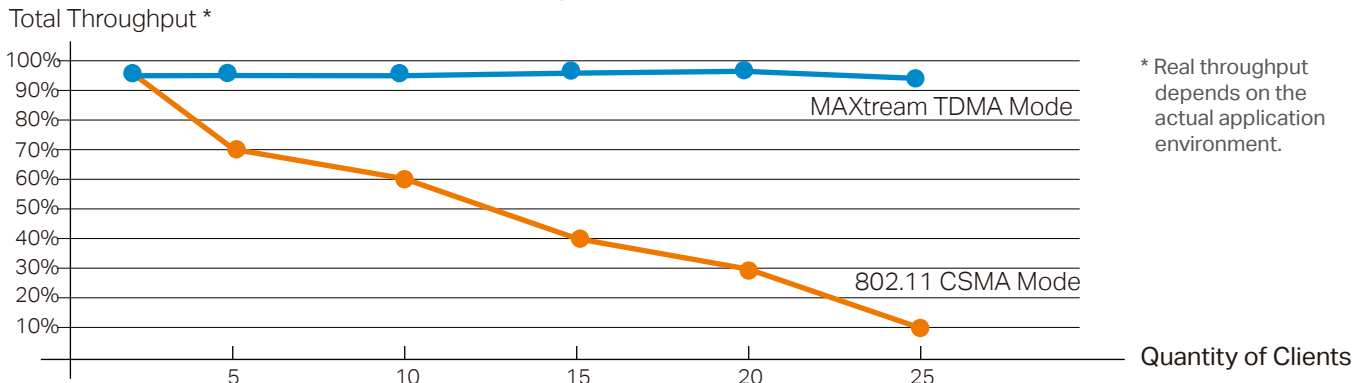


# TP-Link MAXstream TDMA Technology

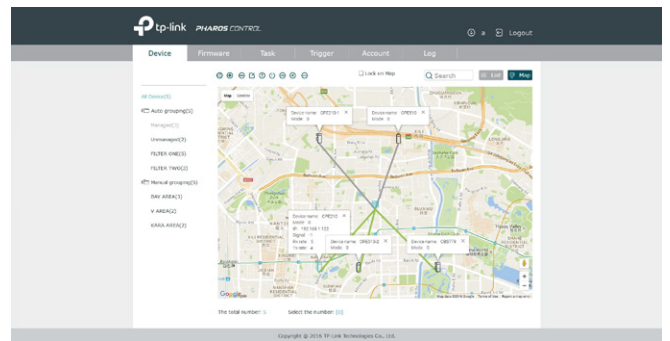
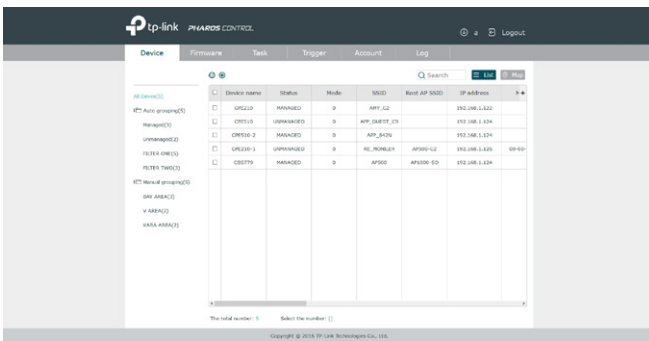
As network scale increases, wireless competition and collisions among outdoor devices will be so fierce that the real throughput of the network will drop, resulting in a serious impact on end-user experience, to mitigate these effects, TP-Link's Pharos series uses MAXstream TDMA Technology.

## Total Throughput vs Clients



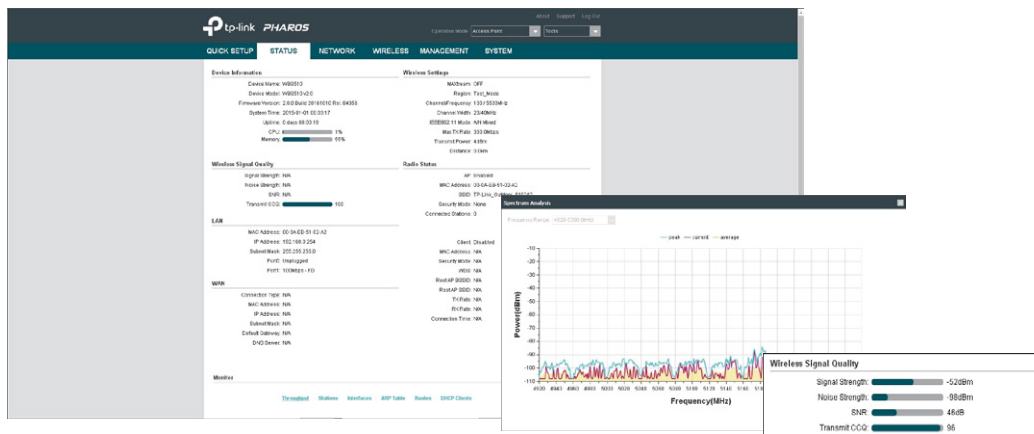
# Pharos Control – Centralized Management System

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.



