Testing Passive Networks in a Distributed Antenna System

Testing Time Sinks
- Getting physical access to both ends of the cable.
- Load swapping. Precision loads, precision shorts, PIM loads and antennas all need to be connected at some time during the testing.
- Measurement naming issues. Misnamed tests may effectively be lost, requiring disassembly and retest of the passive network.

Simplifying DAS Testing
- R&S Quick name matrix, simplifying test naming
- R&S Data sets, simplifying reporting tasks
- Simplifying instrument setup
- R&S Measurement reporting software

What is a Test Band?
A way to group multiple cellular bands together for testing convenience.

What does Return Loss (RL) test?
Return Loss spots RF power loss due to reflections in the antenna, cable, branch, or system.

What does Cable Loss test?
Cable Loss measures the actual RF power loss in the cable, in specific bands, so it can be compared to the expected power loss in those bands.

What does Distance to Fault (DTF) test?
DTF spots RF power loss caused by reflections and shows how far down the cable, branch, or system each fault is.

What does Passive Intermodulation (PIM) test?
PIM tests check for signal distortion in cables, antennas, branches, and systems under higher RF power levels.

What defines RF Transceivers?
RF Transceivers on each floor or section.

What defines Hybrid DAS?
RF Transceivers on each floor or section
- Good price/performance ratio
- Easier to work with than a pure passive DAS
- Better noise figure than a passive DAS

How Hybrid MIMO DAS Branch Two Band Example
This simple 4 antenna hybrid MIMO branch may need 103 to 135 named tests, assuming two testing bands.

Test Band Definitions
- Test Band 1 698 – 960 MHz
- Test Band 2 1700 MHz – 2700 MHz
- Test Band 3 850 MHz
- Test Band 4 1900 MHz
- Test Band 5 2500 MHz

Passive DAS
- No active elements in the antenna system
- Simple to design
- Difficult to modify or adjust

Active DAS
RF Transceivers near the antenna, fiber links
- Easy to adjust and configure
- Expensive, with bulky equipment near the antenna

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