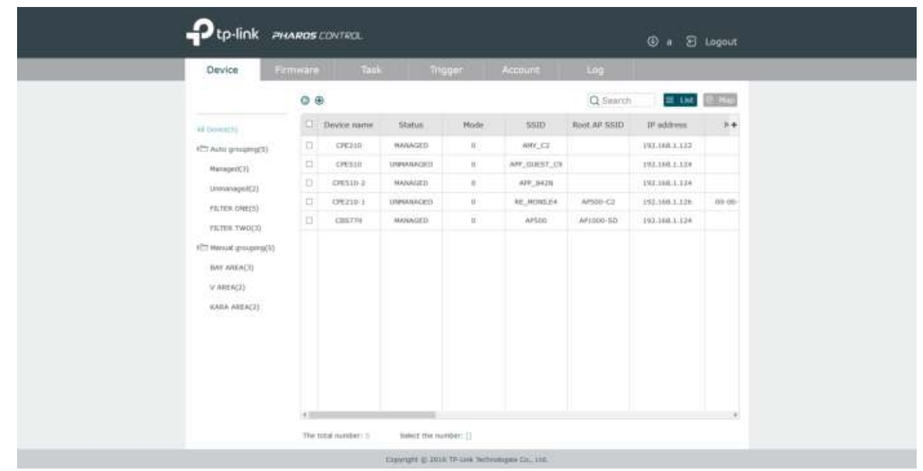

[3] CPE210 / CPE220 / CPE510 / CPE605 / CPE610 supports Maxtream.

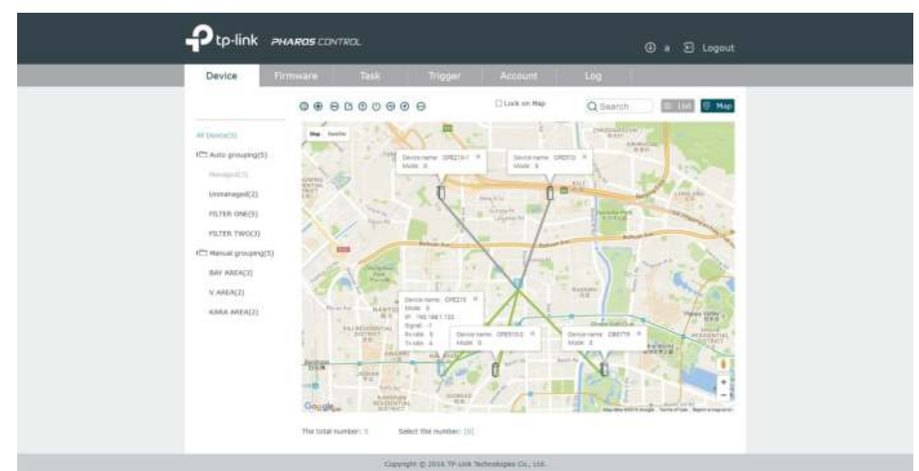
# PharOS

User-friendly web-based management system allows professionals to do more specific configurations.

# Pharos Control – Centralized Management System

Pharos also comes equipped with centralized management software that helps users easily manage all the devices in their network from a single PC - Pharos Control. Functions like device discovery, status monitoring, firmware upgrading, and network maintenance can be managed using Pharos Control.





# Specification

## Features & Performance

| Model | | CPE210 | CPE220 | CPE510 | CPE605 | CPE610 | CPE710 |
|---|---|---|---|---|---|---|---|
| Name | | 2.4 GHz 300 Mbps 9 dBi Outdoor CPE | 2.4 GHz 300 Mbps 12 dBi Outdoor CPE | 5 GHz 300 Mbps 13 dBi Outdoor CPE | 5 GHz 150 Mbps 23 dBi Outdoor CPE | 5 GHz 300 Mbps 23 dBi Outdoor CPE | 5GHz 867Mbps 23dBi Outdoor CPE |
| Package Contents | | Outdoor CPE<br>24 V Passive PoE Adapter<br>AC Power Cord<br>Mounting Kits<br>Quick Installation Guide | | | | | |
| Hardware Feature | Processor | Qualcomm 650 MHz CPU, MIPS 24 Kc | | Qualcomm 560 MHz CPU, MIPS 74 Kc | | | Qualcomm 750 MHz CPU, MIPS 74 Kc |
| | Memory | 64 MB DDR2 RAM, 8 MB Flash | | | | | 128 MB DDR2 RAM, 16 MB Flash |
| | Antenna Gain | 9 dBi | 12 dBi | 13 dBi | 23 dBi | | |
| | Beamwidth | 65° (Azimuth) / 40° (Elevation) | 60° (Azimuth) / 30° (Elevation) | 45° (Azimuth) / 45° (Elevation) | 7° (Azimuth) / 10° (Elevation) | 9° (Azimuth) / 7° (Elevation) | |
| | Interfaces | 1 10/100 Mbps Shielded Ethernet Port (LAN/POE)<br>1 Grounding Terminal<br>1 Reset Button | 1 10/100 Mbps Shielded Ethernet Port (LAN0/POE)<br>1 10/100 Mbps Shielded Ethernet Port (LAN1)<br>1 Grounding Terminal<br>1 Reset Button | 1 10/100 Mbps Shielded Ethernet Port (LAN/POE)<br>1 Grounding Terminal<br>1 Reset Button | 1 10/100 Mbps Shielded Ethernet Port (LAN/POE)<br>1 Reset Button | | 1 10/100/1000 Mbps Shielded Ethernet Port (LAN/POE)<br>1 Reset Button |
| | Power Supply | 24 VDC / 0.25 A Passive PoE<br>(+4,5 pins; -7,8 pins) | 24 VDC / 0.5 A Passive PoE<br>(+4,5 pins; -7,8 pins) | | 24 VDC / 0.25 A Passive PoE<br>(+4,5 pins; -7,8 pins) | 24 VDC / 0.5 A Passive PoE<br>(+4,5 pins; -7,8 pins) | |
| | Dimensions (L x W x H) | 224 × 79 × 60 mm | 276 × 79 × 60 mm | 224 × 79 × 60 mm | 207 x 255 x 350 mm | 207 × 280 × 366 mm | |
| | Protection[4] | 15 kV ESD Protection<br>6 kV Lightning Protection | | | | | |
| | Enclosure | Material: Outdoor ASA stabilized plastic<br>Weatherproof: IPX5 water and dust proof design | | | Material: Outdoor PC stabilized plastic<br>Weatherproof: IP65 water and dust proof design | | |

[4] Protection against lightning and electro-static discharge may be achieved through proper product setup, grounding and cable shielding. Refer to the instruction manual and consult an IT professional to assist with setting up this product.

