



**ECM-P5G** is a brand new range of products that accommodates escalating requirements for speed, reliability and flexibility. It can provide throughput of up to 1 Gbps over the air in 5 GHz license-free frequency bands. ECM-P5G was specifically designed to deliver superior performance over long distances and in extremely adverse environments including nLOS and NLOS scenarios. The ECM-P5G family units harmoniously complements the ECM-P5 and enables to meet accelerating demand for cost-effectively capacity under rapidly evolving conditions.

**ECM-P5G** uses two non-adjacent channels that gives a great advantage compared to 802.11ac systems. Available with a wide range of integrated antennas, as well as a connectorized version for use with 3rd party external antennas, the ECM-P5G family is the ideal choice for a large array of applications such as backhaul in the telecom market, education, oil and gas, smart cities, video surveillance and public safety. It was designed by EC SYSTEM to meet the exact requirements of the most demanding customers, most complex projects and most challenging environments.

## Applications

- ✓ High capacity short-, medium- and longhuals for mobile operators and service providers
- ✓ Full-fledged fibre/FSO/mm-wave systems replacement, extension or backup
- ✓ LOS and NLOS macro- and small-cell LTE backhaul
- ✓ Digital oilfields connectivity
- ✓ Connecting clusters of CCTV cameras to the monitoring centres
- ✓ Rapid deployment of network infrastructure

# ECM-P5G

## Top Facts Sheet

### HIGHEST SPECTRAL EFFICIENCY

- Best-in-breed up to 14 bps/Hz
- Highest order QAM256 and QAM1024 modulations

### SUPERIOR PERFORMANCE AND PROCESSING POWER

- Transparent L2 transport for Ethernet traffic of any type
- Real throughput up to 500 Mbps in 2x20 MHz channel and up to 1000 Mbps in 2x40 MHz

### ULTRA-LOW LATENCY

- Ultra-low consistent 1.5 ms latency at any distance
- Configurable frame size

### LONG RANGE LINKS

- Connectivity at the distances of more than 60 km with external antennas
- High-power transmitter and improved sensitivity even at highest modulations, ensuring maximal link budget
- Unprecedented system gain of 172 dB even with integrated antennas

### SEEMLESS INTEGRATION

- Extended QoS support
- Two Gigabit Ethernet ports
- SFP optical port
- IEEE 1588v2
- Built-in full-fledged L2 switch supporting VLAN and Spanning Tree Protocol

### FLEXIBILITY

- Available in connectorized configuration and with integrated from 23 to 28 dBi flat-panel dual-polarity antennas
- Easy-to-align and easy-to-install
- Fully configurable uplink/downlink ratio
- Very small footprint

### IMPROVED NOISE IMMUNITY / INTERFERENCE AVOIDANCE

- TDD synchronization using a built-in GNSS receiver

### RELIABILITY & ROBUSTNESS

- Ruggedized aluminium cast IP66 and IP67 enclosure
- Extended temperature range of -40°C to +60°C, with 100% humidity
- No link degradation even in harsh weather conditions
- Built-in surge protection

### PERFORMANCE

<b>Throughput</b>	Up to 1 Gbps, net aggregate
<b>Packet performance</b>	More than 1.6 million packets per second (line rate)
<b>Latency</b>	1.5 - 5 ms one-way, typical (depending on air frame period)

### RADIO TECHNOLOGY

<b>Modulation</b>	Cyclic single carrier
<b>Cyclic prefix</b>	1/8 and 1/16 (for 2x20 and 2x40 MHz channel width)
<b>Modulation schemes</b>	Eleven modulation/coding schemes from QPSK to QAM256, as well as QAM1024
<b>Frequency range</b>	4.9 - 6.0 GHz
<b>Channel widths</b>	2x10, 2x20 and 2x40 MHz
<b>Spectral efficiency</b>	Up to 14 bps/Hz
<b>Transmit power</b>	Up to 22 dBm (average, per Tx chain) @ QPSK to QAM64 Up to 20 dBm @ QAM256 Up to 18 dBm @ QAM1024
<b>Receiver sensitivity</b>	down to -93 dBm @ 2x10 MHz, QPSK
<b>System gain</b>	Up to 172 dB (based on a 28 dBi integrated antenna in 2x10 MHz channel width)
<b>Duplex Scheme</b>	TDD, Hybrid-FDD
<b>Antenna</b>	- Integrated: dual-polarization flat panel 23, 26, 28 dBi - Connectorized: 2x N-type (Female) connectors for external dual-polarization antenna
<b>Maximal range</b>	Up to 60 km (clear line-of-sight with external antennas)

