

Antenna Measurement Using Class B

Toronto May 2008

Conrad Proft – Agilent Technologies

May 23, 2008

Antenna Measurement Using LXI Class B

- What customers like in LXI
- Features and Benefits of LXI Class B
- Antenna Measurement Application
- Similar Applications
- Summary

LXI Objectives

- Bring the power of LAN to the T&M industry
- Lower test system costs
- Simplify system integration
- Ensure broad instrument availability
- Open new possibilities for test systems

What are the customers saying...

- LAN provides a good replacement for GPIB
- Omnipresent LAN
- Simple, inexpensive cabling, all computers now have Gbit
- Less clutter on cabling than using GPIB
- Fast block transfer, error checking, and fault detection
- 100 meter point to point using hub, switch, or router
- Can use CAT5, fiber, or wireless
- VPN Remote access of instruments – anywhere in the world
- Powerful setup, debug, and programming aid with built-in web server
- All LXI instruments behave the same when connecting to LAN

What else do they care about...

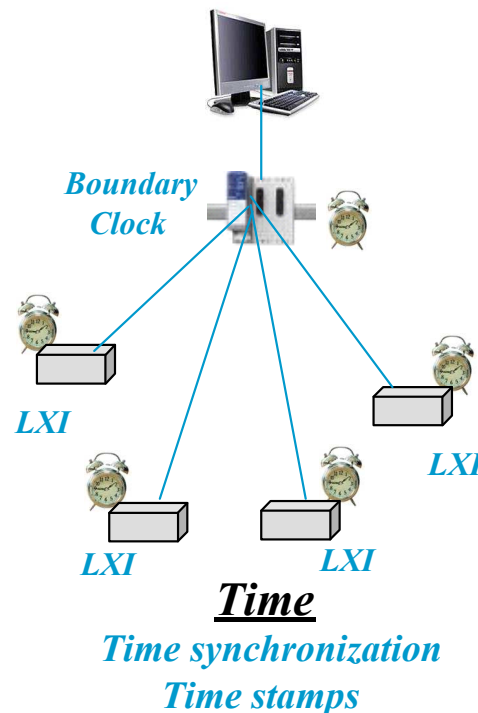
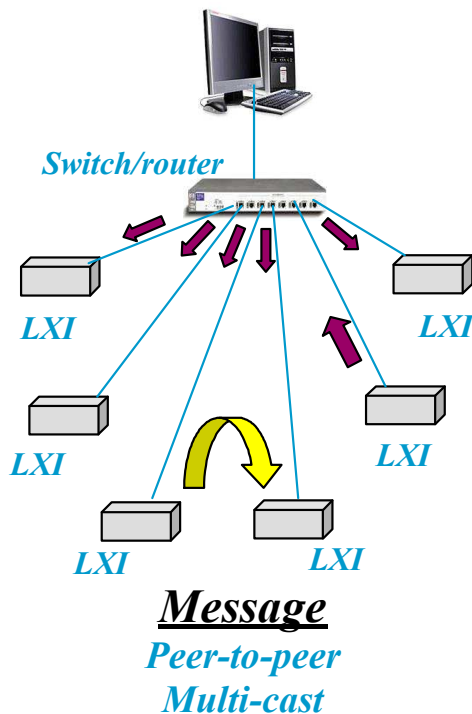
- **Labor**
 - Setup and troubleshooting
 - Test development
- **Latency**
 - Command I/O and processing
 - Download and uploading of results
- **System Speed and Response**
- **Synchronization**
- **What happened when?**

TIME

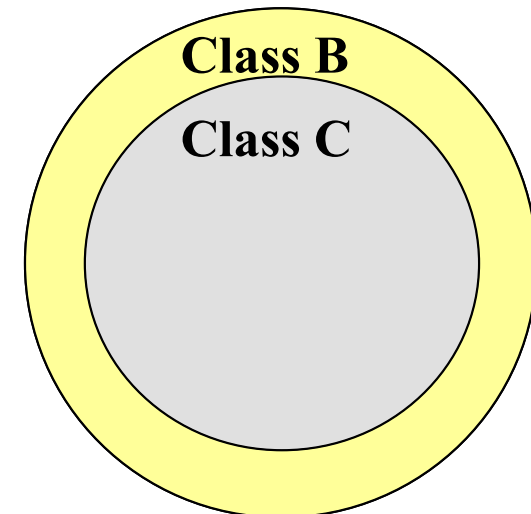


And what more is coming in LXI...

- Time aware instruments in Class B with **synchronization** to $< 50\text{ns}$
- Time logs in Class B give view into **timing of system**
- Flexible triggering using time, **P2P** or **multicast**
- Execute local **scripts or sequences** on time or message