# Specification

## Features & Performance

| Model | | CPE210 | CPE220 | CPE510 | CPE605 V1.0 | CPE610 | CPE710 |
|---|---|---|---|---|---|---|---|
| Name | | 2.4 GHz 300 Mbps 9 dBi Outdoor CPE | 2.4 GHz 300 Mbps 12 dBi Outdoor CPE | 5 GHz 300 Mbps 13 dBi Outdoor CPE | 5 GHz 150 Mbps 23 dBi Outdoor CPE | 5 GHz 300 Mbps 23 dBi Outdoor CPE | 5GHz 867Mbps 23dBi Outdoor CPE |
| Wireless Features | Wireless Standards | IEEE 802.11 b/g/n | | IEEE 802.11a/n | | | IEEE 802.11a/n/ac |
| | Proprietary Protocol | TDMA Mode (with Pharos MAXtream enabled) | | | | | / |
| | Frequency[5] | 2.4-2.483 GHz | | 5.15-5.85 GHz | | | |
| | Wireless Speed[6] | Up to 300 Mbps (40 MHz, Dynamic)<br>Up to 144.4 Mbps (20 MHz, Dynamic)<br>Up to 72.2 Mbps (10 MHz, Dynamic)<br>Up to 36.1 Mbps (5 MHz, Dynamic) | | | Up to 150 Mbps (40 MHz, Dynamic)<br>Up to 72.2 Mbps (20 MHz, Dynamic)<br>Up to 36.1 Mbps (10 MHz, Dynamic)<br>Up to 18.05 Mbps (5 MHz, Dynamic) | Up to 300 Mbps (40 MHz, Dynamic)<br>Up to 144.4 Mbps (20 MHz, Dynamic)<br>Up to 72.2 Mbps (10 MHz, Dynamic)<br>Up to 36.1 Mbps (5 MHz, Dynamic) | Up to 867 Mbps (80 MHz, Dynamic)<br>Up to 400 Mbps (40 MHz, Dynamic)<br>Up to 173.4 Mbps (20 MHz, Dynamic) |
| | Maximum Transmit Power[7] | 25 dBm<br>(Adjustable power by 1 dBm) | 30 dBm<br>(Adjustable power by 1 dBm) | 26 dBm<br>(Adjustable power by 1 dBm) | 23 dBm<br>(Adjustable power by 1 dBm) | 25 dBm<br>(Adjustable power by 1 dBm) | 27 dBm<br>(Adjustable power by 1 dBm) |
| Software Feature | Operation Mode | AP / Client / AP Router / AP Client Router (WISP Client) | | | | | |
| | Network Configurations | WAN: Static / Dynamic / PPPoE / L2TP / PPTP (CPE210 / CPE220 / CPE510 / CPE605 / CPE610 supports L2TP / PPTP)<br>LAN: Static / Dynamic / DHCP<br>IPv6<br>Forwarding: ALG / UPnP / Virtual Server / Port Trigger<br>Security: SPI Firewall / Ping Forbidden / DoS Protection<br>Access Control<br>Static Routing<br>Bandwidth Control<br>IP & MAC Binding | | | | | |

[5] Available operating frequency may vary depending on the limitaion of the countries or regions in which the device is used.

[6] Maximum wireless transmission rates are the physical rates derived from IEEE Standard 802.11 specifications. Actual wireless transmission rate will vary as a result of:
1) environmental factors, including building materials, physical objects and obstacles,
2) network conditions, including local interference, volume and density of traffic, product location, network complexity, and network overhead and
3) client limitations, including rated performance, location, connection quality, and client condition.

[7] Maximum transmit power is limited by local regulatory settings.

# Specification

## Features & Performance

| Model | | CPE210 | CPE220 | CPE510 | CPE605 | CPE610 | CPE710 |
|---|---|---|---|---|---|---|---|
| Name | | 2.4 GHz 300 Mbps 9 dBi/12 dBi Outdoor CPE | | 5 GHz 300 Mbps 13 dBi Outdoor CPE | 5 GHz 150 Mbps 23 dBi Outdoor CPE | 5 GHz 300 Mbps 23 dBi Outdoor CPE | 5GHz 867Mbps 23dBi Outdoor CPE |
| Software Feature | Wireless Configurations | Pharos MAXtream TDMA Technology (CPE210 / CPE220 / CPE510 / CPE605 / CPE610 supports Maxtream.)<br>Long Range PtP<br>Selectable Channel Width: 20/40/80 MHz for CPE710, 5/10/20/40 MHz for other models<br>Auto Channel Selection<br>Transmit Power Control<br>Dynamic Frequency Selection (DFS) *Only CPE510(UN) / CPE605(UN) / CPE610(UN) / CPE710(UN) supports DFS.<br>WDS Enable/Disable<br>Security: WPA / WPA2, WPA-PSK / WPA2-PSK (AES / TKIP) Encryption<br>SSID Broadcast Enable/Disable<br>Multi-SSID with VLAN Tagging (AP mode only)<br>Distance / ACK Timeout Setting<br>Wireless MAC Address Filter<br>Wireless Advanced:<br>Beacon Intevel / RTS Threshold / Fragmentation Threshold / DTIM Intevel / AP Isolation / Short GI / Wi-Fi Multimedia | | | | | |
| | Management | Discovery and Remote Management via Pharos Control application<br>HTTP / HTTPS Web-based management<br>System Log SNMP Agent (v2c)<br>Ping Watch Dog Dynamic DDNS<br>SSH Server | | | | | |
| | System Tools | Indicators: Signal Strength / Noise / Transmit CCQ / CPU / Memory<br>Monitors: Throughput / Stations / Interfaces / ARP / Routes / WAN / DHCP<br>Spectrum Analysis<br>Speed Test<br>Ping<br>Traceroute<br>Antenna Alignment | | | | | |