# PharosOS

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



# Specifications

Features & Performance			
Model	CPE210/CPE220	CPE510/CPE520/CPE610	
Name	2.4GHz 300Mbps 9dBi/12dBi Outdoor CPE	5GHz 300Mbps 13dBi/16dBi/23dBi Outdoor CPE	
Hardware Features	Processor	Qualcomm 650MHz CPU, MIPS 24Kc (CPE210, CPE220) Qualcomm 560MHz CPU, MIPS 74Kc (CPE510, CPE520, CPE610)	
	Memory	64MB DDR2 RAM, 8MB Flash	
	Antenna Gain	CPE210: 9dBi CPE220: 12dBi	CPE510: 13dBi CPE520: 16dBi CPE610: 23dBi
	Beamwidth	CPE210: 65° (Azimuth)/35° (Elevation) CPE220: 60° (Azimuth)/30° (Elevation)	CPE510: 45° (Azimuth)/30° (Elevation) CPE520: 45° (Azimuth)/30° (Elevation) CPE610: 9° (Azimuth)/7° (Elevation)
	Interfaces	CPE210/CPE510: 1 10/100Mbps Shielded Ethernet Port (LAN/POE) 1 Grounding Terminal 1 Reset Button	
		CPE220/CPE520: 1 10/100Mbps Shielded Ethernet Port (LAN0/POE) 1 10/100Mbps Shielded Ethernet Port (LAN1) 1 Grounding Terminal 1 Reset Button	
		CPE610: 1 10/100Mbps Shielded Ethernet Port (LAN/POE) 1 Reset Button	
	Power Supply	24VDC/0.5A Passive PoE (+4,5pins; -7,8pins)	
	Dimensions (L x W x H)	CPE210/CPE510: 224×79×60 mm CPE220/CPE520: 276×79×60 mm CPE610: 207×280×366 mm	
Protection <sup>2</sup>	15KV ESD Protection 6KV Lightning Protection		
Enclosure	CPE210/CPE220/CPE510/CPE520: Material: Outdoor ASA stabilized plastic Weatherproof: IPX5 water and dust proof design		
	CPE610: Material: Outdoor PC stabilized plastic Weatherproof: IP65 water and dust proof design		
Wireless Features	Wireless Standards	IEEE 802.11b/g/n	IEEE 802.11a/n
	Proprietary Protocol	TDMA Mode (with Pharos MAXstream enabled)	
	Frequency <sup>3</sup>	2.4~2.483GHz	5.15~5.85GHz
	Wireless Speed <sup>4</sup>	Up to 300Mbps (40MHz, Dynamic) Up to 144.4Mbps (20MHz, Dynamic) Up to 72.2Mbps (10MHz, Dynamic) Up to 36.1Mbps (5MHz, Dynamic)	

<sup>2</sup>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.

<sup>3</sup>Available operation frequency may vary depending on the limitation of the countries or regions in which the device is used.

<sup>4</sup>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.

## Features & Performance

Model		CPE210/CPE220	CPE510/CPE520/CPE610
Name		2.4GHz 300Mbps 9dBi/12dBi Outdoor CPE	5GHz 300Mbps 13dBi/16dBi/23dBi Outdoor CPE
Wireless Features	Maximum Transmit Power <sup>5</sup>	CPE210: 25dBm (Adjustable power by 1dBm) CPE220: 30dBm (Adjustable power by 1dBm) CPE510: 25dBm (Adjustable power by 1dBm) CPE520: 27dBm (Adjustable power by 1dBm) CPE610: 25dBm (Adjustable power by 1dBm)	
Software Features	Operation Modes	AP/Client/Bridge/Repeater/AP Router/AP Client Router (WISP Client)	
	Network Configurations	WAN: Static/Dynamic/PPPoE/L2TP/PPTP LAN: Static/Dynamic/DHCP Forwarding: ALG/UPnP/Virtual Server/Port Trigger Security: SPI Firewall/ Ping Forbidden/DoS Protection Access Control Static Routing Bandwidth Control IP & MAC Binding	
	Wireless Configurations	Pharos MAXstream TDMA Technology Selectable Channel Width: 5/10/20/40MHz Auto Channel Selection Transmit Power Control Dynamic Frequency Selection (DFS) WDS Enable/Disable Security: WPA/WPA2, WPA-PSK/WPA2-PSK (AES/TKIP) Encryption 64/128/152-bit WEP Encryption SSID Broadcast Enable/Disable Multi-SSID with VLAN Tagging (AP mode only) Distance/ACK Timeout Setting Wireless MAC Address Filter Wireless Advanced: Beacon Interval/RTS Threshold/Fragmentation Threshold/DTIM Interval/AP Isolation/Short GI/Wi-Fi Multimedia	
	Management	Discovery and Remote Management via Pharos Control application HTTP/HTTPS Web-based management System Log SNMP Agent (v2c) Ping Watch Dog Dynamic DDNS SSH Server	
	System Tools	Indicators: Signal Strength/Noise/Transmit CCQ/CPU/Memory Monitors: Throughput/Stations/Interfaces/ARP/Routes/WAN/DHCP Spectrum Analysis Speed Test Ping Traceroute	
	System-level Optimizations	IGMP Snooping/Proxy for multicast applications Hardware watch dog	

