



**TEST REPORT**

**ON**

**0.3 TO 18.0 GHz**

**20 nS HIGH SPEED**

**SPDT, ABSORPTIVE, SOLID STATE SWITCH**  
with SMA FEMALE CONTROL

**AMC MODEL No:**

**SWM-0318-2DT**

with Options BC & A11  
Serial Number:

**Designed By**  
Rene Afable

**Tested By**

**Report By**  
Peter Wood

**FEBRUARY 7, 2005**

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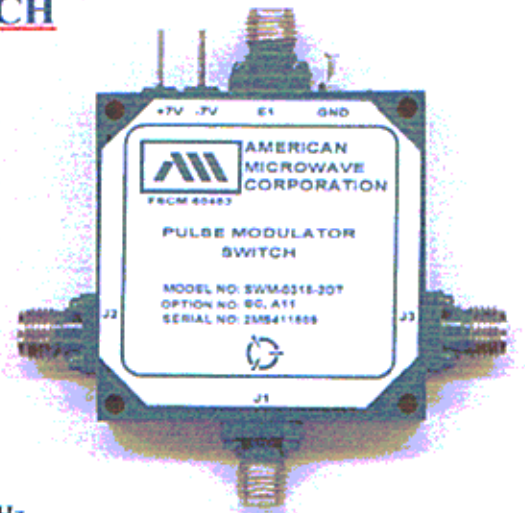
## 0.3 to 18.0 GHz, 20 nS HIGH SPEED, 0.5WATT, SPDT, ABSORPTIVE SOLID STATE SWITCH

### KEY FEATURES:

- 1.8:1 VSWR
- 20nS HIGH SPEED
- +27dBm TYPICAL INPUT POWER
- 0.3 TO 18.0 GHz FREQUENCY RANGE

### SPECIFICATIONS:

- FREQUENCY RANGE : 0.3 TO 18.0 GHz
  - INSERTION LOSS : 0.3 TO 2.0 GHz = ≤ 2.0 dB MAXIMUM (1.5 dB TYPICAL)  
: 2.0 TO 18.0 GHz = ≤ 4.0 dB MAXIMUM (3.5dB TYPICAL)
  - ISOLATION : ≥ 40 dB MINIMUM
  - VSWR (IN/OUT) : 0.3 GHz TO 18.0 GHz: 1.8:1 MAXIMUM
  - SWITCHING TIME
    - RISE (10% TO 90% RF) : 10 nS MAXIMUM, 5 nS TYPICAL
    - FALL (90% TO 10% RF) : 10 nS MAXIMUM, 5 nS TYPICAL
    - ON (50% TTL TO 90% RF) : 20 nS MAXIMUM
    - OFF (50% TTL TO 10% RF) : 20 nS MAXIMUM
  - POWER HANDLING : +26 dBm MAXIMUM, +27 dBm TYPICAL
  - DC POWER SUPPLY : +7VDC TO +18VDC ± 5% @ 5 mA MAXIMUM  
: -7VDC TO -18VDC ± 5% @ 5 mA MAXIMUM
  - RF CONNECTORS : FIELD REPLACABLE SMA FEMALE
  - DC CONNECTORS : SOLDER PINS
  - SIZE : 1.50" X 1.50" X 0.40"
- ### ENVIRONMENTAL RATINGS:
- TEMPERATURE : -55° C TO +85° C OPERATING / -65° C TO +125° C STORAGE
  - HUMIDITY : MIL-STD-202F, METHOD 103B, CONDITION B
  - SHOCK : MIL-STD-202F, METHOD 213B, CONDITION B
  - VIBRATION : MIL-STD-202F, METHOD 204D, CONDITION B
  - ALTITUDE : MIL-STD-202F, METHOD 105C, CONDITION B



