

# Remote Implementation Example

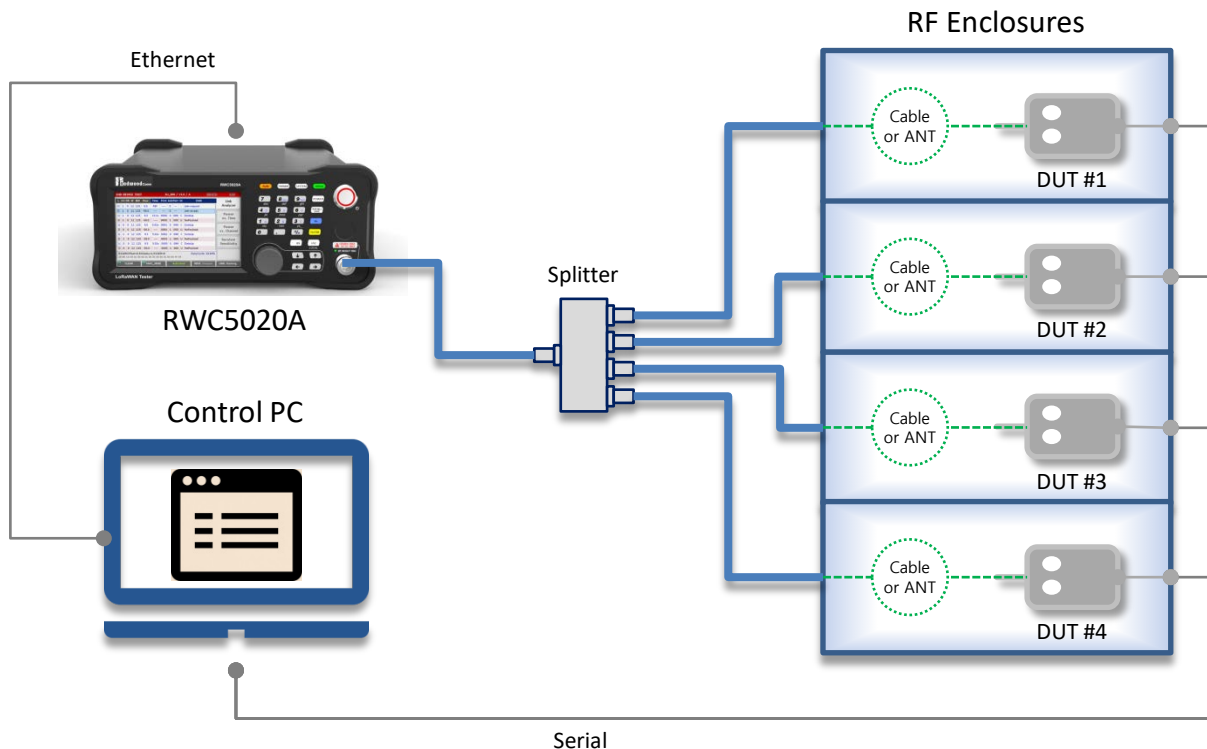
for RWC5020A FW V1.172 or later  
and RWC5020B

For Testing in Production Lines: *4 DUTs per Tester*

**RedwoodComm**



## Test Setup Example for Production Lines



- The tester shall be controlled by the user application software via Ethernet.
- This software may also control the DUTs if necessary.

- The DUTs should be put into RF enclosure(s) to minimize the effect of interferences.
- Any available or efficient method can be adopted for RF connection; either radiated or conducted.

### [RX TEST]

- The test packets sent by the tester as specified are transferred to each DUT by a splitter at the same time.
- Each DUT counts the number of packets it receives, which is read by the user application software.

### [TX TEST]

- A DUT is forced to transmit CW signal.
- The tester measures the power and the frequency\* of the CW signal.
- A DUT is forced to send the LoRa test packets.
- The tester measures the power of the test packets.
- The rest of DUTs are tested in turns.

\* Frequency measurement is available only in **RWC5020B**.