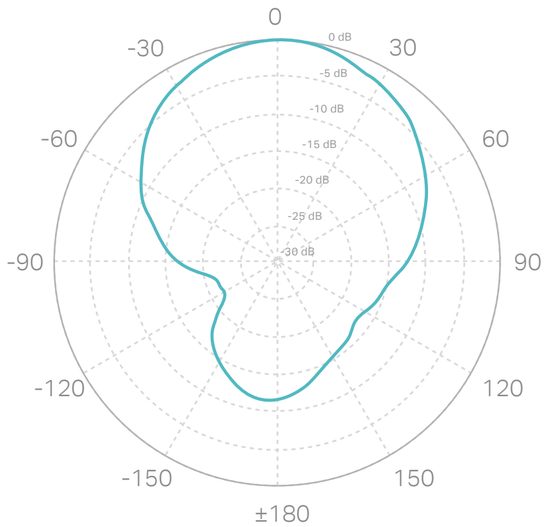
# Specification

## Features & Performance

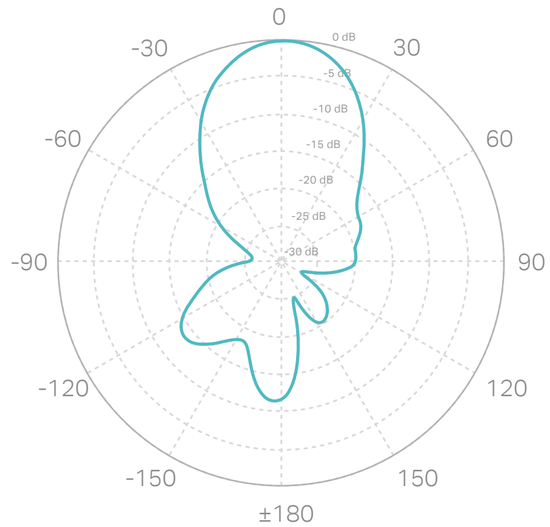
| Model | | CPE210 | CPE220 | CPE510 | CPE605 | CPE610 | CPE710 |
|---|---|---|---|---|---|---|---|
| Name | | 2.4 GHz 300 Mbps 9 dBi / 12 dBi Outdoor CPE | | 5 GHz 300 Mbps 13 dBi Outdoor CPE | 5 GHz 150 Mbps 23 dBi Outdoor CPE | 5 GHz 300 Mbps 23 dBi Outdoor CPE | 5GHz 867Mbps 23dBi Outdoor CPE |
| Software Feature | System-level Optimizations | IGMP Snooping / Proxy for multicast applications | | | | | |
| | System Requirements | Microsoft Windows 98SE, NT, 2000, XP, VistaTM or Windows 10, Windows 8,<br>Windows 7, MAC OS, NetWare, UNIX or Linux.<br>Note: We recommend you to use one of following Web browsers for better experience: Google Chrome, Safari, Firefox. IE browsers are not recommended. | | | | | |
| Others | Certification | CE, FCC, IPX5 | | | CE, FCC, IP65 | CE, FCC, IP65, IC | |
| | Environment | Operating Temperature: -40 °C~70 °C (-40 °F~158 °F)<br>Storage Temperature: -40 °C~70 °C (-40 °F~158 °F)<br>Operating Humidity: 10%~90% non-condensing<br>Storage Humidity: 5%~95% non-condensing | | | | | |

