



Layer	Stack up	Description	Copper Layer Type	Base Thickness	Processed Thickness	Resin Content	εr
1		Liquid Photolimageable Mask			25.400		4.000
		Copper Foil	Signal	17.780	17.780		
2		PrePreg 1080		76.200	49.530	60.000	4.200
3		FR4 Core	Signal	35.560	35.560		
		FR4 Core	Plane	76.200	76.200	60.000	4.200
		PrePreg 3080		76.200	70.510	60.000	4.200
		PrePreg 1651		152.400	141.021	47.000	4.200
		PrePreg 1651		152.400	141.021	47.000	4.200
4		FR4 Core	Signal	35.560	35.560		
		FR4 Core	Signal	304.800	304.800	46.000	4.200
		FR4 Core	Signal	35.560	35.560		
		PrePreg 1651		152.400	141.021	47.000	4.200
		PrePreg 1651		152.400	141.021	47.000	4.200
		PrePreg 3080		76.200	70.510	60.000	4.200
6		FR4 Core	Plane	35.560	35.560		
		FR4 Core	Signal	76.200	76.200	60.000	4.200
	FR4 Core	Signal	35.560	35.560			
	PrePreg 1651		152.400	141.021	47.000	4.200	
	PrePreg 1651		152.400	141.021	47.000	4.200	
	PrePreg 3080		76.200	70.510	60.000	4.200	
7	FR4 Core	Plane	35.560	35.560			
	FR4 Core	Signal	76.200	76.200	60.000	4.200	
	FR4 Core	Signal	35.560	35.560			
	PrePreg 1080		76.200	49.530	60.000	4.200	
8	Copper Foil	Signal	17.780	17.780			
	Liquid Photolimageable Mask				25.400		4.000

Copper Thickness = 248.920 | Dielectric Thickness = 1261.364 | Solder Mask Thickness = 50.800 |
 Stack Up Thickness = 1510.284 | Stack Up Thickness with Soldermask = 1561.084
 Stack Up Cost = 54.00
 Simple Percentage Finishing Class: 'Class 1' = 17.780

Structure Image	Structure Name	Target Impedance	Calculated Impedance	Lower Trace Width (W1)	Upper Trace Width (W2)	Trace Thickness (T1)	Substrate 1 Height (H1)	Substrate 2 Height (H2)	Ref. Plane 1 in Layer	Ref. Plane 2 in Layer	Coating Above Substrate (C1)
	Coated Microstrip 1B	75.000	75.870	114.300	88.900	17.780	161.290	0.000	3	0	25.400
	Edge Coupled Coated Microstrip 1B	100.000	100.350	215.900	190.500	17.780	161.290	0.000	3	0	25.400
	Edge Coupled Offset Stripline 1B1A	100.000	101.280	184.150	158.750	35.560	692.912	388.112	3	6	0.000
	Coated Microstrip 1B	75.000	75.870	114.300	88.900	17.780	161.290	0.000	6	0	25.400

StackName: Speedstack 2020 Extended Drill Capability	
Drawing No:	Associated Documents:
Date: 28 Apr 2020	
Designer: Richard Attrill	
Department: Engineering	
Office: Waterlooville	CONFIDENTIAL

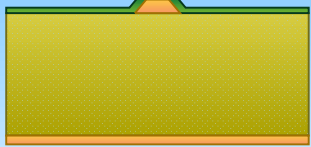
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Coated Microstrip 1B



Length of Line: 25400
 Trace Conductivity: 5.8E+07 S/m
 Frequency Minimum: 500 MHz
 Frequency Maximum: 10 GHz
 Frequency Steps: 20

