



Technical specification

General Specifications

Mode of operation	Point-to-Point / Point-to-Multipoint
Standards compliance	ITU-T G.9991 (G.vlc)
Transmission mode	TDMA with dynamic bandwidth allocation
Modulation	OFDM
Latency	< 3 ms
Network protocol	Ethernet (100/1000Base-T LAN interface)
Network connections	M12 8-pin, X-coded connector (Female Connector)
LED indicators	Power On and Data Communication
Security	128-bit AES CCMP Encryption
Management	GUI based Web-Interface
Quality of Service	Packet prioritization (8 levels)
Optical transmitter	Infrared LED
Wavelength	940 nm
LED power classification	Photobiological safety Risk Group 0 (Risk Group Exempt) EN 62471:2009
Transmit angle	(FWHM) 10 degrees
Receive angle	(FWHM) 6 degrees
Device powering	Power over Ethernet IEEE 802.3af PoE (Type 1)
Power consumption	< 5 W (full traffic load)

Operating temperature	-25°C to +70°C
Protection class	IP66/IP67
Dimensions	(LxWxH) (143 x 106 x 37) mm, (5.6 x 4.2 x 1.4) inch incl fixation brackets
Weight	430 g (15.1 oz.)
Regulatory compliance	FCC CFR 47 Part 15B, CE Mark Low temp. according EN60068-2-1 (Test Ad) Dry Heat according EN60068-2-2 (test Be) EMC according EN50121-3-2 Shock/Vibration acc. EN61373

Performance parameters

Operating distance	0.5 m – 12 m
Max data rate	845 Mbit/s (half duplex) <i>Measurement conditions:</i>
	<ul style="list-style-type: none"> • 1.00 m distance between both Trulifi 6014.02 units • Both Trulifi 6014.02 units are perfectly aligned

Ordering information

A Trulifi 6014.02 system consists of a 6014.02 Access Point and 6014.02 End Point. NMC and alignment options are sold separately.

Trulifi 6014.02 Access Point APMV	Ordering code 912500104195
Trulifi 6014.02 End Point EPMV	Ordering code 912500104196
Option: Laser pointer for optical alignment	Ordering code 912500104197
Option: Networking Monitoring and Control	Trulifi 6800 Controller Unit Trulifi 6800 Controller Application Trulifi 6800 NMC license

Data rate

The data rate depends on the distance d between a Trulifi 6014 Access Point and an End point, as depicted in Figure 1.