## Initialization

CONFIGURATION - GENERAL

CONFIGURATION for TEST PARAMETERS

PREPARATION of DUTs

## RX Test

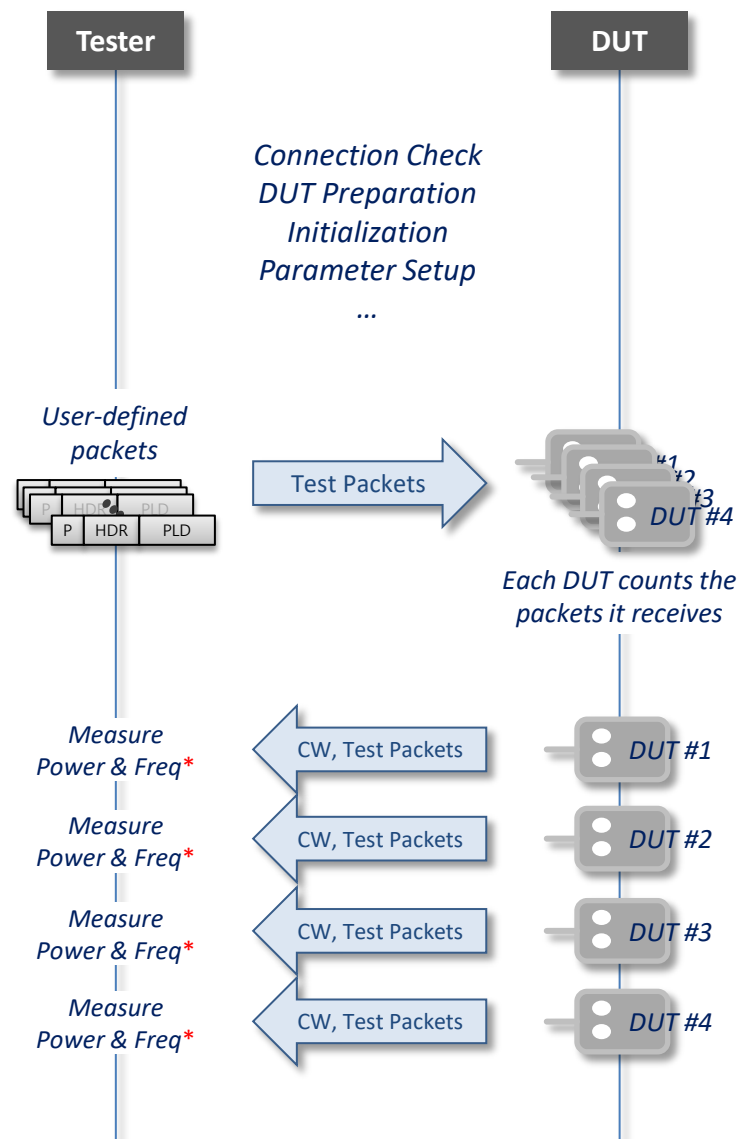
