# QuCam 240SM kit

P/N: C240K

**Outdoor CCTV LTE PoE gateway with embedded LTE router & PoE switch for CCTV cameras.**

QuCam 240SM is a powerful outdoor industrial gateway for professional CCTV application with embedded PoE switch for up to 3x CCTV cameras and LTE & Wi-Fi router. QuCam 240SM also has integrated omnidirectional LTE and Wi-Fi antennas. The mobile router delivers high performance for mission-critical cellular communication in harsh and hazardous environments where a wide operating temperature is required. Equipped with an external SIM holder.


VERSION 1.01

## OUTDOOR

Use LTE router wherever you want

## ANTENNA

Maximize your signal with QuWireless antennas

## SOLUTION

It is all-in-one, you are good to go

## LTE ANTENNA SPECIFICATION

| | |
|---|---|
| FREQUENCY | 0.694-0.96 GHz<br>1.7 - 2.2 GHz<br>2.2 - 2.7 GHz |
| Supported LTE bands | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 17, 18, 19, 20, 23, 25, 26, 27, 28, 29, 30, 33, 34, 35, 36, 37, 38, 39, 40, 41, 44, 53, 59, 62, 65, 66, 67, 68, 69, 85, n80, n81, n82, n83, n84, n86, n89, n90, n95 |
| GAIN | 0.694 - 0.96 GHz : 4 dBi<br>1.7 - 2.2 GHz : 5 dBi<br>2.2 - 2.7 GHz : 6 dBi |
| VSWR | <1.30, max <1.80 |
| BEAMWIDTH | 90°/90° ±30° |
| POLARIZATION | Vertical |
| IMPEDANCE | 50 Ω |

## WI-FI ANTENNA SPECIFICATION

| | |
|---|---|
| FREQUENCY | 2.40 - 2.50 GHz |
| GAIN | 6 dBi |
| VSWR | <1.70, max <2.00 |
| BEAMWIDTH | 360°/25° ±5° |
| POLARIZATION | Vertical |
| IMPEDANCE | 50 Ω |

## PoE SWITCH SPECIFICATION

| | |
|---|---|
| LAN Ports | 6x RJ45 10/100Mbps |
| PoE Input | 1x Passive PoE input 44-60V (LAN_5) |
| PoE Output | 4x Active PoE 802.3af/at (LAN_1-4)<br>1x Passive PoE output 24V/7.2W (LAN_6) |
| PoE Output protection | LAN_1-4: 0.75A, LAN_5: 1.25A (separate resettable fuses) |
| Passive PoE mode | mode B (4,5+) (7,8-) |
| LEDs | 1x Power on (white, on board), 6x Link (orange, on port), 6x Transmit (green, on port) |
| Operating temperature | -10°C ... +40°C |
| Installation | 4x holes ⌀2.5mm |
| Dimensions | 73mm x 145mm x 17mm (WxLxH) |
| Weight | 69.5g |

## POWER SUPPLY ELECTRICAL INPUT SPECIFICATION

| | |
|---|---|
| Input voltage | 110 ... 240VAC |
| Input frequency | 50 ... 60Hz |
| Input current | max. 2A RMS |
| Inrush current | max. 30A |
| AC leakage current | max. 3.5mA |
| Efficiency | min. 80% @ 100VAC, 84% @ 240VAC |
| Dielectric strength (primary to secondary) | 2kVAC/5mA/1s |
| Input socket | IEC320-C6 |
| AC power cord | 0.75m length, 3 pins EU plug or UK plug |

## POWER SUPPLY ELECTRICAL OUTPUT SPECIFICATION

| | |
|---|---|
| Output voltage | 56VDC |
| Min. load | 0A |
| Max. load | 1A |
| Peak load | 1.46A |
| Output power | 56W |
| Line regulation | ± 3% |
| Load regulation | ± 5% |
| Ripple | 560mVpp |
| Turn on delay time | max. 5s |
| Rise time | max. 40ms |
| Hold up time | min. 5ms |
| Overshoot | max. 15% |
| Protections | Short circuit, over current (110 ... 200% of DC output) |
| Ethernet ports | Input (LAN): 1x RJ45 10/100Mbps<br>Output (PoE): 1x RJ45 10/100Mbps |
| PoE mode | mode B: pins 4,5 + / pins 7,8 - |
| LEDs | Green: Power supply is on, Orange: PoE device connected |

