



### CFIP Lumina FODU technical specification

|                                       |  |     |       |       |    |       |    |    |    |
|---------------------------------------|--|-----|-------|-------|----|-------|----|----|----|
| Frequency range (GHz)                 | 6  | 7/8 | 10/11 | 13/15 | 17 | 18/23 | 24 | 26 | 38 |
| Channel Bandwidths (MHz) <sup>3</sup> | 14, 28, 40, 56                                 |     |       |       |    |       |    |    |    |
| Modulation                            | 4QAM / 16QAM / 32QAM / 64QAM / 128QAM / 256QAM |     |       |       |    |       |    |    |    |
| Capacity (Mbps)                       | 34 – 366                                       |     |       |       |    |       |    |    |    |

### Performance

|                           |   |  |  |  |  |  |  |  |  |
|---------------------------|---|--|--|--|--|--|--|--|--|
| Configuration             | 1+0,<br>Ring/Mesh (with RSTP),<br>2+0 (built-in Ethernet aggregation), 1+1 (Hot Stand-By) |  |  |  |  |  |  |  |  |
| Frequency stability (ppm) | +/- 7   |  |  |  |  |  |  |  |  |
| Traffic Interfaces        | 1 or 2 Gigabit Ethernet (electrical or optical)   |  |  |  |  |  |  |  |  |

### Ports

|                               |   |       |        |        |                  |        |                  |        |        |
|-------------------------------|---|-------|--------|--------|------------------|--------|------------------|--------|--------|
| Flange                        | N-type  | UBR84 | UBR100 | UBR140 | Circular<br>13mm | UBR220 | Circular<br>10mm | UBR260 | UBR320 |
| Ethernet                      | Optical 1 or 2 ODC ports<br>Electrical 1 or 2 RJ-45<br>Hybrid 1 ODC and 1 RJ-45 |       |        |        |                  |        |                  |        |        |
| DC power connector            | 2-pin waterproof circular   |       |        |        |                  |        |                  |        |        |
| RSL port, RSSI, BNC connector | Output voltage vs RSL: 0 to 1.4V vs -90 to -20dBm                               |       |        |        |                  |        |                  |        |        |
| Serial port for configuration | RS-232, Twin BNC connector  |       |        |        |                  |        |                  |        |        |

### Management features

|                 |   |  |  |  |  |  |  |  |  |
|-----------------|---|--|--|--|--|--|--|--|--|
| Management port | Ethernet VLAN or Separate Ethernet (RJ-45 or ODC) |  |  |  |  |  |  |  |  |
| SNMP            | Yes, SNMP traps, MIB, SNMP v1/v2c                 |  |  |  |  |  |  |  |  |
| EMS             | Web based, HTTP                                   |  |  |  |  |  |  |  |  |
| ATPC feature    | Yes   |  |  |  |  |  |  |  |  |
| ACM feature     | Hitless 0ms                                       |  |  |  |  |  |  |  |  |
| Loopbacks       | Yes, modem, IF loopback                           |  |  |  |  |  |  |  |  |

### Ethernet

|                        |  |  |  |  |  |  |  |  |  |
|------------------------|--|--|--|--|--|--|--|--|--|
| Switch type            | Managed Gigabit Ethernet Layer 2   |  |  |  |  |  |  |  |  |
| Max frame size         | 9728 bytes   |  |  |  |  |  |  |  |  |
| MAC table              | 4K entries; automatic learning and aging   |  |  |  |  |  |  |  |  |
| Packet buffer          | 128KB; non-blocking store&forward  |  |  |  |  |  |  |  |  |
| Flow Control           | 802.3x   |  |  |  |  |  |  |  |  |
| VLAN support           | 802.1Q (up to 4K VLAN entries)   |  |  |  |  |  |  |  |  |
| QinQ (Double Tagging)  | Yes  |  |  |  |  |  |  |  |  |
| QoS                    | 64 level DiffServ (DSCP) or 8 level 802.1p mapped in 4 prioritization queues with VLAN support |  |  |  |  |  |  |  |  |
| QoS queuing            | Fixed or weighted (configurable ratio)   |  |  |  |  |  |  |  |  |
| Spanning Tree Protocol | 802.1D-2004 RSTP, 802.1Q-2005 MSTP   |  |  |  |  |  |  |  |  |

