

# Outline – 8April04 Conference Call

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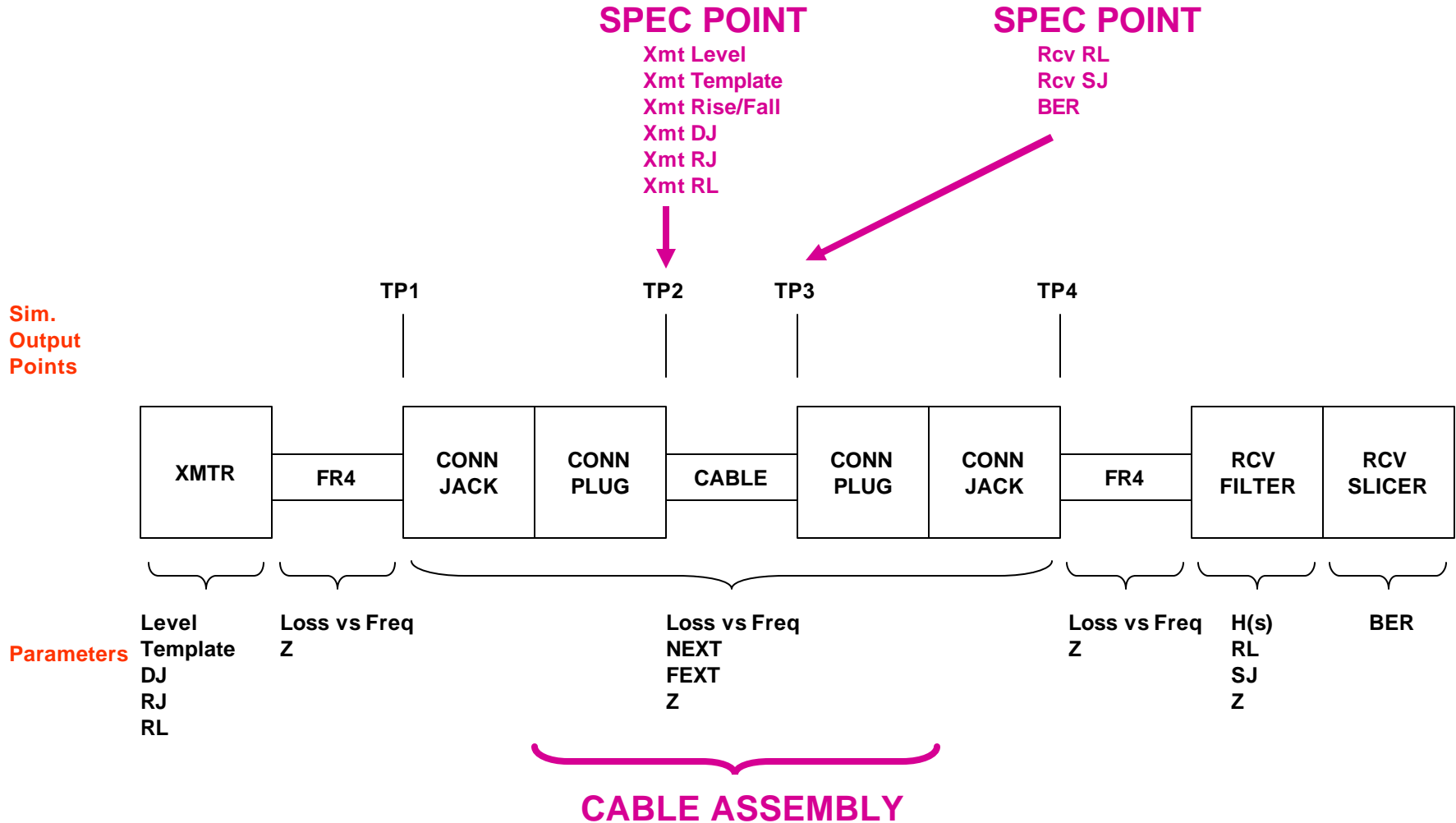
- Review Basic outline of CX-4 Channel
  - ◆ Channel Model For Simulation
- Discuss Basic Electrical Specifications
- Test Point
- Basic Electrical Specifications
- S21
- NEXT/FEXT
- Group Delay

