

Huawei AirEngine 6776-58TI Access Point Datasheet

Product Overview

Huawei AirEngine 6776-58TI is an indoor IoT access point (AP) in compliance with Wi-Fi 7 (802.11be). It can flexibly switch between 2.4 GHz (2x2 MIMO) + 5 GHz (4x4 MIMO) + 6 GHz (2x2 MIMO) mode and 2.4 GHz (4x4 MIMO) + 5 GHz (4x4 MIMO) mode. Designed with a total of 8 spatial streams, the AP delivers a data rate of up to 7.89 Gbps. AirEngine 6776-58TI has built-in smart antennas to enable always-on signals for users, and draws on Wi-Fi 7 innovations to redefine wireless user experience. These strengths make AirEngine 6776-58TI ideal for indoor coverage scenarios such as mobile office, education, healthcare, shopping malls/supermarkets and so on.



AirEngine 6776-58TI

- Provides services simultaneously on the 2.4 GHz (2x2 MIMO), 5 GHz (4x4 MIMO), and 6 GHz (2x2 MIMO) frequency bands, at a data rate of up to 689 Mbps at 2.4 GHz, 5.76 Gbps at 5 GHz, and 1.44 Gbps at 6 GHz, meaning 7.89 Gbps for the entire AP.
- Has built-in smart antennas that automatically adjust the coverage direction and signal strength based on the intelligent switchover algorithm. Such capability enables the AP to flexibly adapt to the application environment changes, providing accurate and stable coverage as STAs move.
- Built-in IoT slots (PCIe) and USB port for IoT expansion such as ZigBee and RFID
- Supports Bluetooth serial port-based O&M through built-in Bluetooth and CloudCampus APP.
- Supports Fit AP and cloud-managed AP modes, easily managing the AP and its services on Huawei cloud management platform and reducing network O&M costs.

- The third radio (6 GHz) can be switched to the 2.4 GHz radio. In this case, the three radios become two radios: 2.4 GHz (4x4) +5 GHz (4x4). The data rate of the AP is up to 7.14 Gbps.
- The feature description and specification is based on the version of V600R24C10.

Feature Descriptions

Wi-Fi 7 (802.11be) standard

Wi-Fi 7 (802.11be) is the Wi-Fi standard, also known as IEEE 802.11be or extremely high throughput (EHT). Based on Wi-Fi 6, Wi-Fi 7 introduces technologies such as 4096-quadrature amplitude modulation (QAM), multi-resource unit (MRU), multi-link operation (MLO), enhanced multi-user multiple-input multiple-output (MU-MIMO). Drawing on these cutting-edge technologies, Wi-Fi 7 delivers a higher data transmission rate and lower latency than Wi-Fi 6.

New Features in Wi-Fi 7

Wi-Fi 7 aims to increase the WLAN throughput and provide low-latency access assurance. To achieve this goal, the Wi-Fi 7 standard defines modifications to both the physical layer (PHY) and MAC layer. Compared with Wi-Fi 6, Wi-Fi 7 brings the following technical innovations:

Multi-RU

In Wi-Fi 6, each user can send or receive frames only on the RUs allocated to them, which greatly limits the flexibility of spectrum resource scheduling. To resolve this problem and further improve spectrum efficiency, Wi-Fi 7 defines a mechanism for allocating multiple RUs to a single user. To balance the implementation complexity and spectrum utilization, the standard specifications impose certain restrictions on RU combination. That is, small RUs (containing fewer than 242 tones) can be

combined only with small RUs, and large RUs (containing greater than or equal to 242 tones) can be combined only with large RUs. Small RUs and large RUs can be combined together.

Higher-Order 4096-QAM

The highest order modulation supported by Wi-Fi 6 is 1024-QAM, which allows each modulation symbol to carry up to 10 bits. To further improve the rate, Wi-Fi 7 introduces 4096-QAM so that each modulation symbol can carry 12 bits. With the same coding, 4096-QAM in Wi-Fi 7 can achieve a 20% rate increase compared with 1024-QAM in Wi-Fi 6.

Multi-Link Mechanism

To efficiently utilize all available spectrum resources, the industry is in urgent need to introduce new spectrum management, coordination, and transmission mechanisms on the 2.4 GHz, 5 GHz, and 6 GHz frequency bands. The TGbe defines multi-link aggregation technologies, including the MAC architecture of enhanced multi-link aggregation, multi-link channel access, and multi-link transmission.

There are two modes as for MLO:

- High-concurrency mode, multiple links send different data to improve bandwidth.
- High-reliability mode, multiple links send the same data, improving reliability.