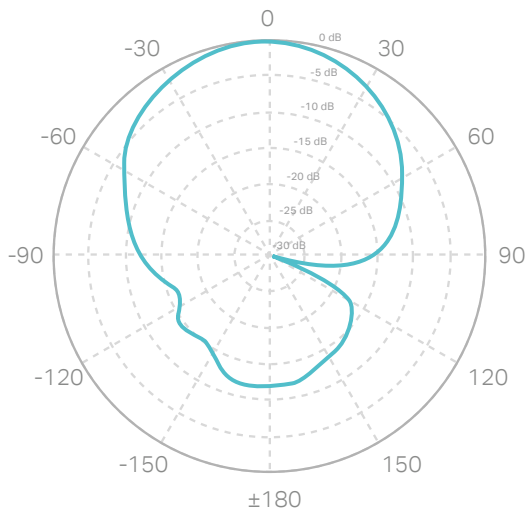
<sup>5</sup>Maximum transmit power is limited by local regulatory settings.

## Features & Performance

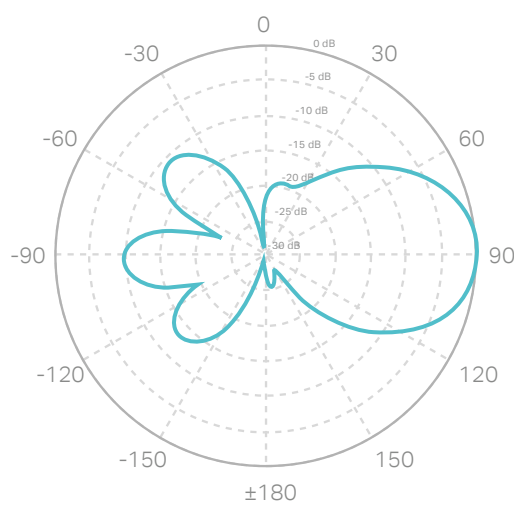
Model		CPE210/CPE220	CPE510/CPE520/CPE610
Name		2.4GHz 300Mbps 9dBi/12dBi Outdoor CPE	5GHz 300Mbps 13dBi/16dBi/23dBi Outdoor CPE
Others	Certification	CPE210/CPE220/CPE510/CPE520: CE, FCC, RoHS, IPX5 CPE610: CE, FCC, RoHS, IP65, IC	
	Package Contents	Outdoor CPE 24V 0.5A Passive PoE Adapter Pole Mounting Strap AC Power Cord Quick Installation Guide	
	System Requirements	Microsoft Windows 98SE, NT, 2000, XP, Vista™ or Windows 10, Windows 8, Windows 7, MAC OS, NetWare, UNIX or Linux. Note: We recommend you to use one of following Web browsers for better experience: Google Chrome, Safari, Firefox. IE browsers are not recommended..	
	Environment	Operating Temperature: -40°C~70°C (-40°F~158°F) Storage Temperature: -40°C~70°C (-40°F~158°F) Operating Humidity: 10%~90% non-condensing Storage Humidity: 5%~95% non-condensing	
POE Adapter Features	Dimensions (WxDxH)	85.8×43.9×29.7mm	
	Input Voltage	100VAC-240VAC@50Hz-60Hz	
	Input Current	0.4A Max @ 100VAC	
	Output Voltage	24VDC(+4,5pins; -7,8pins)	
	Output Current	0.5A Max	
	Efficiency	>84.29%	
	Interfaces	1 AC Jack with Earth Ground 1 10/100/1000Mbps Shielded Ethernet Port (Power + Data) 1 10/100/1000Mbps Shielded Ethernet Port (Data)	
	Power LED	Green	
	Certifications	CE/FCC/BSMI/UL/CB/CEC/DOE/NRCAN/SAA/KC/ERP/MEPS/S-mark/PSB/PSE/GS	