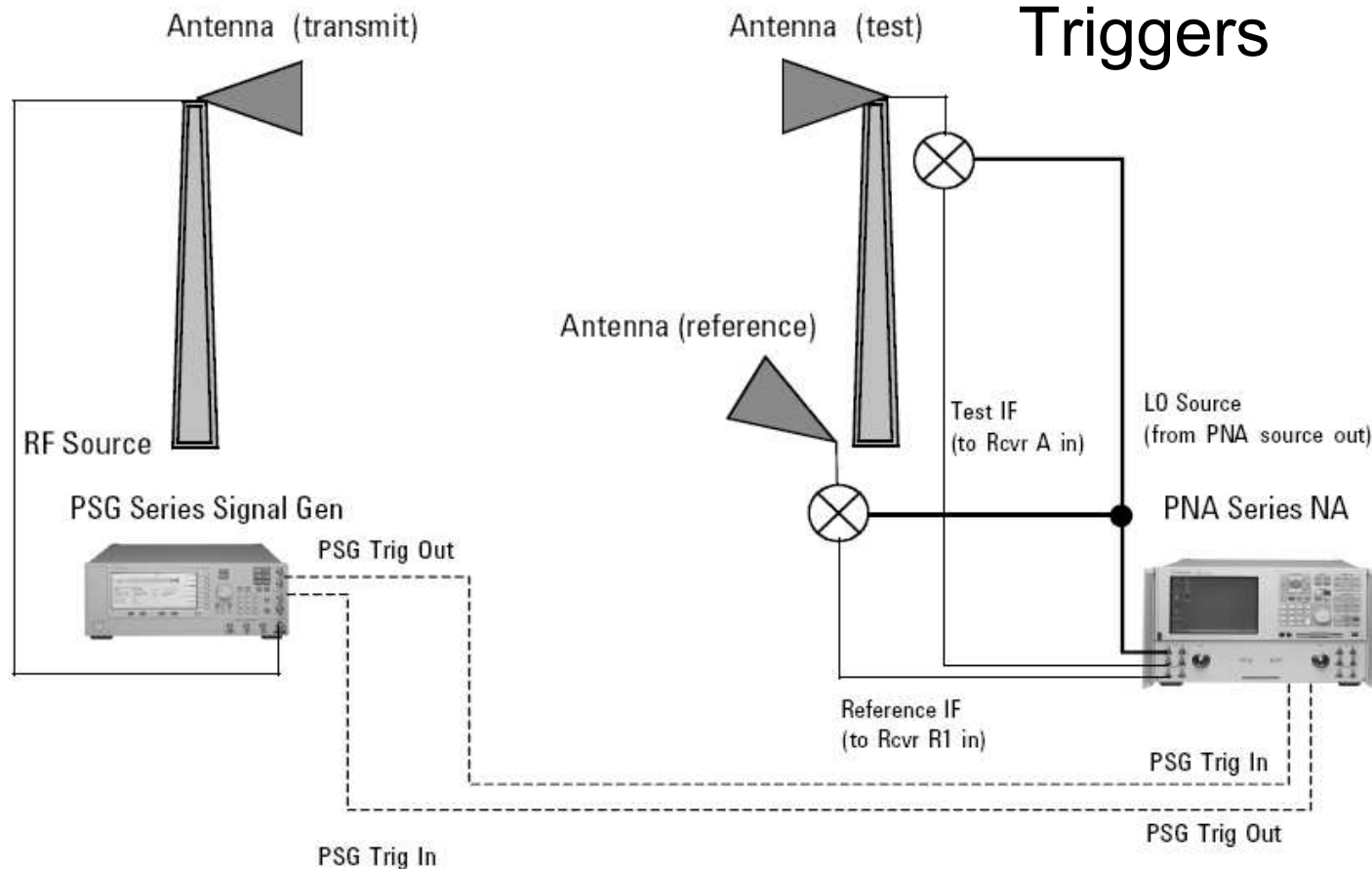


LXI Class C and B

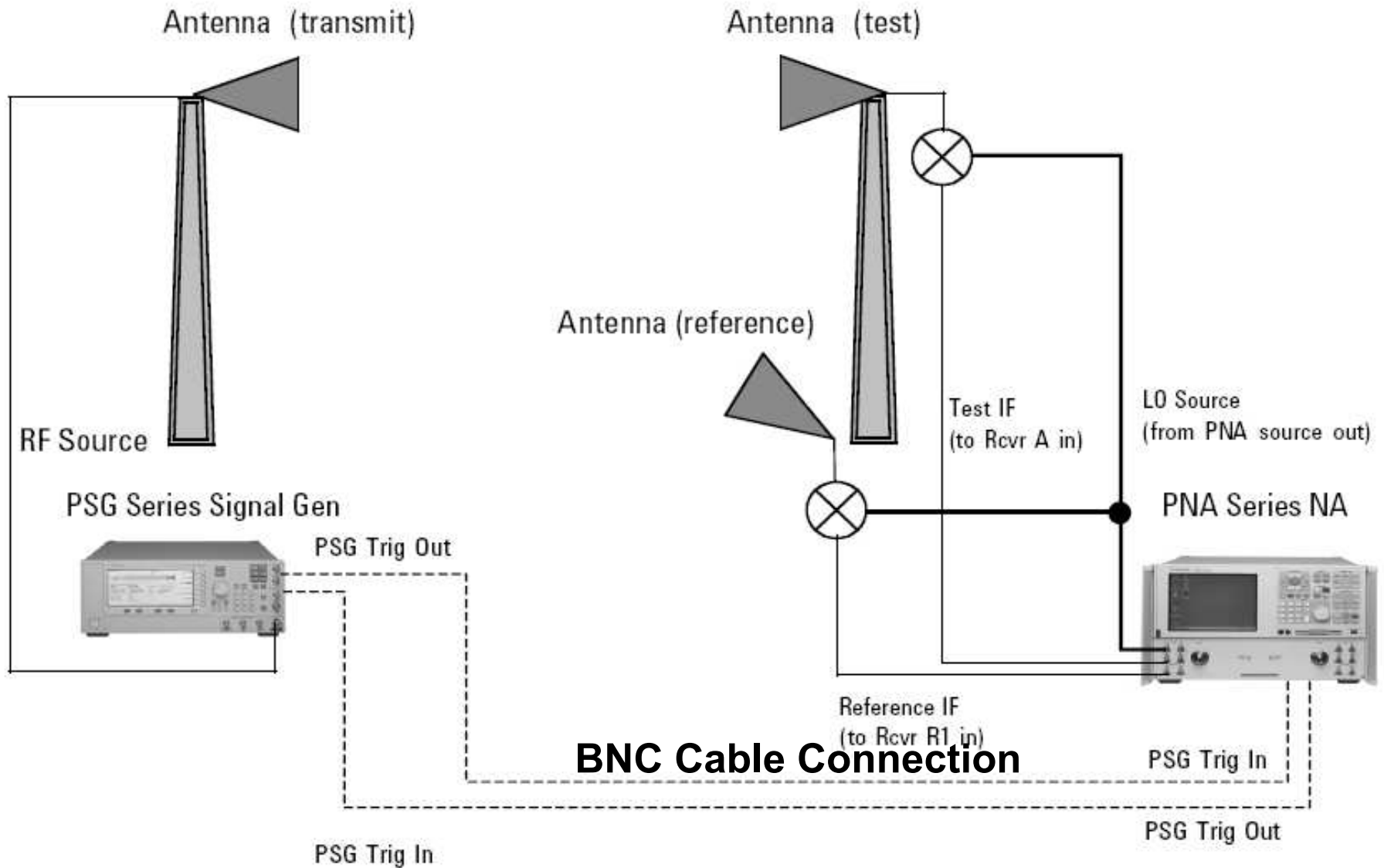


Antenna Measurement Application

- Uses List Sweep Mode
 - Extends distance to 1000'
 - Uses directional wireless communication
- Frequency sequencing
 - P2P messages
 - 1588 Time Triggers