# CPE210 Antenna Patterns

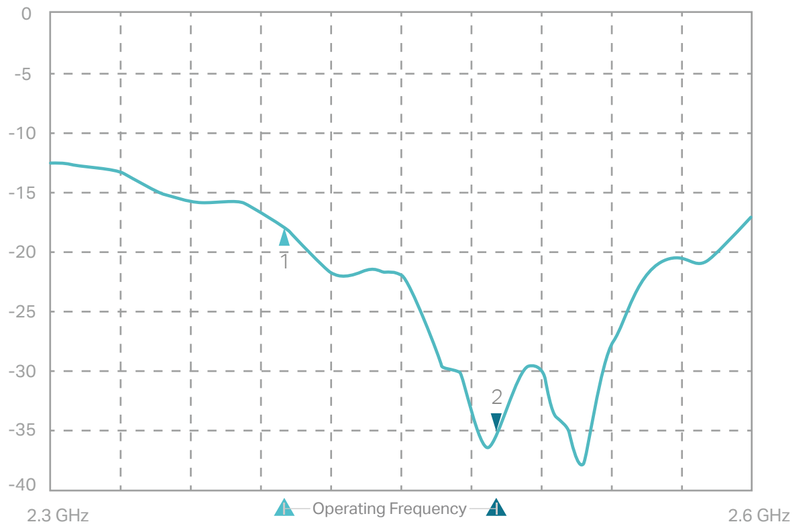
## Vertical Azimuth



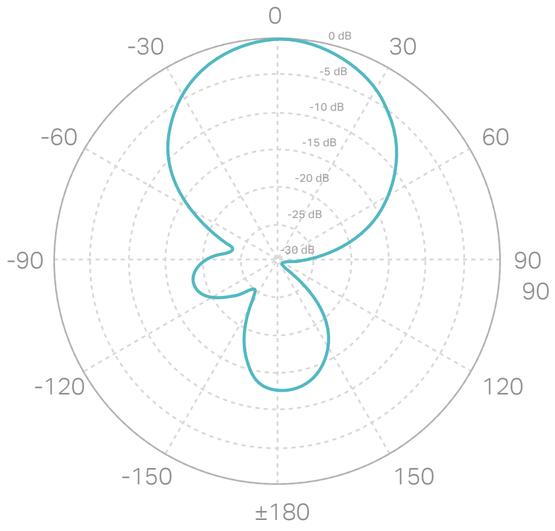

## Vertical Elevation



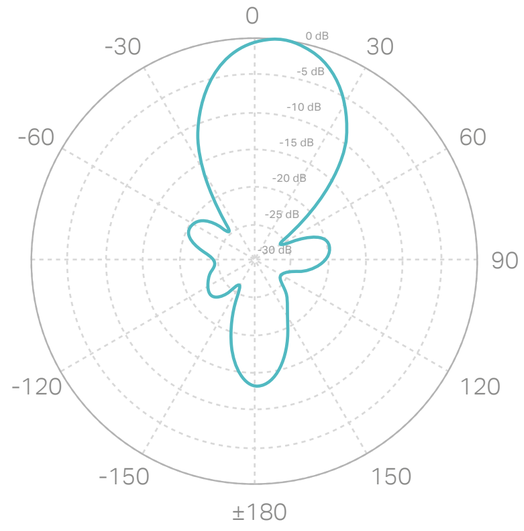

## Return Loss –Vertical Polarization



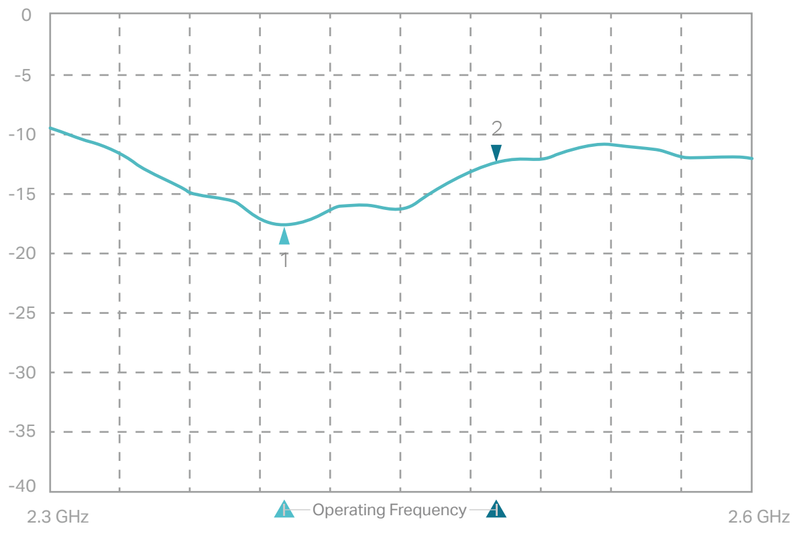

## Horizontal Azimuth




## Horizontal Elevation

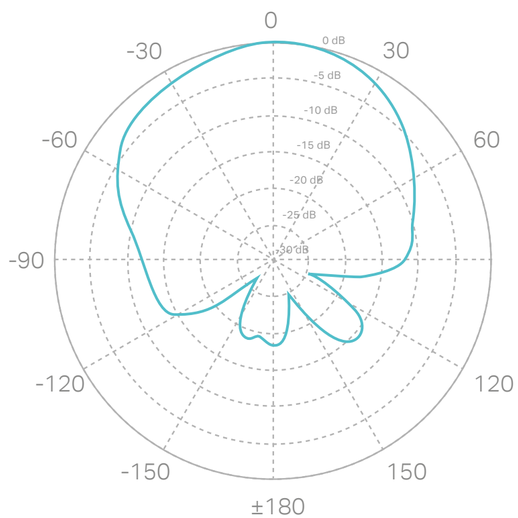



## Return Loss – Horizontal Polarization

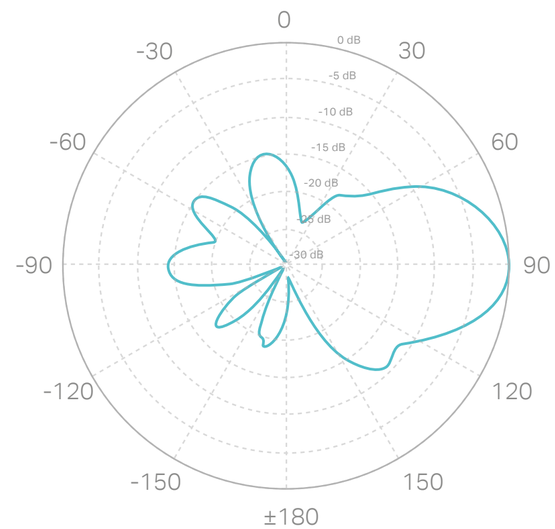


