Rx Interference Testing Process Overview Using COM

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Highlights

- In support of comment 224, 223, 32, 34, and 21 resolution
- Not much change from 94.3.13.4.2 however
  - Broad band noise source for Tx
  - Broad band noise source or equivelent PRBS source used as Rx interferer.
  - Summers are functional icons and implementation may vary.
  - There are some procedural refinements from comments
- List specifics of COM operation and connections paths

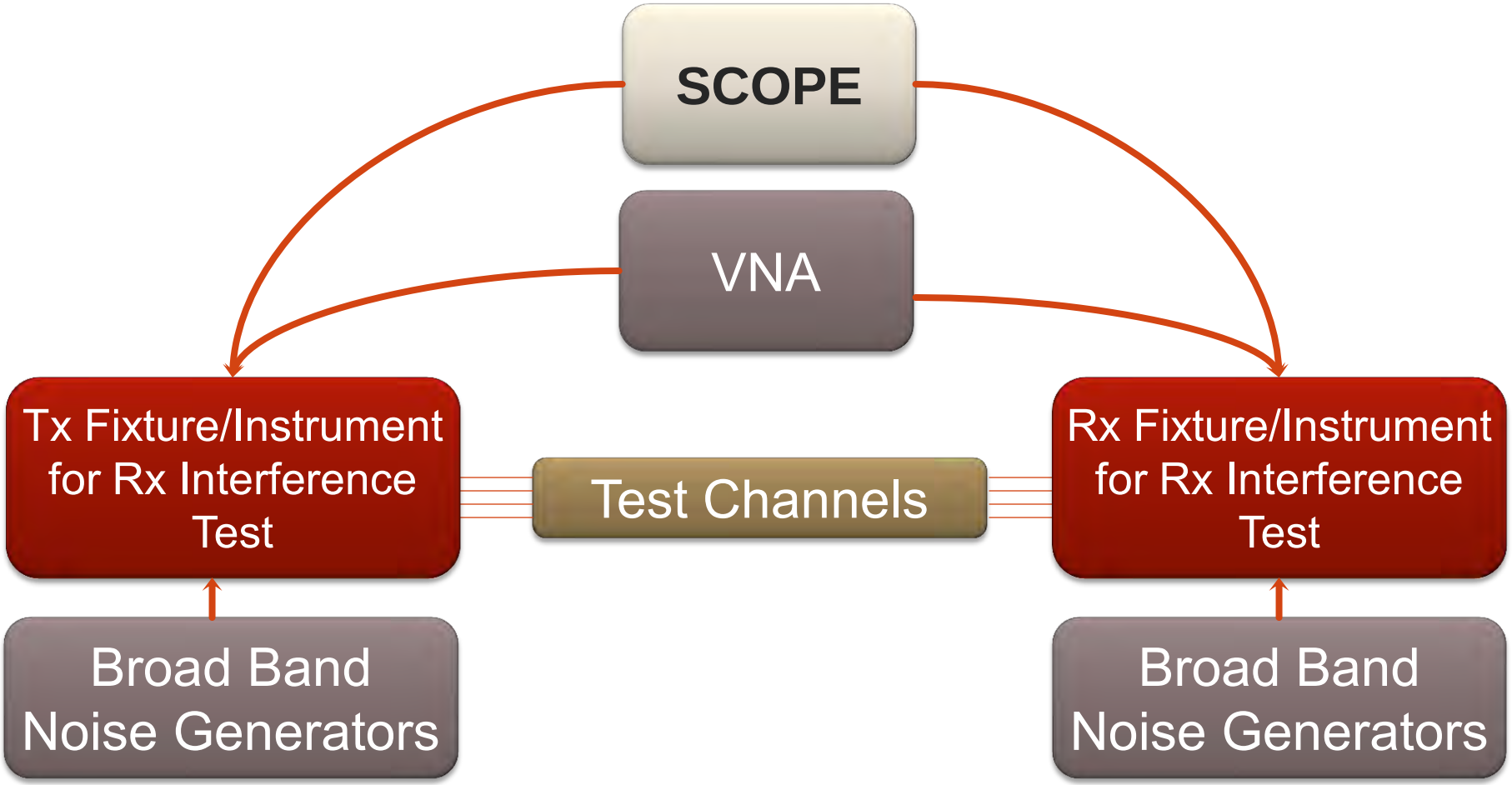
Summary (94.3.13.4.2 Test method)