RECEIVER SENSITIVITY MEASUREMENT

## TX Test

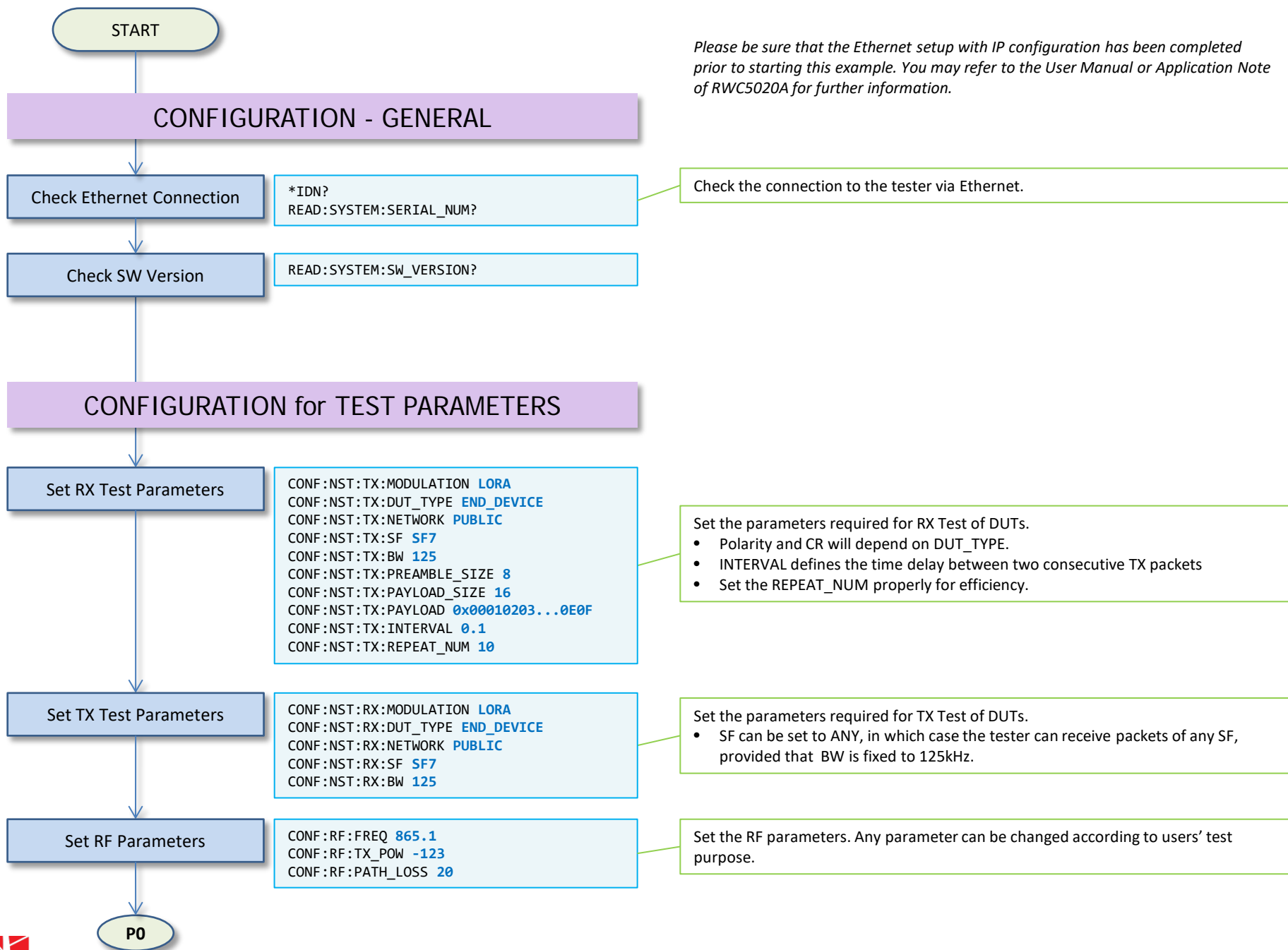
CW POWER & FREQUENCY\* MEASUREMENT

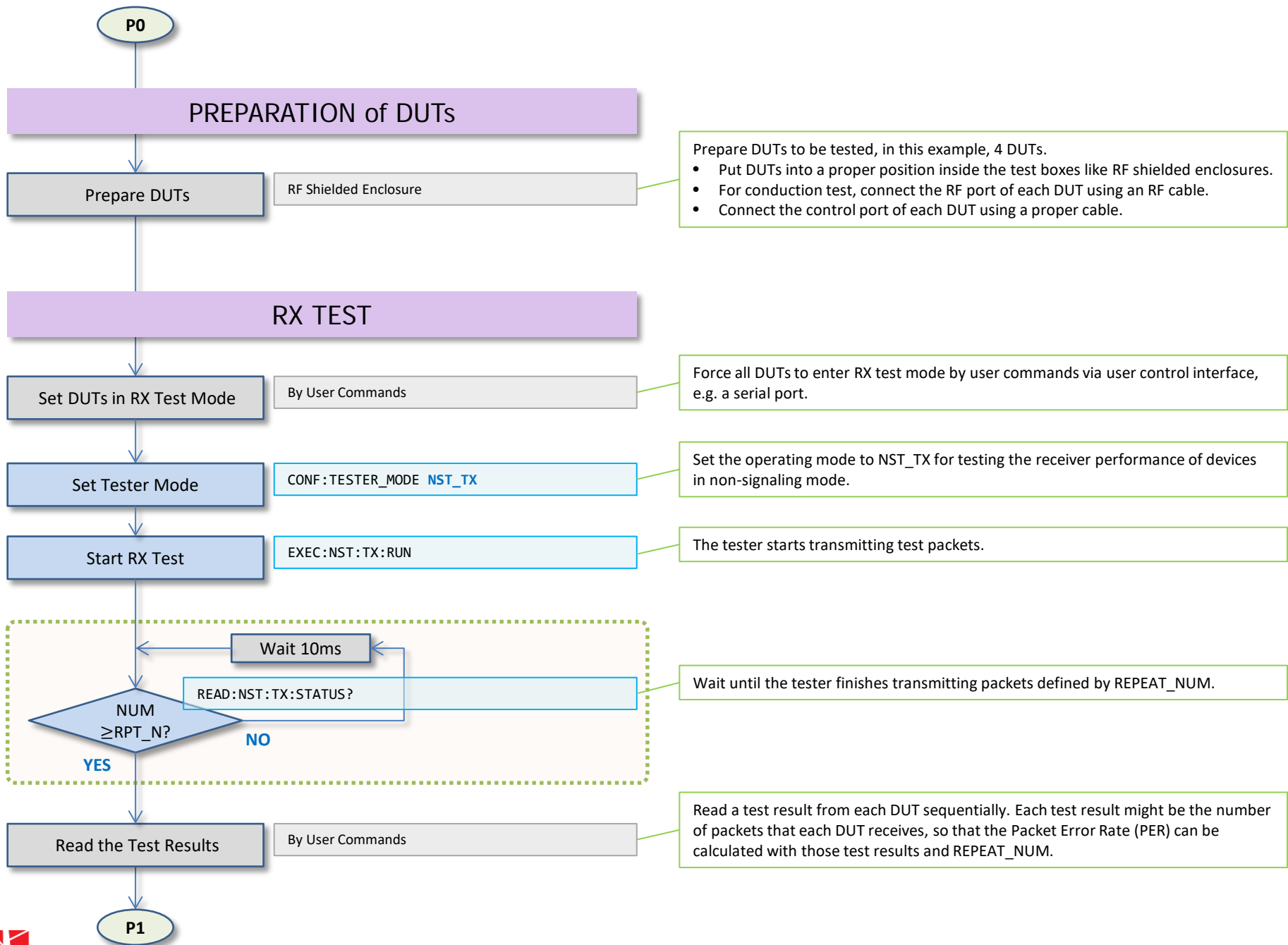
