

## Zephyr High Altitude Platform Station (HAPS) achieves connectivity in trial conducted by Airbus and NTT DOCOMO

- The companies demonstrated the feasibility of providing communication services from the stratosphere to smartphones
- Data transmissions across various speeds up to a distance of 140km were successfully demonstrated

[@AirbusSpace](#) [@Docomo](#) [#Zephyr](#) [#connectivity](#)

**TOKYO, JAPAN, November 15, 2021** – Airbus and NTT DOCOMO, INC. have demonstrated the ability to use its solar-powered Zephyr High Altitude Platform Station (HAPS) to deliver future wireless broadband connectivity. The trial took place in the United States in August, when the Zephyr S aircraft undertook approx. 18-day stratospheric flights to test various capabilities.

Carrying an onboard radio transmitter, the Zephyr S provided an agile datalink during a stratospheric flight to simulate future direct-to-device connectivity. Test data was captured at different altitudes and at different times of day and night, focusing on assessing how connectivity is affected in the stratosphere by factors including weather conditions, different elevation angles and aircraft flight patterns.

Tests included various bandwidths to simulate direct-to-device service from the HAPS to end users using low, nominal and high throughput. The demonstration confirmed the viability and versatility of the 2GHz spectrum for HAPS-based services and also the use of a narrow (450MHz) band to provide connectivity in a range of up to 140km.

The measurement and analysis of the propagation of radio waves transmitted from Zephyr demonstrated the feasibility of stratospheric communications to devices such as smartphones. Based on the results of this experiment, Airbus and NTT DOCOMO aims to provide communication services to mountainous areas, remote islands, and maritime areas where radio waves are difficult to reach.

"DOCOMO believes that HAPS will be a promising solution for coverage expansion in 5G evolution and 6G," said Takehiro Nakamura, General Manager of DOCOMO's 6G-IOWN Promotion Department. "In this measurement experiment, we were able to demonstrate the effectiveness of HAPS, especially for direct communication to smartphones, through long-term propagation measurements using actual HAPS equipment. Based on these results, we would like to further study the practical application of HAPS in 5G evolution and 6G with Airbus."

As part of efforts to further advance 5G and prepare for 6G, "coverage expansion" to expand communication networks to any location, including air and sea, is being studied worldwide. To achieve this, non-terrestrial network (NTN) technology is expected to be used. In addition to coverage of the air and sea, stratospheric HAPS networking will be useful for disaster preparedness and many industrial use cases, for example, to increase communication

Follow us



If you wish to update your preferences to Airbus Communications, [media@airbus.com](mailto:media@airbus.com)  
If you no longer wish to receive communications from Airbus, [media@airbus.com](mailto:media@airbus.com)

capacity in densely populated areas such as event venues, and remotely controlling heavy equipment at construction sites.

