

# **The issue with hard-coding the amount of additional receiver noise to the COM pass threshold value**

## **COM Commit Request Number 4p8\_4**

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# Introduction

- Section “178A.1.10.1. Additional receiver noise” in D1.5 defines the method that increases receiver noise before MLSD COM calculation to mimic the implementation penalty
- The amount of increase is set by the target parameter “ $\delta_{COM_{an}}$ ”
- A natural choice for this target is to add enough noise that consumes the entire COM limit available to the receiver
- This COM limit is specified in the COM table as the “COM Pass threshold”
- However, it is advantageous to have the flexibility to use a different target for the purpose of further investigations and explorations
- Currently, for the user the only way to achieve this is to change “COM Pass threshold”
- “COM Pass threshold” serves a different purpose and necessarily tying it to receiver noise increase target may have side consequences
- It seems reasonable to use a separate parameter for the receiver noise increase target, but still default it to “COM Pass threshold”

# The Suggested Change

- The suggested change is obvious and only mentioned here for completeness
- Currently:

```
2145 - |   delta_COM_an=param.pass_threshold; % align terminology
2146 - | end
2147 - | % new function to scale CDF at specified DER; healey_3dj_01_2409 slide 8, 12, and 13
2148 - | % directly compute p_an (PDF) and P_an (CDF);
2149 - | [p_an, P_an, ~] = scaleCDF( PDF,delta_COM_an,DER0, A_s );
```

- Change to:

Remove Line →

Add Line →

```
2145 - |   %   delta_COM_an=param.pass_threshold; % align terminology
2146 - |   delta_COM_an=param.add_rx_noise; % align terminology
2147 - | end
2148 - | % new function to scale CDF at specified DER; healey_3dj_01_2409 slide 8, 12, and 13
2149 - | % directly compute p_an (PDF) and P_an (CDF);
2150 - | [p_an, P_an, ~] = scaleCDF( PDF,delta_COM_an,DER0, A_s );
```

```
8919 - | param.pass_threshold = xls_parameter(parameter, 'COM Pass threshold',false,0); % the pass fail threshold for COM in dB
8920 - | param.add_rx_noise = xls_parameter(parameter, 'add_rx_noise', true, param.pass_threshold); % the additional receiver noise target in dB
```

Add Line ↑

**Thank You 😊**

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