## POWER SUPPLY MECHANICAL SPECIFICATION

| | |
|---|---|
| MTBF | 30,000 operating hours confidence-level at 80% load, 25°C |
| Operating temperature | -10°C ... +45°C |
| Storage temperature | -20°C ... +85°C |
| Humidity | 5% @ 0°C, 90% @ 40°C |
| Size | 146 x 59 x 30mm (LxWxH) |
| Safety | CE: EMC/LVD / FCC Part 15 Class B/ EN55022 Class B/ EN55024 |

## MOBILE

| | |
|---|---|
| Mobile module | 4G (LTE) – Cat 4 up to 150 Mbps, 3G – Up to 42 Mbps, 2G – Up to 236.8 kbps |
| Supported frequency bands | **4G (LTE-FDD):** B1 (2100 MHz), B3 (1800 MHz), B7 (2600 MHz), B8 (900 MHz), B20 (800 MHz), B28A (700 MHz)<br>**3G:** B1 (2100 MHz), B8 (900 MHz)<br>**2G**: B3 (1800 MHz), B8 (900 MHz)<br>• **Other supported bands on demand** – please ask us |
| Bridge mode | Direct connection (bridge) between mobile ISP and device on LAN |
| Status | Signal strength, SINR, RSRP, RSRQ, Bytes sent/received |
| SMS | SMS status, SMS configuration, send/read SMS via HTTP POST/GET, Email to SMS, SMS to Email, SMS to HTTP, SMS to SMS, SMS auto reply, scheduled SMS (planned), SMPP (planned) |
| Black/White list | Operator black/white list |
| Multiple PDN (planed) | Possibility to use different PDNs for multiple network access and services |
| Band management | Band lock, Used band status display |

## WIRELESS

| | |
|---|---|
| Wireless mode | IEEE 802.11b/g/n, Access Point (AP), Station (STA) |
| WiFi | WPA2-Enterprise (with external/internal Radius server), WPA2-PSK, WPA-PSK, WEP, MAC Filter |
| WiFi security | WPA2-Enterprise - PEAP, TLS, TTLS, AES-CCMP, TKIP, Auto Cipher modes, Client separation |
| SSID | SSID stealth mode and access control based on MAC address |
| WiFi users | Up to 50 simultaneous connections |
| Wireless Hotspot | Captive portal (Hotspot), internal/external Radius server, built in customizable landing page |

## ETHERNET

| | |
|---|---|
| WAN | 1 x WAN port (can be configured to LAN) 10/100 Mbps, comply IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX |
| LAN | 1 x LAN port, 10/100 Mbps, comply IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX |

## NETWORK

| | |
|---|---|
| Routing | Static routing, Dynamic routing (Optional - BGP, OSPF v2, RIP v1/v2) |
| Network protocols | TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, FTP, SMTP, SSL v3, TLS, ARP, VRRP, PPP, PPPoE, UPnP, SSH, DHCP, Telnet, SMNP, MQTT, Wake On Lan (WOL) |
| VoIP passthrough support | H.323 and SIP-alg protocol NAT helpers, allowing proper routing of VoIP packets |
| Connection monitoring | Ping Reboot, Wget reboot, Periodic Reboot, LCP and ICMP for link inspection |
| Firewall | Ping Reboot, Periodic Reboot, LCP and ICMP for link inspection |
| DHCP | Static and dynamic IP allocation, DHCP Relayd |
| QoS | Traffic priority queuing by source/destination, service, protocol or port, traffic priority queuing by source/destination, service, protocol or port, WMM, 802.11e |
| DDNS | Supported >25 service providers, others can be configured manually |
| Network backup | VRRP, Mobile and Wired WAN options, each of which can be used as an automatic Failover |
| Load balancing | Balance Internet traffic over multiple WAN connections |
| NetSnapper (optional) | Mobile connection management, data compression VPN client (not available in standard FW) |
| SSHFS (optional) | Possibility to mount remote file system via SSH protocol (not available in standard FW) |