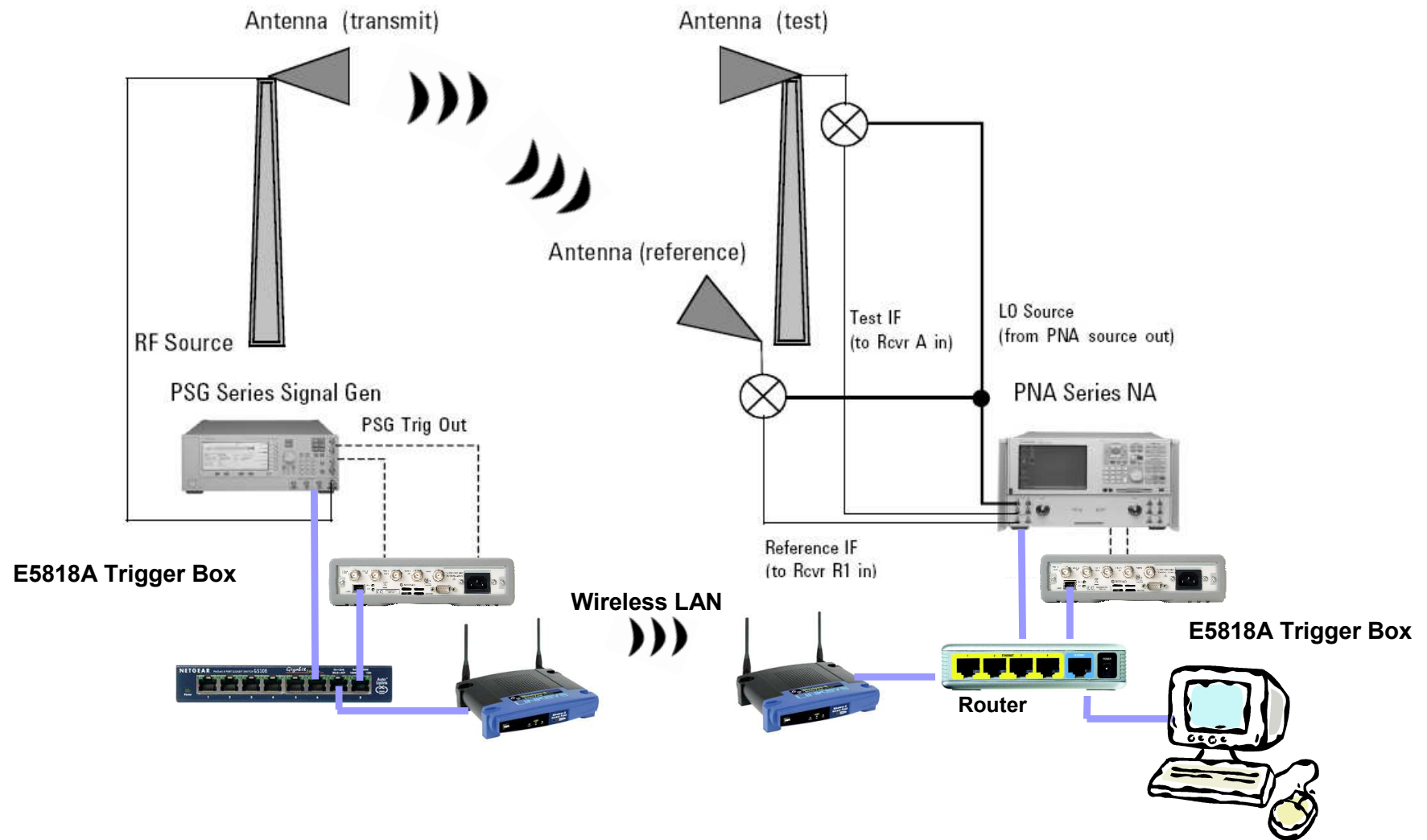


Antenna Measurement – Hardware handshake



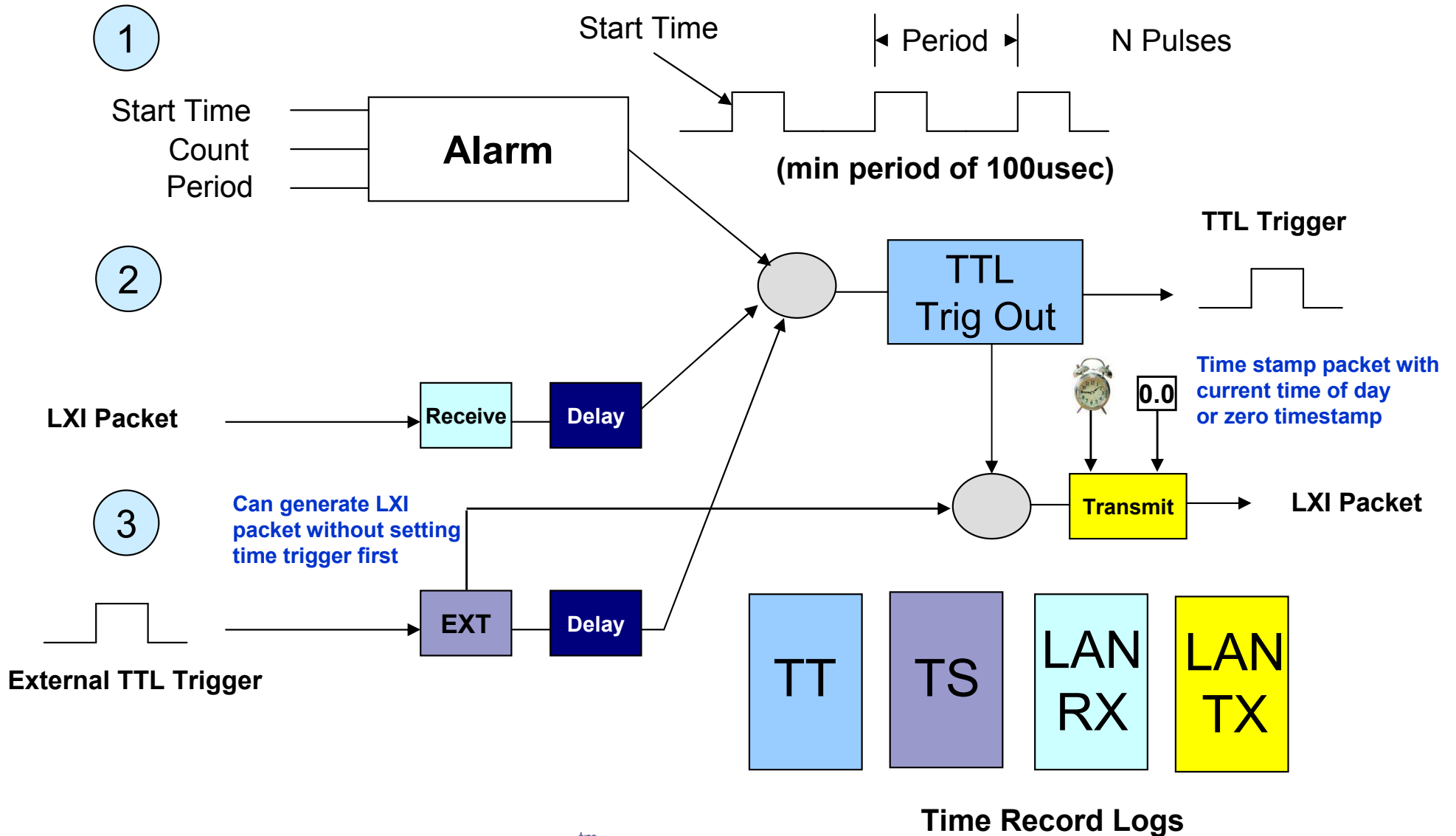
Network Analyzer and Signal Generator