LoRa PACKET POWER MEASUREMENT

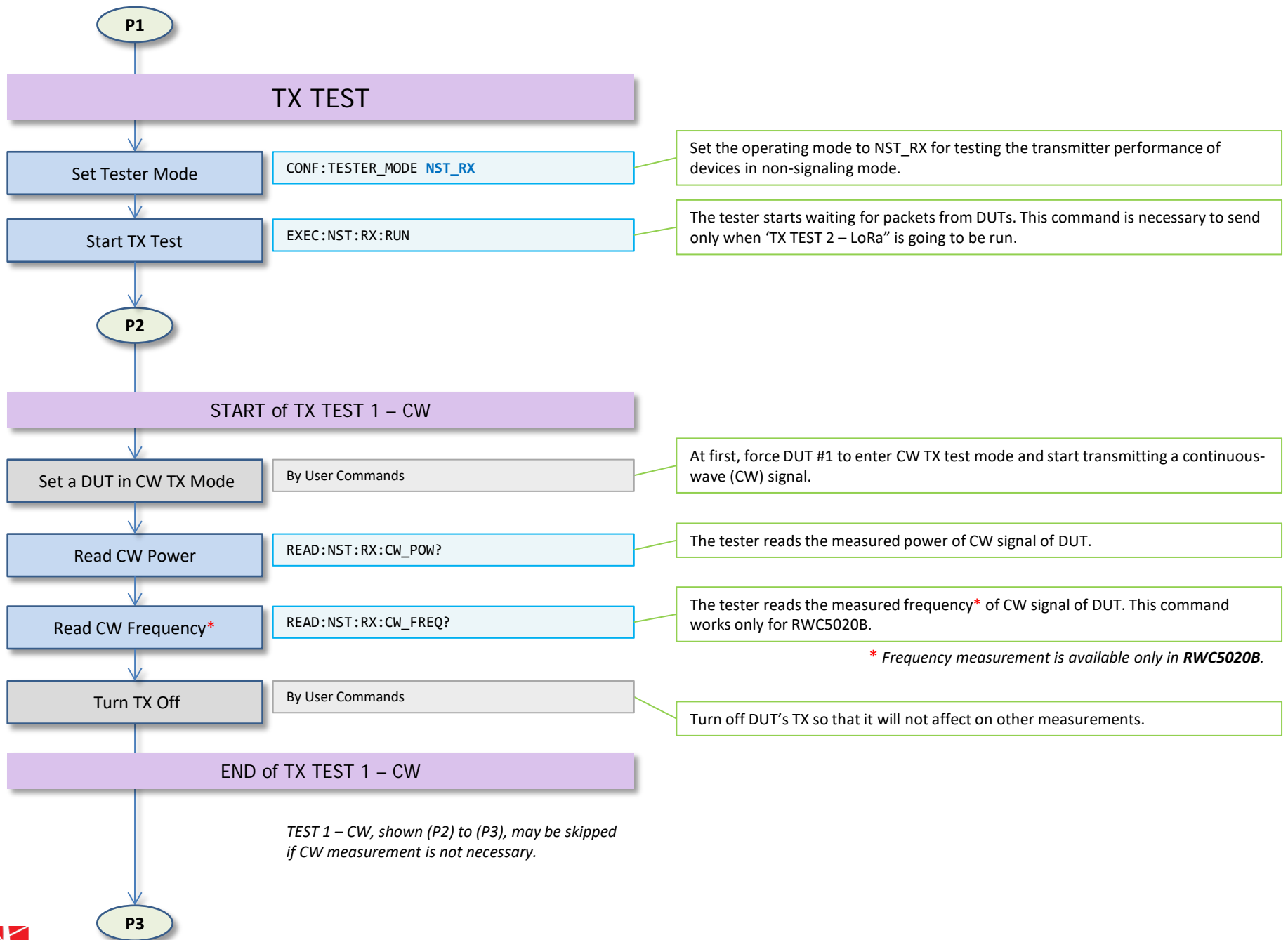
*You may select a way to test TX performance of devices; it may be CW only, LoRa packet only, or both.*

