

ADVANCES IN MINIATURIZATION

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# LARK RF TECHNOLOGY

LARK MICRORADIO

# WHAT IS THE LARK MICRORADIO?

## A MINIATURIZATION CASE STUDY

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The Lark MicroRadio is an **asset-tracking device** which uses Ultra Wide Band (UWB) and Bluetooth frequencies

- Circuitry consists of an accelerometer, a Nordic microcontroller, and a UWB transceiver module
- The size of a complete PCB is 1.2" X 0.7" X 0.56"

# WHAT IS THE LARK MICRORADIO?

## A MINIATURIZATION CASE STUDY

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The **small size** of the Lark MicroRadio is possible with Benchmark's **capability of manufacturing less than 1 mil lines** and spaces in substrate board layers

Additional miniaturization methods used to shrink the MicroRadio PCB:

- Vias in pads
- Embedded traces
- Part choices with the smallest size

# SHRINKING RADIO CONNECTIVITY

BUSINESS CARD SIZED PCB TO QUARTER SIZED MICRORADIO

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## OUR CHALLENGES

01

Shrinking a business card sized board to the size of a **quarter** to make a wearable device with transmission capabilities

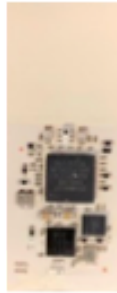
02

Client **needed short-range wireless communication** (voice & audio) between body-worn devices and location **in GPS denied areas**

# SHRINKING RADIO CONNECTIVITY

BUSINESS CARD SIZED PCB TO QUARTER SIZED MICRORADIO

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## OUR SOLUTION

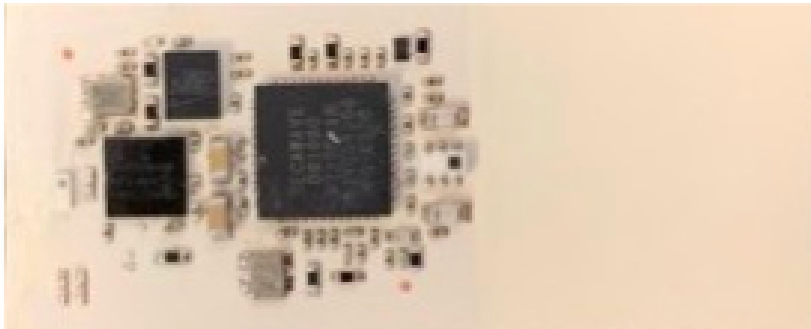
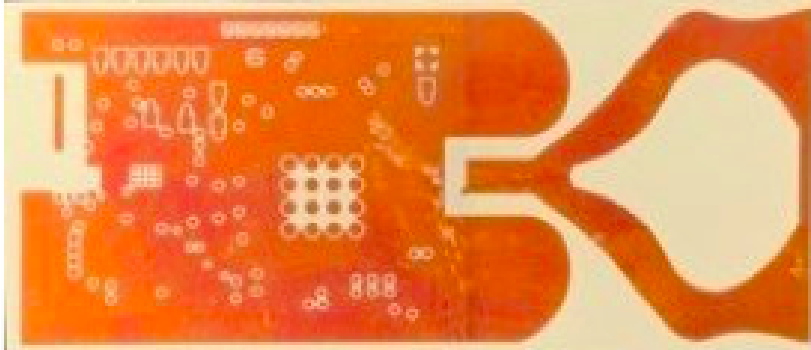
Our new MicroRadio design utilizes miniaturization techniques to host the Ultra Wide Band (UWB) transceiver which contains:

- A UWB antenna
- Bluetooth chip antenna
- Accelerometer on a 6 layer, high-performance, water resistant PCB

# SHRINKING RADIO CONNECTIVITY

BUSINESS CARD SIZED PCB TO QUARTER SIZED MICRORADIO

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## CLIENT BENEFIT

A water resistant miniaturized radio, capable of transmitting and receiving over UWB (3-8 GHz)

# THANK YOU!

TO LEARN MORE ABOUT LARK RF TECHNOLOGY AND OUR  
MINIATURIZATION CAPABILITIES VISIT [WWW.BENCH.COM/LARK-RF](http://WWW.BENCH.COM/LARK-RF)