

# Channel Sounder Verification Artifact

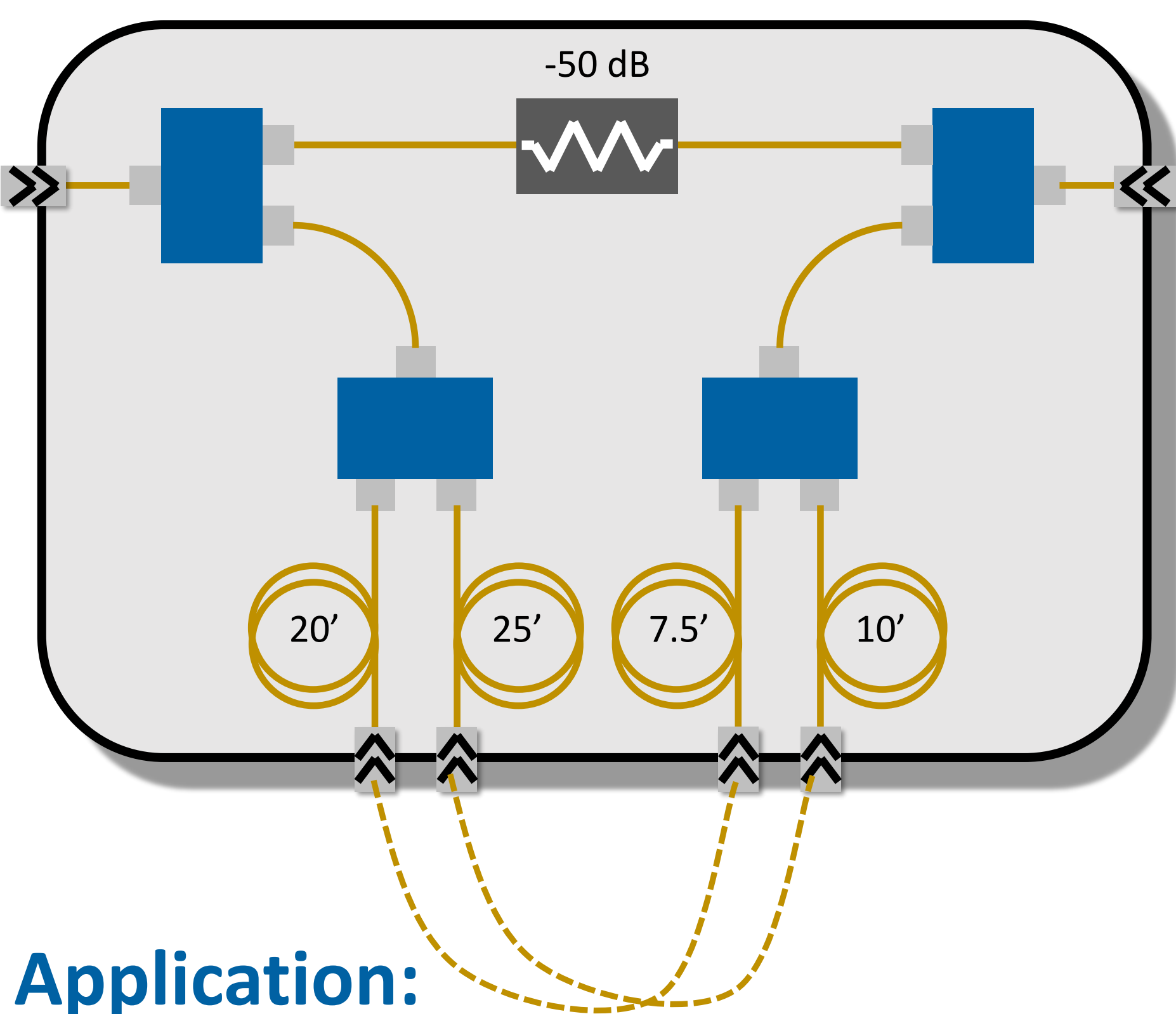
## Motivation:

The transition to 5G networks will require revised channel models for millimeter-wave bands. This need for accurate channel models requires metrology-grade channel sounding measurements.

