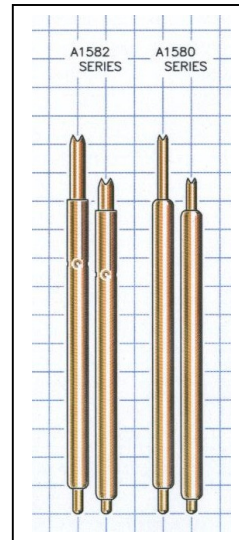


**FEATURES**

- <-1db insertion loss to 7.4 GHz
- <2:1 VSWR to 6.4 GHz
- 16 – 32 gram operating spring force
- $Z_0 = 32.7 \Omega$
- <43.5ps risetime
- 95 milliOhms contact resistance
- 1.55 Amps max. drive current


**GENERAL DESCRIPTION**

The A1580 spring probe from Signal Integrity Inc. is designed to meet the rigorous test requirements driven by the ultra fast risetimes in the digital domain, and high bandwidth, high frequency RF / microwave specifications for the wireless market. Along with speed and accuracy, these probes are designed to operate at pitches to 0.4mm, specifically for the ultra fine pitch packaging these markets demand.

The ultra high bandwidth of these probes provides very low insertion loss up to 7.4GHz. These probes will provide transparent operation on Bluetooth, 802.11b and 3G wireless protocol devices as well as exceed the test probe demands of proprietary microwave communications devices and systems.

With an impulse risetime of less than 43.5ps and a propagation delay of 43.5ps, the A1580 has more than enough performance for probe applications and interconnection solutions in broadband digital. These probes are ideal for building transparent test channels or interconnection solutions that must address datacom and source synchronous memory busses. Among others, these include Infiniband, PCI-Express, Source Synchronous DDR, Rambus<sup>™</sup>, HyperTransport and 10Gb Ethernet.

**SERIES A1580 MODELS: ORDERING INFORMATION**

A Series 0.4mm (.0157) Pitch					
Model	Length Operating / Initial inches [mm]	DUT Plunger and Plating	Interface Plunger	Spring	Operating Spring Force
A1580-A1	.192 [4.88] / .210 [5.33]	4 Point Crown - Gold	Spherical	Music Wire	32 Grams
A1580-B2				Stainless Steel	22 Grams
A1580-C3		Sharp Ogive - Gold		Music Wire	32 Grams
A1580-D4				Stainless Steel	22 Grams
A1580-E5				Stainless Steel	16 Grams

**FUNCTIONAL SPECIFICATIONS**

Model	A1580-A1			
Time Domain	Min.	Typ.	Max.	Units
TDT Risettime into 50Ω			43.5	ps
TDR Risettime open circuit			57.0	ps
TDR Risettime short circuit			97.5	ps
Signal Delay into 50Ω		43.5		ps
Frequency Domain				
Insertion Loss <-1db	7.4			GHz
<-3db	>40.0			GHz
Return Loss, S11 <-10db	6.0			GHz
<-20db	1.8			GHz
VSWR <2:1	6.4			GHZ
Equivalent Circuit Parameters				
Pin Inductance		1.02		nH
Pin Capacitance to ground, C1, C2		0.633		pF
Mutual Inductance		0.208		nH
Mutual Capacitance		0.069		pF
Transmission Line Zo		32.7		Ω
Tl		27.0		Ps
DC Parameters				
Contact Resistance		95		MΩ
Maximum Rating				
Drive Current		1.55		A

