

COM Commit Request 4p11_1

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IEEE 802.3 Channel Operating Margin (COM) Open Source Project Ad Hoc

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Purpose for Commit Request

- ❑ Align to “178A.1.3 Measurement of the channel under test”
 - “The reference impedance for the differential-mode S-parameters is required to be twice the single-ended reference resistance R_0 specified for the calculation of COM. “
 - “It is recommended that the scattering parameters be measured with a uniform frequency step from a start frequency no greater than 10 MHz to a stop frequency of at least 67 GHz.”

- ❑ Branch: Re-normalization

Navigate to Richard_Mellitz/com_code

First step to review changes of a branch to the last release

Projects

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C Richard Mellitz / com_code 🌐 Owner
Workspace for Rich's COM development

Navigate to Richard Mellitz
com_code

Checking changes of a branch to the last release

Use drop down in the 3 dots for SCMR and select compare

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Use drop down in the 3 dots for SCMR and select compare

Overview Active Stale All

Filter by branch name

View branch rules

New branch

Active branches

Modal_ERL
387468b7 · Removing an extra end statements · 2 days ago

Re-normalization
cd8871cd · Correcting adding the resistance die termination with

Replace_SDDii_w_ERL_spec
3f819e31 · Merge branch com_code:main into Replace_SDDii_w

Modal_VTF
d09c4781 · Merge branch com_code:main into Modal_VTF · 5 days ago

CC
892fbd1e · Merge branch com_code:main into CC · 5 days ago

Show more active branches

Use drop down in the 3 dots pulldown for Re-normalization and select compare. Selecting bring up the compare screen

0 | 21

802-co...

0 | 6

802-co...

0 | 4

New

0 | 4

New

0 | 4

New

Project

com_code

Pinned

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Code updates

- ❑ 6 .m files changed
- ❑ 100-ohm references changed to param.Z0 which is R_0 in the config files
 - src/SL.m
 - src/process_sxp.m
 - src/read_Nport_touchstone.m
 - src/read_p4_s4params.m
 - src/read_s4p_files.m
 - src/s21_pkg.m
- ❑ Impedance conversion done in src/read_Nport_touchstone.m
 - The s4p s-parameter is converted which is more accurate than converting a modal s-parameter.
 - Added modal data to “chdata” structure