# CPE210 Antenna Patterns

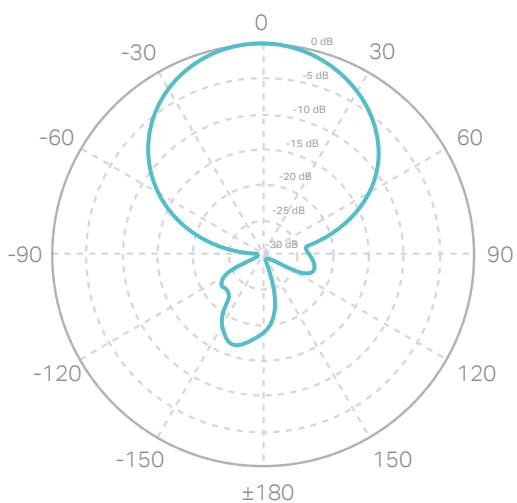
**Vertical Azimuth**



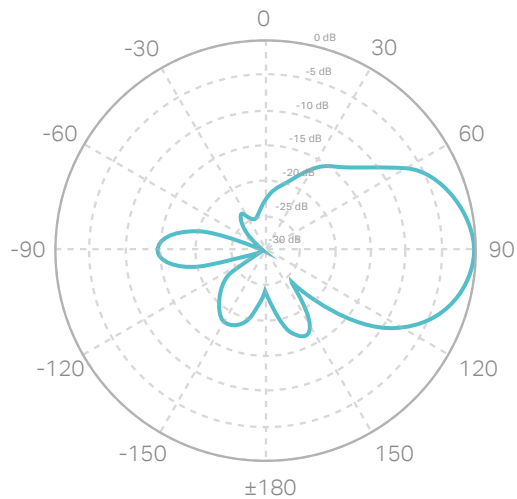
**Vertical Elevation**



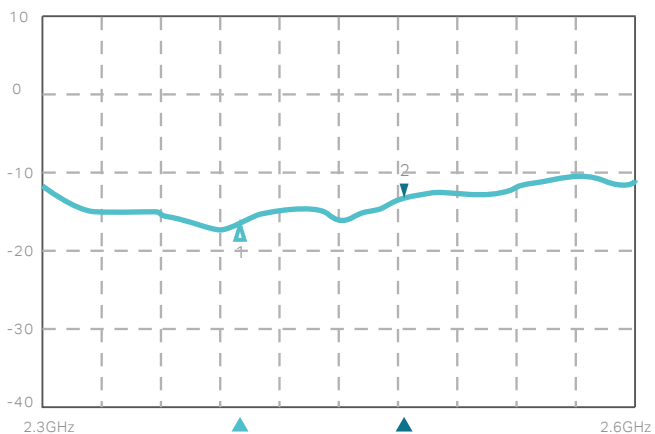
**Horizontal Azimuth**



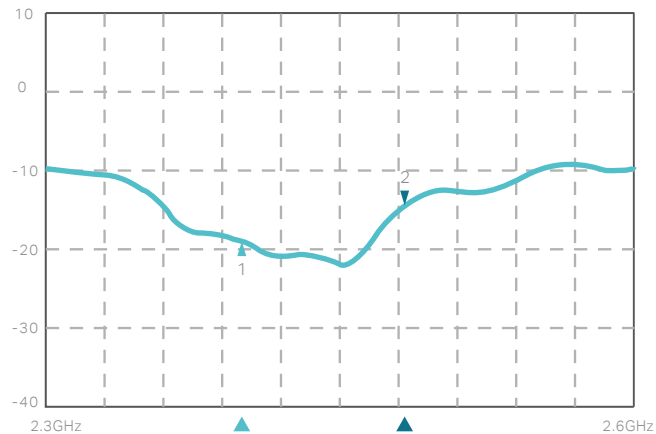
**Horizontal Elevation**



**Return Loss – Vertical Polarization**

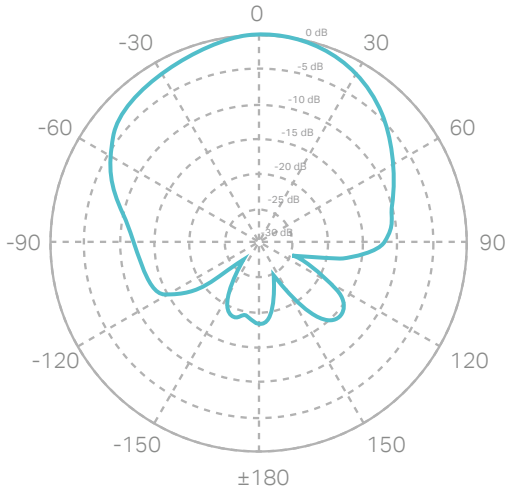


**Return Loss – Horizontal Polarization**

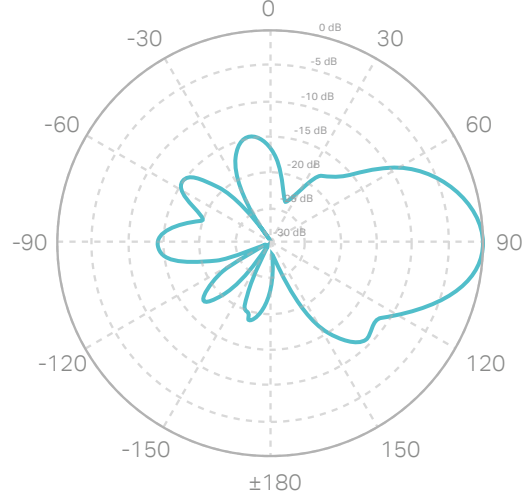