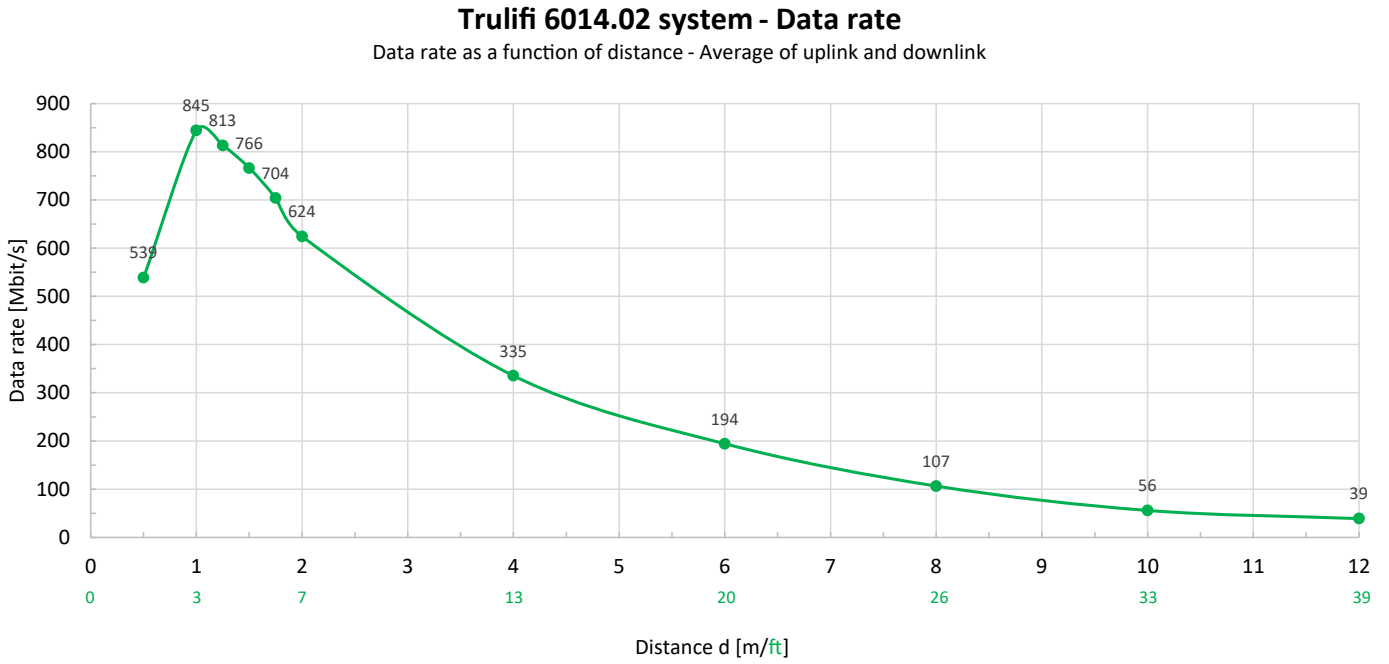


Figure 1: Data rate

Coverage area

The coverage area is defined as the area where a LiFi connection between two 6014 units can be established. The coverage area is a circle of which the radius depends on the distance d . Figure 2 illustrates how the radius depends on the distance d . The maximum data rate is achieved straight under the transmitting 6014 unit ($r = 0$) and decreases with increasing radial offset r , as illustrated in Figure 3.