## SECURITY

| | |
|---|---|
| Authetication | Pre-shared key, digital certificates, X.509 certificates |
| Firewall | Pre-configured firewall rules can be enabled via web-ui, unlimited firewall configuration via CLI; DMZ; NAT; NAT-T |
| Attack prevention | DDOS prevention (SYN flood protection, SSH attack prevention, HTTP/HTTPS attack prevention), port scan prevention ( SYN-FIN, SYN-RST, X-mas, NULL flags, FIN scan attacks) |
| WiFi security | WPA2-Enterprise – PEAP, EAP-TLS, TLS, TTLS. AES-CCMP, TKIP, Auto Cipher modes, Client separation |
| VLAN | Port based and tag based VLAN separation |
| Mobile quota control | Set up custom data limits for the SIM card |

| | |
|---|---|
| WEB filter | Blacklist for blocking out unwanted websites, Whitelist for specifying allowed sites only |
| Access control | Flexible access control of TCP, UDP, ICMP packets, MAC address filter |

## VPN

| | |
|---|---|
| OpenVPN | Multiple clients and a server can run simultaneously, 12 encryption methods |
| OpenVPN Encryption | DES-CBC, RC2-CBC, DES-EDE-CBC, DES-EDE3-CBC, DESX-CBC, BF-CBC, RC2-40-CBC, CAST5-CBC, RC2-64-CBC, AES-128-CBC, AES-192-CBC, AES-256-CBC |
| IPsec | IKEv1, IKEv2, supports up to 4 x VPN IPsec tunnels (instances), with 5 encryption methods (DES, 3DES, AES128, AES192, AES256) |
| GRE | GRE tunnel |
| PPTP, L2TP | Client/Server instances can run simultaneously |
| Stunnel | Proxy designed to add TLS encryption functionality to existing clients and servers without any changes in the program's code |
| SSTP | SSTP client instance support |

## MONITORING & MANAGEMENT

| | |
|---|---|
| WEB UI | HTTP/HTTPS, status, configuration, FW update, CLI, troubleshoot, event log, system log, kernel log |
| FOTA | Firmware update from server, automatic notification |
| SSH | SSH (v1, v2) |
| SMS | SMS status, SMS configuration, send/read SMS via HTTP POST/GET |
| TR-069 (optional) | OpenACS, EasyCwmp, ACSLite, tGem, LibreACS, GenieACS, FreeACS, LibCWMP, Friendly tech, AVSystem |
| SNMP | SNMP (v1, v2, v3), SNMP trap |
| JSON-RPC | Management API over HTTP/HTTPS |
| MQTT | MQTT Broker, MQTT publisher |
| RMS | Teltonika Remote Management System (RMS) |

## SYSTEM CHARACTERISTICS

| | |
|---|---|
| CPU | Quad-core ARM Cortex A7, 717 MHz |
| RAM | 64 MB, DDR2 |
| FLASH memory | 16 MB SPI Flash |

## FIRMWARE / CONFIGURATION

| | |
|---|---|
| WEB UI | Update FW from file, check FW on server, configuration profiles, configuration backup, restore point |

| | |
|---|---|
| FOTA | Update FW/configuration from server |
| RMS | Update FW/configuration for multiple devices |
| Keep settings | Update FW without losing current configuration |

## FIRMWARE CUSTOMIZATION

| | |
|---|---|
| Operating system | RutOS (OpenWrt based Linux OS) |
| Supported languages | Busybox shell, Lua, C, C++ |
| Development tools | SDK package with build environment provided |

## INPUT/OUTPUT

| | |
|---|---|
| Input | 1x Digital Input |
| Output | 1x Digital Output |
| Events | SMS, Email, RMS |

## POWER

| | |
|---|---|
| Connector | 4 pin industrial DC power socket (inside QuRouter enclosure, no access from outside of the product, to get access please install additional QuPS4) |
| Input voltage range | 9 – 30 VDC (4 pin industrial socket), reverse polarity protection, surge protection >33 VDC 10us max |
| PoE (passive) | Passive PoE. Possibility to power up through LAN port, not compatible with IEEE 802.3af and 802.3at standards |
| Power consumption | < 5 W |
| PSU included | 24V 0.8A Passive PoE with EU or UK or US power cord (QuPSU P248) |