Wi-Fi Shield

Wi-Fi Shield is an innovative wireless security technology developed by Huawei. It transmits extra interference signals to ensure that only the target terminal can accurately receive data packets and signals, preventing malicious users from listening. The Wi-Fi shield function is supported. Eavesdropping terminals cannot capture packets over the air interface.

Wi-Fi CSI Sensing

Wi-Fi CSI sensing is a cutting-edge technology for implementing sensing by using channel state information (Channel State Information, CSI) generated during radio signal propagation. Based on the Wi-Fi 7 standard, Huawei innovatively introduces Wi-Fi CSI to sense the presence of personnel, so that Wi-Fi signals can be sensed wherever they are. Compared with cameras, it protects user privacy and applies to scenarios such as energy saving, health care, and smart security.

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.

Basic Specifications

Fit AP mode

Item	Description		
WLAN features	Compliance with IEEE 802.11be and compatibility with IEEE 802.11a/b/g/n/ac/ax		
	Maximum ratio combining (MRC)		
	Space time block code (STBC)		
	Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD)		
	Beamforming		
	Multi-user multiple-input multiple-output (MU-MIMO)		
	Orthogonal frequency division multiple access (OFDMA)		
	Preamble puncturing		
	BSS Color		
	TxBF		
	TWT		
	Compliance with 4096-quadrature amplitude modulation (QAM) and compatibility with 1024-QAM, 256-QAM, 64-QAM, 16-QAM, 8-QAM, quadrature phase shift keying (QPSK), and binary phase		

Item	Description
	shift keying (BPSK)
	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, 160 MHz modes
	Wi-Fi multimedia (WMM) for priority-based data processing and forwarding
	WLAN channel management and channel rate adjustment
	NOTE
	For detailed management channels, see the Country Codes & Channels Compliance.
	Automatic channel scanning and interference avoidance
	Service set identifier (SSID) hiding configuration for each AP, supporting Chinese SSIDs
	Signal sustain technology (SST)
	Unscheduled automatic power save delivery (U-APSD)
	Multi-user call admission control (CAC)
	Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular networks
	802.11k and 802.11v smart roaming
	802.11r fast roaming (≤ 50 ms)
	Spectrum analysis
	Terminal location
Network features	Compliance with IEEE 802.3ab
	Auto-negotiation of the rate and duplex mode, and automatic switchover between Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)
	Compatibility with IEEE 802.1Q
	SSID-based VLAN assignment
	Eth-Trunk function
	Management channel of the AP's uplink port in tagged and untagged modes
	DHCP client, obtaining IP addresses through DHCP
	Tunnel data forwarding and direct data forwarding
	STA isolation in the same VLAN
	IPv4/IPv6 access control list (ACL)
	Link Layer Discovery Protocol (LLDP)
	Service holding when CAPWAP link disconnection in direct data forwarding mode
	Unified authentication on the AC
	AC dual-link backup
	Telemetry, quickly collecting AP status and application experience parameters
	MESH
	HotSpot2.0
	IPv6 SAVI
QoS features	WMM power save
	Priority mapping for upstream packets and flow-based mapping for downstream packets
	Queue mapping and scheduling
	User-based bandwidth limiting
	Adaptive bandwidth management (automatic bandwidth adjustment based on the user quantity and radio environment) to improve user experience
	Application identification and QoS classification to improve voice quality for popular applications,

Item	Description	
item	such as Zoom, QQ, and WeChat	
	Airtime scheduling	
	Air interface HQoS scheduling	
	Intelligent multimedia scheduling	
	VIP bandwidth reservation	
	VIP FastPass, per-packet power control	
Security features	Open system authentication	
	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	
	WPA/WPA2/WPA2-PPSK authentication and encryption	
	WPA/WPA2/WPA2-DPSK authentication and encryption	
	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	
	802.11w Protected Management Frames (PMF)	
	CAPWAP DTLS data encryption and decryption	
	URL filtering	
	MACsec@ Uplink Ethernet port	
	Wi-Fi Shield	
	Secure boot	
EAP types	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-CHAP, EAP-SIM, EAP-AKA, EAP-GTC, EAP-FAST, EAP-PEAP, EAP-MD5, EAP-MSCHAPv2, PEAPv0, PEAPv1	
Maintenance features	Unified AP management and maintenance on the AC	
	Automatic AP onboarding, automatic configuration loading, and plug-and-play (PnP)	
	Automatic batch upgrade	
	STelnet using SSHv2	
	SFTP using SSHv2	
	Remote wireless O&M through the Bluetooth serial port	
	System status alarm	
	Unified AP management on WebMaster	
Sensing	Wi-Fi CSI Sensing	
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Fat AP mode