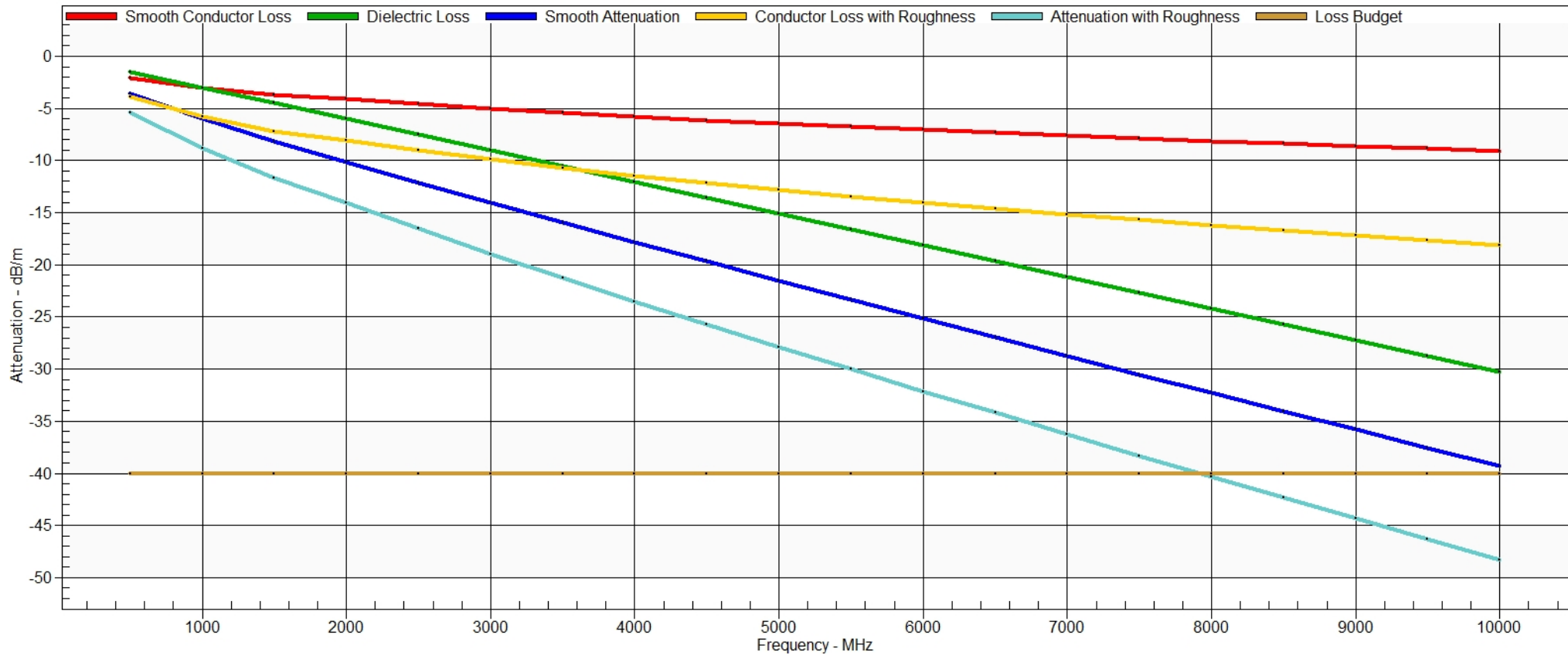
Substrate Causal Extrapolation Reference Points

	Freq (Hz)	Ref Er	Ref TanD
H1	1.000E+09	4.2000	0.0195
H2			
H3			
H4			
REr			
CEr	1.000E+09	4.0000	0.0195

Surface Roughness Compensation: Hammerstad

Surface 1 Roughness (RMS) R1: 5.08
 Surface 2 Roughness (RMS) R2: 5.08

Frequency of Interest: 1000 MHz
 Smooth Conductor Loss: -3.013E+00 dB/m
 Dielectric Loss: -3.000E+00 dB/m
 Smooth Attenuation: -6.013E+00 dB/m
 Conductor Loss with Roughness: -5.796E+00 dB/m
 Attenuation with Roughness: -8.796E+00 dB/m



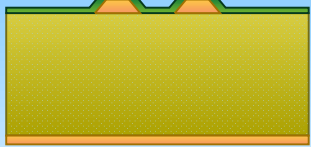
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Edge Coupled Coated Microstrip 1B