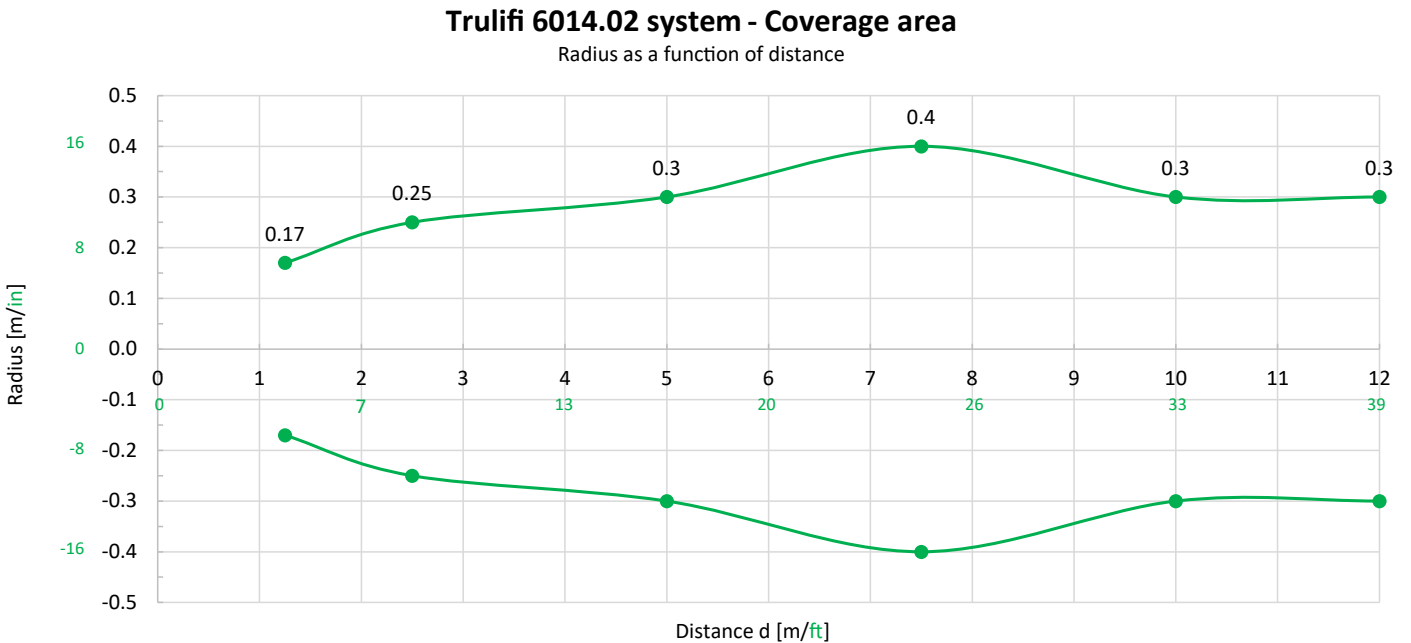


Figure 2: Coverage area

Trulifi 6014.02 system - Data rate

Data rate as a function of radial offset

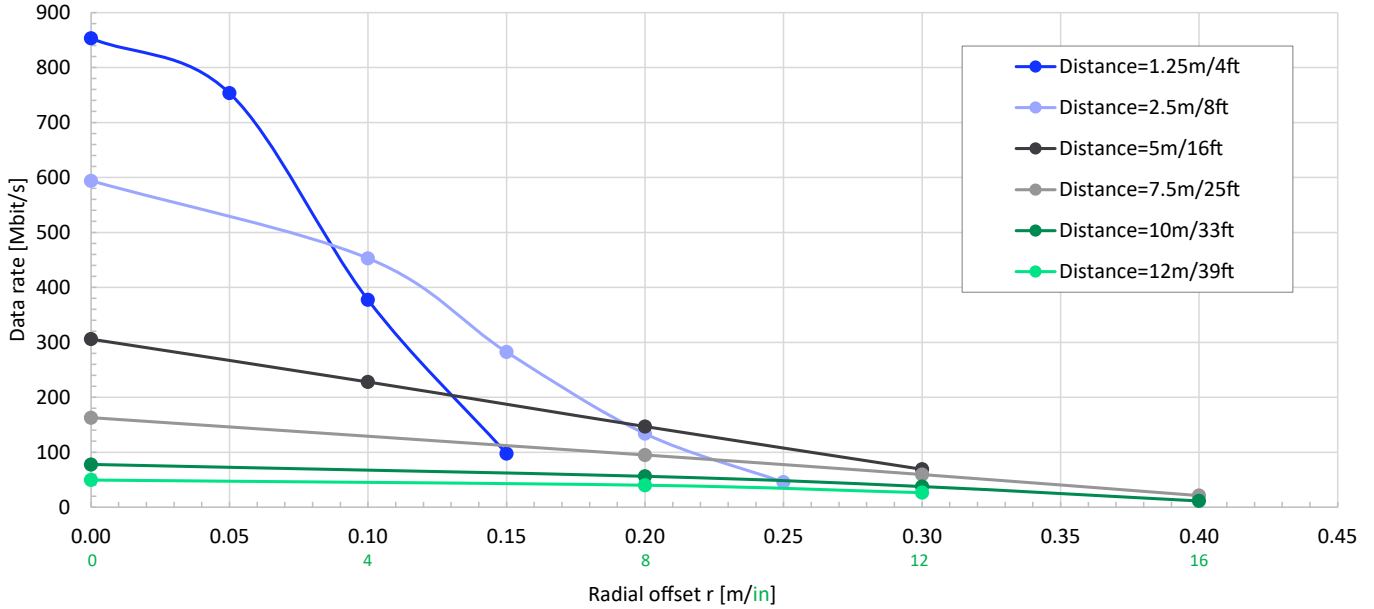


Figure 3: Data rate as a function of radial offset

Rotation

The data rate depends not only on the distance d and the radial offset r , but also on how well both units are aligned with respect to the central optical axis. Any misalignment resulting in a rotation angle greater than zero will result in a decrease of data rate. Figure 4 illustrates the measurement setup. Figure 5 displays the data rate as a function of the rotation angle for 3 different distances.