Item	Description	
WLAN features	Compliance with IEEE 802.11be and compatibility with IEEE 802.11a/b/g/n/ac/ax	
	Maximum ratio combining (MRC)	

Item	Description	
	Space time block code (STBC)	
	Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD)	
	Beamforming	
	Multi-user multiple-input multiple-output (MU-MIMO)	
	Orthogonal frequency division multiple access (OFDMA)	
	Preamble puncturing	
	BSS Color	
	TxBF	
	TWT	
	Compliance with 4096-quadrature amplitude modulation (QAM) and compatibility with 1024-QAM, 256-QAM, 64-QAM, 16-QAM, 8-QAM, quadrature phase shift keying (QPSK), and binary phase shift keying (BPSK)	
	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, 160 MHz modes	
	Wi-Fi multimedia (WMM) for priority-based data processing and forwarding	
	WLAN channel management and channel rate adjustment	
	NOTE	
	For detailed management channels, see the Country Codes & Channels Compliance.	
	Automatic channel scanning and interference avoidance	
	Service set identifier (SSID) hiding configuration for each AP, supporting Chinese SSIDs	
	Signal sustain technology (SST)	
	Unscheduled automatic power save delivery (U-APSD)	
	Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular networks	
	802.11k and 802.11v smart roaming	
	802.11r fast roaming (≤ 50 ms)	
Network features	Compliance with IEEE 802.3ab	
	Auto-negotiation of the rate and duplex mode, and automatic switchover between Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)	
	Compatibility with IEEE 802.1Q	
	SSID-based VLAN assignment	
	DHCP client, obtaining IP addresses through DHCP	
	Tunnel data forwarding and direct data forwarding	
	STA isolation in the same VLAN	
	IPv4 access control list (ACL)	
	Link Layer Discovery Protocol (LLDP)	
	Leader AP	
	NAT	
QoS features	WMM power save	
	Priority mapping for upstream packets and flow-based mapping for downstream packets	
	Queue mapping and scheduling	
	User-based bandwidth limiting	
	Airtime scheduling	
	Intelligent multimedia scheduling	

Item	Description
Security features	Open system authentication WPA2-PSK authentication and encryption (WPA2-Personal) WPA3-SAE authentication and encryption (WPA3-Personal) WPA-WPA2 hybrid authentication WPA2-WPA3 hybrid authentication MAC address authentication, and Portal authentication DHCP snooping 802.11w Protected Management Frames (PMF) Secure boot
EAP types	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-CHAP, EAP-SIM, EAP-AKA, EAP-GTC, EAP-FAST, EAP-PEAP, EAP-MD5, EAP-MSCHAPv2, PEAPv0, PEAPv1
Maintenance features	STelnet using SSHv2 SFTP using SSHv2 Remote wireless O&M through the Bluetooth serial port System status alarm

Cloud-Managed AP mode

Item	Description	
WLAN features	Compliance with IEEE 802.11be and compatibility with IEEE 802.11a/b/g/n/ac/ax	
VVE/ (IV locatores	Maximum ratio combining (MRC)	
	Space time block code (STBC)	
	Cyclic Delay Diversity (CDD)/Cyclic Shift Diversity (CSD)	
	Beamforming	
	Multi-user multiple-input multiple-output (MU-MIMO)	
	Orthogonal frequency division multiple access (OFDMA)	
	Preamble puncturing	
	BSS Color	
	TXBF	
	TWT	
	Compliance with 4096-quadrature amplitude modulation (QAM) and compatibility with 1024-QAM, 256-QAM, 64-QAM, 16-QAM, 8-QAM, quadrature phase shift keying (QPSK), and binary phase shift keying (BPSK)	
	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, 160 MHz modes	
	Wi-Fi multimedia (WMM) for priority-based data processing and forwarding	
	WLAN channel management and channel rate adjustment	
	NOTE	
	For detailed management channels, see the Country Codes & Channels Compliance.	
	Automatic channel scanning and interference avoidance	
	Service set identifier (SSID) hiding configuration for each AP, supporting Chinese SSIDs	
	Signal sustain technology (SST)	
	Unscheduled automatic power save delivery (U-APSD)	