# CPE220 Antenna Patterns

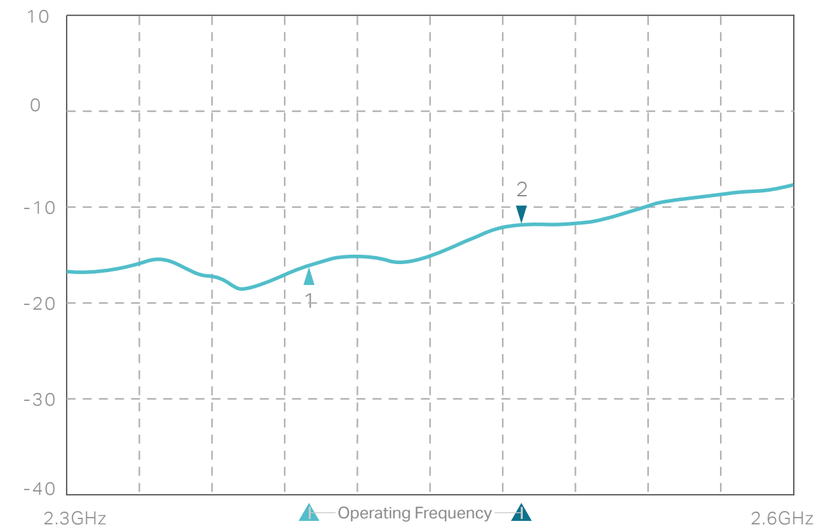
## Vertical Azimuth



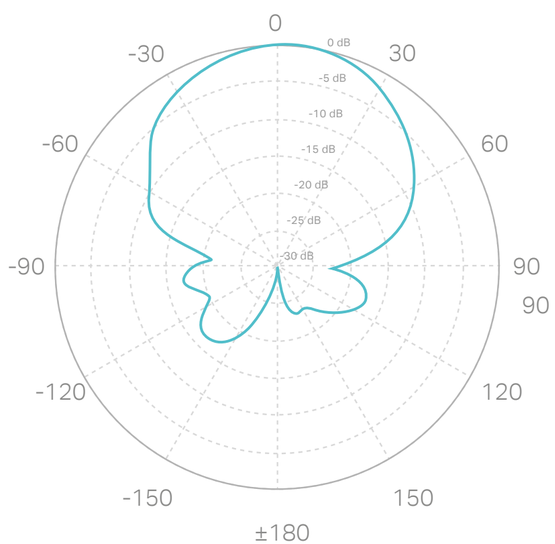

## Vertical Elevation



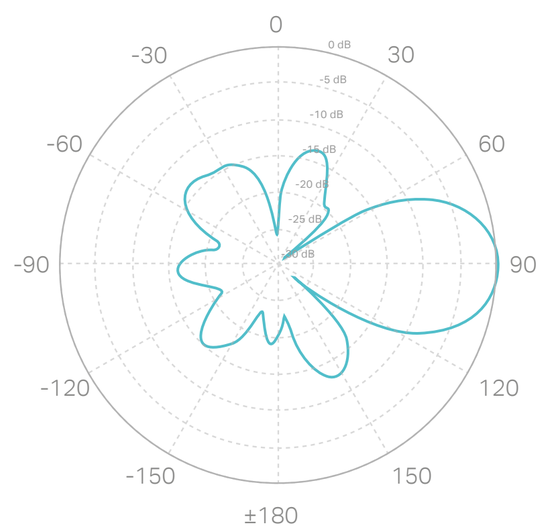

## Return Loss –Vertical Polarization



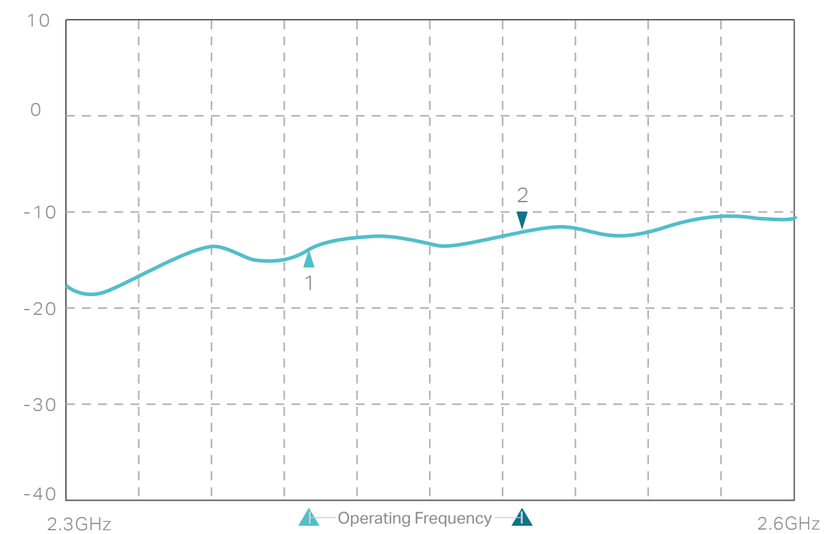

## Horizontal Azimuth




## Horizontal Elevation

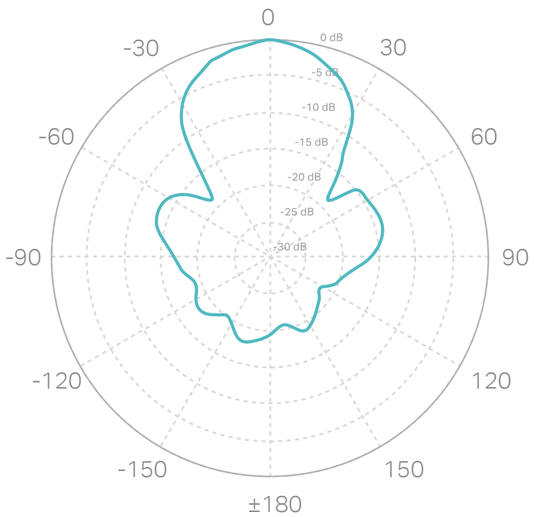



## Return Loss – Horizontal Polarization

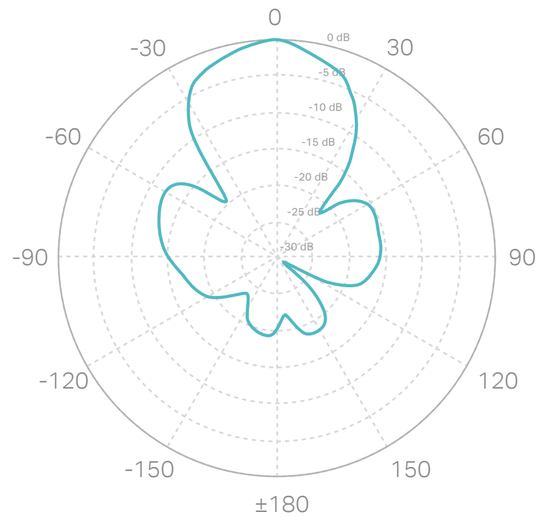


# CPE510 Antenna Patterns

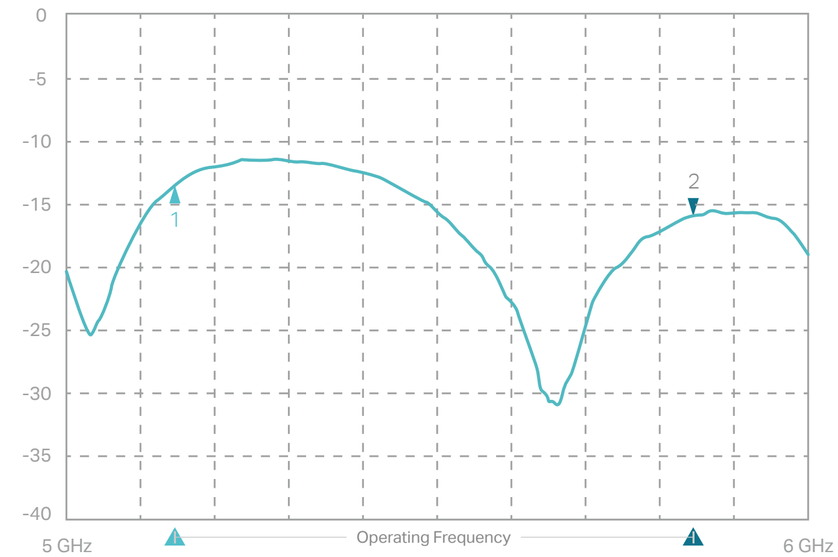