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• TEMPERATURE CYCLE

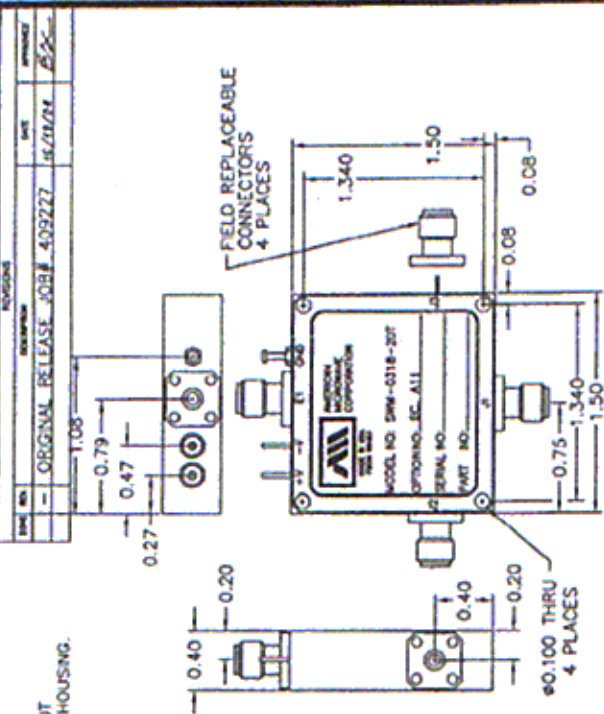
: MIL-STD-202F, METHOD 107D, CONDITION A

## PRODUCT FEATURE

**DESCRIPTION**  
 AMC MODEL SWM-0318-2DT OPTION: BC, A11 IS AN ABSORPTIVE CoAs MMIC SPOT SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, PACKAGED IN A LOW PROFILE HOUSING.

**SPECIFICATIONS**

- FREQUENCY RANGE ..... 0.3-18 GHz
- INSERTION LOSS ..... 0.3-2 GHz: ≤ 2.0 dB MAXIMUM (1.5 dB TYPICAL)  
 2-18 GHz: ≤ 4.0 dB MAXIMUM (3.5 dB TYPICAL)
- ISOLATION ..... 2-40 dB
- VSWR (ON/OFF) ..... 0.3-18 GHz: 1.8:1 MAXIMUM
- SWITCHING TIME  
 RISE (10% RF TO 90% RF) ..... 10 ns MAXIMUM, 5 ns TYPICAL  
 FALL (90% RF TO 10% RF) ..... 10 ns MAXIMUM, 5 ns TYPICAL  
 ON (50% TTL TO 90% RF) ..... 20 ns MAXIMUM  
 OFF (50% TTL TO 10% RF) ..... 20 ns MAXIMUM
- POWER HANDLING ..... 26 dBm MAXIMUM, 27 dBm TYPICAL
- POWER SUPPLY ..... +7.5V TO +18VDC ±5% 5 mA MAXIMUM  
 -7.5V TO -18VDC ±5% 5 mA MAXIMUM
- CONNECTORS  
 RF INPUT/OUTPUT: ..... FIELD REPLACEABLE SMA (FEMALE)  
 POWER CONTROL: ..... SOLDER PIN  
 FIELD CONTROL: ..... FIELD REPLACEABLE SMA (FEMALE)  
 NOTE: RF CONNECTORS CAN BE PLACED SIDE BY SIDE OR IN ANGLE.  
 (CONSULT FACTORY FOR AVAILABLE MECHANICAL OPTIONS)
- SIZE ..... 1.50" x 1.50" x 0.40"



FIELD REPLACEABLE CONNECTORS 4 PLACES

60:100 THRU 4 PLACES

AMERICAN MICROWAVE CORPORATION  
 MODEL NO: SWM-0318-2DT  
 SERIAL NO.  
 PART NO.

**AVAILABLE OPTIONS**

BC ..... SPECIAL FOR BRETT COOPER  
 A11 ..... SMA FEMALE CONTROL CONNECTOR

**ENVIRONMENTAL RATINGS**

- TEMPERATURE: ..... -55°C TO +85°C (OPERATING)  
 -65°C TO +125°C (STORAGE)
- HUMIDITY: ..... MIL-STD-202F, METHOD 103B COND. B
- SHOCK: ..... MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: ..... MIL-STD-202F, METHOD 2040 COND. B
- ALTITUDE: ..... MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: ..... MIL-STD-202F, METHOD 107D COND. A