## PHYSICAL INTERFACES (PORTS, LEDS, BUTTONS, SIM)

| | |
|---|---|
| Ethernet | 2 x RJ45 ports, 10/100 Mbps (1x RJ45 with Passive PoE outside enclosure, 1x RJ45 inside enclosure - access from outside of QuRouter is possible after install additional QuRJ45) |
| I/O's | 1 Digital Input, 1 Digital Output on 4 pin power connector (access to INPUT/OUTPUT connector after open enclosure of QuRouter or install QuGland / QuPS4 which is not included in set) |
| Status LEDs | Not visible from outside of enclosure, 3 x connection type status LEDs, 5 x connection strength LEDs, 2 x LAN status LEDs, 1 x Power LED |
| SIM | 1 x SIM slot (Mini SIM – 2FF), 1.8 V/3 V, external SIM holder |
| Power | Passive PoE power support and 4 pin DC connector inside enclosure (to get access please install additional QuPS4) |

| | |
|---|---|
| Reset | Factory reset button (no access from outside of enclosure, to get access please install additional QuRST) |

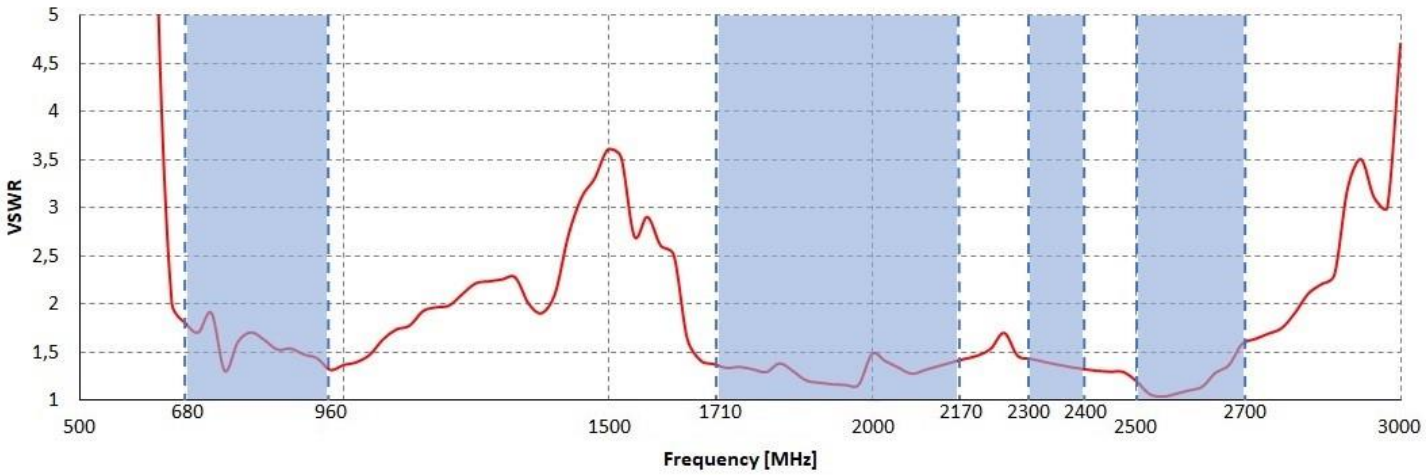
## OPERATING ENVIRONMENT

| | |
|---|---|
| OPERATING TEMPERATURE | -40°C to 75°C |
| OPERATING HUMIDITY | 10% to 90% non-condensing |
| INGRESS PROTECTION REATING | IP67 |
| MTBF | 310000 h |