## Vertical Azimuth



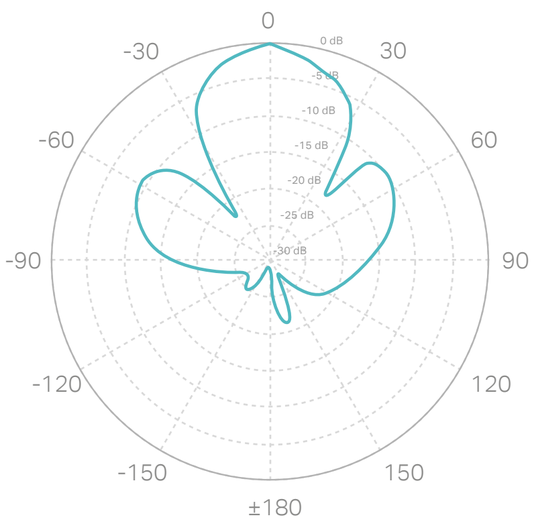

## Vertical Elevation



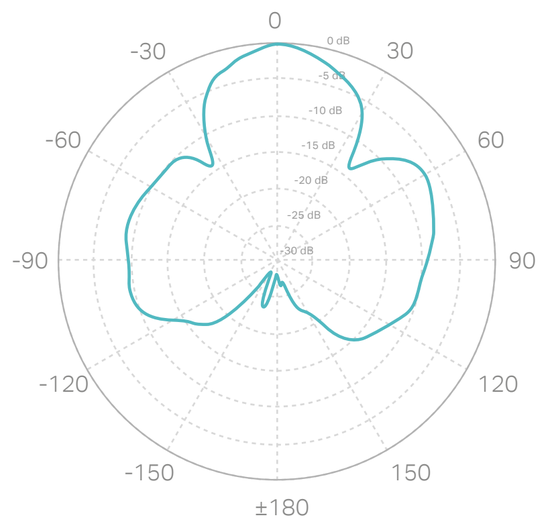

## Return Loss –Vertical Polarization



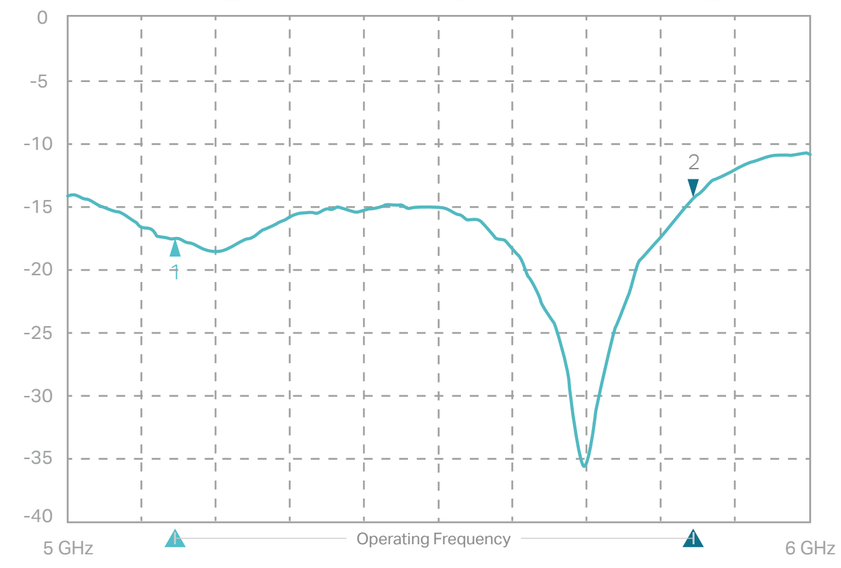

## Horizontal Azimuth




## Horizontal Elevation

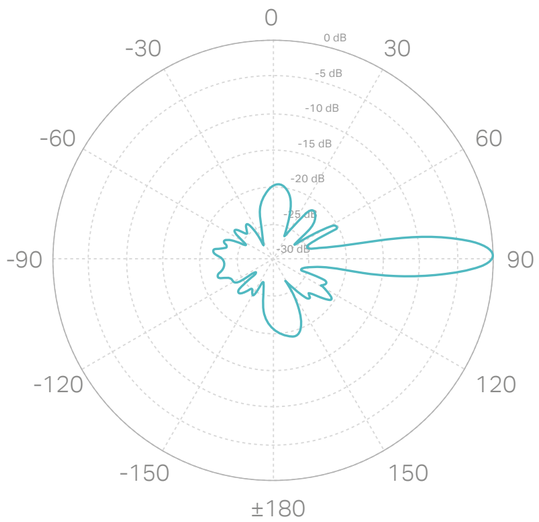



## Return Loss – Horizontal Polarization

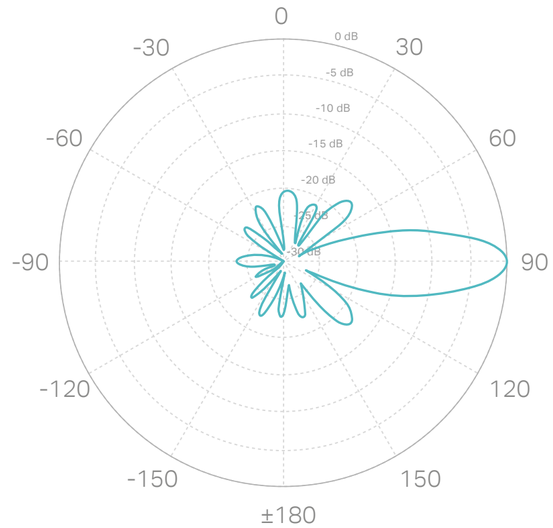


# CPE605 Antenna Patterns

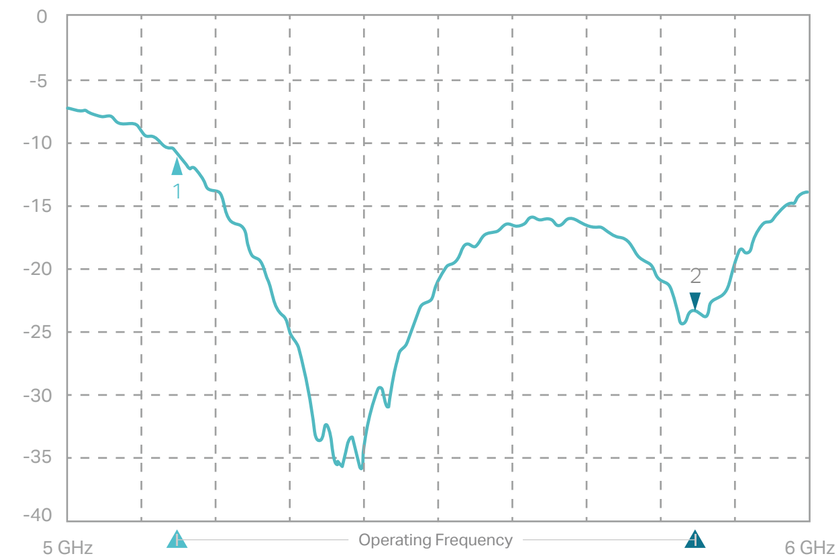