**LOGIC TABLE**

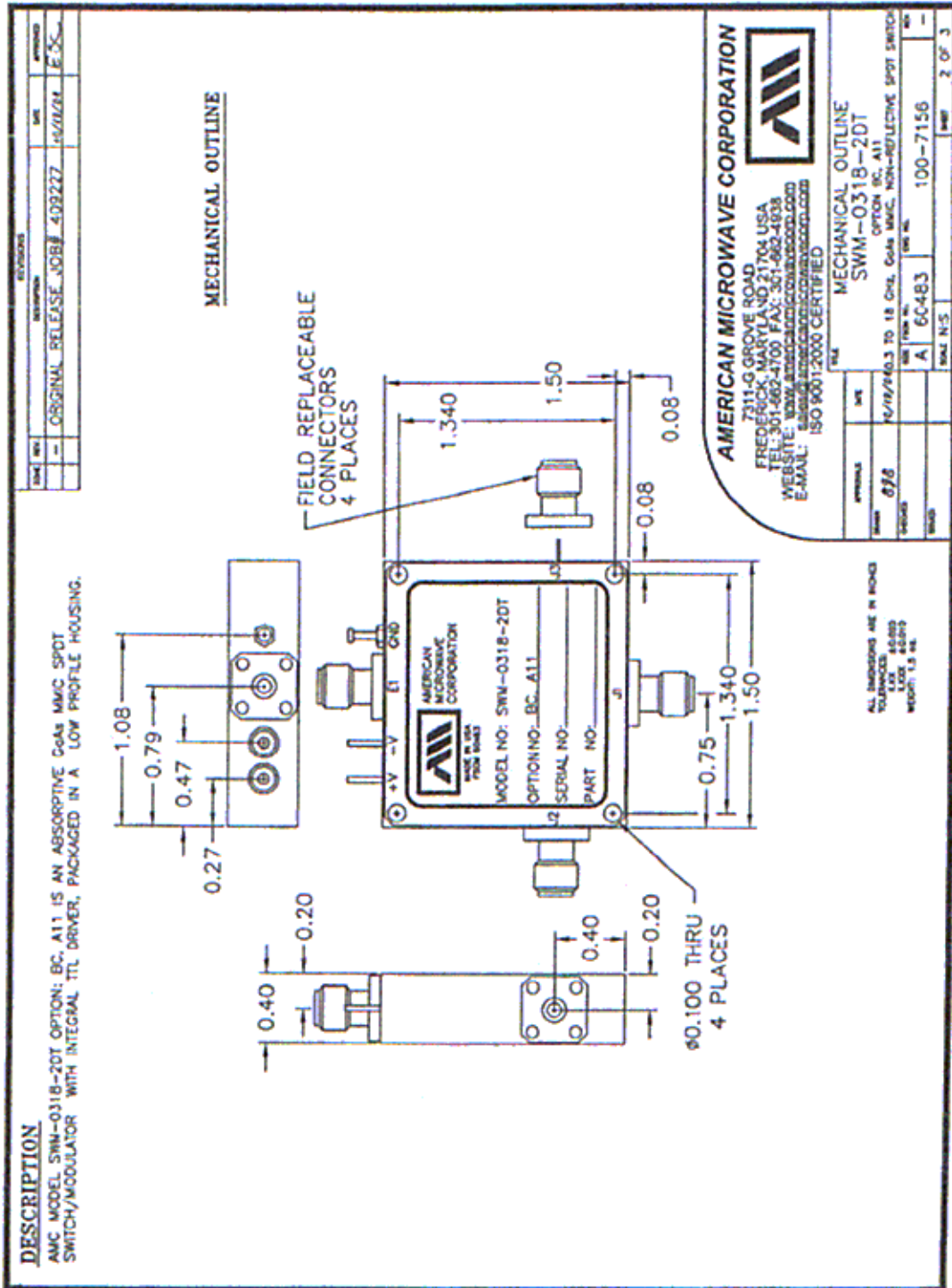
E1	J1-J2	J1-J3
1	ON	OFF
0	OFF	ON

ALL DIMENSIONS ARE IN INCHES  
 TOLERANCES:  
 XXXX ±0.005  
 XXXX ±0.010  
 MODIFY: 1.5 IN.

NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE.  
 NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION.

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MECHANICAL OUTLINE



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**TEST DATA AS PRESENTED TO CUSTOMER**

FORM: SW-DTA  
 DATE: February 7, 2005



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 ISO 9001:1994 CERTIFIED

**FINAL TEST DATA  
 ON  
 MICROWAVE SWITCH**

CUSTOMER: NASA  
 JOB NO: 409227  
 MODEL NO: SWM-0318-2DT  
 SERIAL NO: 2MS411809  
 CURRENT DRAW: + VDC @ mA; 7 VDC @ 1 mA

TECHNICIAN: R. ELAD  
 CUSTOMER PART NO:  
 OPTION NO: BC,A11  
 SPECIFICATION: MIL-STD-454  
 FREQUENCY RANGE: 0.3 GHz - 18 GHz

