

# EasyCell 5G

Hardened 5G Router w/HexaCloud Device Monitoring & WAN Failover



## Specifications

### + Mobile

#### Module

5G Sub-6 GHz SA, NSA 2.4, 3.4Gbps DL (4x4 MIMO) 900, 550Mbps UL (2x2 MIMO); 4G (LTE): DL Cat 19 1.6Gbps (4x4 MIMO), UL Cat 18 200Mbps

#### SIM Switch

2 SIM cards, auto-switch cases: weak signal, data limit, SMS limit, roaming, no network, network denied, data connection fail, SIM idle protection

#### Status

Signal strength (RSSI), SINR, RSRP, RSRQ, EC/IO, RSCP, bytes sent/received, connected band, IMSI, ICCID

#### SMS

SMS status, SMS configuration, send/read SMS via HTTP POST/GET, EMAIL to SMS, SMS to e-MAIL, SMS to HTTP, SMS to SMS, scheduled SMS, SMS autoreply, call utilities

#### USSD

Supports sending and reading Unstructured Supplementary Service Data messages

#### Black/White list

Operator black/whitelist

#### Multiple PDN

Possibility to use different PDNs for multiple network access and services

#### Band management

Band lock, used band status display

#### APN

Automatic APN

#### Bridge

Direct connection (bridge) between mobile ISP and device on LAN

#### Passthrough

Router assigns its mobile WAN IP address to another device on LAN

### + Wireless

#### Wireless mode

802.11b, g, n, ac Wave 2 (Wi-Fi 5) with data transmission rates up to 867 Mbps (Dual Band, MU-MIMO)

#### Wi-Fi security

WPA3-EAP, WPA3-SAE, WPA2-Enterprise-PEAP, WPA2-PSK, WEP; AES-CCMP, TKIP, Auto Cipher modes, client separation/li>

SSID/ESSID

SSID stealth mode and access control based on MAC address

Wi-Fi users

Up to 50 simultaneous connections

Wireless Hotspot

Captive portal (Hotspot), internal/external Radius server, SMS authorization, internal/external landing page, walled garden, user scripts, URL parameters, user groups, individual user or group limitations, user management, 9 default customizable themes

Wireless Features

Wireless mesh (802.11s), fast roaming (802.11r), Relayed

Wireless MAC filter

Whitelist, blacklist

## + Ethernet

WAN

1 x WAN port (can be configured as LAN) 10, 100, 1000 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI, MDIX crossover

LAN

1 x LAN port, 10/100 Mbps, compliance with IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIXX

## + Network

Routing

Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, EIGRP, NHRP), Policy based routing

Network protocols

TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, SFTP, FTP, SMTP, SSL/TLS, ARP, VRRP, PPP, PPPoE, UPNP, SSH, DHCP, Telnet, SMPP, 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

Port forward, traffic rules, custom rules

DHCP

Static and dynamic IP allocation, DHCP Relay

QoS / Smart Queue Management (SQM)

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

Wi-Fi WAN, Mobile, VRRP, Wired options, each of which can be used as an automatic failover

Load balancing

Balance Internet traffic over multiple WAN connections

SSHFS

Possibility to mount remote file system via SSH protocol

## + Security

Authentication

Pre-shared key, digital certificates, X.509 certificates, TACACS+, Radius, IP & Login attempts block

Firewall

Pre-configured firewall rules can be enabled via WebUI, 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)

VLAN

Port and tag-based VLAN separation

Mobile quota control

Mobile data limit, customizable period, start time, warning limit, phone number

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, 27 encryption methods

#### OpenVPN Encryption

DES-CBC 64, RC2-CBC 128, DES-EDE-CBC 128, DES-EDE3-CBC 192, DESX-CBC 192, BF-CBC 128, RC2-40-CBC 40, CAST5-CBC 128, RC2-64-CBC 64, AES-128-CBC 128, AES-128-CFB 128, AES-128-CFB1 128, AES-128-CFB8 128, AES-128-OFB 128, AES-128-GCM 128, AES-192-CFB 192, AES-192-CFB1 192, AES-192-CFB8 192, AES-192-OFB 192, AES-192-CBC 192, AES-192-GCM 192, AES-256-GCM 256, AES-256-CFB 256, AES-256-CFB1 256, AES-256-CFB8 256, AES-256-OFB 256, AES-256-CBC 256