## Azimuth




## Elevation

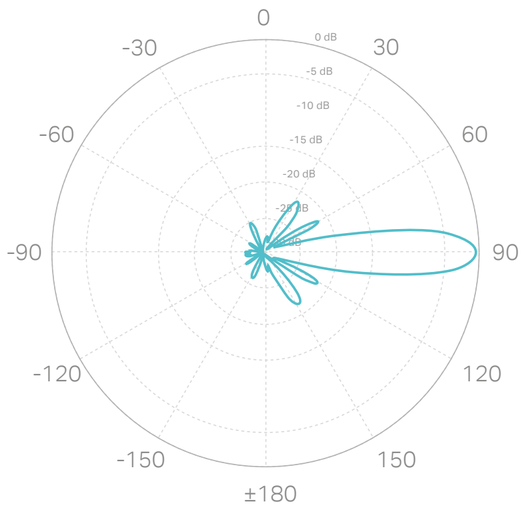



## Return Loss

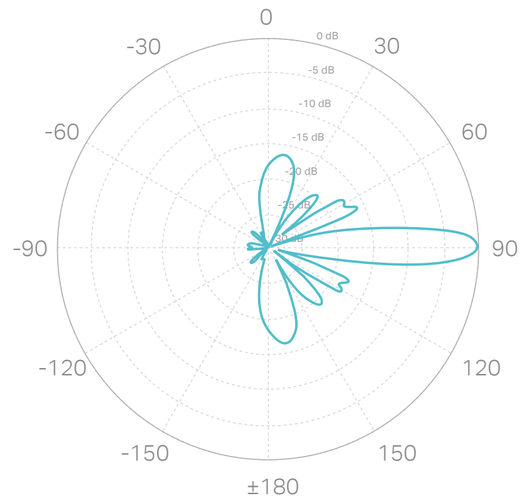


# CPE610 Antenna Patterns

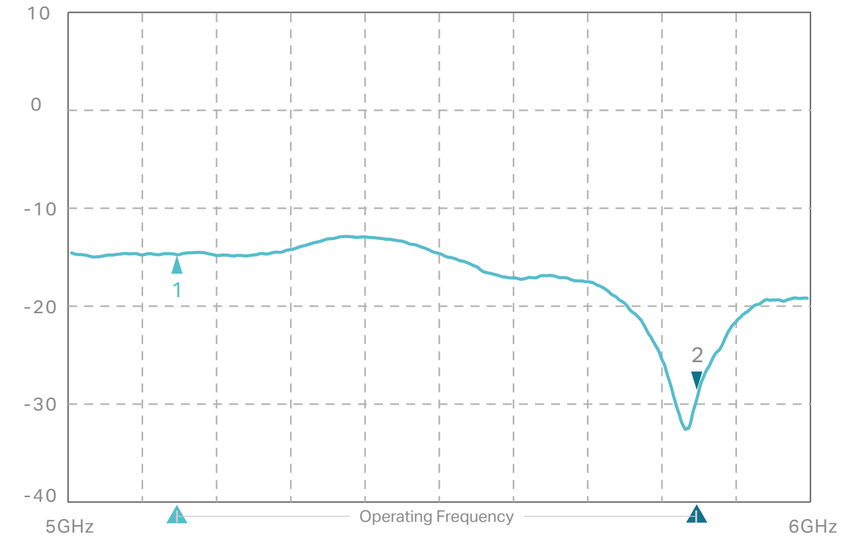
## Vertical Azimuth



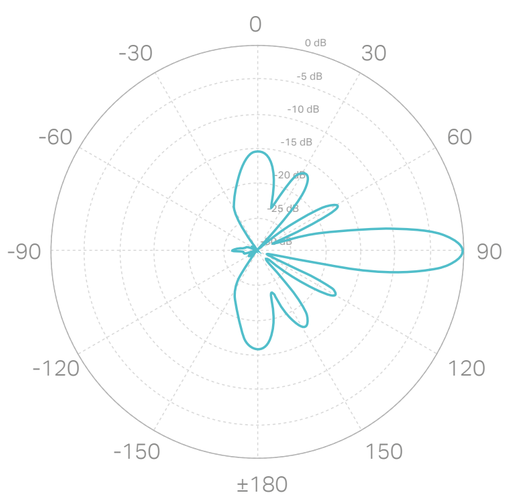

## Vertical Elevation



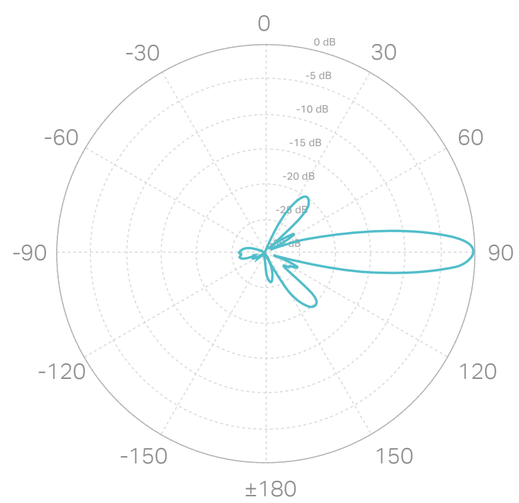

## Return Loss –Vertical Polarization



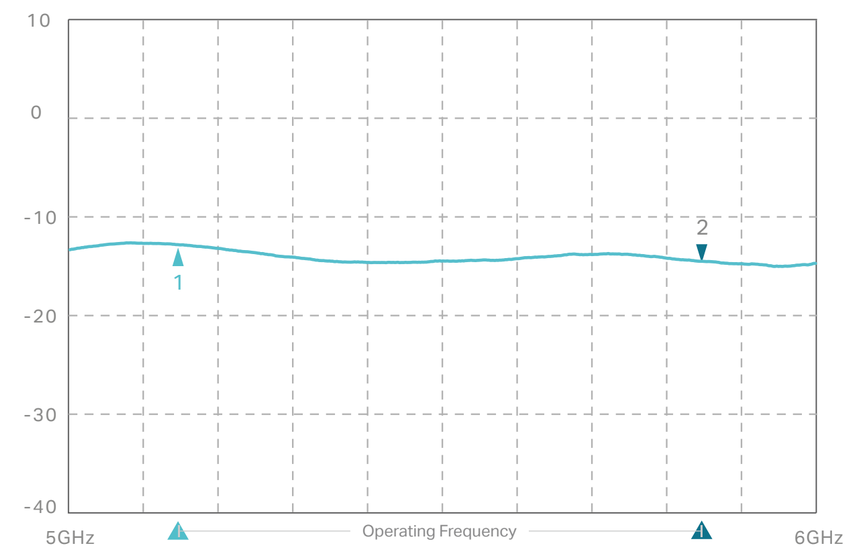

## Horizontal Azimuth




## Horizontal Elevation

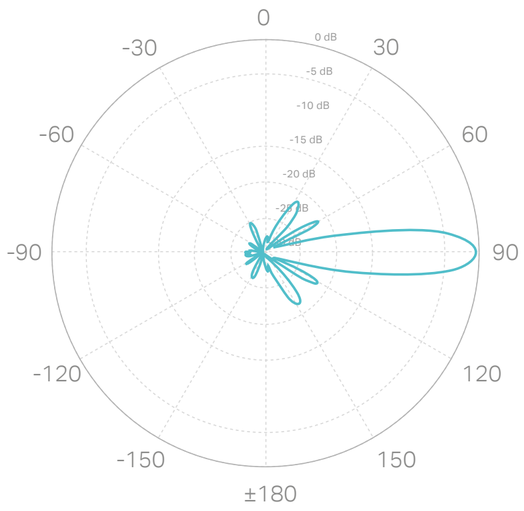