Length of Line: 101600
 Trace Conductivity: 5.8E+07 S/m
 Frequency Minimum: 500 MHz
 Frequency Maximum: 10 GHz
 Frequency Steps: 20

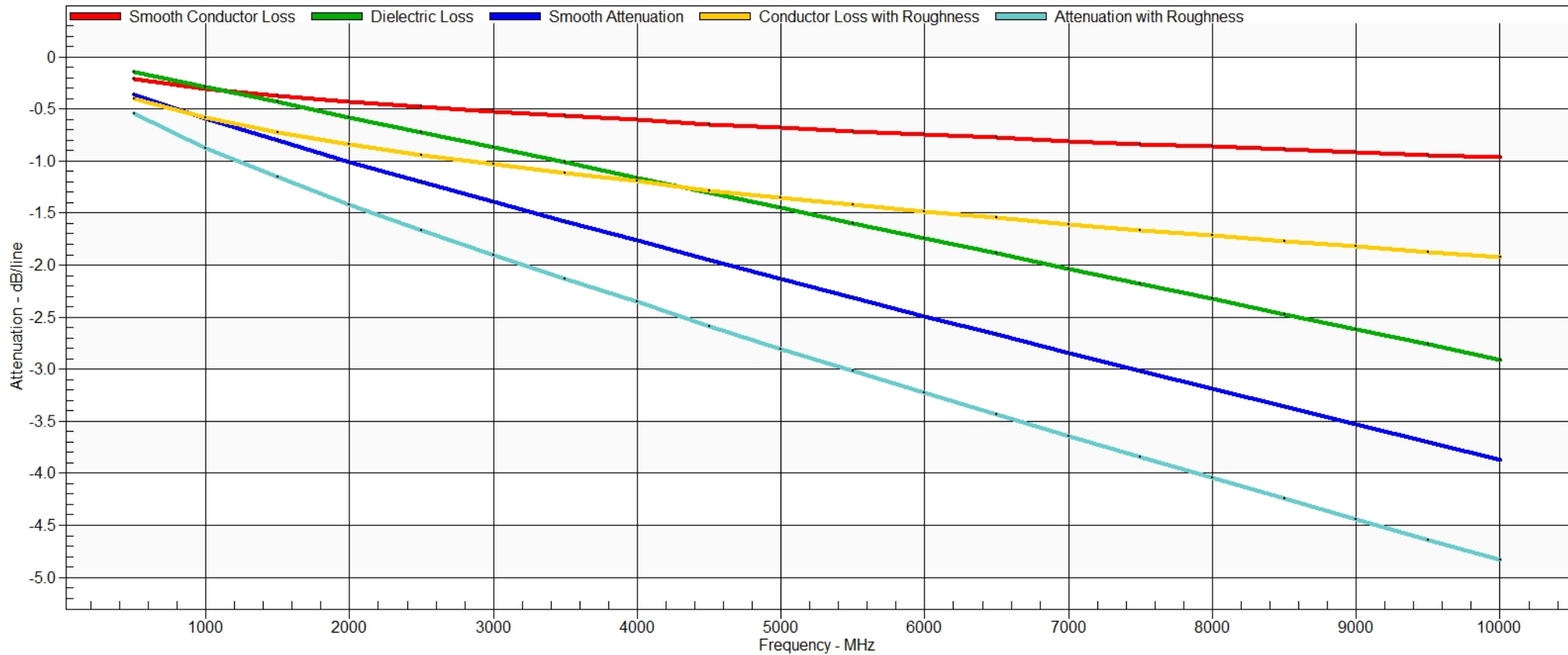
Substrate Causal Extrapolation Reference Points

	Freq (Hz)	Ref Er	Ref TanD
H1	1.000E+09	4.2000	0.0195
H2			
H3			
H4			
REr			
CEr	1.000E+09	4.0000	0.0195