# CPE220 Antenna Patterns

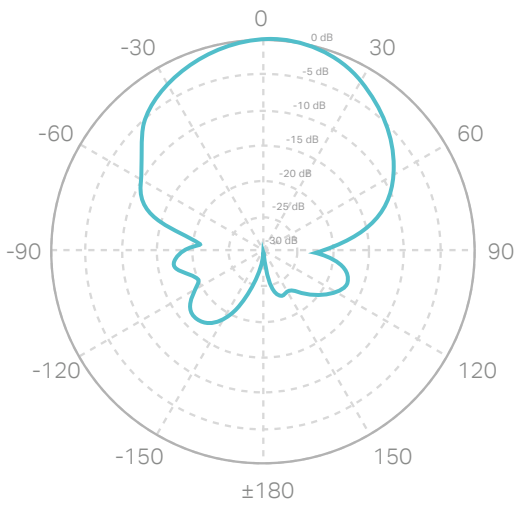
**Vertical Azimuth**



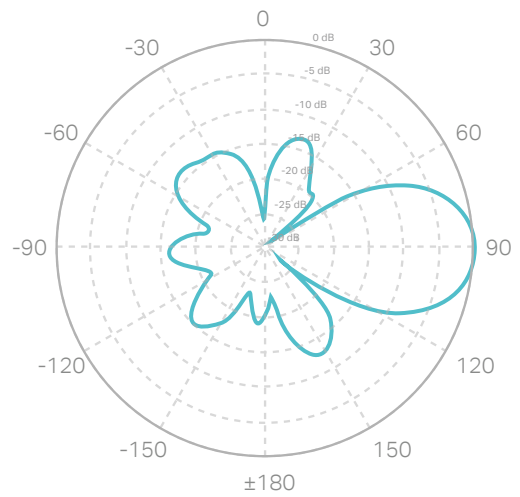
**Vertical Elevation**



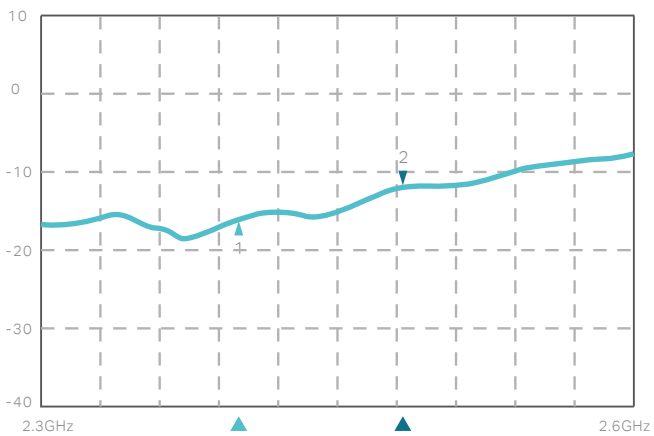
**Horizontal Azimuth**



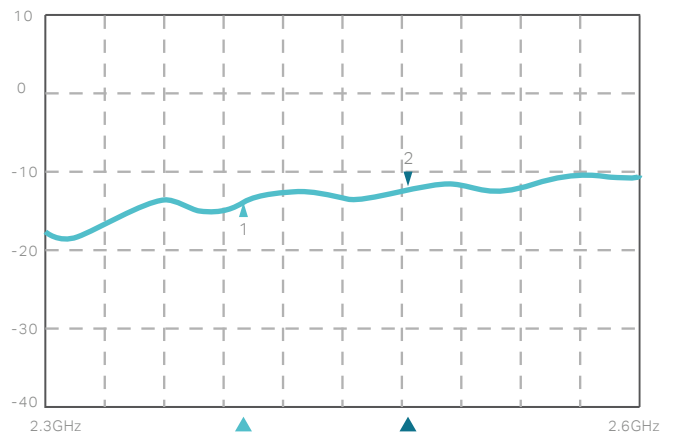
**Horizontal Elevation**



**Return Loss – Vertical Polarization**

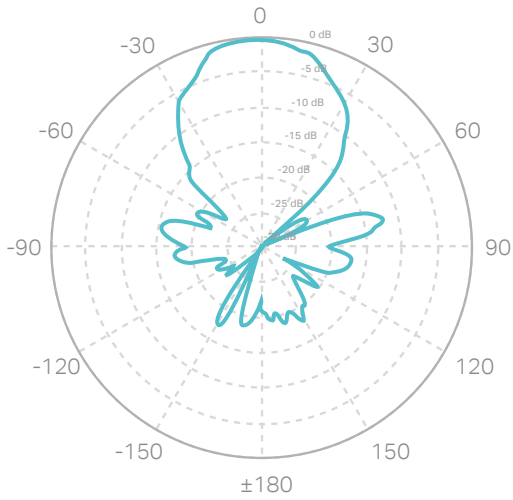


**Return Loss – Horizontal Polarization**

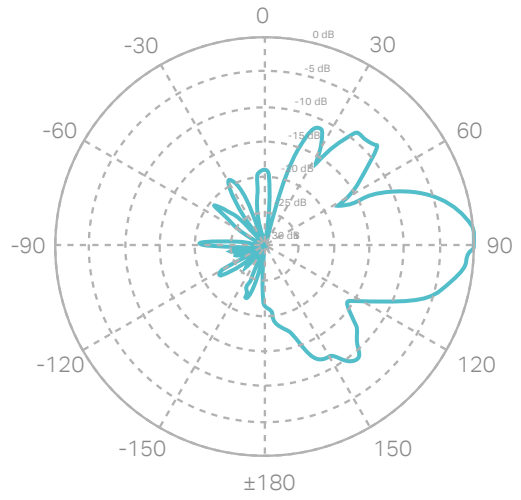


