



## Press Release

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### **Signify and RIAT pioneer growing tomatoes and cucumbers in a vertical farm without daylight**

**Eindhoven, the Netherlands** – [Signify](#) (Euronext: LIGHT), the world leader in lighting, and RIAT, an innovative farming enterprise located in Russia, have together pioneered the growing of tomatoes and cucumbers in a vertical farm without daylight. During the research phase in 2019, RIAT achieved a yield comparable to advanced traditional greenhouses using [Philips GreenPower LED](#) grow lights.

“We already had facilities of sufficient height at our disposal, therefore there was no need to invest in building a glass construction. But as the building had no windows, we needed a high-quality lighting system to fulfil the intensive lighting requirements of tomatoes and cucumbers,” says Vladimir Bukharev, director at RIAT. “In 2019, Signify provided its Philips GreenPower LED grow lighting, helping us to achieve a yield performance comparable to traditional greenhouse operations.”

RIAT’s indoor farm is located in the center of the Ivanovo region, enabling the company to distribute its tomatoes, cucumbers and 19 types of green crops to its own RIAT stores within an hour after harvesting. RIAT has a special technique to fold the long stems, allowing it to grow the 3.5m high plants indoors.

“With a harvest of 2.7 to 3.2 kg of cucumbers per m<sup>2</sup> every week, and 1.7 kg per m<sup>2</sup> of tomatoes, we started making a profit as of the second year of operation,” Bukharev added. “In addition to that, the quality of the product is very high, there’s hardly any waste and we sell 99% of what is being grown.” “To mimic nature as much as possible, RIAT has chosen a combination of different kinds of Philips GreenPower LED toplighting and interlighting, bringing light both from the top and right in the canopy where the light is needed the most for photosynthesis. While using different kinds of lights, the light recipe can be adjusted based on the crop that is grown,” said Sergey Khokhrin, business Development Manager CEE/Russia & CIS at Signify.

Signify, in collaboration with several research partners, discovered that the red spectrum in light stimulates growth of plant cells and tissues, while the blue spectrum influences the processes of cytodifferentiation (racemes initiation, bines and root formation, flowering). The combination of red and blue with the addition of white and other colors in Philips LED grow lights creates lighting conditions that are as close to natural daylight as possible. Additionally, RIAT is using bumblebees for pollination, as in traditional greenhouses. The bees don’t experience difficulties due to the absence of natural light.



When choosing a lighting supplier, RIAT tested LED modules from different manufacturers from around the globe. “By using Philips LED lighting modules, we managed to achieve maximum stability and a light output of 18 g/mol. This is why we chose Signify. The area equipped with LED lamps is currently 3,800 m<sup>2</sup>. Soon, we are going to launch a new area of 700 m<sup>2</sup> to grow lettuce which will also be equipped with Philips LED lighting,” Bukharev added.

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**About Signify**

[Signify](#) (Euronext: LIGHT) is the world leader in lighting for professionals and consumers and lighting for the Internet of Things. Our [Philips](#) products, [Interact](#) connected lighting systems and data-enabled services, deliver business value and transform life in homes, buildings and public spaces. With 2019 sales of EUR 6.2 billion, we have approximately 38,000 employees and are present in over 70 countries. We unlock the extraordinary potential of light for brighter lives and a better world. We have been named [Industry Leader](#) in the Dow Jones Sustainability Index for three years in a row. News from Signify is located at the [Newsroom](#), [Twitter](#), [LinkedIn](#) and [Instagram](#). Information for investors can be found on the [Investor Relations](#) page.

**About RIAT**

RIAT is a holding in the Ivanovo region, Russia, which owns the world's first indoor production of tomatoes and cucumbers, as well as 10 supermarkets in Ivanovo and 2 in the Ivanovo region (in the cities of Ples and Kineshma).