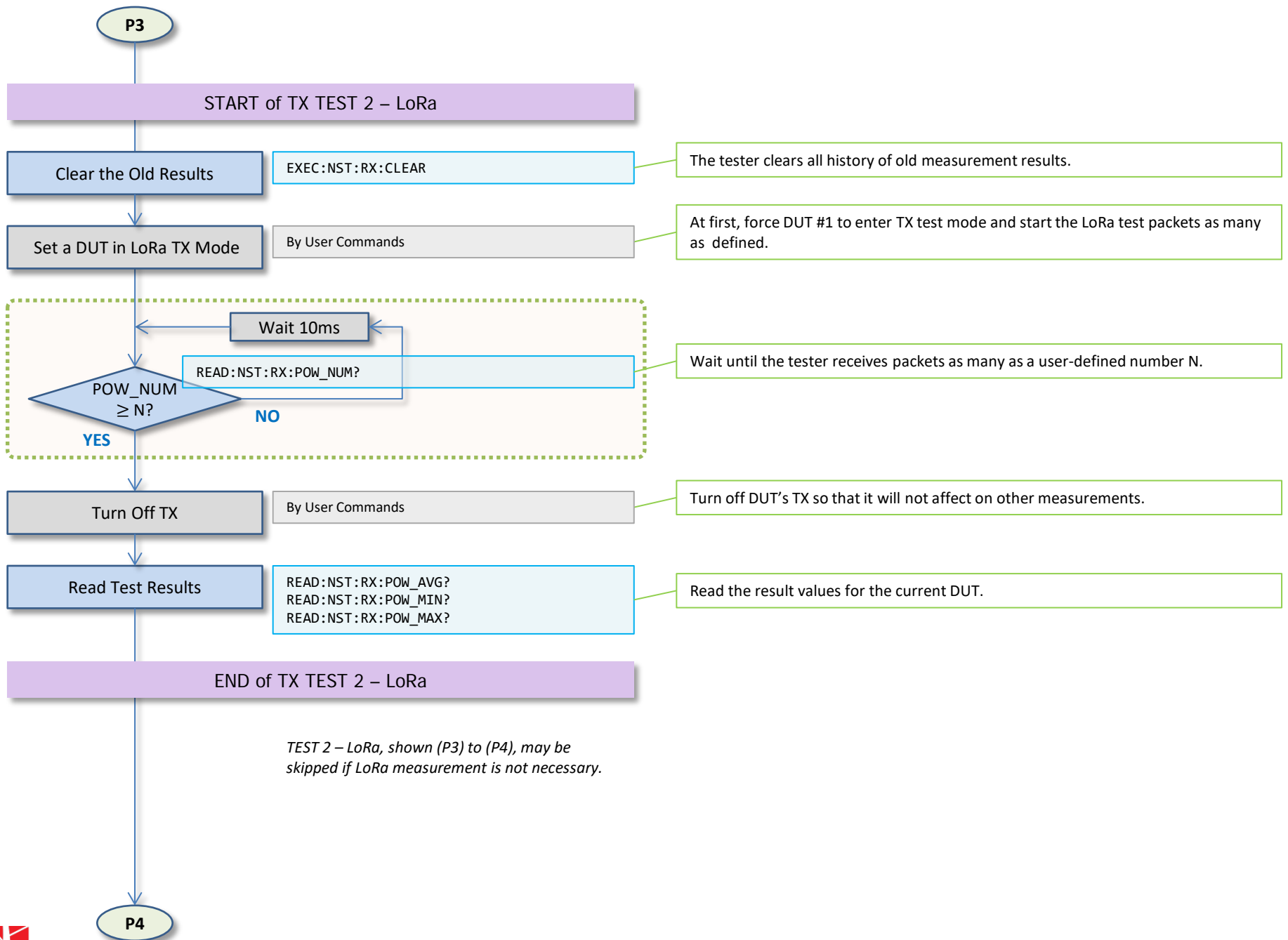


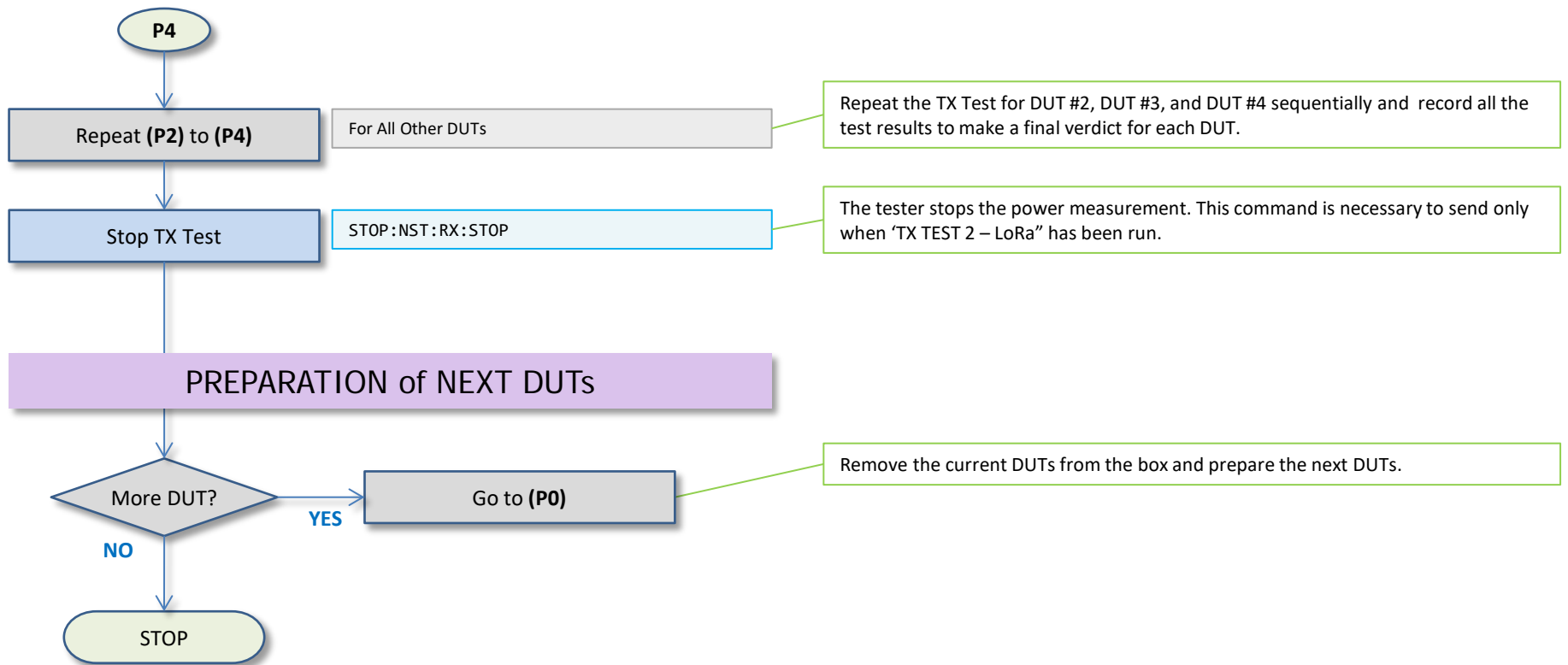
\* Frequency measurement is available only in **RWC5020B**.