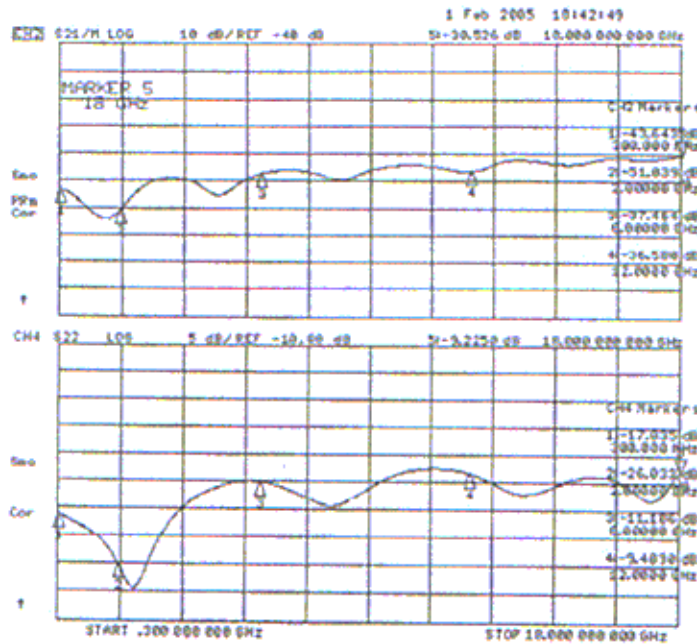
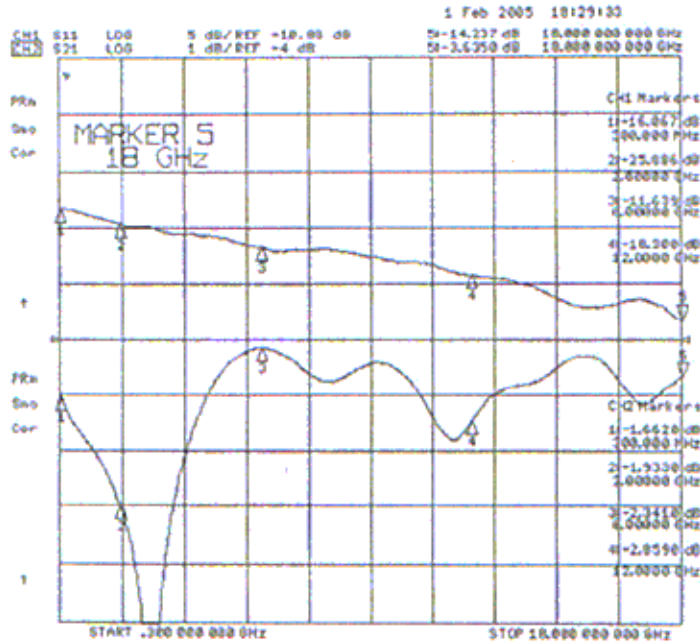
INSERTION LOSS (WORST CASE)	RETURN LOSS (WORST CASE)					
	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 2.26 dB @ 0.3-2 GHz	16.11 dB	1.37 : 1	14.95 dB	1.44 : 1	17.14 dB	1.32 : 1
J1-J2 3.98 dB @ 2-18 GHz	11.97 dB	1.67 : 1	11.41 dB	1.74 : 1	8.75 dB	2.15 : 1
J1-J3 2.18 dB @ 0.3-2 GHz	16.37 dB	1.36 : 1	15.72 dB	1.39 : 1	17.09 dB	1.33 : 1
J1-J3 3.74 dB @ 2-18 GHz	13.20 dB	1.56 : 1	12.44 dB	1.63 : 1	9.04 dB	2.09 : 1
ISOLATION	SWITCHING SPEED					
	DELAY ON	RISE TIME	DELAY OFF	FALLTIME		
J1-J2 45.56dB @ 0.3-2 GHz	35 nS	8 nS	29 nS	5 nS		
J1-J2 34.24dB @ 2-18 GHz	35 nS	8 nS	29 nS	5 nS		
J1-J3 46.84dB @ 0.3-2 GHz	36 nS	9 nS	25 nS	5 nS		
J1-J3 34.32dB @ 2-18 GHz	36 nS	9 nS	25 nS	5 nS		