### Mechanical & Electrical

|                                    |   |  |  |  |  |  |  |  |  |
|------------------------------------|---|--|--|--|--|--|--|--|--|
| Stationary use                     | Ref. ETSI EN 300 019-2-4, class 4.1E; non weather-protected locations |  |  |  |  |  |  |  |  |
| Temperature Range                  | -33°C to +55°C  |  |  |  |  |  |  |  |  |
| Dimensions: HxWxD, mm / weight, kg | 288x288x80 / 3.9  |  |  |  |  |  |  |  |  |
| Built-in DC port surge protection  | Conforms to ETSI EN 301 489-1; EN 61000-4-5; IEC 61000-4-5            |  |  |  |  |  |  |  |  |
| Input DC voltage                   | -40.5V to -57V DC (conforms to ETSI EN 300 132-2)                     |  |  |  |  |  |  |  |  |
| Max. power consumption             | SP: 25-40 W; HP: 29-52 W  |  |  |  |  |  |  |  |  |

# CFIP Lumina series

## High capacity - Full Outdoor - Microwave Radio Systems



| CFIP Lumina Rx sensitivity, payload capacity |            |                  |       |       |       |        |        |        |        |                         |        |                     |        |        |                      |
|--|------------|------------------|-------|-------|-------|--------|--------|--------|--------|-------------------------|--------|---------------------|--------|--------|----------------------|
| Bandwidth <sup>1</sup> , MHz                 | Modulation | FEC <sup>2</sup> | 6 GHz | 7 GHz | 8 GHz | 10 GHz | 11 GHz | 13 GHz | 15 GHz | 17 <sup>4</sup> /18 GHz | 23 GHz | 24 <sup>4</sup> GHz | 26 GHz | 38 GHz | Capacities, Mbps     |
| 28   | 4QAM       | Strong           | -90.5 | -89.5 | -89   | -88.5  | -89.5  | -89.5  | -89    | -90                     | -89    | -89                 | -91.5  | -85    | 35                   |
|  | 16QAM      | Strong           | -84.5 | -83   | -83   | -82.5  | -83.5  | -83.5  | -83    | -84                     | -83    | -83                 | -85    | -79    | 69                   |
|  | 32QAM      | Strong           | -81.5 | -80   | -80   | -80    | -80.5  | -80.5  | -80.5  | -80.5                   | -80    | -80                 | -82    | -76    | 88                   |
|  | 64QAM      | Strong           | -79   | -77.5 | -77.5 | -77    | -78    | -77.5  | -77    | -78                     | -77.5  | -77.5               | -79.5  | -73.5  | 115                  |
|  | 128QAM     | Strong           | -75.5 | -74.5 | -74   | -73.5  | -74.5  | -74.5  | -74    | -75.5                   | -74    | -74                 | -76.5  | -70    | 139                  |
|  | 256QAM     | Strong           | -72.5 | -71   | -70.5 | -70.5  | -71    | -71    | -70.5  | -72                     | -71    | -71                 | -73    | -67    | 162                  |
| 40   | 4QAM       | Strong           | -89   | -87.5 | -88   | -87.5  | -88    | -88    | -88    | -88                     | -87.5  | -87.5               | -89.5  | -83.5  | 50                   |
|  | 16QAM      | Strong           | -82.5 | -81.5 | -81.5 | -81    | -82    | -82    | -81.5  | -82.5                   | -81    | -81                 | -83.5  | -77    | 98                   |
|  | 32QAM      | Strong           | -80   | -78.5 | -79   | -78.5  | -79.5  | -79.5  | -79    | -79.5                   | -78.5  | -78.5               | -80.5  | -74.5  | 127                  |
|  | 64QAM      | Strong           | -77   | -76   | -75.5 | -75.5  | -76.5  | -76    | -76    | -77                     | -75.5  | -75.5               | -78    | -71.5  | 164                  |
|  | 128QAM     | Strong           | -74   | -73   | -72.5 | -72.5  | -73.5  | -73    | -72.5  | -73.5                   | -72.5  | -72.5               | -74.5  | -68.5  | 196                  |
|  | 256QAM     | Strong           | -70.5 | -69.5 | -69   | -68.5  | -69.5  | -69.5  | -69    | -70.5                   | -69    | -69                 | -71    | -65    | 229                  |
| 56   | 4QAM       | Strong           | -87   | -85.5 | -86   | -85.5  | -87    | -86.5  | -86    | -87                     | -85.5  | -85.5               | -88    | -81.5  | 72/67 <sup>3</sup>   |
|  | 16QAM      | Strong           | -81   | -80   | -79.5 | -79.5  | -80.5  | -80    | -79.5  | -80.5                   | -79.5  | -79.5               | -82    | -75.5  | 145/135 <sup>3</sup> |
|  | 32QAM      | Strong           | -78   | -77   | -77.5 | -77    | -78    | -77.5  | -77    | -77.5                   | -76.5  | -76.5               | -79    | -72.5  | 186                  |
|  | 64QAM      | Strong           | -75.5 | -74.5 | -74   | -73.5  | -74.5  | -74.5  | -74    | -75.5                   | -74    | -74                 | -76    | -70    | 241                  |
|  | 128QAM     | Strong           | -72   | -71   | -71   | -70.5  | -71.5  | -71.5  | -71    | -72                     | -70.5  | -70.5               | -73    | -66.5  | 289                  |
|  | 256QAM     | Strong           | -68.5 | -67.5 | -67   | -66.5  | -68    | -67.5  | -67    | -68.5                   | -67    | -67                 | -69.5  | -63    | 337                  |
|  |            | Weak             | -64   | -63   | -63   | -62.5  | -63.5  | -63    | -62.5  | -64.5                   | -62.5  | -62.5               | -65    | -58.5  | 366                  |