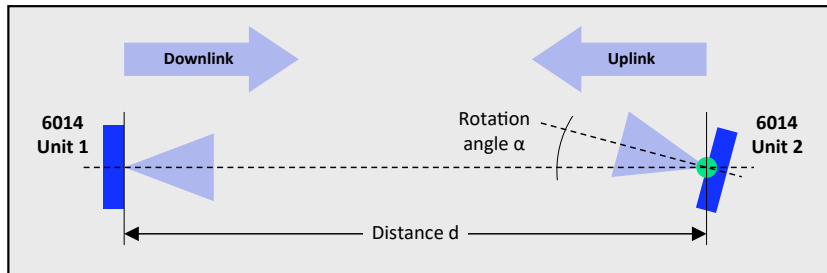
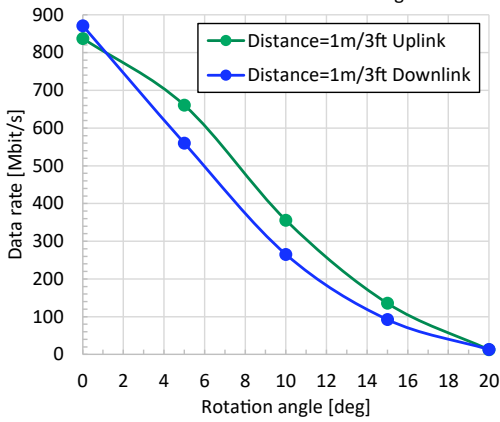


Figure 4: Trulifi 6014 device rotation

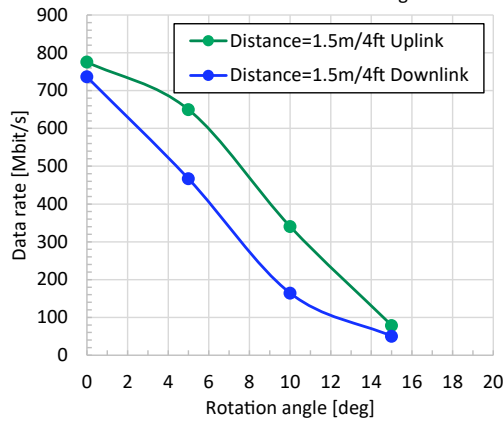
Trulifi 6014.02 system - Data rate

Data rate as a function of rotation angle



Trulifi 6014.02 system - Data rate

Data rate as a function of rotation angle



Trulifi 6014.02 system - Data rate

Data rate as a function of rotation angle

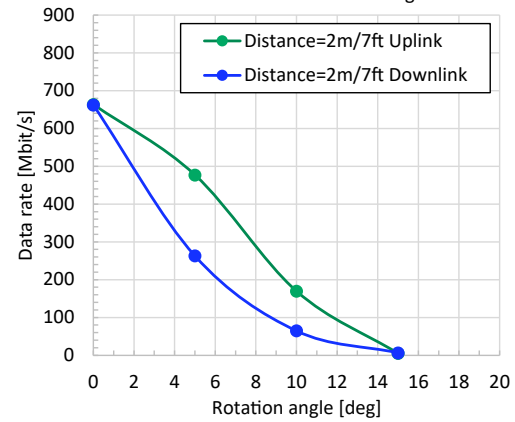


Figure 5: Data rate as a function of rotation

Inter-carriage rotation

The use case where the point of rotation is not in the centre of one of the 6014 units but in the middle of both units on the central optical axis, is referred to as inter-carriage rotation. Figure 6 illustrates the measurement setup.

