

FEATURES

- **<-1db insertion loss 8.2GHz**
- **<2:1 VSWR to 40 GHz**
- **6g operating spring force**
- **Z0 = 37.2Ω**
- **<36 ps risetime**
- **110 milliohms**
- **0.90 Amps max drive current**



GENERAL DESCRIPTION

The BB801 series spring probes from Signal Integrity Inc. are designed to meet the rigorous test probe bandwidth of the wireless and RF test markets as well as very fast rise times in test applications for telecommunication and broadband data communications system-on-a-chip devices. The risetime requirements for these devices are usually well below 150 picoseconds. Along with speed and accuracy, these probes are designed for testing ultra-fine pitch to 0.2mm, well suited to the packaging constraints driven by the consumer wireless market.

The high bandwidth of these probes provides very low insertion loss up to 8.2 GHz. 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 36 ps and a propagation delay of 19.6ps, the AC performance of the BB801 probe is transparent for test applications and interconnections solutions that operate in high speed CMOS, SiGe and GaAs technologies.

SERIES BB801 MODELS: ORDERING INFORMATION

BB Series 0.2mm (.0079) Pitch				
Model	Length Operating / Initial inches [mm]	DUT / Plating	Spring	Operating Spring Force
BB801-A1	.154 [3.90] / .170 [4.31]	Conic / Gold	Music Wire	6 Grams
BB801-B2		Crown / Gold		
BB801-C3		Cup Tip / Gold		

FUNCTIONAL SPECIFICATIONS

Model	BB801-B2*			Units
	Corner	Edge	Field	
TDT Risetime thru 50Ω	30	31.5	36	ps
TDR Risetime open circuit	31.5	45	45	ps
TDR Risetime short circuit	69	33	45	ps
Signal Delay into 50Ω	21.6	19.7	19.6	ps
Insertion Loss <-1db	25.7	11.6	8.2	GHz
Insertion Loss <-3db	>40	>40	>40	GHz
VSWR <2:1	31.3	40.0	40.0	GHz

Equivalent Circuit Parameters

	Min.	Typ.	Max.	Units
Pin Inductance		0.66		nH
Pin Capacitance		.443		pF
Mutual Inductance		.171		nH
Mutual Capacitance		.064		pF
Transmission Line				
Zo		37.2		Ω
Tl		19.6		ps

MAXIMUM DC CURRENT

DUTY CYCLE	DC	50%	25%	10%	1%
AMPS	0.90	1.21	1.34	1.36	1.42

*Test socket has 1mm air gap.