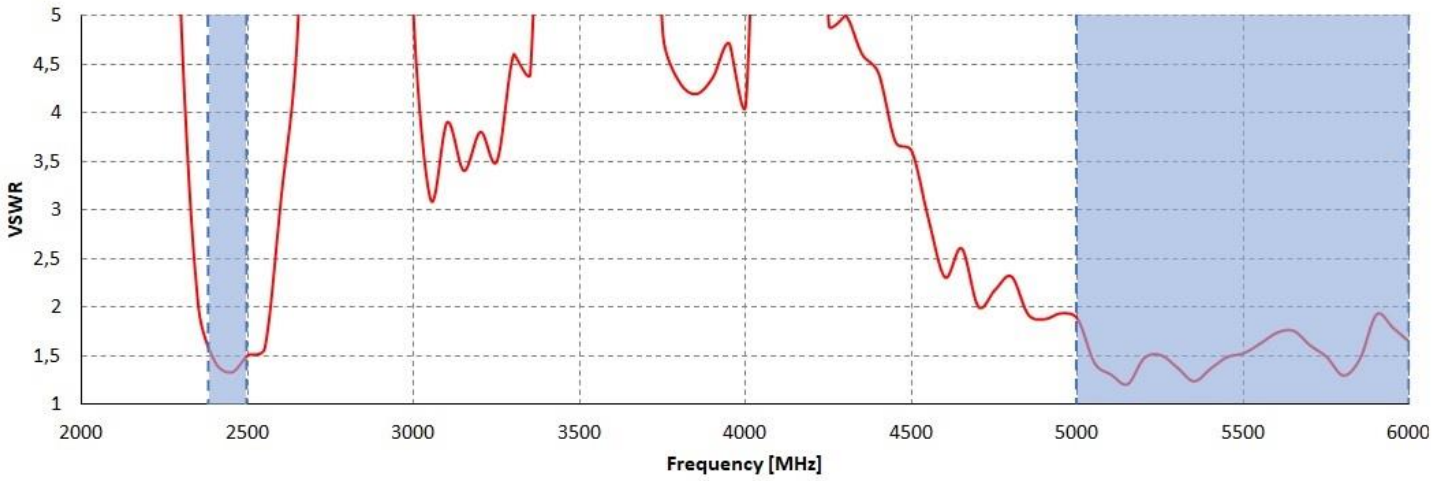
## REGULATORY & TYPE APPROVALS

| | |
|---|---|
| REGULATORY | CE/RED, FCC, IC/ISED, EAC, RCM, PTCRB, RoHS, WEEE, Wi-Fi Alliance |
| OPERATOR | Verizon, AT&T |