### AIR PROTOCOL

<b>Air frame</b>	Configurable, from 2 to 10 ms
<b>Downlink/uplink ratio</b>	Configurable, from 50:50 to 90:10 at both uplink and downlink
<b>Automatic modulation control</b>	Fully supported
<b>Automatic ranging</b>	Fully supported
<b>TDD synchronization</b>	Fully supported, via built-in GNSS receiver or IEEE1588 PTP

## WIRED INTERFACES

<b>Ethernet</b>	2x 10/100/1000-BaseT copper ports, RJ-45: GE0 – Data+PoE input GE1 – Data only SFP port: various 3rd party single and multi-mode fibre module supported Either of the ports can be configured independently for management, user data or for a hybrid mode
<b>PoE</b>	EC SYSTEM proprietary «passive» PoE
<b>Cable length</b>	Copper Ethernet cable length: up to 100 m between outdoor unit and the primary network connection Fibre cable length: up to 300 m or more depending on the SFP module type

## QOS AND NETWORK PROTOCOLS

<b>QoS</b>	4 queues
<b>Prioritization</b>	«Strict» and «Weighted Round Robin» modes
<b>Packet classification</b>	802.1p
<b>Network protocols</b>	VLAN, STP
<b>Timing Transport</b>	IEEE 1588 v2, transparent clock

## MANAGEMENT AND INSTALLATION

<b>LED Indication</b>	Power status, wireless and wired link status, RSSI indication, TDD sync status
<b>Management Protocols</b>	HTTP, telnet, SNMP v1/2c/3 (MIB-II and proprietary MIBs)
<b>Web GUI Tools</b>	Antenna Alignment Tool, Spectrum Analyzer

## PHYSICAL

<b>Weight and dimensions</b>	Please refer to the model matrix below
<b>Operating temperature range</b>	from -40°C to +60°C
<b>Dust and water protection</b>	IP66, IP67
<b>Wind load</b>	160 km/h, operational; 200 km/h, survival
<b>Power supply</b>	IDU-BS-G(60W): 90-220 VAC, 50/60 Hz, -10°C to +40°C, 151x62x38 mm, 0.32 kg
<b>Input DC range</b>	±43 to ±56 VDC
<b>Consumption</b>	Up to 55 W

# ECM-P5G

## Technical Specifications

### ACCESSORIES




Mount Kit	MONT-KIT-85 or MONT-KIT-85s
DC Injector	AUX-ODU-INJ-G (indoor/outdoor installation), IDU-LA-G (V.01) (indoor installation)
External Lightning Protection	AUX-ODU-LPU-G
GPS/GLONASS Antenna	ANT-SYNC

### COMPLIANCE

Safety	EN 60950-1:2006, UL 60950-1 2nd ed.
Radio (pending)	EN 301 893 v.1.8.1, EN 302 502, v.1.2.1, FCC part 15.247
EMC	ETSI EN 301 489-1, ETSI EN 301 489-17, FCC Part 15 Class B
RoHS	Directive 2011/65/EU

## MODEL RANGE

### Integrated Antenna Models

PART NUMBER	FREQUENCY RANGE	INTEGRATED ANTENNA	WEIGHT AND SIZE	
ECM-P5G-A23R150	4900-6000 MHz	Flat-panel, 23 dBi, 10x10 deg	305x305x67 mm 2.4 kg	
ECM-P5G-A26R150	4900-6000 MHz	Flat-panel, 26 dBi, 8x8 deg	371x371x89 mm 3.3 kg	
ECM-P5G-A28R150	4900-6000 MHz	Flat-panel, 28 dBi, 5x5 deg	600x600x74 mm 6.3 kg	

### External Antenna Models

PART NUMBER	FREQUENCY RANGE	INTEGRATED ANTENNA	WEIGHT AND SIZE	
ECM-P5G-CR150	4900-6000 MHz	2xN-type (Female)	256x240x86 mm 2.1 kg	