<sup>1</sup> According to ETSI channel plan

<sup>2</sup> Forward Error Correction (FEC) can be optimized either for sensitivity (Strong FEC) or for capacity (Weak FEC)

<sup>3</sup> Higher capacity is available in 16QAM and 4QAM if using 32QAM-256QAM with ACM enabled

<sup>4</sup> For non-degraded Rx sensitivity refer to Technical Description (TD) for maximum Tx level according to Rx level observed.



# CFIP Lumina series

High capacity - Full Outdoor - Microwave Radio Systems



## CFIP Lumina Tx power

| Modulation | Standard/High Tx Power, dBm |                    |                       |                |                         |        |
|------------|-----------------------------|--------------------|-----------------------|----------------|-------------------------|--------|
|            | 6, 7, 8 GHz                 | 10, 11, 13, 15 GHz | 17 GHz <sup>4,5</sup> | 18, 23, 26 GHz | 24 GHz <sup>4,5,6</sup> | 38 GHz |
| 4QAM       | +19 / +27                   | +19 / +25          | -25...+5              | +19            | -20...0                 | +17    |
| 16QAM      | +18 / +26                   | +18 / +24          | -25...+4              | +18            | -20...-1                | +16    |
| 32QAM      | +17 / +25                   | +17 / +23          | -25...+3              | +17            | -20...-2                | +15    |
| 64QAM      | +15 / +23                   | +15 / +21          | -25...+1              | +15            | -20...-4                | +13    |
| 128QAM     | +15 / +23                   | +15 / +21          | -25...+1              | +15            | -20...-4                | +13    |
| 256QAM     | +12 / +20                   | +12 / +18          | -25...-2              | +12            | -20...-7                | +10    |

## CFIP Lumina Labeling

The label can be found on the front side of the unit.

The label contains the following information (see sample in the picture below):

- Model name ("CFIP Lumina").
- Product Number (I18GLT02HB).
- Unit Serial Number (3203001 00002); serial number uniquely identifies the FODU.



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MADE IN LATVIA

CFIP Lumina

Product Name

Tx: 19198.00 - 19693.00 MHz

Rx: 18188.00 - 18683.00 MHz

P/N: I18GLT02HB

Product Number

S/N: 3203001 00002

Serial Number



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<sup>4</sup> For non-degraded Rx sensitivity refer to Technical Description (TD) for maximum Tx level according to Rx level observed.

<sup>5</sup> Tx power should not exceed EIRP limitation. Please consult the local spectrum regulating authority.

<sup>6</sup> Output Tx range may differ for previous hardware and software versions.