Item	Description		
	Automatic AP Online by NCE-Campus		
	Multi-user call admission control (CAC)		
	Advanced cellular coexistence (ACC), minimizing the impact of interference from cellular networks		
	802.11k and 802.11v smart roaming		
	802.11r fast roaming (≤ 50 ms)		
	Spectrum analysis		
	Terminal location		
Network features	Compliance with IEEE 802.3ab		
	Auto-negotiation of the rate and duplex mode, and automatic switchover between Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)		
	Compatibility with IEEE 802.1Q		
	SSID-based VLAN assignment		
	DHCP client, obtaining IP addresses through DHCP		
	STA isolation in the same VLAN		
	IPv4/IPv6 access control list (ACL)		
	Link Layer Discovery Protocol (LLDP)		
	Service holdover when the link to NCE-Campus is disconnected		
	Unified authentication on the cloud management platform		
	Network address translation (NAT)		
	· · · ·		
	Telemetry, quickly collecting AP status and application experience parameters MESH		
	MESH Tunnel-AC		
	IPv6 SAVI		
	HotSpot2.0		
QoS features	WMM power save		
	Priority mapping for upstream packets and flow-based mapping for downstream packets		
	Queue mapping and scheduling		
	User-based bandwidth limiting		
	Adaptive bandwidth management (automatic bandwidth adjustment based on the user quantity and		
	radio environment) to improve user experience		
	Application identification and QoS classification to improve voice quality for popular applications, such as Zoom, QQ, and WeChat		
	Airtime scheduling		
	Air interface HQoS scheduling		
	Intelligent multimedia scheduling		
	VIP bandwidth reservation		
	VIP FastPass, per-packet power control		
Security features	Open system authentication		
	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		

Item	Description			
	WPA/WPA2/WPA2-PPSK authentication and encryption			
	WPA/WPA2/WPA2-DPSK authentication and encryption			
	802.1X authentication, MAC address authentication, and Portal authentication			
	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			
	DHCP snooping			
	802.11w Protected Management Frames (PMF)			
	CAPWAP DTLS data encryption and decryption			
	URL filtering			
	MACsec@ Uplink Ethernet port			
	Wi-Fi Shield			
	Secure boot			
EAP types	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-CHAP, EAP-SIM, EAP-AKA, EAP-GTC, EAP-FAST, EAP-PEAP, EAP-MD5, EAP-MSCHAPv2, PEAPv0, PEAPv1			
Maintenance features	Unified AP management and maintenance on the cloud management platform			
	Automatic AP onboarding, automatic configuration loading, and PnP			
	Batch upgrade			
	STelnet using SSHv2			
	SFTP using SSHv2			
	Remote wireless O&M through the Bluetooth serial port			
	Real-time user configuration monitoring and fast fault locating using the NMS			
	System status alarm			
	Network Time Protocol (NTP)			
Sensing	Wi-Fi CSI Sensing			

Technical Specifications

Item		Description
Technical	Dimensions (H x W x D)	61 mm x 220 mm x 220 mm
specifications	Weight	1.47 kg
	Port type	1 x 100M/1000M/2.5GE/5GE(RJ-45) 1 x 10M/100M/1000M (RJ-45) 1 x USB port NOTE The 5GE(RJ-45) and GE(RJ-45) support PoE input.
	IoT	 Built-in multi-protocol IoT interfaces, flexibly supporting BLE, ZigBee, HomeKit, and Thread* USB port extension external IoT (Supports protocols such as ZigBee, RFID, and UWB) Built-in two IoT slots (PCIe), supporting IoT expansion such as ZigBee, RFID, and Thread* NOTE

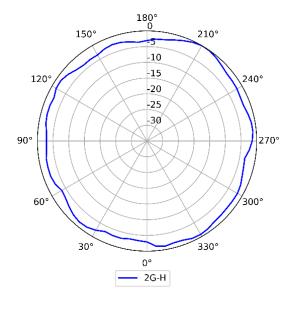
Item		Description
		Features marked with asterisks (*) can be implemented through software upgrade.
	IoT expansion	Two built-in IoT slots (PCIe), supporting IoT expansion such as ZigBee, RFID, and Thread NOTE The Bluetooth function is unavailable when two serial port IoT cards are used at the same time.
	Bluetooth	BLE 5.4
	LED indicator	Indicates the power-on, startup, running, alarm, and fault states of the system.
Power specifications	Power input	 DC: 43.2 V to 57.6 V PoE power supply: in compliance with 802.3bt/at (dual PoE inputs for hot backup) NOTE 802.3at/af power supply restrictions are detailed in the Info-Finder.
	Maximum power consumption	23.9 W (excluding USB and IoT cards) NOTE The actual maximum power consumption depends on local laws and regulations.
Environmental	Operating temperature	-10°C to +50°C
specifications	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
Radio specifications	Antenna type	Built-in smart antennas
	Antenna gain	2.4 GHz: 4 dBi 5 GHz: 5 dBi 6 GHz: 5 dBi NOTE The preceding gains are the peak gains of a single antenna. When all WLAN 2.4 GHz, 5 GHz, or 6 GHz antennas are combined, the equivalent antenna gain is 1 dBi for 2.4 GHz radios, 2 dBi for 5 GHz radios, or 2 dBi for 6 GHz radios.
	Maximum number of SSIDs for each radio	16
	Maximum transmit power	 Mode 1 2.4 GHz (2x2): 23 dBm (combined power) 5 GHz (4x4): 26 dBm (combined power) 6 GHz (2x2): 23 dBm (combined power) Mode 2 2.4 GHz (4x4): 26 dBm (combined power) 5 GHz (4x4): 26 dBm (combined power)