## LTE VSWR

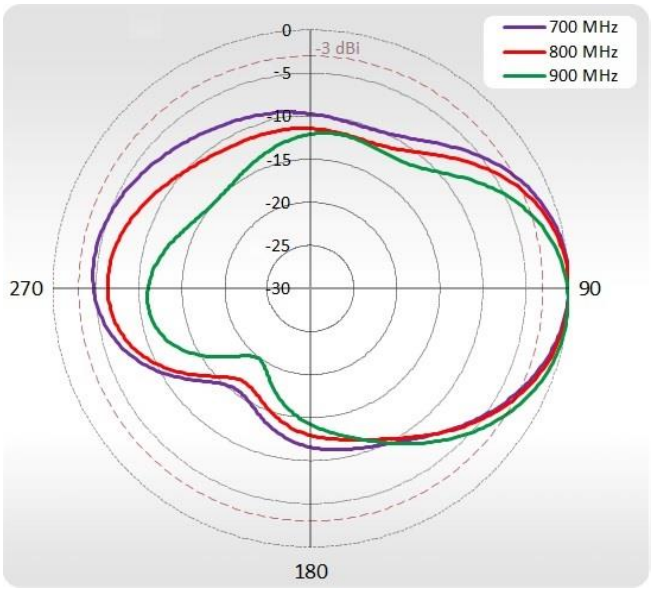



## WI-FI VSWR

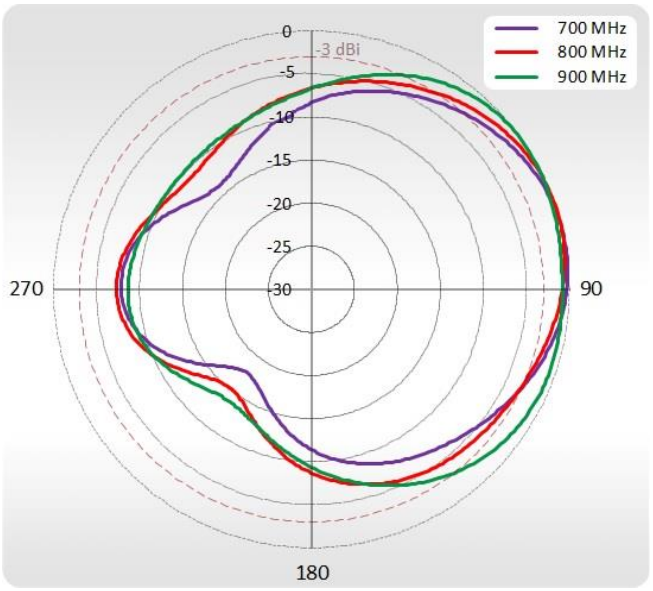


## LTE PLOTS

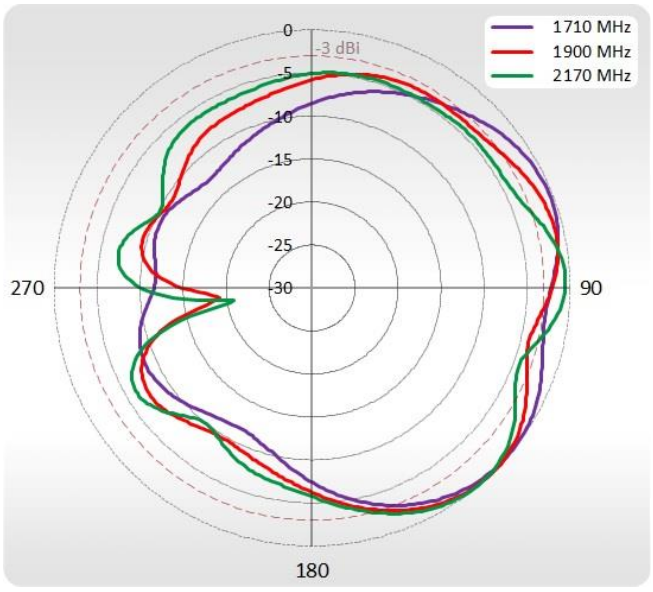
700-900 MHz Azimuth



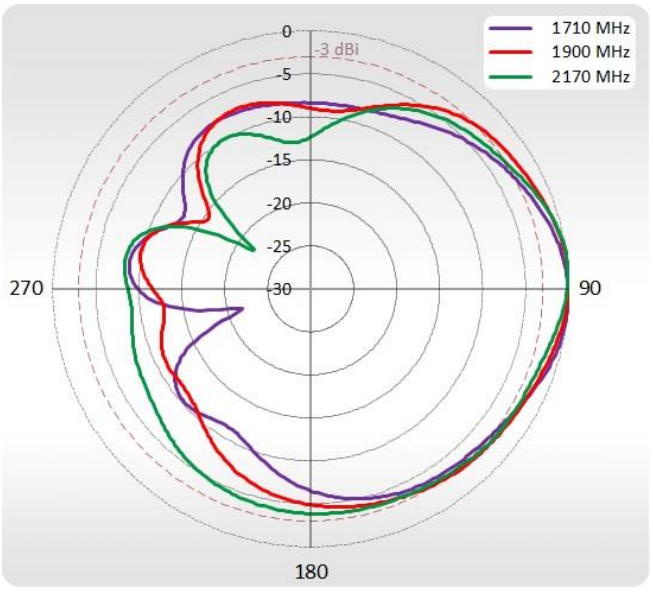

700-900 MHz Elevation



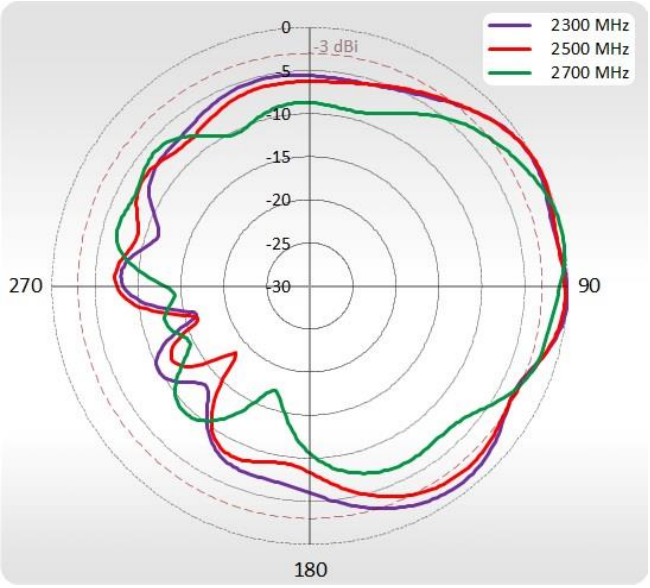

1710-2170 MHz Azimuth



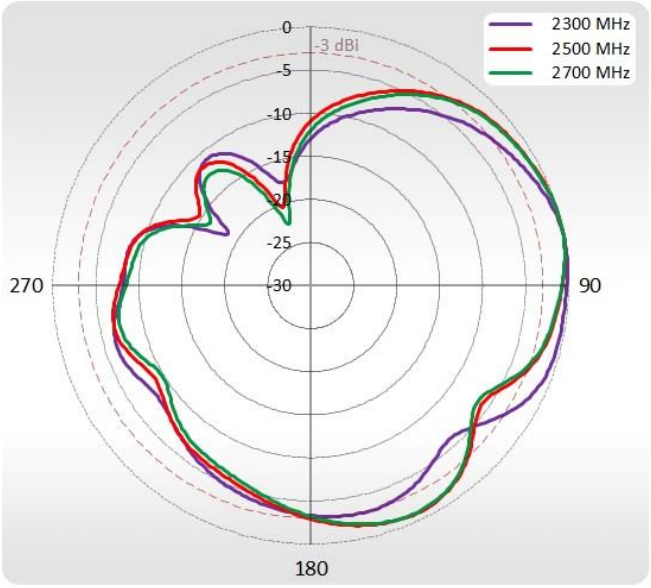