# CPE510 Antenna Patterns

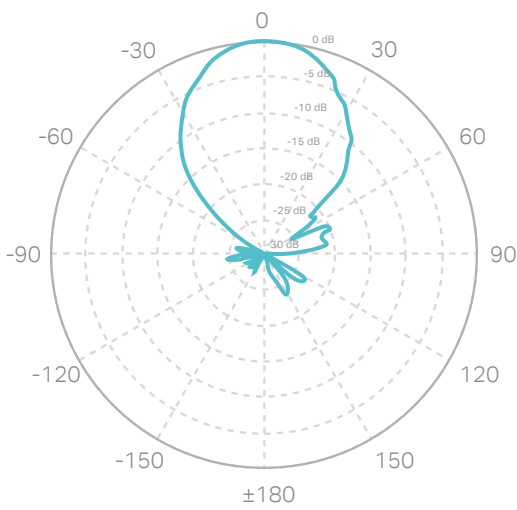
**Vertical Azimuth**



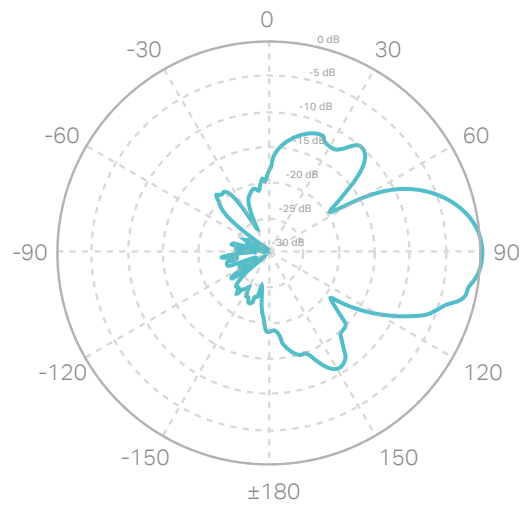
**Vertical Elevation**



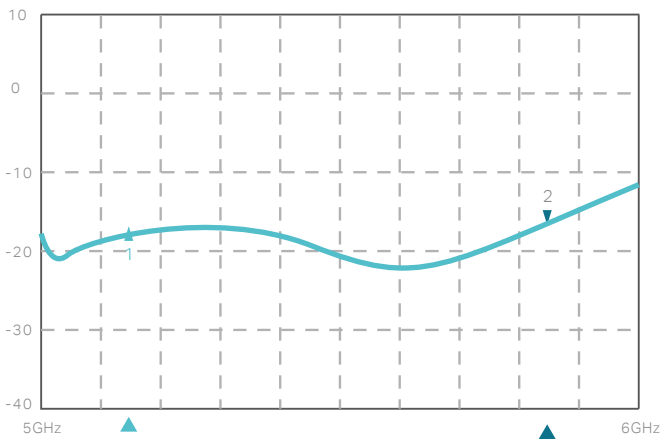
**Horizontal Azimuth**



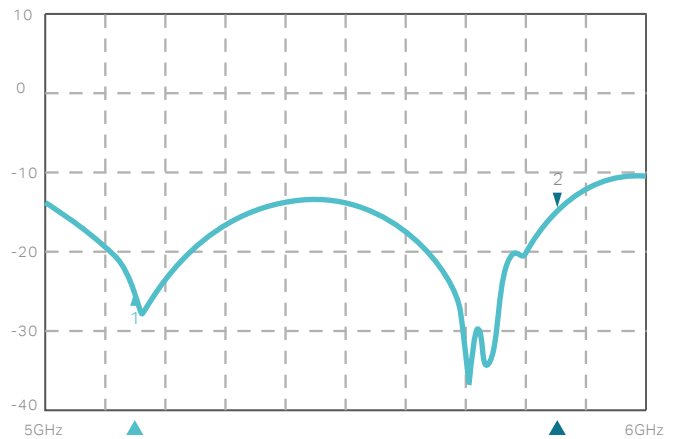
**Horizontal Elevation**



**Return Loss – Vertical Polarization**

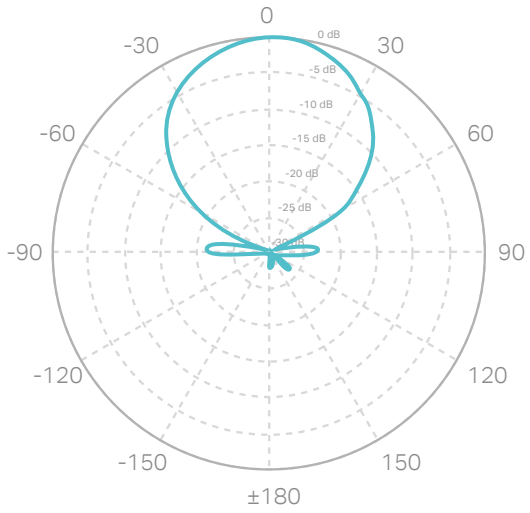


**Return Loss – Horizontal Polarization**

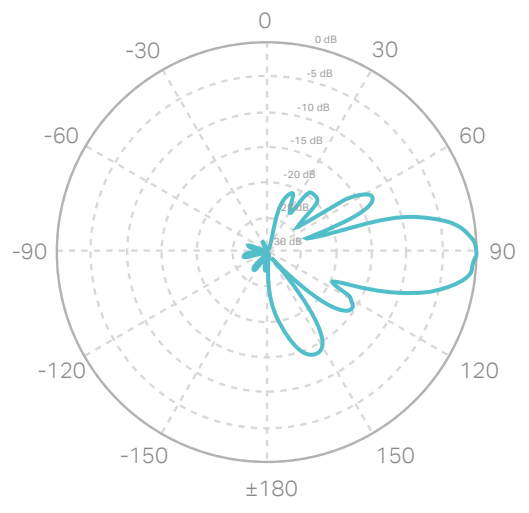