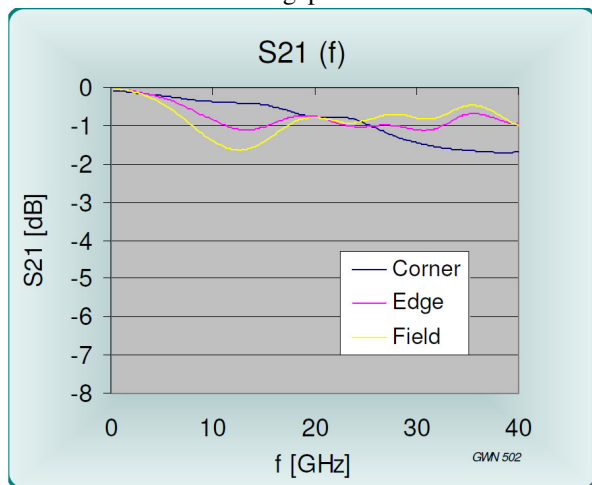


Figure 1: Insertion Loss, S21, BB801-B2

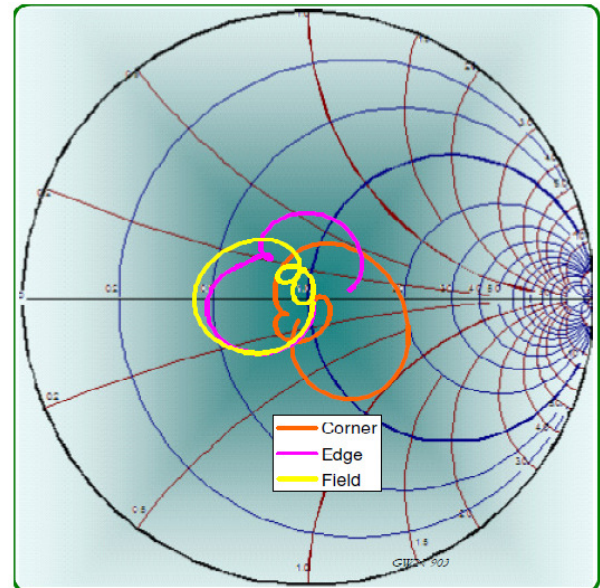


Figure 2: Measurement into 50Ω, BB801-B2

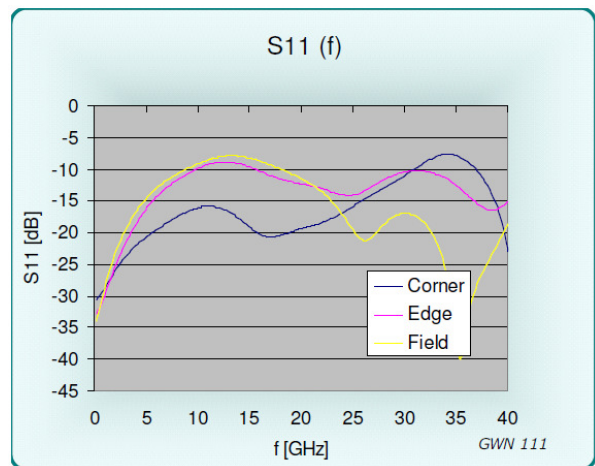


Figure 3: Return Loss, S11, BB801-B2

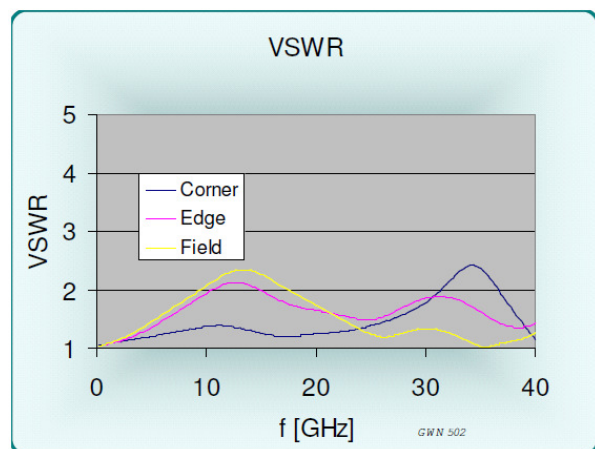


Figure 4: VSWR, BB801-B2

EQUIVALENT CIRCUITS / SPICE MODELS

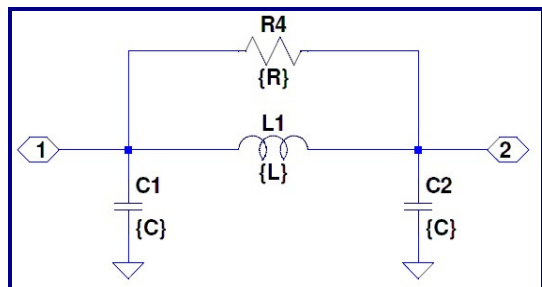


Figure 5: Pi Equivalent, Valid to >12 GHz

Site	Cg = C1+C2	L1	R4
Corner	0.346 pF	1.05 nH	800 Ω
Edge	0.425 pF	0.69 nH	400 Ω
Field	0.443 pF	0.66 nH	200 Ω
Diagonal	0.443 pF	0.66 nH	200 Ω