- Connect the 4 lanes of the Rx DUT to 4 lane Tx compliant signal generator
- Add stress to one lane at a time
- 4 Tx compliant lanes transmitting scrambled id
  - Same clock source for all 4 lanes
- Rx has it's own separate clock source

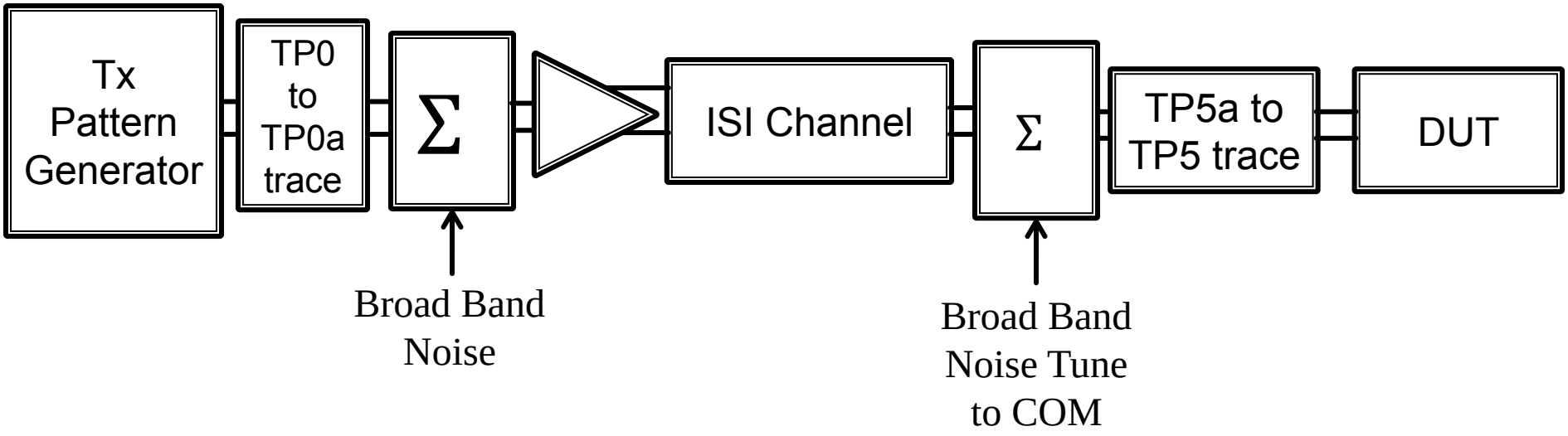
Rx Procedure (94.3.13.4.2 Test method)

- For the each Rx channel (comment 34)
  - Set the noise to zero and initiate the training sequence and allow the training sequence to complete, then freeze the resulting transmitter tap values..
  - Measure the Tx output for minimum compliance and adjust amplitude if need.
  - Adjust Broad Band noise generator to give the worst case allowable SDNR as specified in 94.3.12. (see diagrams)
  - Iterate training the transmitter, freezing the transmitter and adjusting noise to achieve worst case Tx SNDR until the transmitter taps do not change
  - Measure jitter and covert to σ_{rj} and Add for use in COM
  - Measure S parameter of channel per slide 8 and Measure S parameter of noise addition network per slide 9.
  - Using COM calculation as modified by moore_3bj_02_0113 determine how much receiver noise is required to be added to the receiver to achieve the specified COM.
    - COM calculation is modified as in slide 8
    - Verify the RSS of the DFE cursors reported by COM are greater than the specified value.
  - Connect noise source to scope or power meter as in slide 9
    - Adjust noise source to value reported by COM
- Configure the transmitter PCS to transmit the scrambled idles test pattern.
- Apply Rx Noise source
- Measure the symbol error ratio on the stressed lane; test limit is 8.34e-4, which is ¼ of the allowed SER for normal operation (3.34e-3) **.** Symbol error ratio can be read from FEC_symbol_error_counter_*i* where *i* is the lane under test.
- It is recommended that the test period be at least 120 seconds to obtain sufficient confidence level, and that during that period, FEC_symbol_error_counter_*i* be read at intervals of 10 ms or shorter. To meet the test requirements, the counter advance rate is not allowed to exceed 4543 symbol errors per ms.
- Repeat this for the other 3 lanes