# Outline

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- *Review Basic outline of CX-4 Channel*
  - ◆ *Channel Model For Simulation*
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# CX-4 Channel Model for Simulation



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# CX-4 Channel Model for Simulation

Block	Parameter	Worst Case	Comments
FR4	Loss vs. Freq	2" trace: $s_{21} = 20 \cdot \log_{10}(e) \cdot [(a_1 \cdot v f + a_2 \cdot f + a_3 \cdot f^2)] \cdot (1/10)$ $a_1 = 6.5E-6$ $a_2 = 2.0E-10$ $a_3 = 3.3E-20$ $e=2.718.....$	From XAUI. Decided 2" was worst case length, and then scaled XAUI linearly from 20" to 2".
	Z	45-55 ohm	From XAUI
Conn Mated Pair (Jack+Plug)	Loss	$LOSS = a \cdot v f$ $a = 1.266E-02$ LOSS in dB, f in MHz	Preliminary model from Cable Assembly Team.

# CX-4 Channel Model for Simulation

Block	Parameter	Worst Case	Comments
Cable Assbly	Loss vs Freq	$LOSS = a \cdot \sqrt{f} + b \cdot f + c \cdot (1/\sqrt{f})$ $a = 2.629E-01$ $b = 3.408E-03$ $c = 1.276E+01$ LOSS in dB, f in MHz	This is prelim model from Cable Assembly Team. Includes:  plug+jack+cable+jack+plug.
	NEXT	-28 dB	From Sacro. Long term, this spec will be included in new cable assbly model.
	FEXT	-26 dB	From Sacro. Long term, this spec will be included in the new cable assbly model.
	Z	45-55 ohms	Cable vendor data indicates this paramter varies +/-10%.



SJ Template

# Specs @ TP2

Parameter	Value	Justification
Xmt Level	800mvpp – 1200mvpp	
Xmt Template	See spec	
Xmt Rise and Fall	60-130pS	
Xmt DJ	0.17 UI pp	
Xmt RJ	0.27 UI pp	
Xmt RL	-10 db @ 312-625 MHz -10+10log(f/625) @ >625MHz	

# Specs @ TP3

Parameter	Value	Justification
Rcv RL	-10 db @ 312-625 MHz -10+10log(f/625) @ >625MHz	
Receiver Coupling	AC	
Diff Input Level	1200mvpp	
BER	1E-12	