Surface Roughness Compensation: Hammerstad

Surface 1 Roughness (RMS) R1: 5.08
 Surface 2 Roughness (RMS) R2: 5.08

Frequency of Interest: 1000 MHz
 Smooth Conductor Loss: -3.041E-01 dB/line
 Dielectric Loss: -2.889E-01 dB/line
 Smooth Attenuation: -5.931E-01 dB/line
 Conductor Loss with Roughness: -5.849E-01 dB/line
 Attenuation with Roughness: -8.739E-01 dB/line



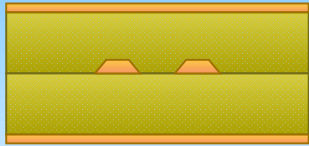
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Edge Coupled Offset Stripline 1B1A



Length of Line: 25400
 Trace Conductivity: 5.8E+07 S/m
 Frequency Minimum: 500 MHz
 Frequency Maximum: 10 GHz
 Frequency Steps: 20

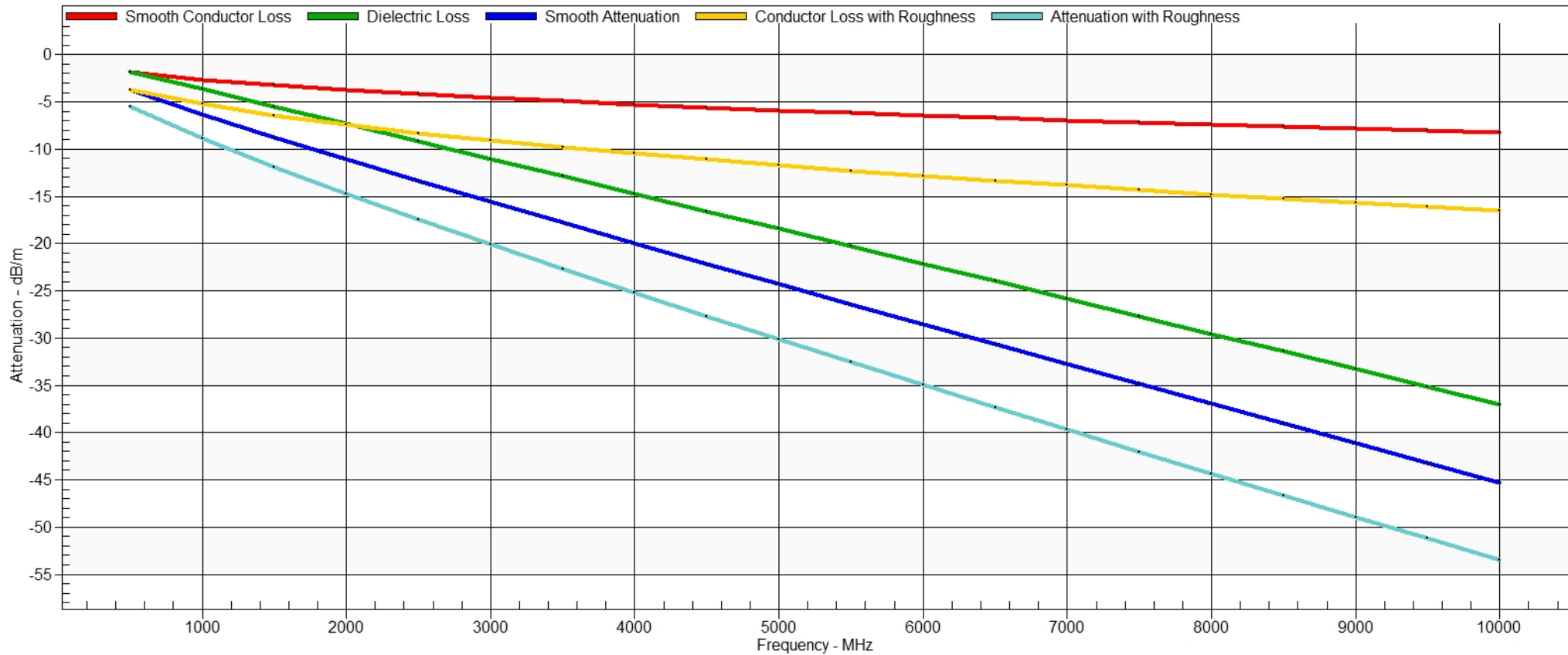
Substrate Causal Extrapolation Reference Points