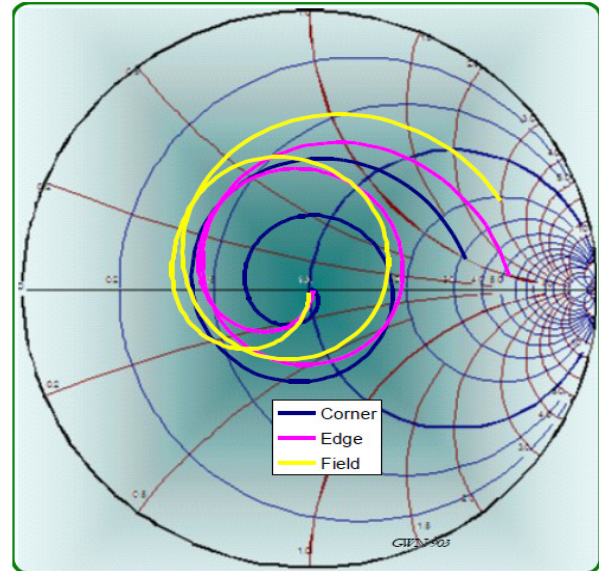


Figure 2: Measurement into 50Ω, A1580-A1

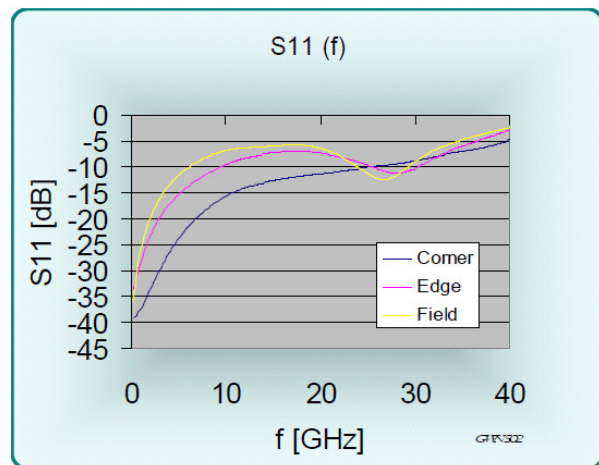


Figure 3: Return Loss, S11, A1580-A1

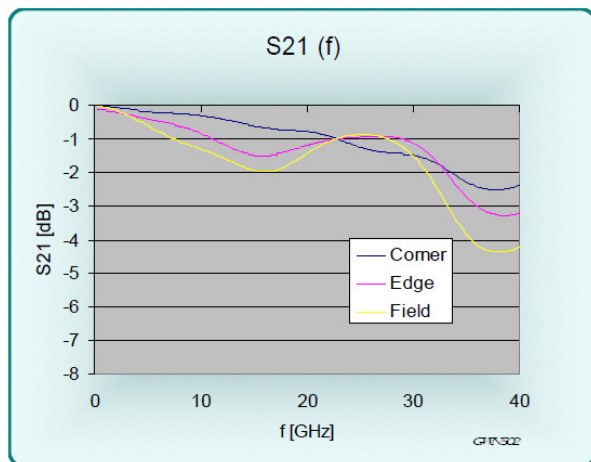


Figure 1: Insertion Loss, S21, A1580-A1

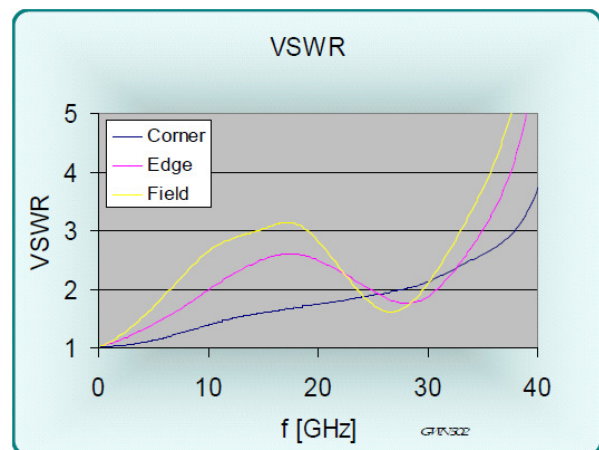


Figure 4: VSWR, A1580-A1

**EQUIVALENT CIRCUITS / SPICE MODELS**

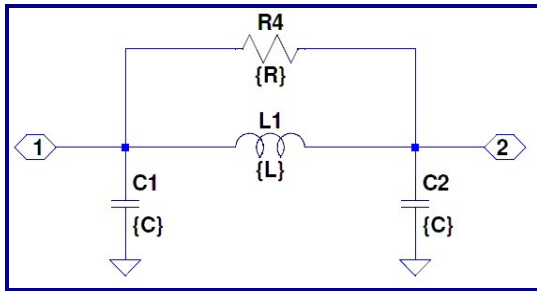


Figure 5: Pi Equivalent, Valid to <9GHz

Site	C1 + C2	L1	R4
Corner	0.489 pf	1.45 nH	700 Ohms
Edge	0.562 pf	1.08 nH	600 Ohms
Field	0.633 pf	1.02 nH	400 Ohms
Diagonal	0.633 pf	1.02 nH	400 Ohms

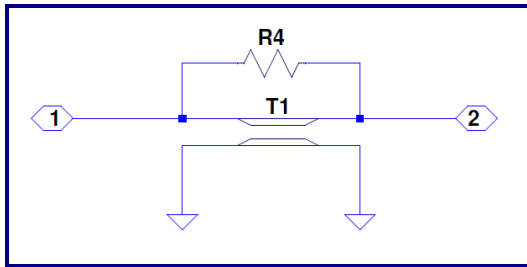


Figure 6: Transmission Line Model Valid to >40GHz

Site	Zo	L	R4
Corner	54.4 Ω	26.6 ps	2000 Ω
Edge	43.9 Ω	24.7 ps	800 Ω
Field	40.2 Ω	25.4 ps	600 Ω