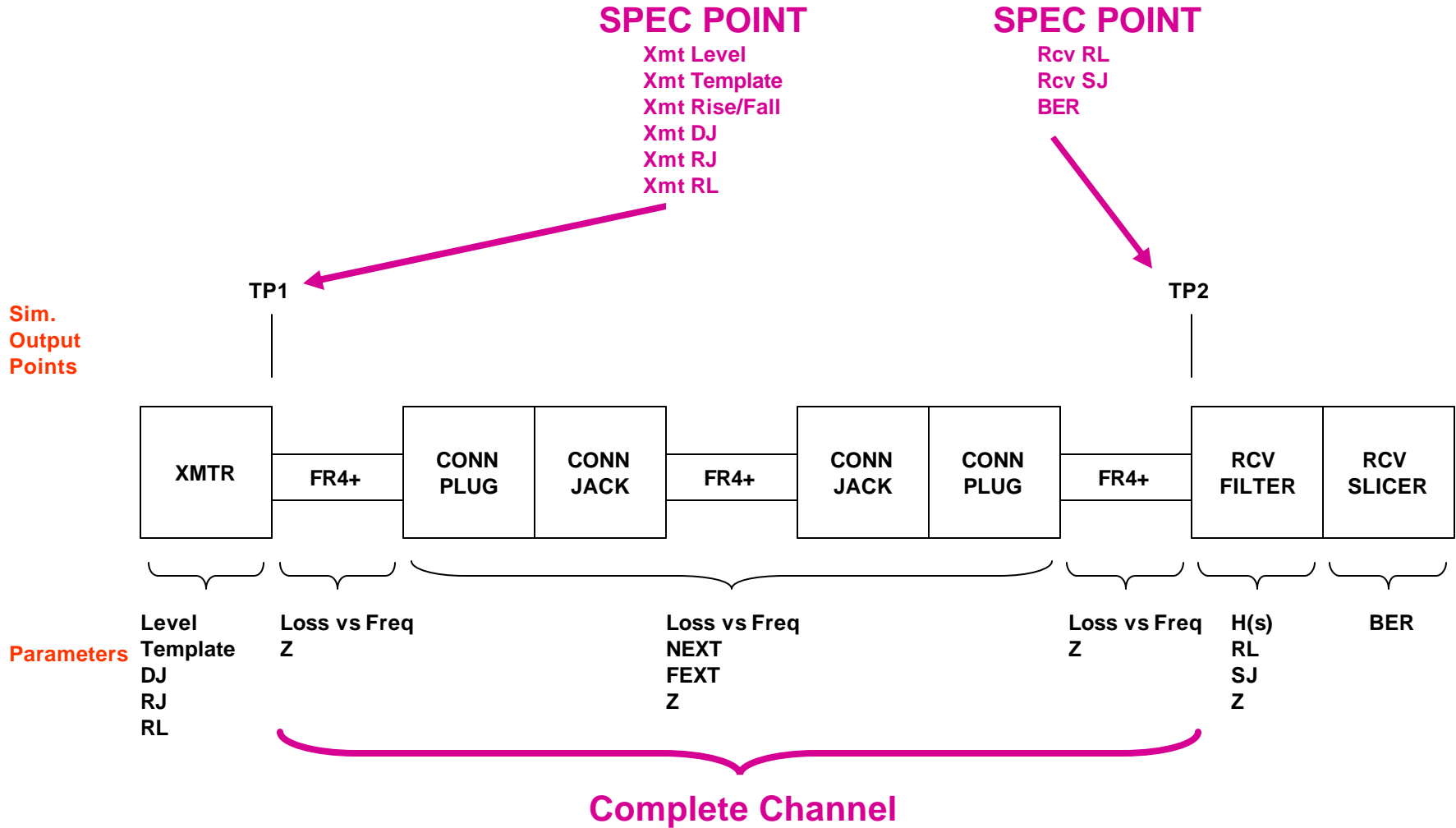


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# Proposed Model for Simulation



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# Proposed Specifications @ TP1

Parameter	Value	Justification
Baud Rate	10.0Gps	
Xmt Level Vdiff	800mvpp – 1200mvpp	
Vcm		
VcmAC		
Diff Impedance	100ohms	
Diff Impedance Tolerance	+/- 20ohms	
Xmt Template	See spec	
Xmt Rise and Fall	30pS	
Xmt DJ	0.17 UI pp	
Xmt RJ	0.27 UI pp	
Xmt RL	-10 db @ 312-625 MHz -10+10log(f/625) @ >625MHz	