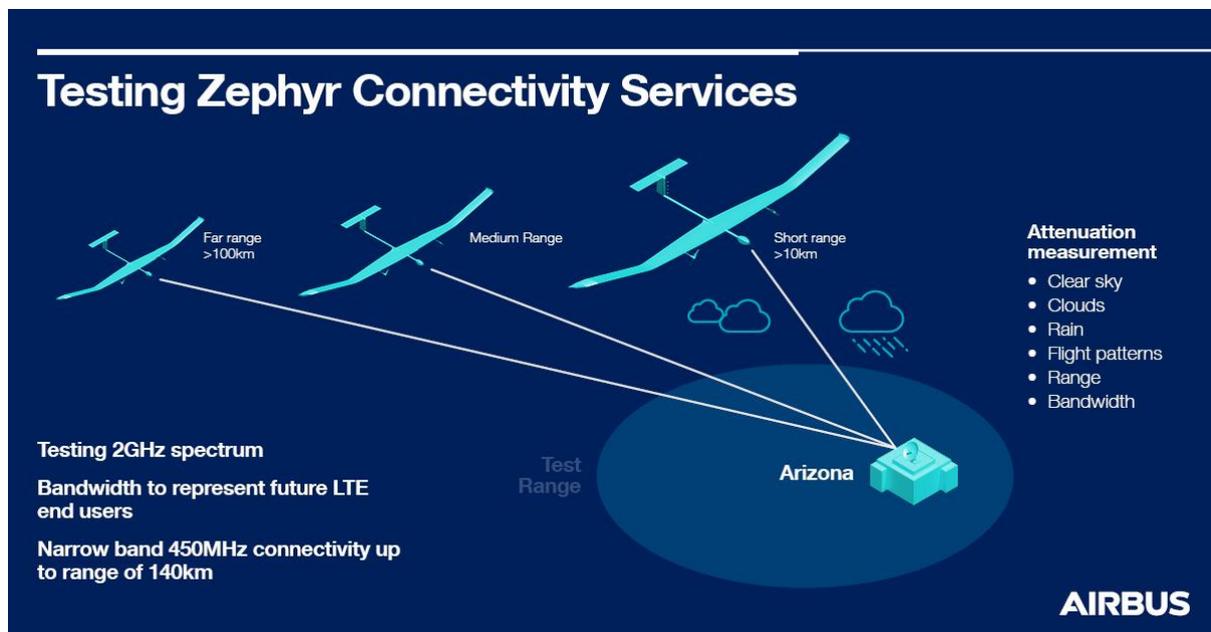
The test data will be used to inform future LTE direct-to-device services that are expected to be provided via the Airbus Zephyr HAPS solution.

“Billions of people across the world suffer from poor or no connectivity. These tests show us the viability of the stratosphere to bridge this divide and provide direct to device connectivity via Zephyr without the need for base stations or extra infrastructure,” Stephane Ginoux, Head of North Asia region for Airbus and President of Airbus Japan K.K.

**Test details**

The trial involved a radio propagation experiment from the stratosphere at an altitude of approximately 20 kilometers to a receiving antenna on the ground. Tests involved a direct connection between the radio equipment on board a Zephyr S HAPS aircraft flying in the stratosphere and the ground antenna under conditions of ever-changing altitude and day/night time.

The trial tested the stability of the connection between the Zephyr S HAPS and the ground antenna and how it was affected by factors such as weather conditions, differences in reception distance, and the flight pattern of the HAPS aircraft. As a result, under three specific scenarios: clear, rainy and cloudy conditions, and in a multitude of flight patterns, data transmissions across various speeds were successfully demonstrated, up to a distance of 140km.



Follow us



If you wish to update your preferences to Airbus Communications, [media@airbus.com](mailto:media@airbus.com)  
If you no longer wish to receive communications from Airbus, [media@airbus.com](mailto:media@airbus.com)

**About Airbus**

Airbus pioneers sustainable aerospace for a safe and united world. The Company constantly innovates to provide efficient and technologically-advanced solutions in aerospace, defence, and connected services. In commercial aircraft, Airbus offers modern and fuel-efficient airliners and associated services. Airbus is also a European leader in defence and security and one of the world's leading space businesses. In helicopters, Airbus provides the most efficient civil and military rotorcraft solutions and services worldwide.

**About NTT DOCOMO**

NTT DOCOMO, Japan's leading mobile operator with over 83 million subscriptions, is one of the world's foremost contributors to 3G, 4G and 5G mobile network technologies. Beyond core communications services, DOCOMO is challenging new frontiers in collaboration with a growing number of entities ("+d" partners), creating exciting and convenient value-added services that change the way people live and work. Under a medium-term plan toward 2020 and beyond, DOCOMO is pioneering a leading-edge 5G network to facilitate innovative services that will amaze and inspire customers beyond their expectations. <https://www.nttdocomo.co.jp/english/>.

**Newsroom****Contacts for the media**

Pablo Correa  
Airbus Defence and Space  
+34 689 669 602  
pablo.correa@airbus.com

Yuki Hokazono, Hinata Kohara  
NTT DOCOMO INC.  
6G-IOWN Promotion Department  
TEL: +81 46 840 6230

**Follow us**

If you wish to update your preferences to Airbus Communications, [media@airbus.com](mailto:media@airbus.com)  
If you no longer wish to receive communications from Airbus, [media@airbus.com](mailto:media@airbus.com)