# CPE520 Antenna Patterns

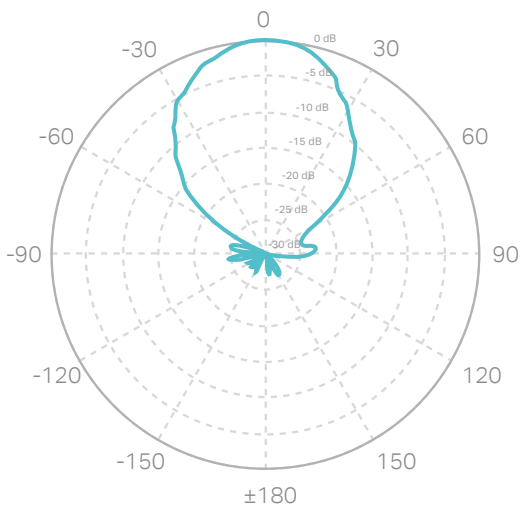
**Vertical Azimuth**



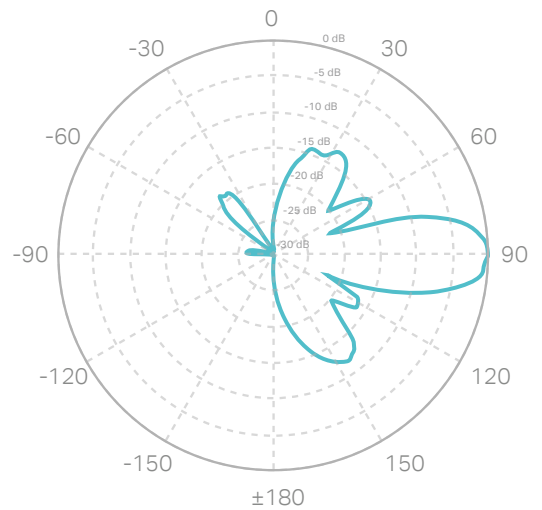
**Vertical Elevation**



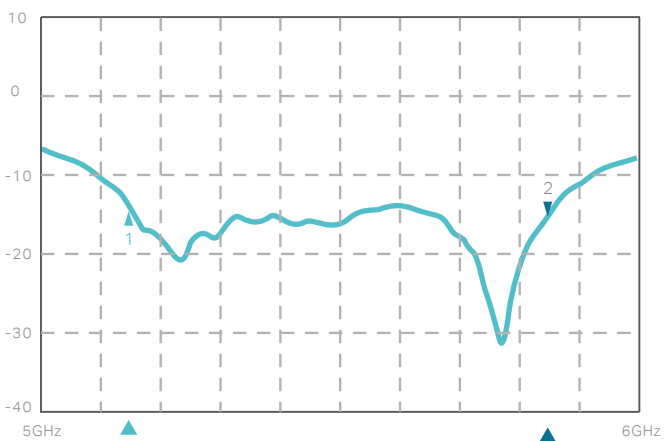
**Horizontal Azimuth**



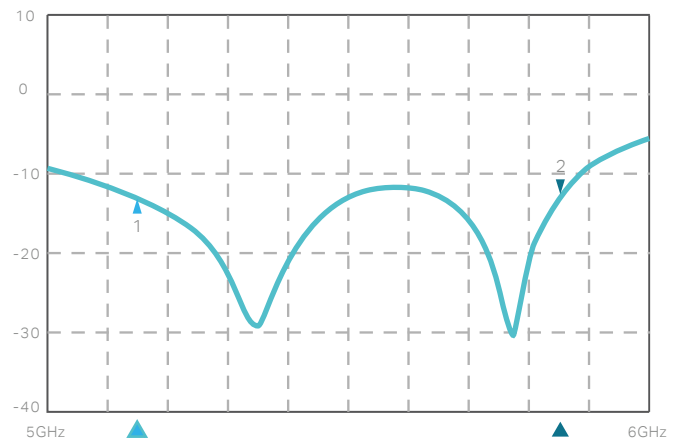
**Horizontal Elevation**



**Return Loss – Vertical Polarization**



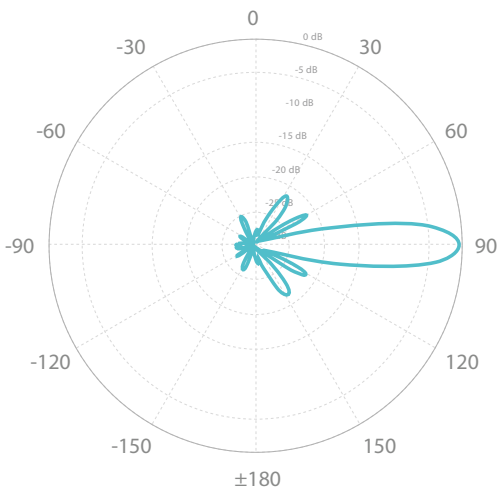
**Return Loss – Horizontal Polarization**