# Proposed Specifications @ TP2

Parameter	Value	Justification
Baud Rate	10.0Gps	
Diff Input Level	1200mvpp	
Vcm		
VcmAC		
Diff Impedance	100ohms	
Diff Impedance Tolerance	+/- 20ohms	
Rcv RL	-10 db @ 312-625 MHz -10+10log(f/625) @ >625MHz	
Receiver Coupling	AC	
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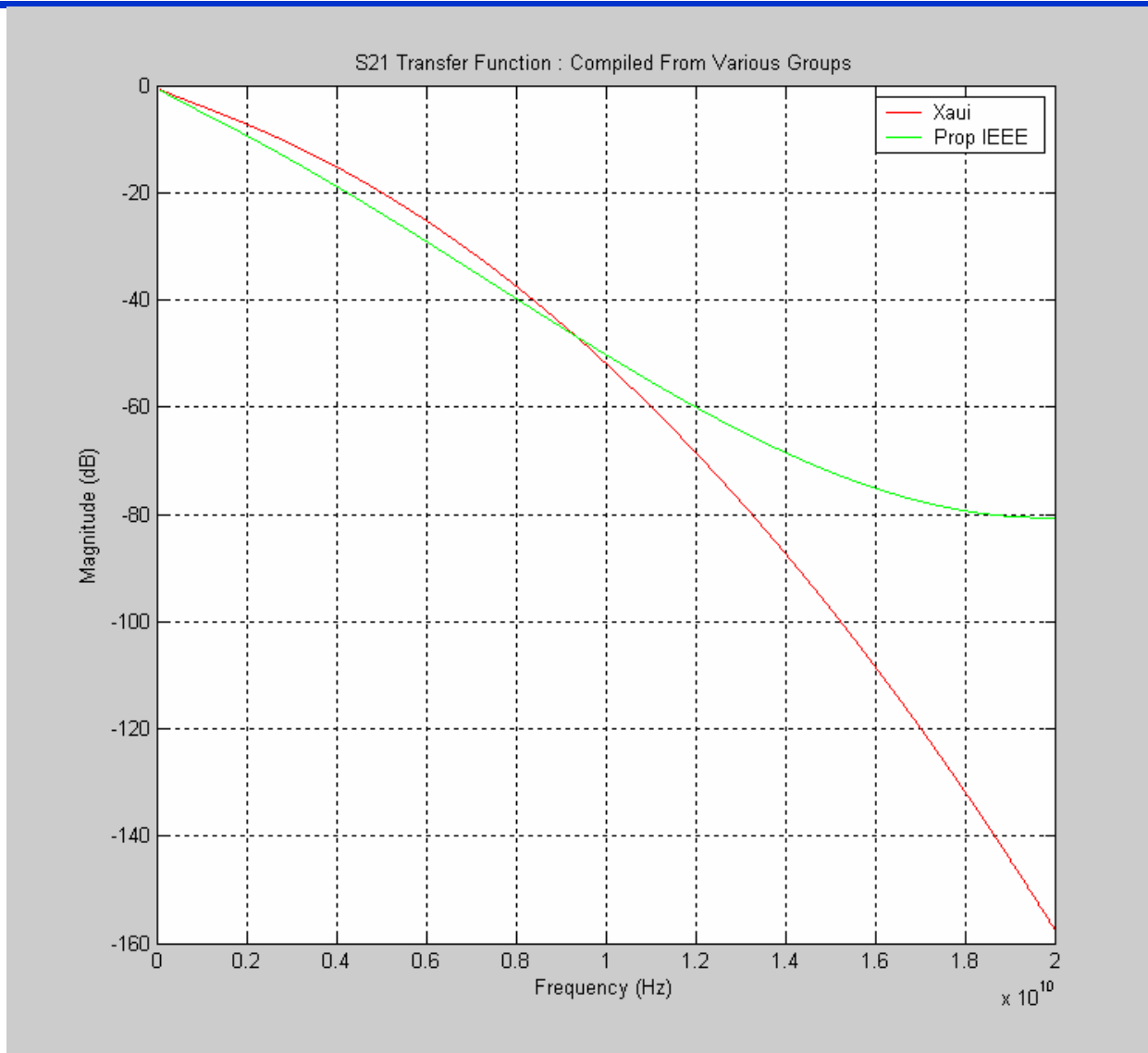
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# Proposed S21 Channel Equation

Parameter	Value	Justification
S21 Range	100Mhz to 20,000Mhz	
Source Power	Max and Min TX dBm	
IF BW	100Hz	
NEXT/FEXT Range	100Mhz to 20,000Mhz	Discuss terminations on source and victim.
Source Power	Max and Min TX dBm	
IF BW	100Hz	
Group Delay	100Mhz to 20,000Mhz	
Source Power	Max and Min TX dBm	
IF BW	100Hz	