	Freq (Hz)	Ref Er	Ref TanD
H1	1.000E+09	4.2000	0.0195
H2	1.000E+09	4.2000	0.0195
H3			
H4			
REr			
CEr			

Surface Roughness Compensation: Grosse

Surface 1 Roughness (RMS) R1: 5.08
 Surface 2 Roughness (RMS) R2: 7.62
 Surface 3 Roughness (RMS) R3: 10.16
 Surface 4 Roughness (RMS) R4: 12.7

Frequency of Interest: 4000 MHz
 Smooth Conductor Loss: -5.268E+00 dB/m
 Dielectric Loss: -1.473E+01 dB/m
 Smooth Attenuation: -2.000E+01 dB/m
 Conductor Loss with Roughness: -1.048E+01 dB/m
 Attenuation with Roughness: -2.521E+01 dB/m



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Coated Microstrip 1B



Length of Line: 25400
 Trace Conductivity: 5.8E+07 S/m
 Frequency Minimum: 500 MHz
 Frequency Maximum: 10 GHz
 Frequency Steps: 20

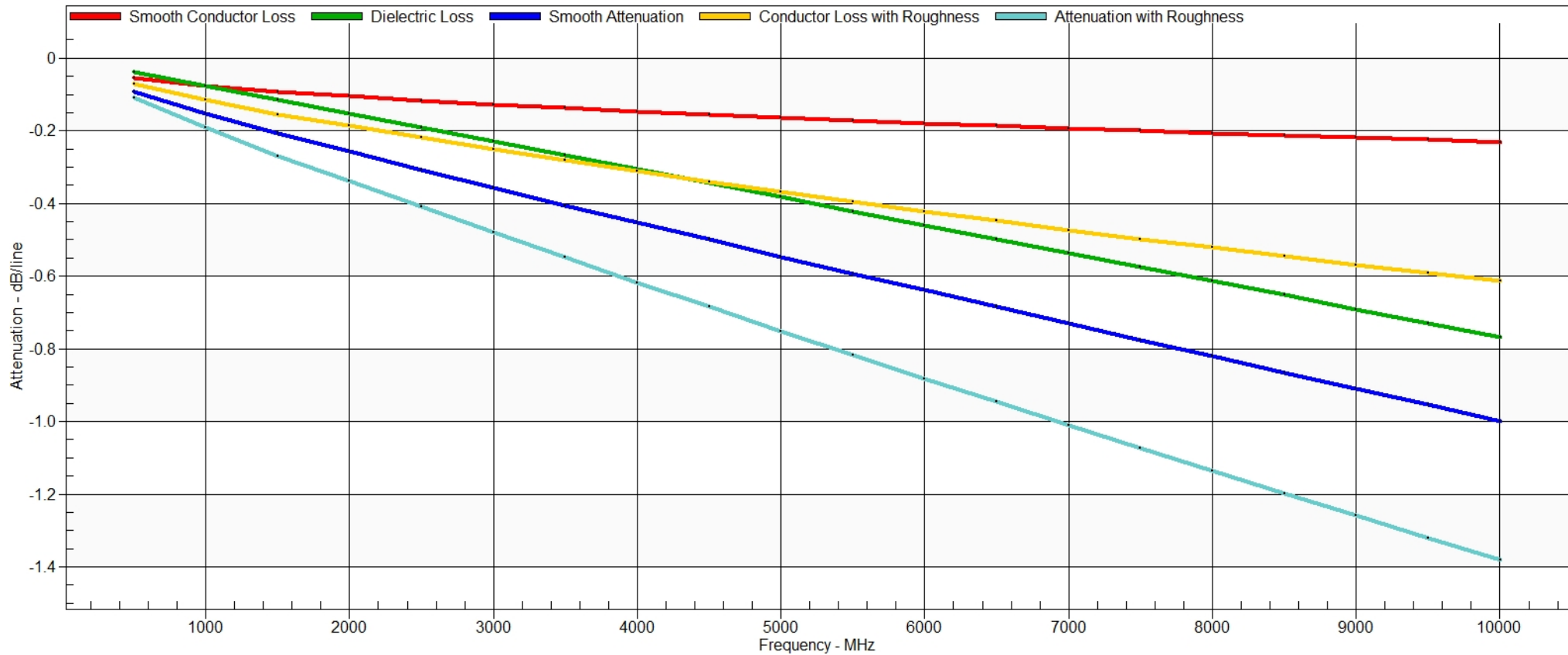
Substrate Causal Extrapolation Reference Points