Extended Handshake using LAN



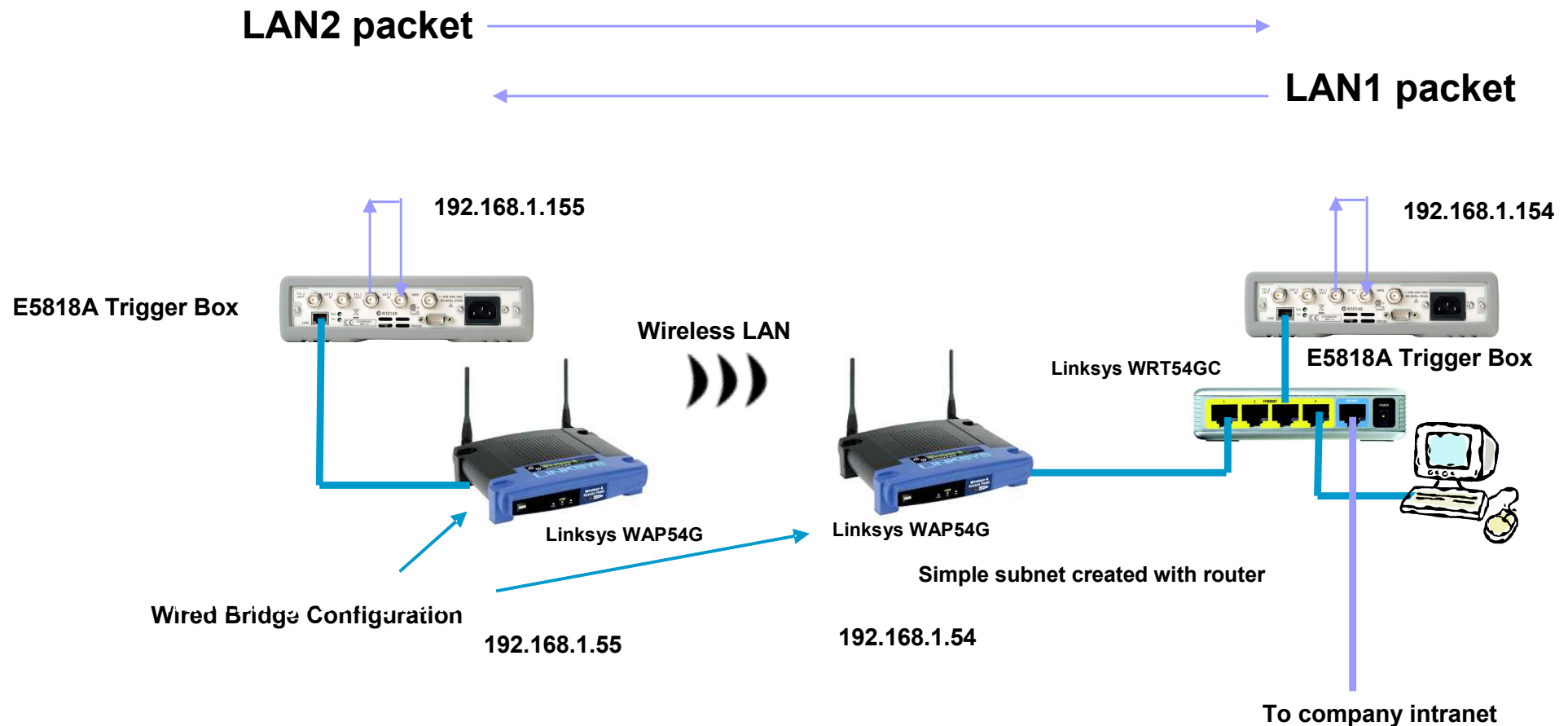
The Essence of LXI Class B Triggering

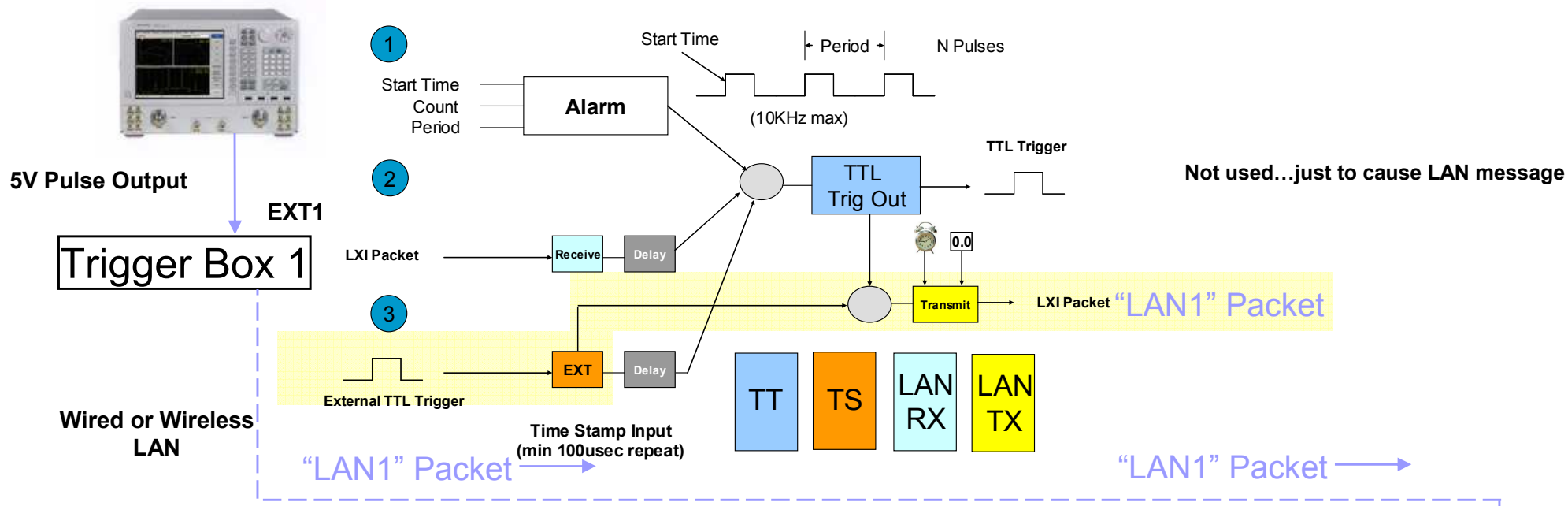