# Proposed S21 Channel Equation





# Proposed S21 Channel Equation

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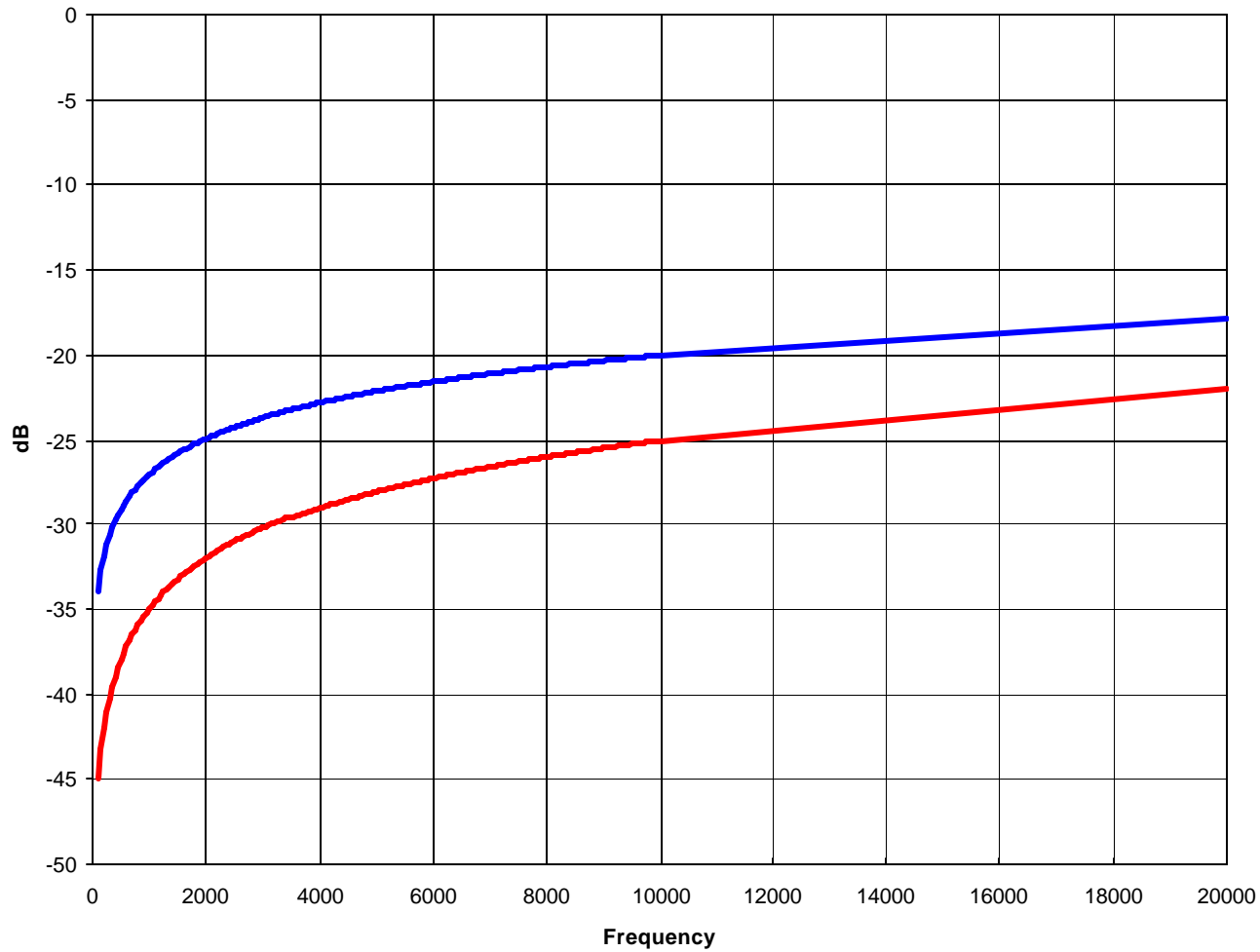
- % original Xaui model numbers per released 802.3 standard
- a1 = 6.5E-06; %
- a2 = 2.0E-10; %
- a3 = 3.3E-20; %
- % Anameconstants = 'Xaui 50cm';
- %
- % Proposed Constants per Joel
- b1 = 6.5E-06; %
- b2 = 3.3E-10; %
- b3 = 3.2E-20; %
- b4 = 1.38E-30; %
- % Bnameconstants = 'Proposed';
- %
- %
- % \*\*\*\*\*
- %
- f = startfreq:stepsize:stopfreq;
- s21a = -20\*log10(exp(1))\*(a1\*sqrt(f) + a2\*f + a3\*f.^2);
- s21b = -20\*log10(exp(1))\*(b1\*sqrt(f) + b2\*f + b3\*f.^2 - b4\*f.^3);

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# Proposed NEXT/FEXT



— NEXT  
— FEXT

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# Proposed Group Delay