New or changed keywords

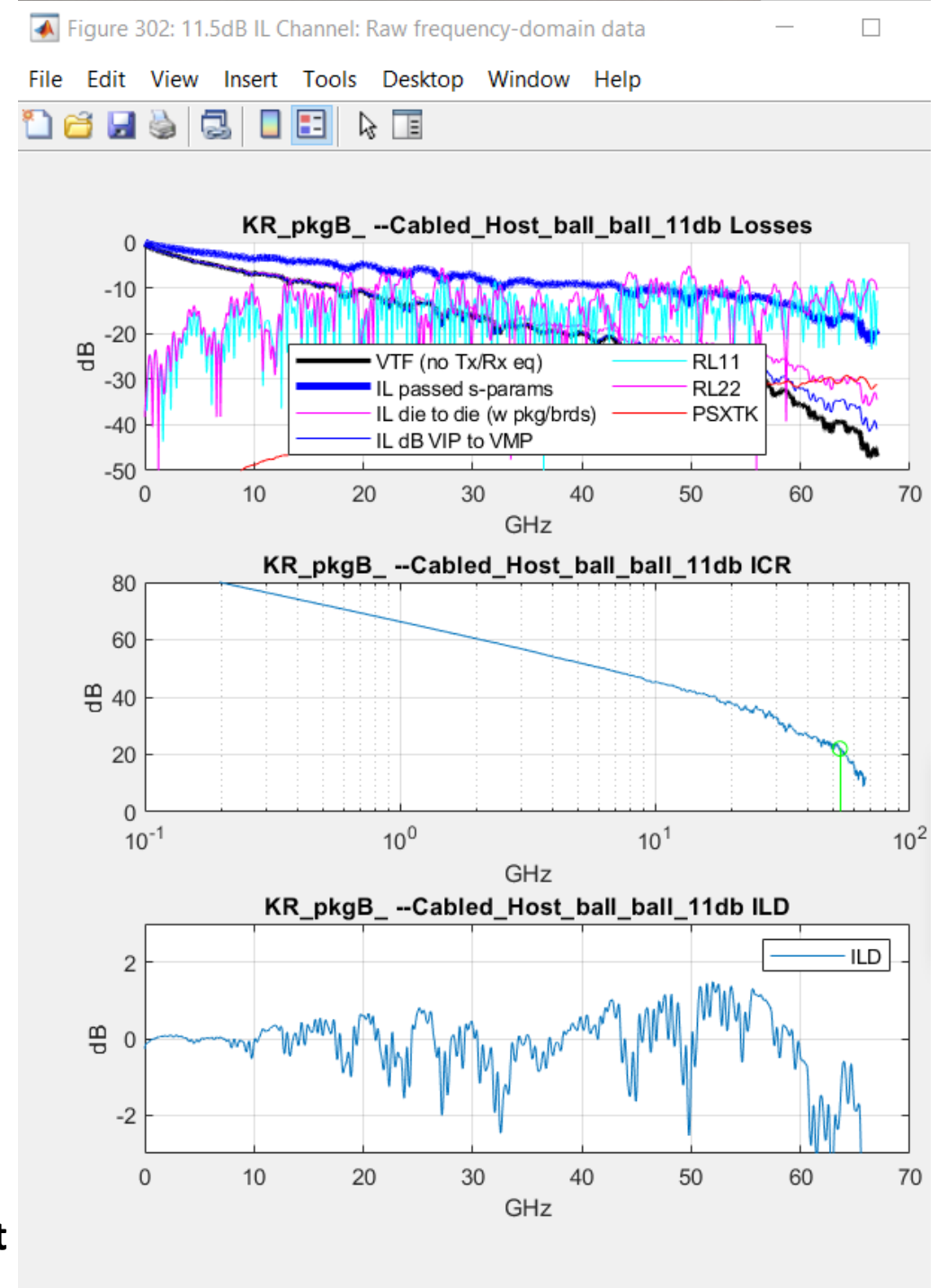
☐ None

Modified Outputs

- ❑ Frequency graphs are reference R_0
- ❑ Example of some difference between R_0 = 50 ohms and 25.26 ohms
 - Very little difference in COM>
 - ILdd of channel is about 0.1 (fitted) to 0.16 dB less loss.

	50 ohms	46.25 ohms	delta (50ohms - 46.25 ohms)
ERL22	7.2763	7.2562	0.02
ERL	7.2763	7.2562	0.02
ICN_mV	4.01	4.0247	-0.01
MDNEXT_ICN_92_46_mV	2.8355	2.8459	-0.01
MDFEXT_ICN_92_47_mV	2.8355	2.8459	-0.01
fitted_IL_dB_at_Fnq	12.4911	12.3927	0.10
cable_assembly_loss			
loss_with_PCB			
VIP_to_VMP_IL_dB_at_Fnq	26.4169	26.4286	-0.01
IL_dB_channel_only_at_Fnq	11.6499	11.4894	0.16
VTF_loss_dB_at_Fnq	28.0797	28.0914	-0.01
IL_db_die_to_die_at_Fnq	22.8775	22.9175	-0.04
COM_orig	1.608	1.6184	-0.01
delta_COM	0.93461	0.93881	0.00
DER_DFE	9.05E-06	9.03E-06	0.00
DER_MLSE	7.98E-07	7.83E-07	0.00
COM_dB	2.5426	2.5572	-0.01
DER_thresh	0.00134	0.0013372	0.00

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Modified Terminal Report

❑ Example if R_0 when is not 50 ohms

- 1 INFO: S-parameter reference impedance of 50 ohms renormalized to 46.25 ohms

❑ Recommended Configuration File used aligned to D2.2 and D2.1

- “It is recommended that the scattering parameters be measured with a uniform frequency step from a start frequency no greater than 10 MHz to a stop frequency of at least 67 GHz.”

s-parameters processing		
ZERO_PAD	1	logical
zero_pad_tukey_window_in_fb	0.2	fb
flim	67	GHz

Summary

- ❑ R_0 is now used to renormalized inputted s-parameters
- ❑ COM package, die loads, and PCB models are reference to R_0
- ❑ R_0 is the computation reference for COM
- ❑ This change is use for the Modal_ERL branch

Thank You!