#### IPsec

IKEv1, IKEv2, with 14 encryption methods for IPsec (3DES, DES, AES128, AES192, AES256, AES128GCM8, AES192GCM8, AES256GCM8, AES128GCM12, AES192GCM12, AES256GCM12, AES128GCM16, AES192GCM16, AES256GCM16)

#### GRE

GRE tunnel, GRE tunnel over IPsec support

#### PPTP, L2TP

Client/Server instances can run simultaneously, L2TPv3, L2TP over IPsec support

#### Stunnel

Proxy designed to add TLS encryption functionality to existing clients and servers without any changes in the program's code

#### DMVPN

Method of building scalable IPsec VPNs

#### SSTP

SSTP client instance support

#### ZeroTier

ZeroTier VPN client support

#### WireGuard

WireGuard VPN client and server support

#### Tinc

Tinc offers encryption, authentication, and compression in its tunnels. Client and server support

## + BACNET

Supported Modes  
router

Supported connection types  
TCP

## + OPC UA

Supported Modes  
Client, server

Supported connection types  
TCP

## + DNP3

Supported Modes  
Station, outstation

Supported connection types  
TCP, USB

## + MODBUS

Supported Modes  
Server, Client

Supported connection types  
TP, USB

Custom registers  
MODBUS TCP custom register block requests, which read/write to a file inside the router, and can be used to extend MODBUS TCP Slave functionality

Supported Data Formats  
8-bit: INT, UINT; 16-bit: INT, UINT (MSB or LSB first); 32-bit: float, INT, UINT (ABCD (big-endian), DCBA (little-endian), CDAB, BADC), HEX, ASCII

## + Data to Server

Protocol  
HTTP(S), MQTT, Azure MQTT, Kinesis

## + MODBUS MQTT Gateway

MQTT Gateway  
Allows sending commands and receiving data from MODBUS Master through MQTT broker

## + DNP3

Supported modes  
TCP Master, DNP3 Outstation

## + 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

### Call

Reboot, Status, Mobile data on/off, Output on/off, answer/hang-up with a timer, Wi-Fi on/o

### TR-069

OpenACS, EasyCwmp, ACSLite, tGem, LibreACS, GenieACS, FreeACS, LibCWMP, Friendly tech, AVSystem

### MQTT

MQTT Broker, MQTT publisher

### JSON-RPC

Management API over HTTP, HTTPS

### Modbus

Modbus TCP status, control

### FOTA

Firmware update from server, automatic notification

### Remote Management

HexaCloud Remote Management System

## + IoT Platforms

### Cloud of Things

Allows monitoring of: Device data, Mobile data, Network info, Availability

### ThingWorx

Allows monitoring of: WAN Type, WAN IP, Mobile Operator Name, Mobile Signal Strength, Mobile Network Type

### Cumulocity

Allows monitoring of: Device Model, Revision and Serial Number, Mobile Cell ID, ICCID, IMEI, Connection Type, Operator, Signal Strength, WAN Type and IP

### Azure IoT Hub

Can send device IP, Number of bytes send, received, Mobile connection state, Network link state, IMEI, ICCID, Model, Manufacturer, Serial, Revision, IMSI, SIM State, PIN state, GSM signal,

WCDMA RSCP, WCDMA EC, IO, LTE RSRP, LTE SINR, LTE RSRQ, CELL ID, Operator, Operator number, Connection type, Temperature, PIN count to Azure IoT Hub server

## + System Characteristics

### CPU

MediaTek MT7621A, Dual-Core, 880 MHz, MIPS1004Kc

### RAM

256MB DDR3

### FLASH storage

16MB serial NOR flash, 256MB serial NAND flash

## + Firmware/Configuration

### WEB UI

Update FW from file, check FW on server, configuration profiles, configuration backup

### FOTA

Update FW

### Remote Mgmt. Sys.

Update FW/configuration for multiple devices at once

### Keep settings

Update FW without losing current configuration

## + Firmware Customization

### Operating system

OpenWrt based Linux OS

### Supported languages

Busybox shell, Lua, C, C++, and Python, Java in Package manager

### Development tools

SDK package with build environment provided

## + Location Tracking

### GNSS

GPS, GLONASS, BeiDou, Galileo and QZSS

### Coordinates

GNSS coordinates via WebUI, SMS, TAVL, HexaCloud

### NMEA

SDK package with build environment provided

### NTRIP

NTRIP protocol (Networked Transport of RTCM via Internet Protocol)