Agilent E5818A Trigger Box



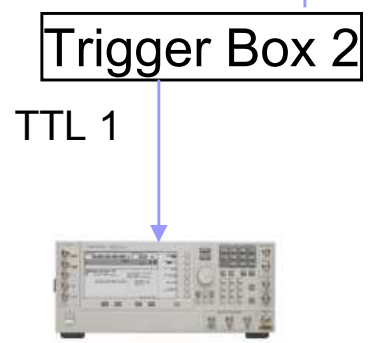
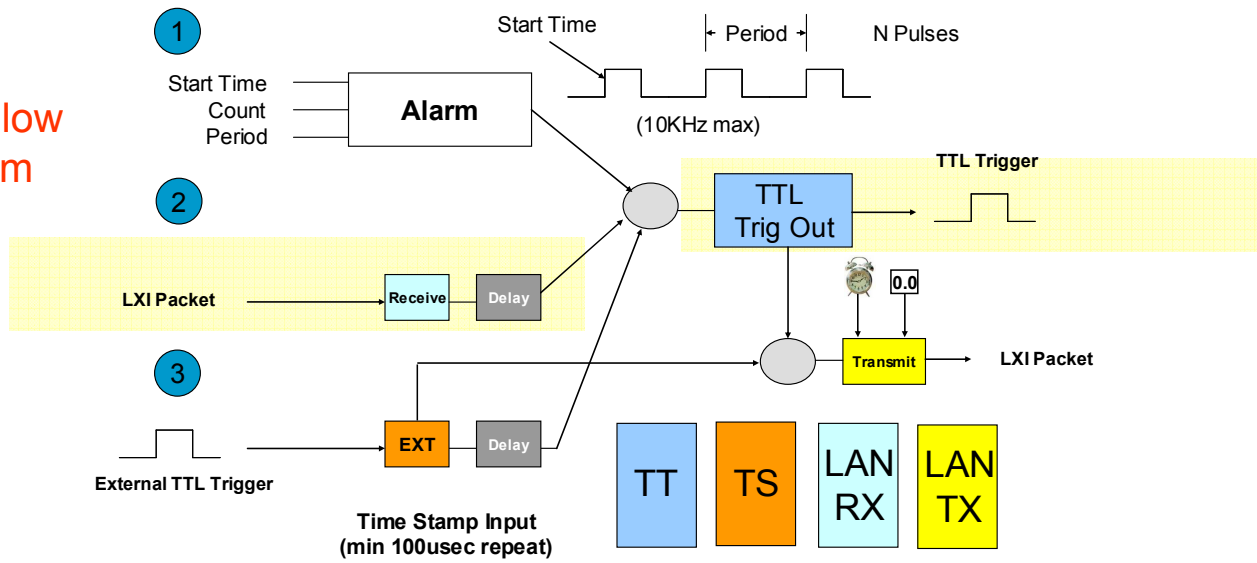
Test Configuration - verify infrastructure