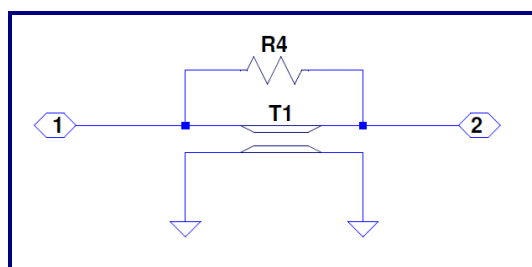


Figure 6: Transmission Line Model Valid <14.9 GHz

	Zo	L	R4
Corner	55.2 Ω	19.08 ps	1000 Ω
Edge	40.2 Ω	17.09 ps	1000 Ω
Field	38.6 Ω	17.11 ps	700 Ω

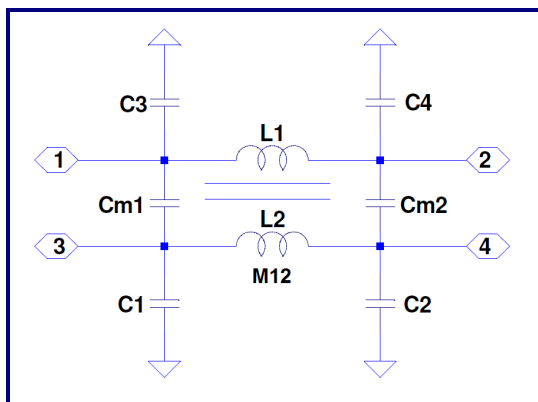


Figure 7: Lumped, Mutual Elements

Site	C1,2,3,4	Cm1,Cm2	L1,L2	M
Corner	0.173	0.050 pF	1.05	0.291 nH
Edge	0.213	0.046 pF	0.69	0.222 nH
Field	0.222	0.032 pF	0.66	0.172 nH
Diagonal	0.222	0.006 pF	0.66	0.037 nH

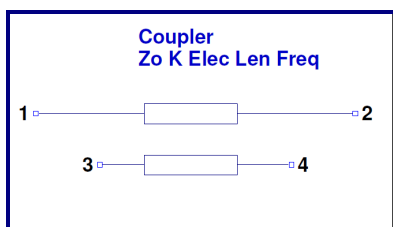
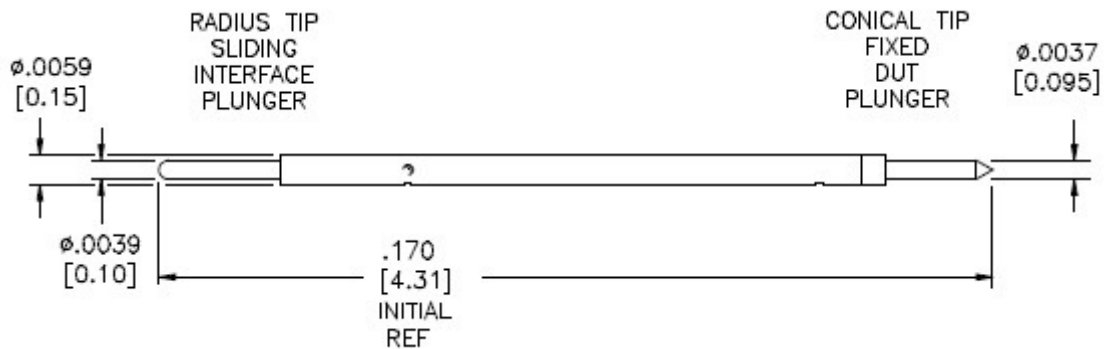


Figure 8: Transmission Line Equivalent for Crosstalk

Z0	37.2	Ohms
Lel	19.6	ps
k	0.26	
f	29.2	Ghz

BB Series 0.2mm (.0079) pitch									
Probe Series	Initial Length inch/mm		Operating Position inch/mm		Operating Spring Force	Self Inductance	Insertion Loss < -1db to	Typical Contact Resistance	Maximum Current
BB801	.170	4.31	.154	3.90	6 grams	0.66 nH	8.2 GHz	110 mOhms	0.90 A

MECHANICAL DIMENSIONS
INCHES [MM]



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