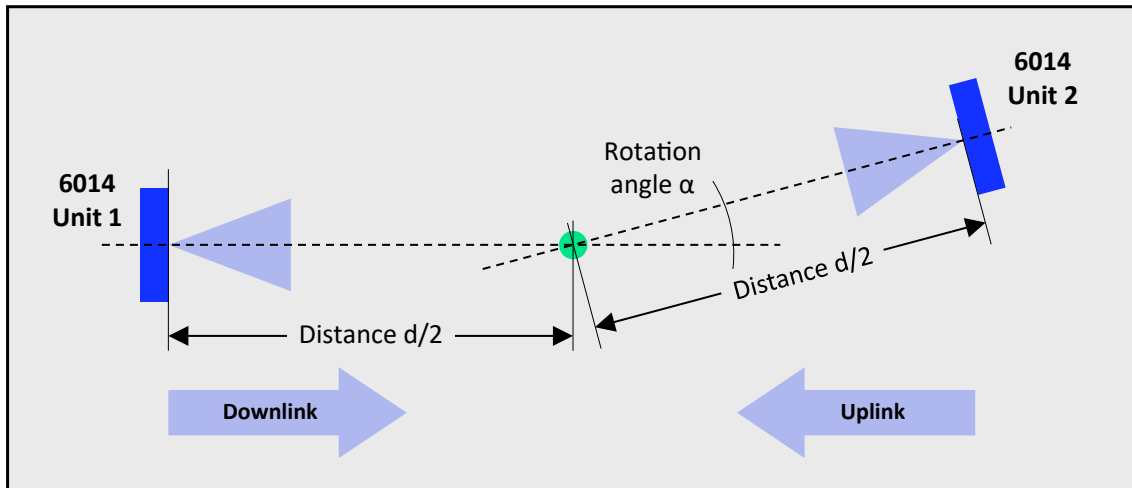


Figure 6: Trulifi 6014 inter-carriage rotation

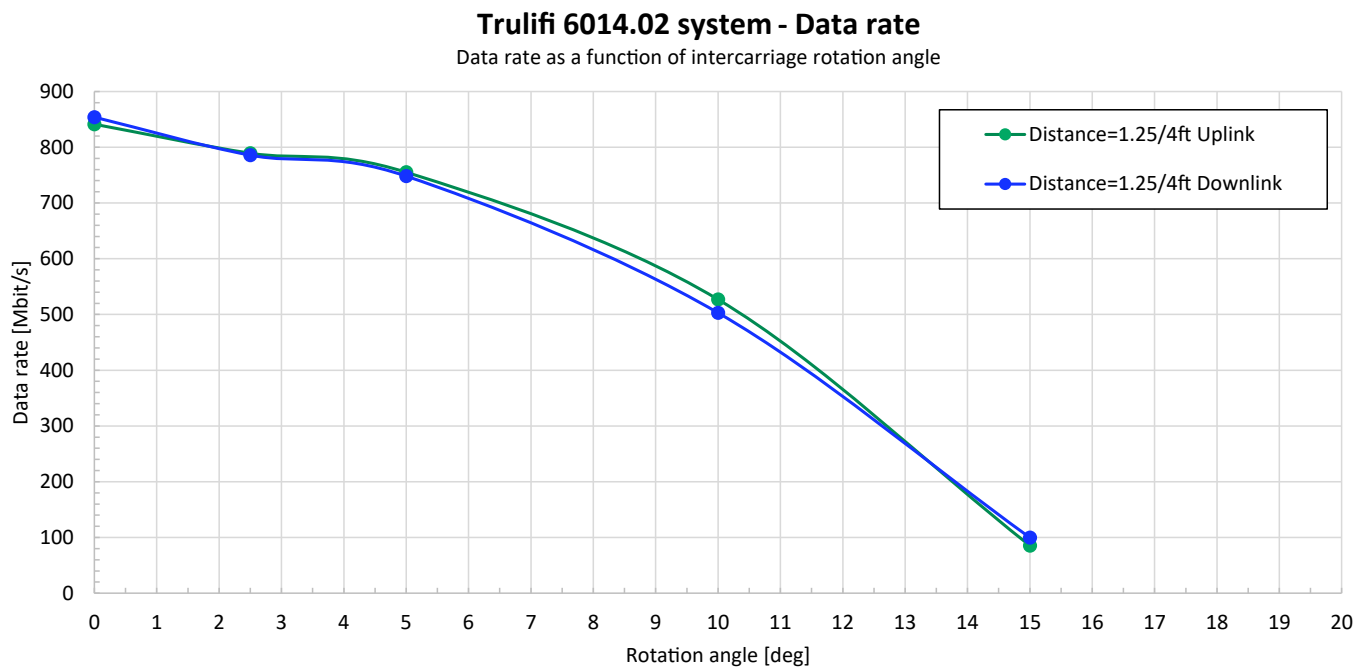


Figure 7: Data rate as a function of intercarriage rotation