### Server software

Supports server software: TAVL, HexaCloud

### Geofencing

Multiple configurable geofence zones

## + USB

### Data Rate

USB 2.0

### Applications

Samba share, USB-to-serial

### External Devices

Possibility to connect external HDD, flash drive, additional modem, printer, USB-serial adapter

### Storage Formats

FAT, FAT32, exFAT, NTFS (read-only), ext2, ext3, ext4

## + Input / Output

### Input

1 x Digital Input, 0 - 6 V detected as logic low, 8 - 50 V detected as logic high

### Output

1 x Digital Output, Open collector output, max output 50 V, 300 mA

### Events

Email, HexaCloud, SMS

### I/O juggler

Allows to set certain I/O conditions to initiate event

## + Power

### Connector

4-pin industrial DC power socket

### Input voltage range

9~30 VDC, reverse polarity protection; surge protection >31 VDC 10us max

### PoE (passive)

Passive PoE over spare pairs. Possibility to power up through LAN port, not compatible with IEEE802.3af, 802.3at and 802.3bt standards, Mode B, LAN1 Port, 9 - 30 VDC

### Power consumption

< 6.5 W Max

## + Physical Characteristics

### Ethernet

5 x RJ45 ports, 10/100/1000 Mbps

### I/O's

1 x Digital Input, 1 x Digital Output on 4-pin power connector

**Status LEDs**

3 x connection status LEDs, 3 x connection strength LEDs, 10 x Ethernet port status LEDs, 4 x WAN status LEDs, 1x Power LED, 2 x 2.4G and 5G Wi-Fi LEDs

**SIM**

2 x SIM slot (Mini SIM – 2FF), 1.8 V, 3 V

**Power**

1 x 4-pin power connector

**Antennas**

4 x SMA for Mobile, 2 x RP-SMA for Wi-Fi, 1 x SMA for GNSS

**USB**

1 x USB A port for external devices

**Reset**

Reboot/User default reset/Factory reset button

**Grounding**

1 x Grounding screw

## + Regulatory and Type Approval

**Regulatory**

FCC, IC, PTCRB

## + EMC Emissions & Immunity

**Standards**

47 CFR Part 15 Subpart B, ICES-003: Issue 7 (October 2020)

## + RF

**Standards (Wi-Fi 2.4 GHz, 5 GHz)**

47 CFR Part 15 Subpart C - § 15.247, Subpart E - § 15.407, RSS-247 Issue 2 (February 2017), RSS-Gen Issue (April 2018) Amendment 2 (February 2021), KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02, KDB 905462 D04 Operational Modes for DFS Testing New Rules v01

**Standards (4G, 5G)**

47 CFR Part 2, Part 22 Subpart H, Part 24 Subpart E, Part 27 Subpart C, Part 90 Subpart R/S, Part 96 RSS-130 Issue 2 (February 2019), RSS-132 Issue 3 (January 2013), RSS-133 Issue 6 (January 2018) Amendment, RSS-139 Issue 3, (July 2015), RSS-140 Issue 1 (April 2018), RSS-192 Issue 4 (May 2020), RSS-195 Issue 2 (April 2014), RSS-197 Issue 1 (February, 2010), RSS-199 Issue 3 (December 2016), RSS-Gen Issue 5 (April 2018) Amendment 2, SRSP-503 Issue 7 (September 2008), SRSP-510 Issue 5 (February 2009), SRSP-513 Issue 3 (July 2015), SRSP-516 Issue 1 (April 2014), SRSP 517 Issue 1 (July 2014), SRSP-518 Issue 2 (February 2019), SRSP-520 Issue 2 (November 2021)

**RF Exposure Standards**

47 CFR - § 2.1091, KDB 447498 D04 Interim  
General RF Exposure Guidance v01, RSS-102 Issue  
5 (March 2015) Amendment 1

**+ Operating Environment****Operating temperature**

-40 °C to 75 °C

**Operating humidity**

10% to 90% non-condensing

**Ingress Protection**

IP30 Rating

**+ Physical Specifications****Casing material**

Aluminum housing

**Dimensions (WxHxD)**

132 x 44.2 x 95.1 mm

**Weight**

519 g

**Mounting options**

DIN rail (can be mounted on two sides), flat  
surface placement

**+ Package Contents****Router**

QSG (Quick Start Guide)