For testing in absence of PSG/PNA





Areas in faded yellow are path to program

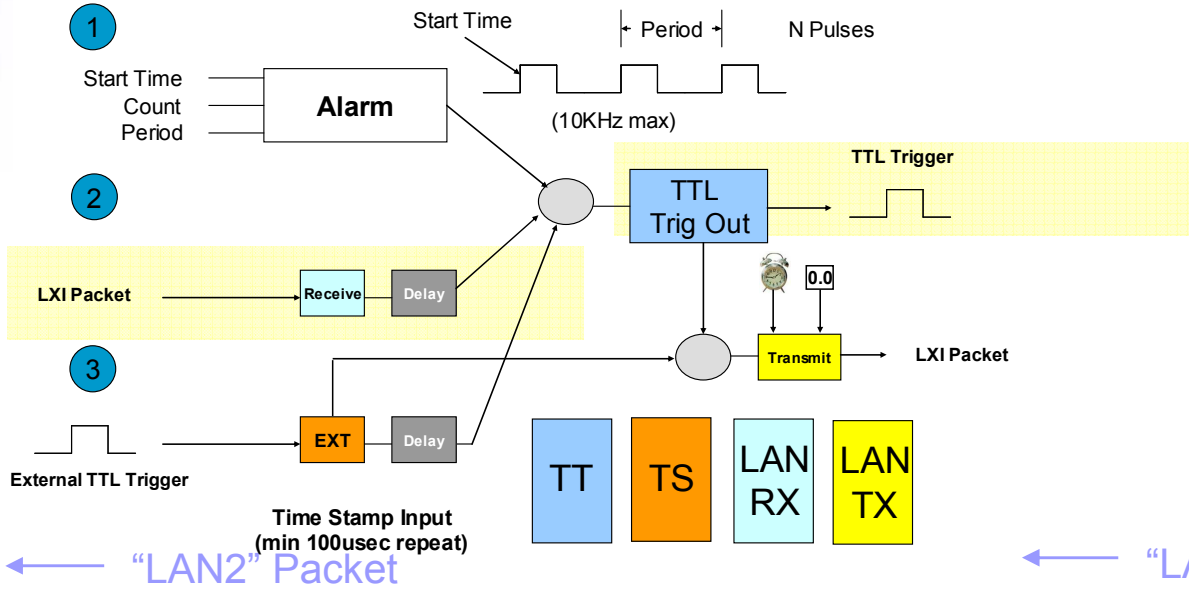




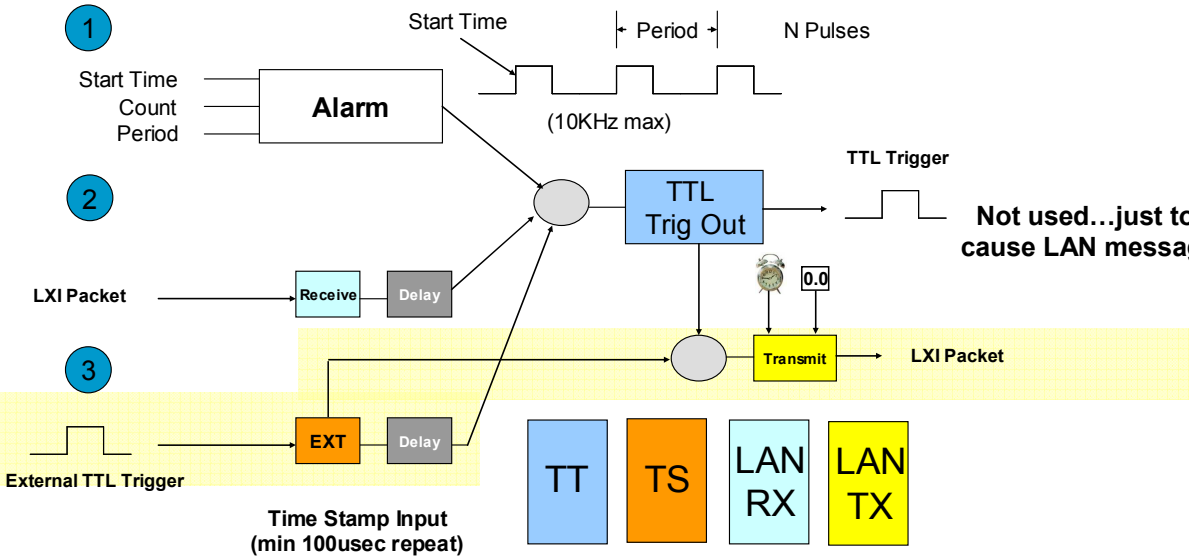
TTL1

Trigger Box 1

Wired or Wireless LAN



Areas in faded yellow are path to program