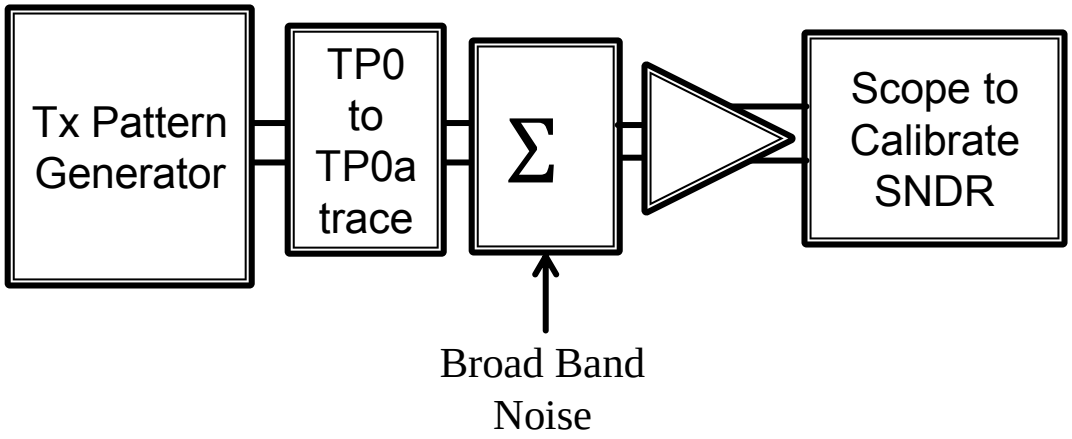
Overview Setup for Rx Compliance testing