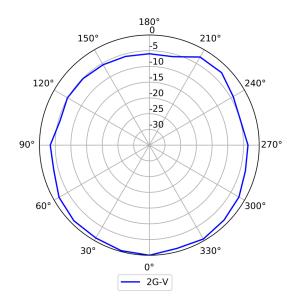
Item		Description
		NOTE The actual transmit power depends on local laws and regulations.
Freque	ency bands	2.400 to 2.4835 GHz ISM 5.150 to 5.250 GHz U-NII-1 5.250 to 5.350 GHz U-NII-2A 5.470 to 5.725 GHz U-NII-2C 5.725 to 5.850 GHz U-NII-3/ISM 5.925 to 6.425 GHz U-NII-5 6.425 to 6.525 GHz U-NII-6 6.525 to 6.875 GHz U-NII-7 6.875 to 7.125 GHz U-NII-8 NOTE The available bands and channels are dependent on the configured regulatory domain (country).

Standards Compliance

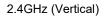
Item	Description		
Safety standards	• EN 62368-1	• IEC 62368-1	
Radio standards	• ETSI EN 300 328	• ETSI EN 301 893	• AN/NZS 4268
EMC standards	 EN 301 489-1 EN 301 489-17 EN 60601-1-2 EN 55032 EN 55035 	 GB 9254 GB 17625.2 AS/NZS CISPR32 CISPR 32 CISPR 35 	 IEC/EN61000-4-2 IEC/EN 61000-4-3 IEC/EN 61000-4-4 IEC/EN 61000-4-5 IEC/EN 61000-4-6 ICES-003
IEEE standards	 IEEE 802.11a/b/g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11be 	 IEEE 802.11h IEEE 802.11d IEEE 802.11e IEEE 802.11k 	 IEEE 802.11v IEEE 802.11w IEEE 802.11r
Security standards	 802.11i, Wi-Fi Protected Access (WPA), WPA2, WPA2-Enterprise, WPA2-PSK, WPA3, WAPI 802.1X Advanced Encryption Standards(AES), Temporal Key Integrity Protocol(TKIP), WEP, Open EAP Type(s) 		
EMF	• EN 62311	• EN 50385	
RoHS	 Directive 2002/95/EC & 2011/65/EU (EU)2015/863 		
Reach	Regulation 1907/2006/EC		
WEEE	• Directive 2002/96/EC & 2012/19/EU		

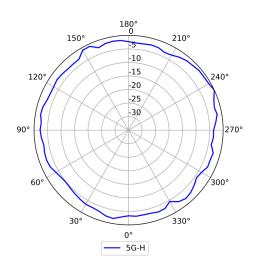
Antennas pattern

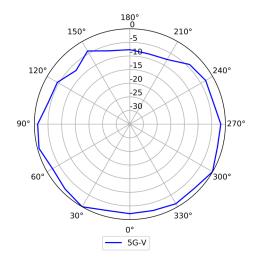




2.4GHz (Horizontal)

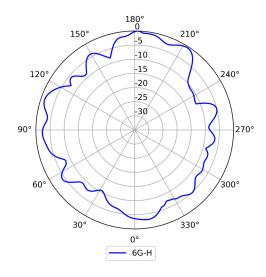


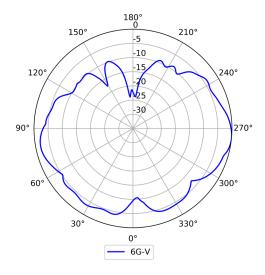




5GHz (Horizontal)

5GHz (Vertical)





6GHz (Horizontal)

6GHz (Vertical)

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