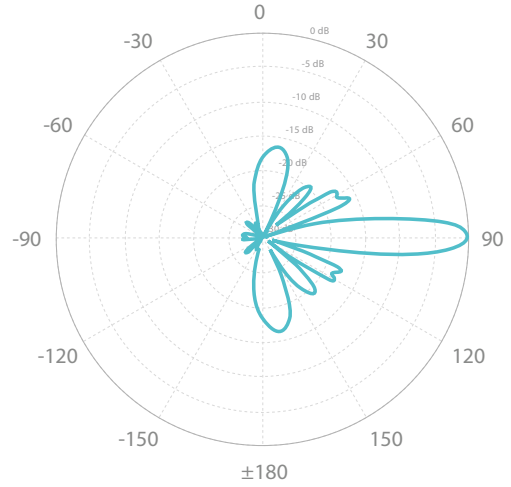


# CPE610 Antenna Patterns

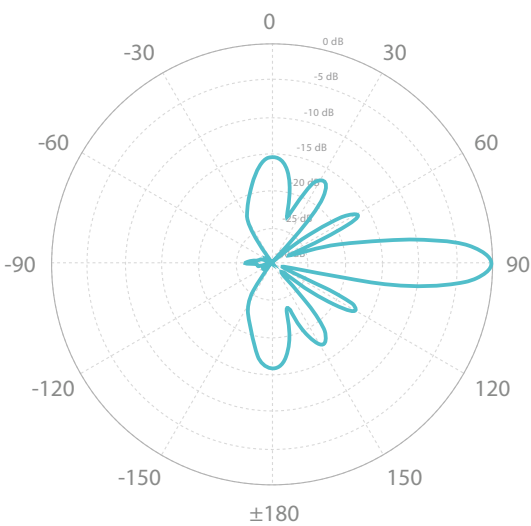
### Vertical Azimuth



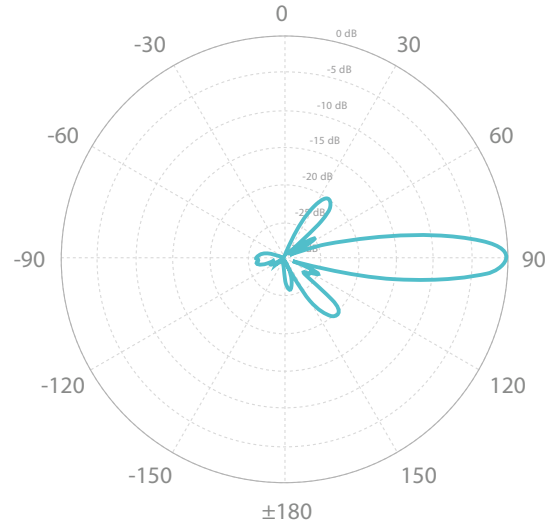
### Vertical Elevation



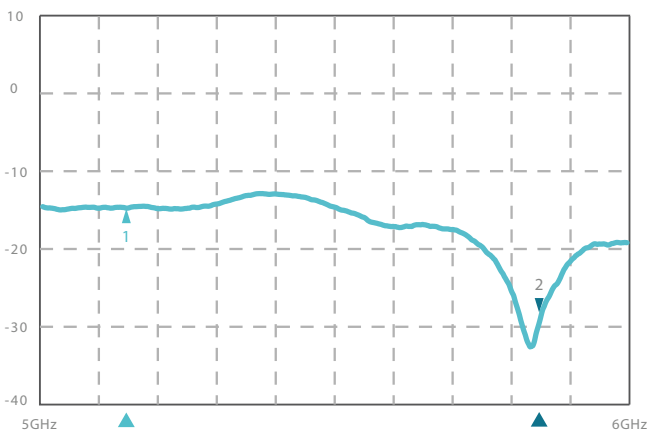
### Horizontal Azimuth



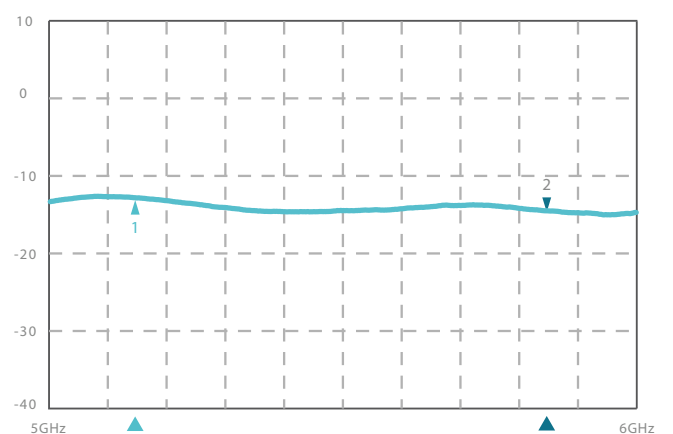
### Horizontal Elevation



### Return Loss – Vertical Polarization



### Return Loss – Horizontal Polarization



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