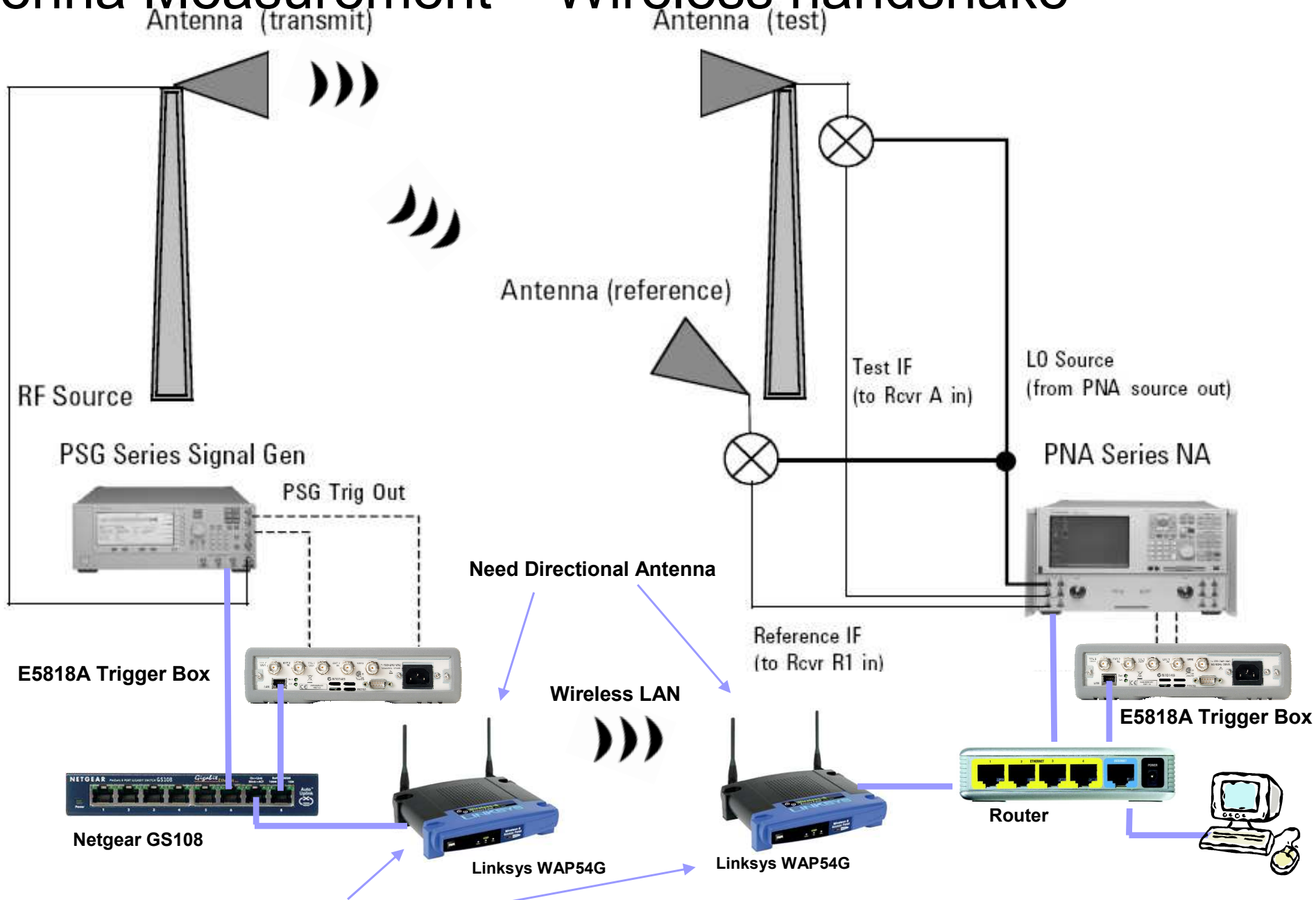


Trigger Box 2

EXT1

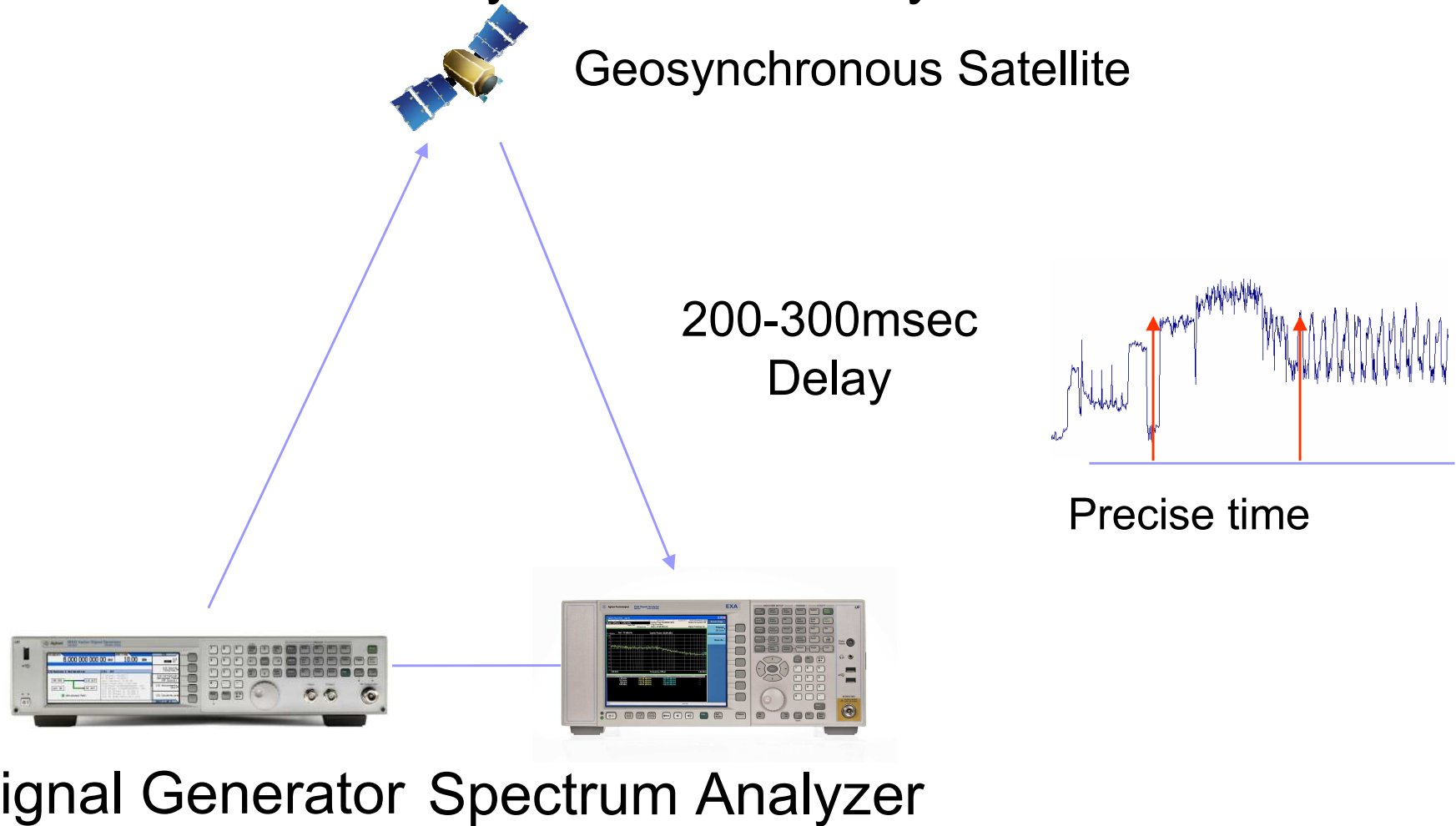


Antenna Measurement – Wireless handshake



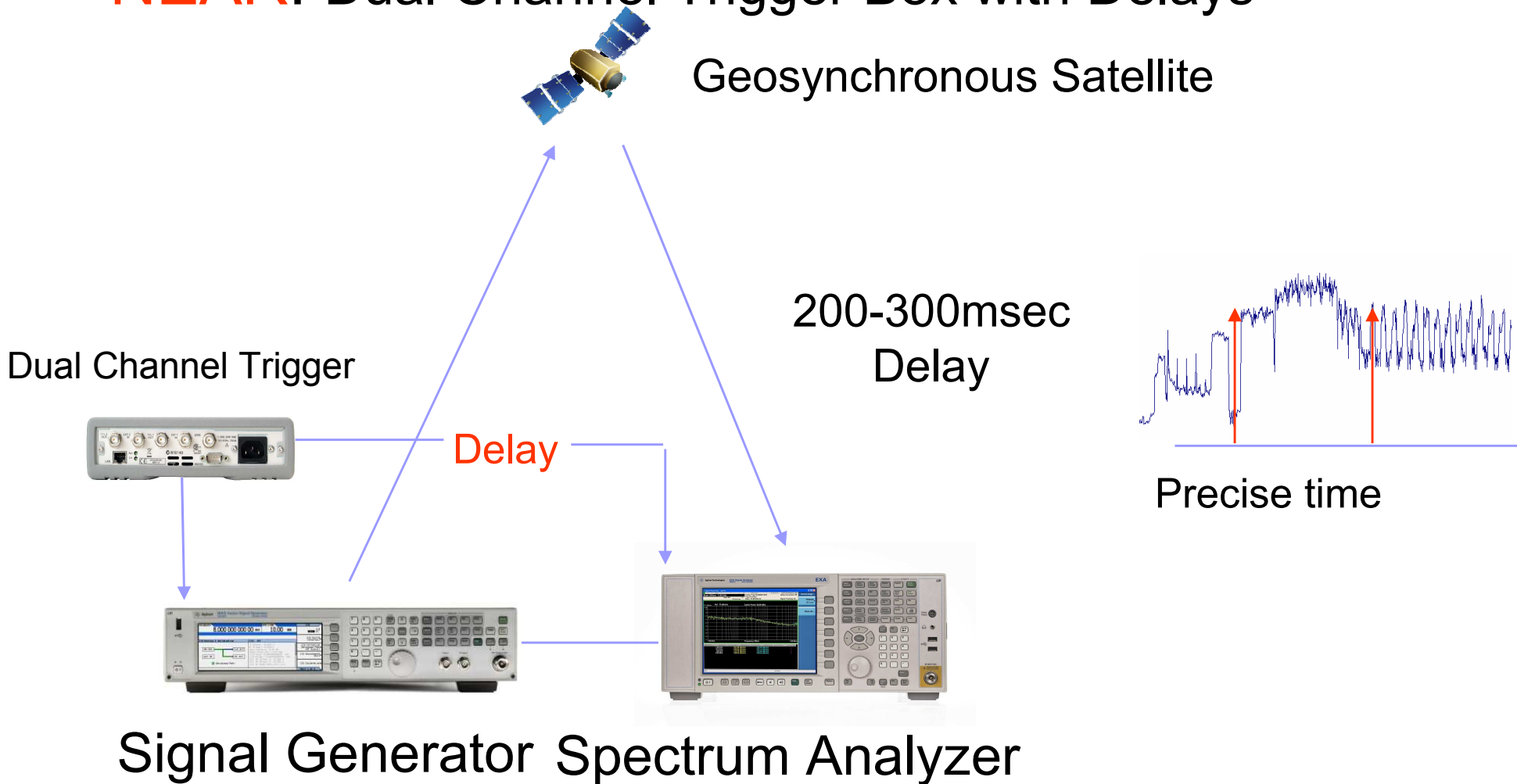
Synchronize delayed trigger to Receiver

NEAR: How would you do that today?