# Test Time Estimation

## RX TEST

### Key Factors in RWC5020A

- Packet
  - SF SF7~SF12
  - PREAMBLE\_SIZE 2~12 symbols
  - PAYLOAD\_SIZE 0~250 bytes
- REPEAT\_NUM 1~10000
- INTERVAL 0.01~1000 sec

### Example :

SF7, PAYLOAD\_SIZE=16, REPEAT\_NUM=10, INTERVAL=0.01

$$t_{RX} \approx (0.05^* + 0.01) \times 10 = 0.6 \text{ (sec)}$$

\* Dependent on SF & size

## TX TEST

### Key Factors in DUT

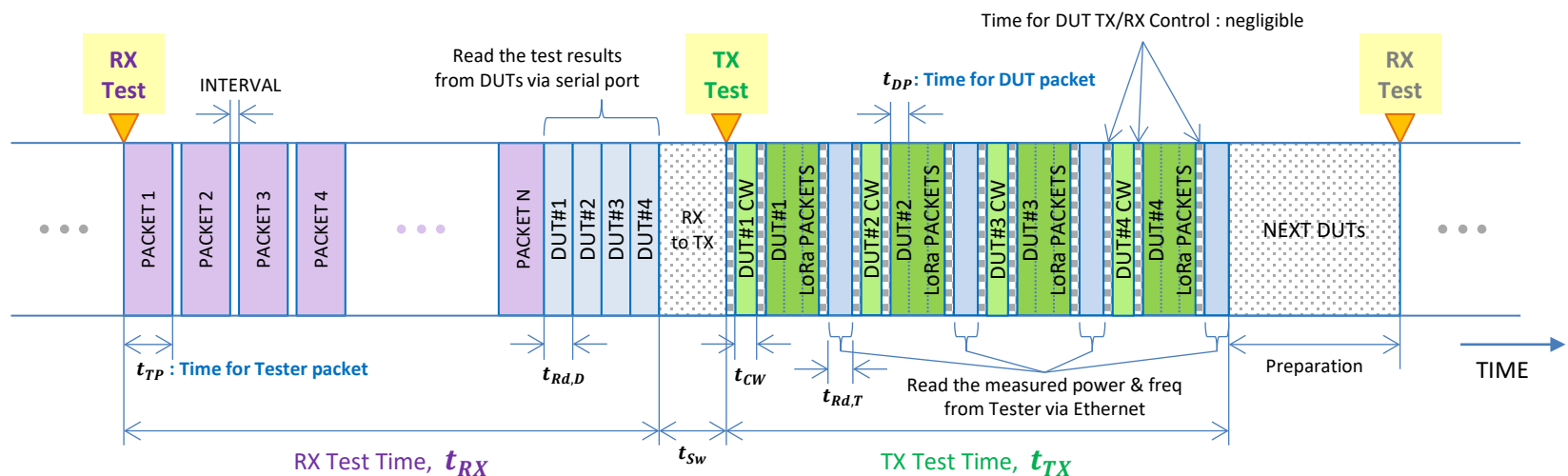
- CW Interval user-defined
- Packet
  - SF user-defined
  - Preamble size user-defined
  - Payload size user-defined
- Number of packets user-defined
- Interval user-defined

### Example :

CW int.=0.2, SF7, Payload size=16, N\_pkts=3, Interval=0.01

$$t_{TX} \approx (0.2 + (0.05^* + 0.01) \times 3) \times 4 = 1.52 \text{ (sec)}$$

\* Dependent on SF & size



$$= (t_{TP} + \text{INTERVAL}) \times \text{REPEAT\_NUM} + t_{Rd,D}^{\dagger} \times 4$$

$$= (t_{cw} + (t_{DP} + \text{Interval}) \times N\_pkts) + t_{Rd,T}^{\dagger} \times 4$$

<sup>†</sup> The read time  $t_{Rd,D}$  and  $t_{Rd,T}$  are negligible.