	Freq (Hz)	Ref Er	Ref TanD
H1	1.000E+09	4.2000	0.0195
H2			
H3			
H4			
REr			
CEr	1.000E+09	4.0000	0.0195

Surface Roughness Compensation: Huray

Ratio of Areas: 1
 Effective Ball Radius: 0.75 µm
 Area of Ball Count: 90 sq µm
 Number of Balls in Area: 32

Frequency of Interest: 1000 MHz
 Smooth Conductor Loss: -7.654E-02 dB/line
 Dielectric Loss: -7.620E-02 dB/line
 Smooth Attenuation: -1.527E-01 dB/line
 Conductor Loss with Roughness: -1.142E-01 dB/line
 Attenuation with Roughness: -1.904E-01 dB/line
















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Drill Image	1st Layer	2nd Layer	Column Position	Drill Type	Must-Cut Layer No	Must-Not-Cut Layer No
	1	2	2	Laser PTH	-	-
	1	2	3	Laser PTH	-	-
	1	8	9	Mechanical PTH	-	-
	1	8	8	Mechanical PTH	-	-
	1	8	11	Mechanical NPTH	-	-
	1	8	10	Mechanical PTH	-	-
	1	8	7	Mechanical PTH	-	-
	1	8	1	Mechanical PTH	-	-
	1	8	6	Mechanical PTH	-	-
	2	3	3	Laser PTH	-	-
	2	7	4	Mechanical PTH	-	-
	4	5	5	Mechanical PTH	-	-
	7	6	3	Laser PTH	-	-

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Drill Image	1st Layer	2nd Layer	Column Position	Drill Type	Must-Cut Layer No	Must-Not-Cut Layer No
	8	-	10	Back Drill	3	2
	8	-	9	Back Drill	4	3
	8	-	8	Back Drill	5	4
	8	-	7	Back Drill	6	5
	8	-	6	Back Drill	7	6
	8	7	3	Laser PTH	-	-
	8	7	2	Laser PTH	-	-

Supplier	Supplier Description	Description	Type	Stock Number	Stack Quantity	Unit Cost	Stack Cost	Total Quantity
Polar Samples	SM/001	Liquid PhotoImageable Mask	SolderMask	500-001	2	0.00	0.00	2
Polar Samples	FO/001	Copper Foil	Copper	100-001	2	1.00	2.00	2
Polar Samples	PP/001	PrePreg 1080	Dielectric	300-001	2	1.00	2.00	2
Polar Samples	CO/005	FR4 Core	FR4	400-005	2	5.00	10.00	2
Polar Samples	PP/002	PrePreg 3080	Dielectric	300-002	2	2.00	4.00	2
Polar Samples	PP/004	PrePreg 1651	Dielectric	300-004	4	4.00	16.00	4
Polar Samples	CO/020	FR4 Core	FR4	400-020	1	20.00	20.00	1
							54.00	

No. of Panels = 1 | Circuits Per Panel = 1 | Price Per Circuit = 54.00 |
Notes

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