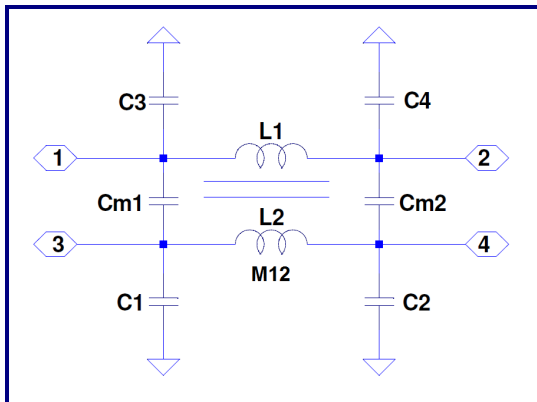


Figure 7: Lumped, Mutual Elements

Site	C1,2,3,4	Cm1,Cm2	L1,L2	M12
Corner	0.245	0.090 pF	1.45	0.468 nH
Edge	0.281	0.078 pF	1.05	0.289 nH
Field	0.316	0.069 pF	1.02	0.208 nH
Diagonal	0.316	0.010 pF	1.02	0.051 nH

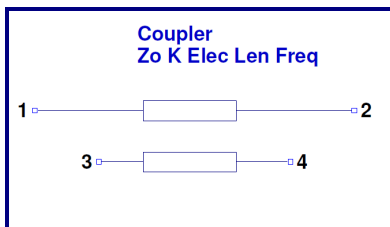
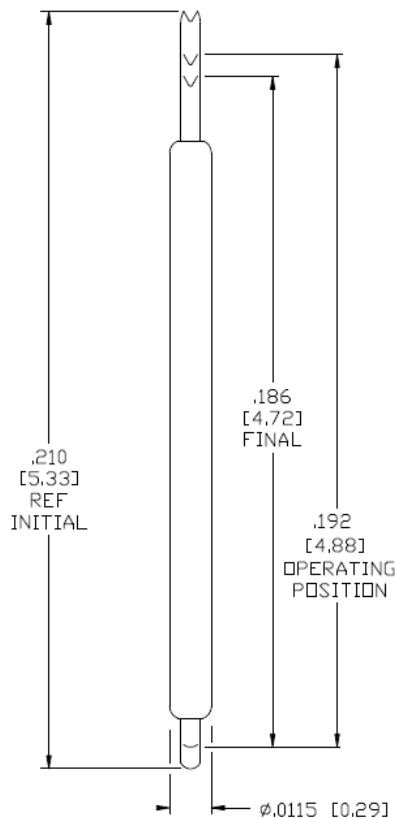


Figure 8: Transmission Line Equivalent for Crosstalk

Z0	L1	k	f
32.7 Ω	27.0 ps	0.20	16.7 GHz

**A Series 0.4mm (.0157) pitch**

Probe Series	Initial Length		Operating Position		Operating Spring Force	Self Inductance	Insertion Loss < -1db to	Typical Contact Resistance	Maximum Current
	inch	mm	inch	mm					
<a href="#">A1512</a>	.131"	3.32	.119"	3.02	18-29g	0.66 nH	20.3 GHz	72 mOhms	2.0 A
<a href="#">A1520</a>	.081"	2.05	.075"	1.90	20g	0.44 nH	24.1 GHz	60 mOhms	2.0 A
<a href="#">A1540</a>	.126"	3.20	.114"	2.90	22-29g	0.42 nH	16.1 GHz	20 mOhms	4.3 A
<a href="#">A1550</a>	.133"	3.30	.118"	3.00	20-29g	0.71 nH	18.7 GHz	85 mOhms	2.0 A
<a href="#">A1561</a>	.149"	3.78	.131"	3.33	16-29g	0.67 nH	7.4 GHz	90 mOhms	1.65 A
<a href="#">A1562</a>	.160"	4.06	.144"	3.66	14-30g	0.80 nH	11.6 GHz	90 mOhms	1.45 A
<a href="#">A1580</a>	.210"	5.33	.192"	4.88	16-32g	1.02 nH	7.4 GHz	95 mOhms	1.55 A
<a href="#">A1582</a>	.210"	5.33	.184"	4.67	16-30g	0.93 nH	9.6 GHz	100 mOhms	1.4 A
<a href="#">A1586</a>	.219"	5.56	.199"	5.06	19-20g	-	-	-	-

**MECHANICAL DIMENSIONS**  
 INCHES [MM]


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