## Return Loss – Horizontal Polarization

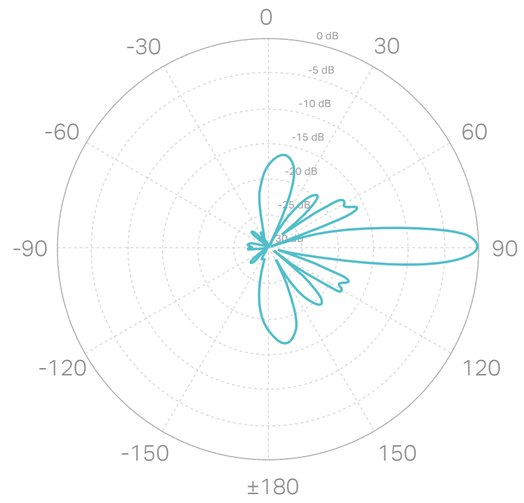


# CPE710 Antenna Patterns

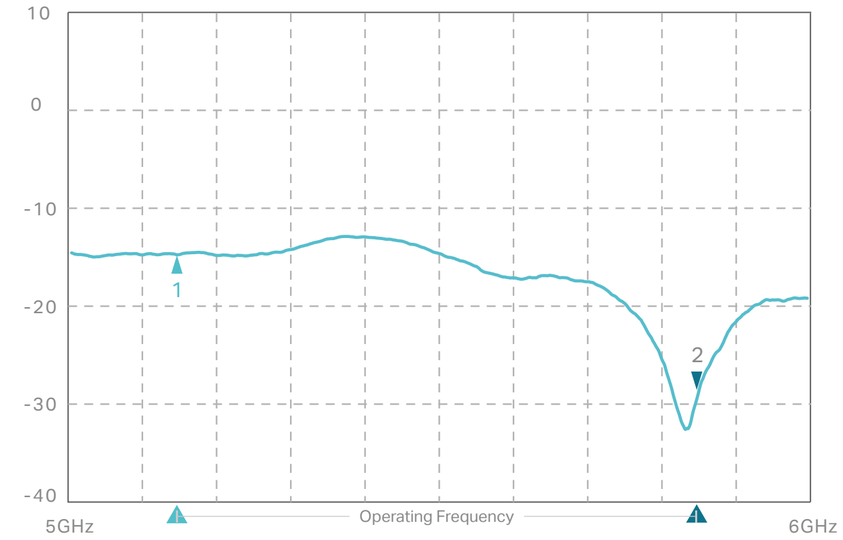
## Vertical Azimuth



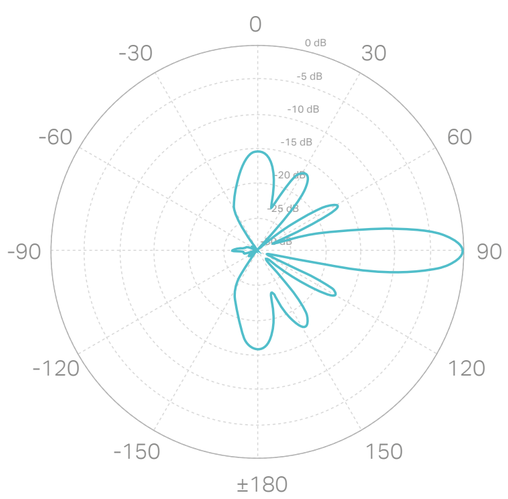

## Vertical Elevation



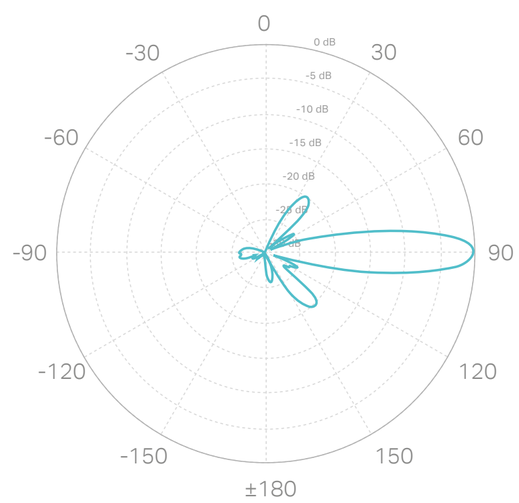

## Return Loss –Vertical Polarization



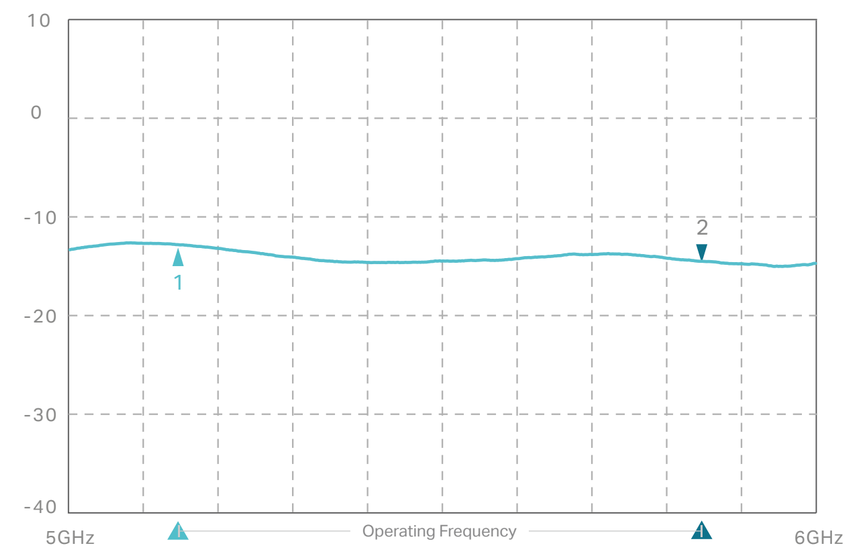

## Horizontal Azimuth




## Horizontal Elevation




## Return Loss – Horizontal Polarization

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