## The Artifact:

The channel sounder “verification box” provides:

- A robust, stable and portable performance-check artifact for channel sounders with removable antennas
- Reconfigurable conducted channels with a range of multipath and attenuation
- Center frequencies between 10 GHz and 67 GHz.
- Temperature control for repeatable results.

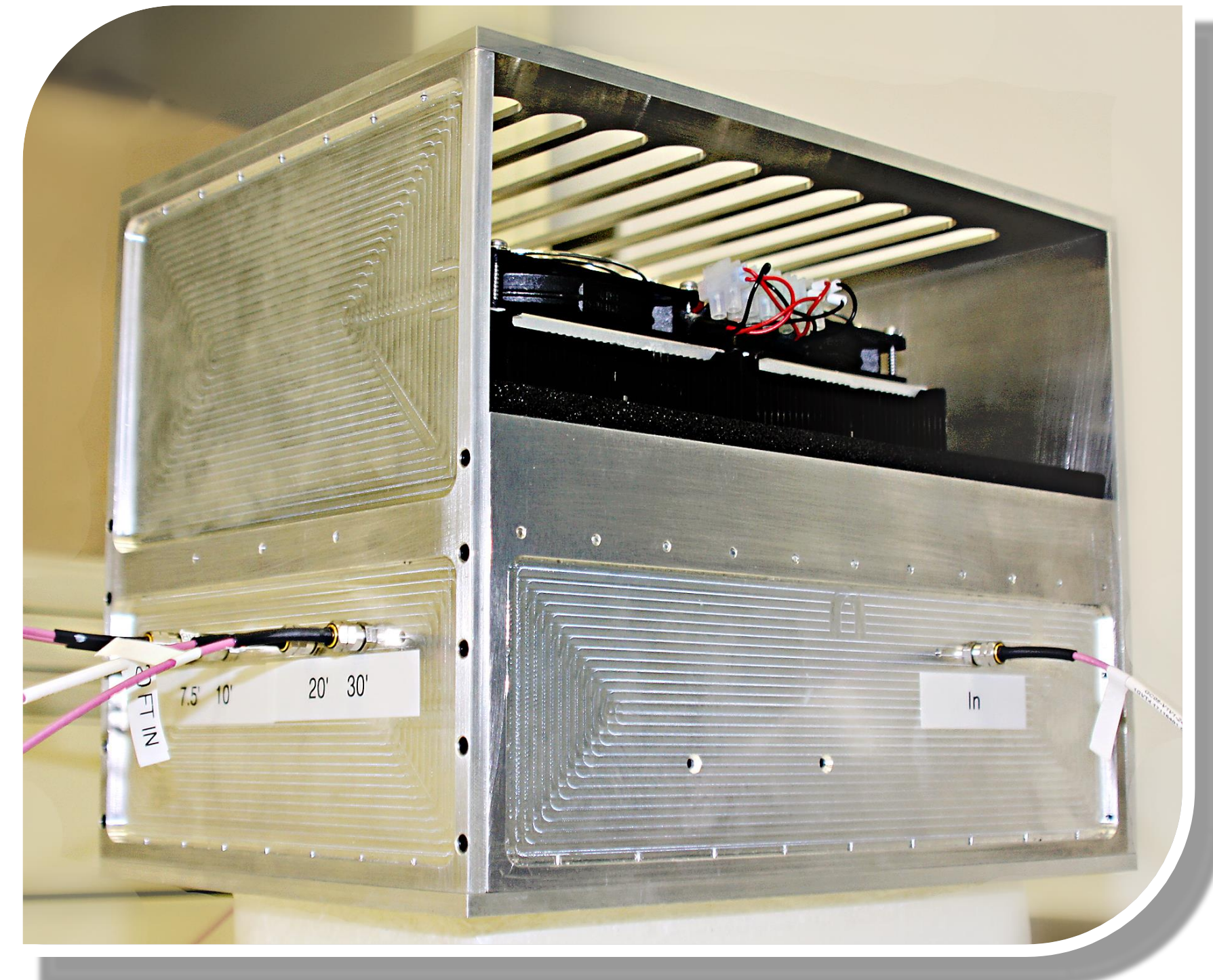
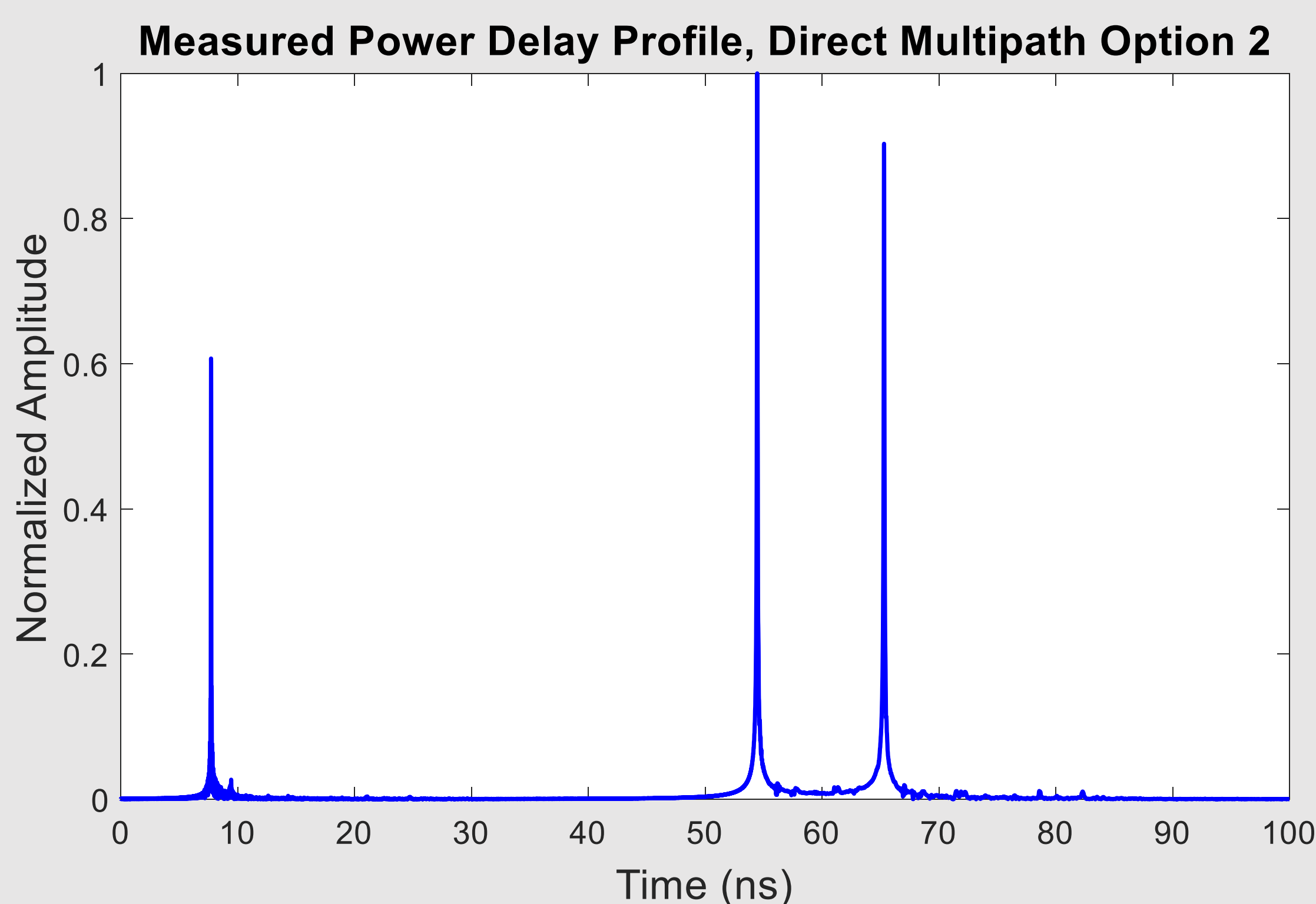


## Application:

- Users may select from up to 27 different multipath and attenuation configurations, providing insight into channel-sounder measurements and data-processing.
- The device is calibrated using a NIST traceable VNA before and after use. Error bars show user agreement with NIST measurements.

## Example Measurement:

The verification box provides three distinct multipath components with known amplitudes and time delays.



## Design:

- Multipath power-delay environment is produced using power dividers and delay lines.
- Front panel connectors provide reconfigurable channel effects.
- RF components are temperature controlled via Peltier junction.
- Robust enclosure provides stability of measurements after transport or shipping.