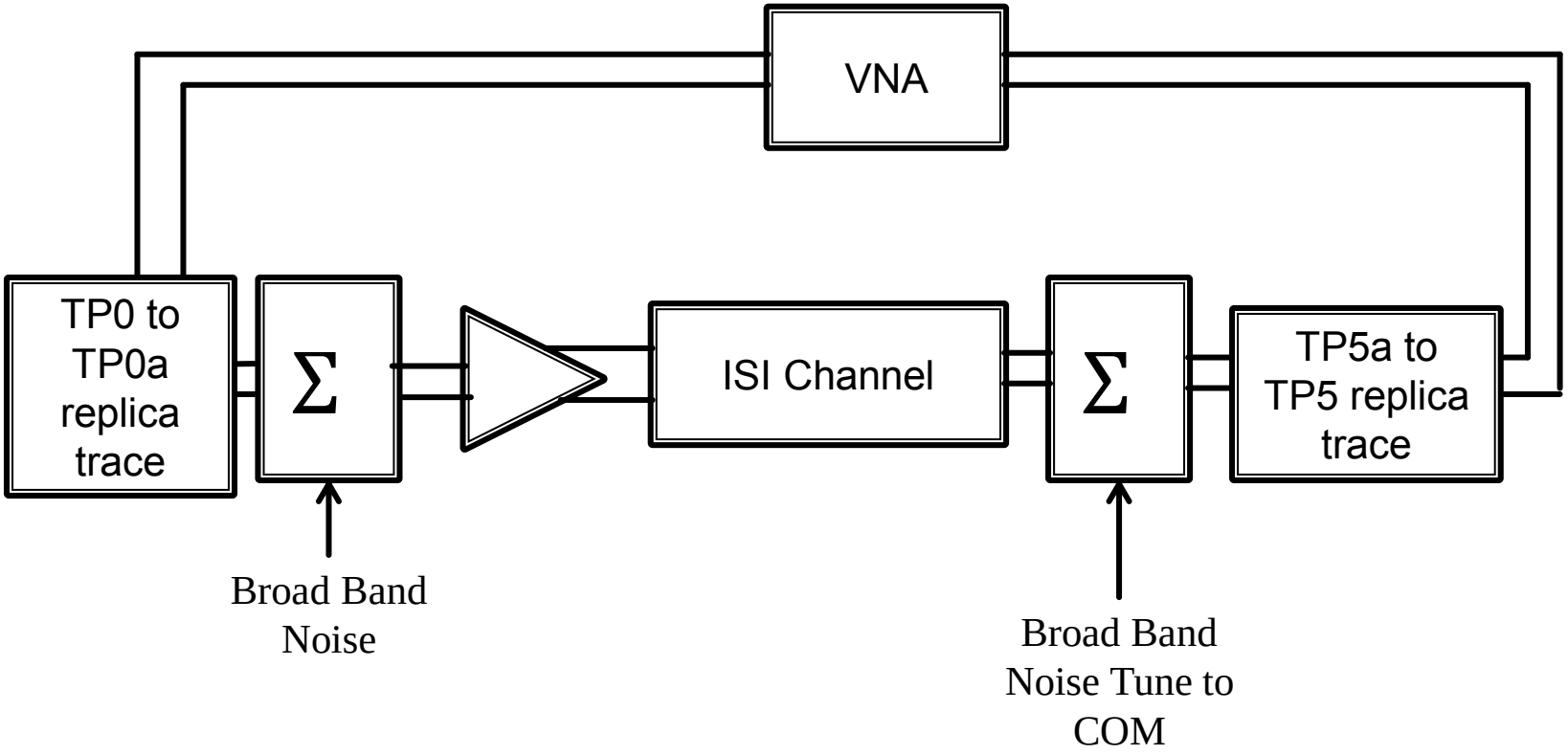
Rx tolerance test



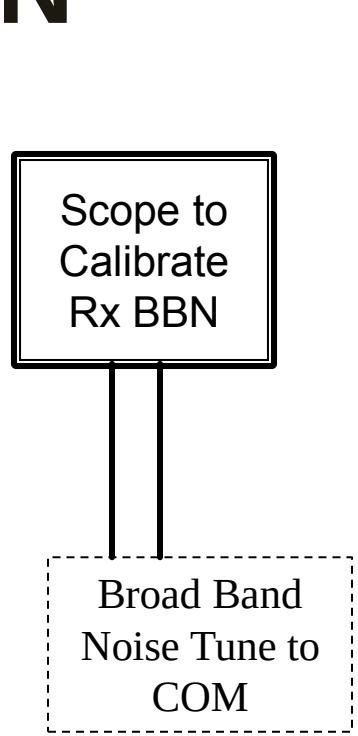
Calibration SNDR and amplitude

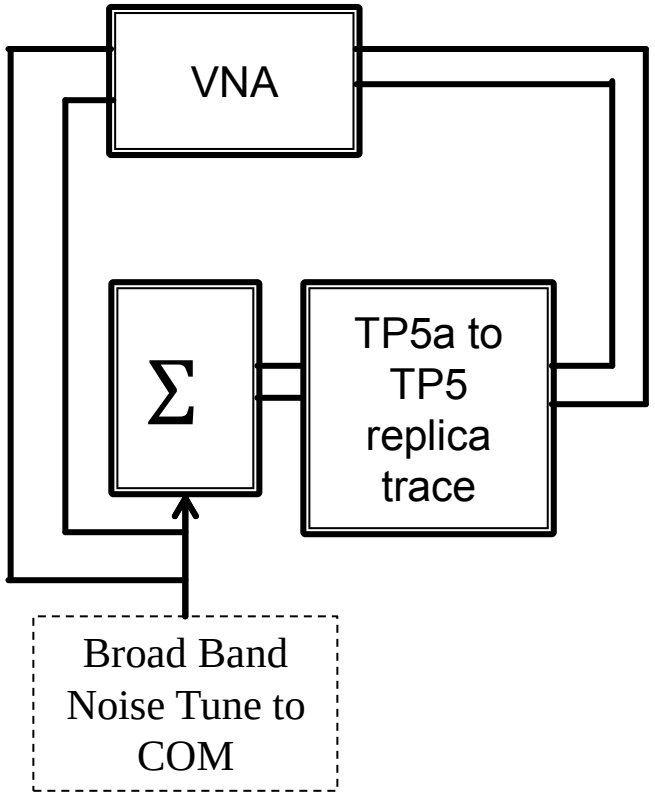


Measure Channel S parameters

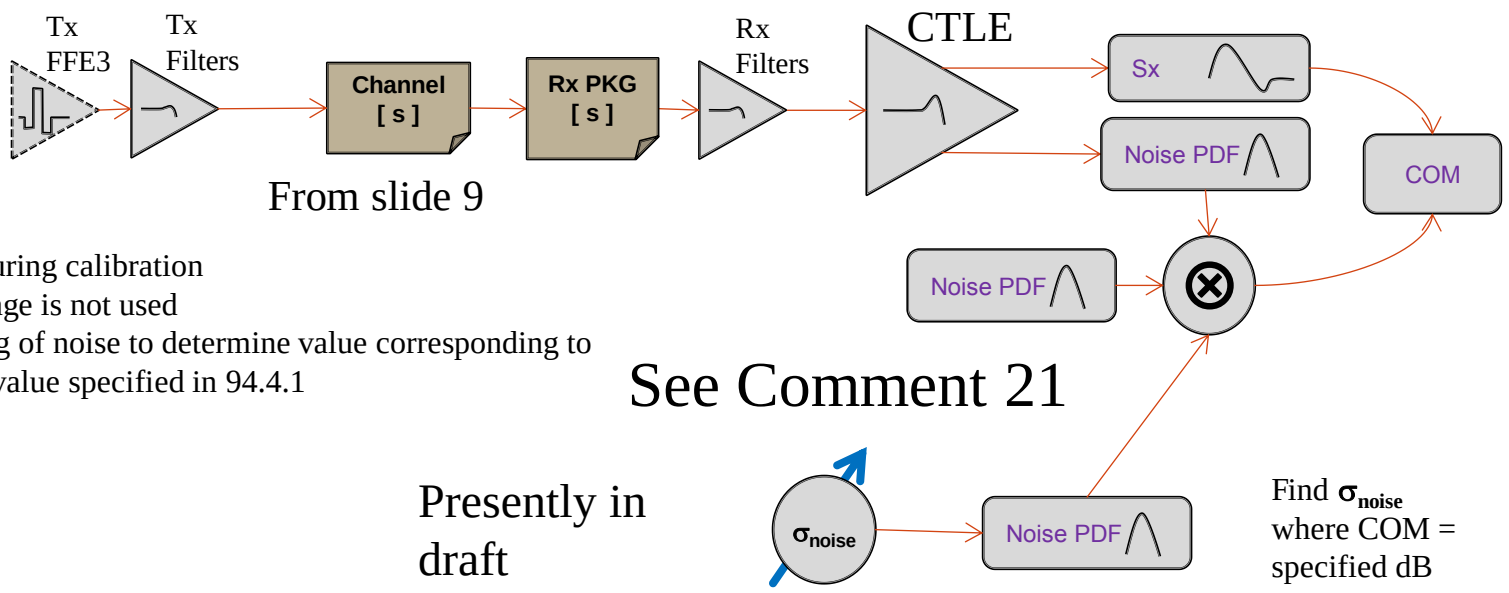


Measure noise path s-parameters and calibrate Rx BBN





COM measured without Tx package



COM usage during calibration

- Tx package is not used
- Sweeping of noise to determine value corresponding to COM = value specified in 94.4.1

Presently in draft