



Enabling the GHz Generation

**3D Glass Solutions**

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**Press Release  
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## **3DGS Technology is Used by Nokia to Demonstrate World's First D-Band Radio on-Glass Transceiver Module**

ALBUQUERQUE, NEW MEXICO -- 3D Glass Solutions, Inc. (3DGS), a leading innovator of glass-based, three-dimensional passive RF devices, has collaborated with Nokia, a global leader in 5G solutions, to deliver a breakthrough in D-band signal transport.

D-band signal transport requires highly integrated and cost-effective mm-wave modules with high spectral-efficiency. 3DGS worked with Nokia to develop a demonstrator for ultra-high performance >30Gbps speed Wireless backhaul systems.

“This solution allows designers in D Band TX/RX modules the lowest loss and lowest cost point for TX/RX modules, as demonstrated by this Radio-on-Glass architecture for Nokia operating up to 160GHz with less than 1dB of loss from the chip to the antenna output/input ports,” said 3DGS CTO, Jeb Flemming.

“One of the reasons we’ve been able to achieve such extraordinary performance numbers using our RFIC on glass is because we’ve been working closely with the engineers at 3DGS,” said Shahriar Shahramian, Director of Sensing and Communication ASICs Research at Nokia Bell Labs. “Its unique etching process allows us to build things on glass that simply aren’t possible using any other process. At the same time, 3DGS’ willingness to collaborate and explore unexplored areas and applications has allowed us to build something incredible.”

This is the next generation of ultra-high-performance Radio-on-Glass modules operating at these frequencies,” said Jeb Flemming. “Our demand for data continues to grow, and we are pleased to work with Nokia to deliver record-breaking solutions that can keep up with that demand.”

### **About 3D Glass Solutions**

3D Glass Solutions (3DGS) is a world-class expert on the fabrication of electronic packages and devices using photo-definable glass-ceramics. The company manufactures a wide variety of glass-based, system-in-package (SiP) devices and components using its patented low-loss photosensitive APEX® glass technology for applications in RF electronics and photonics used in automotive radar, IC electronics, medical, aerospace, defense, wireless infrastructure, mobile handset and IoT industries.



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3DGS offers high-precision products with exceptional high-frequency and low-loss properties. 3DGS glass-based RF products can be combined with any number of designs or devices to create incredibly unique and valuable SiP products. The company has created foundational patent positions related to all photosensitive glass-ceramic materials and devices and owns the fundamental intellectual property for all four positions (materials, design, systems and manufacturing) related to glass-ceramic devices for the electronics packaging industry. 3DGS leverages its unique product solutions to provide device manufacturing and systems integration services for several standard and custom products. To learn more about 3DGS, visit [www.3DGSinc.com](http://www.3DGSinc.com).

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