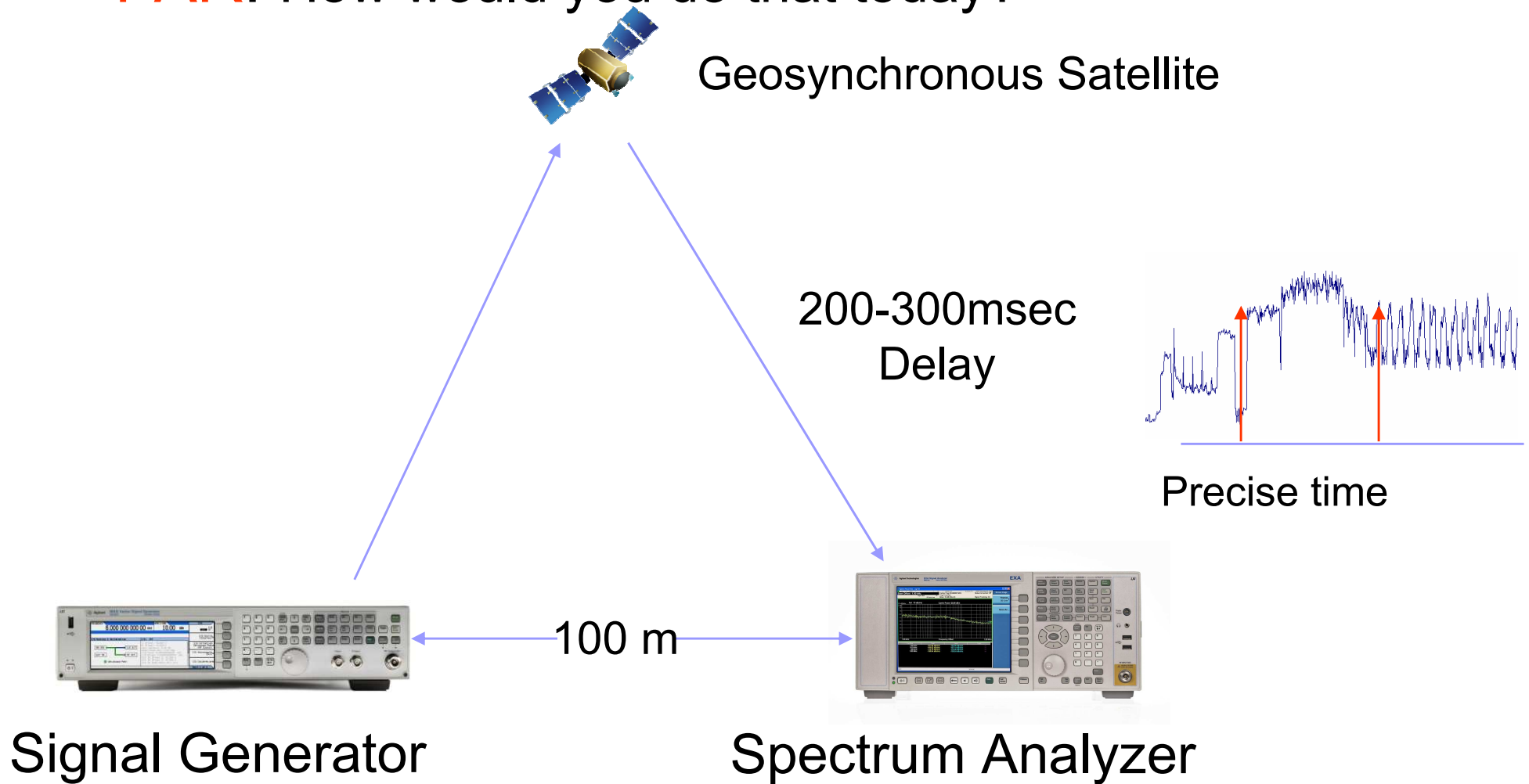
Synchronize delayed trigger to Receiver

NEAR: Dual Channel Trigger Box with Delays



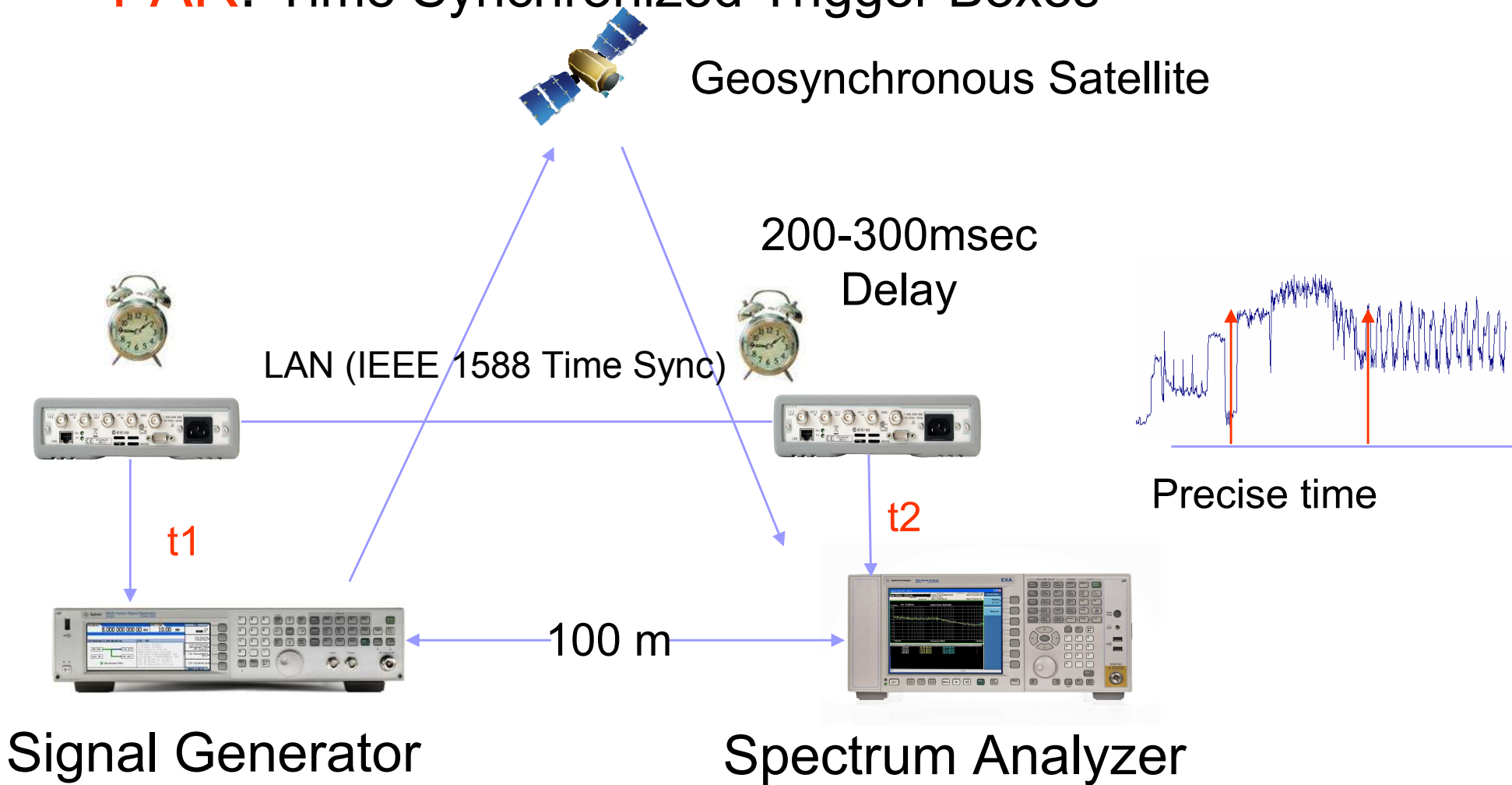
Synchronize delayed trigger to Receiver

FAR: How would you do that today?



Synchronize delayed trigger to Receiver

FAR: Time Synchronized Trigger Boxes



Put a Tiger in your tank !

LXI Class B Functionality

- Time Synchronous
- Time Stamp Operations
- Time Trigger Events
- Peer to Peer Messages
- Broadcast Messages
- Time/Event Sequences

Trigger Box



Is LXI achieving its Objectives?

- Bring the power of LAN to the T&M industry
- Lower test system costs
- Simplify system integration
- Ensure broad instrument availability
- **Open new possibilities for test systems**

Q & A



Backup Slides