1710-2170 MHz Elevation



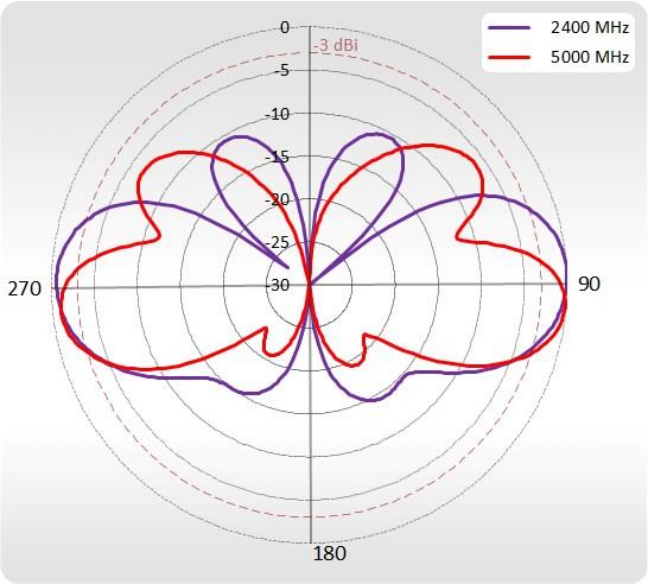
## 2300-2700 MHz Azimuth



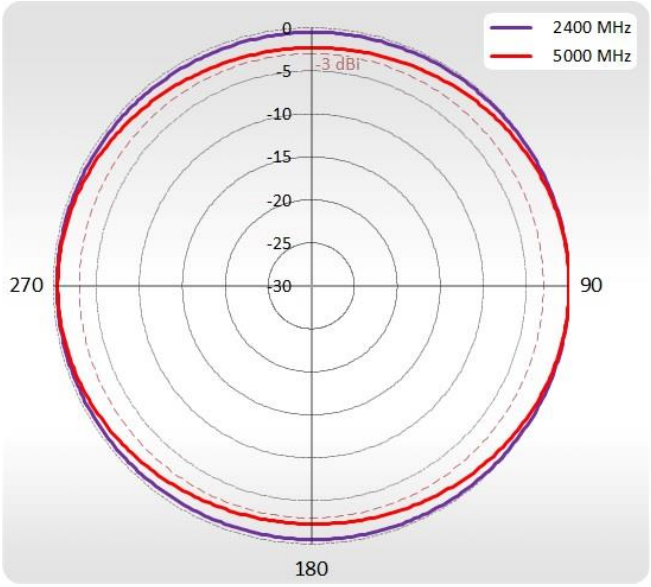

## 2300-2700 MHz Elevation




## WI-FI Azimuth




## WI-FI Elevation




**HEADQUARTER**:
Wireless Instruments sp. z o.o.
ul. Kościuszki 27
52-116 Iwiny
POLAND
sales@quwireless.com
tel 1. +48 601 366 369
tel 2. +48 577 667 761
www.quwireless.com