\* DENOTES A FAILURE

TESTED ON: HEWLETT PACKARD,8720D,0,7.64  
 QA/QC APPROVAL:  DATED: 2/8/05

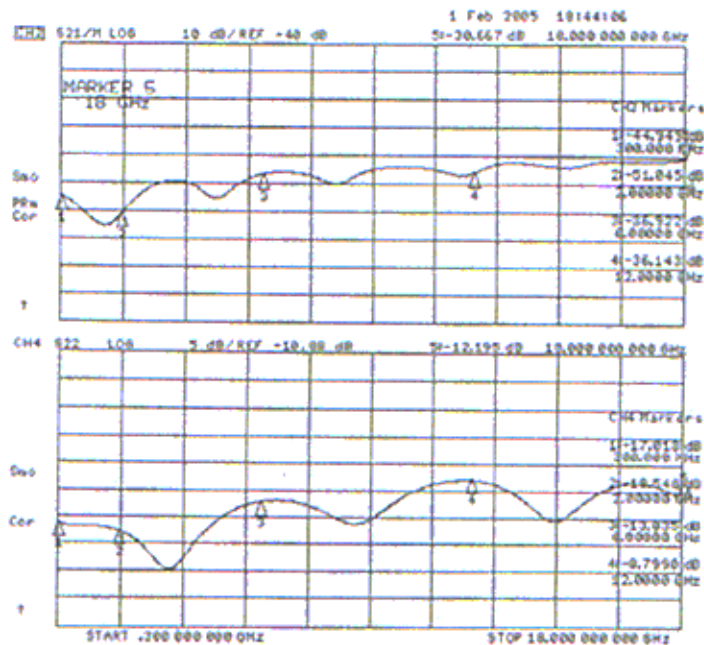
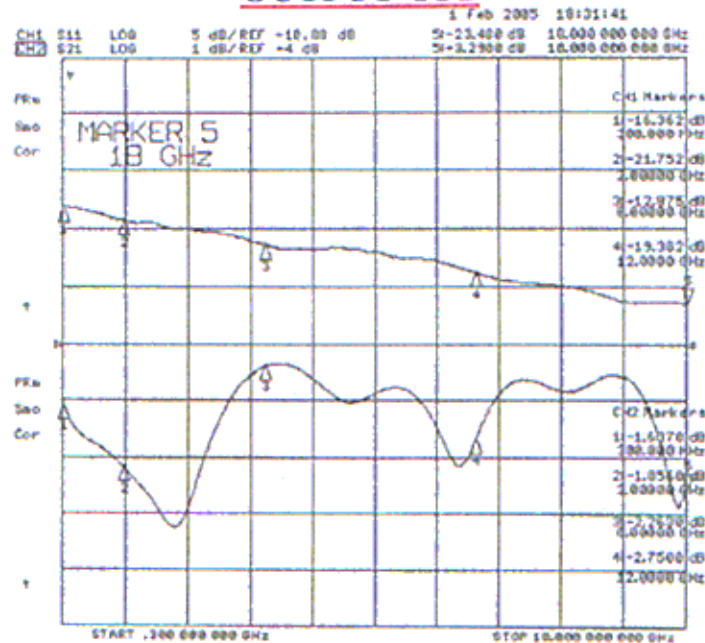
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**J1 TO J2 INSERTION LOSS, RETURN LOSS, ISOLATION & OUTPUT OFF**



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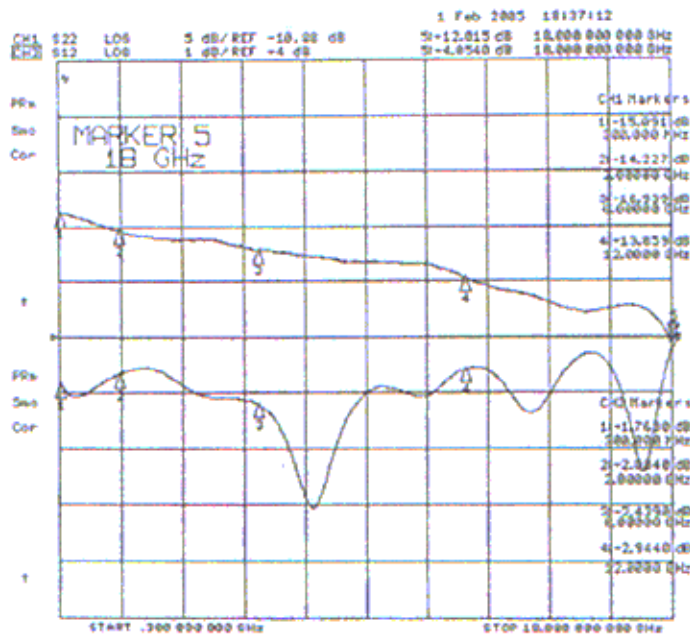
## J1 TO J3 INSERTION LOSS, RETURN LOSS, ISOLATION & OUTPUT OFF



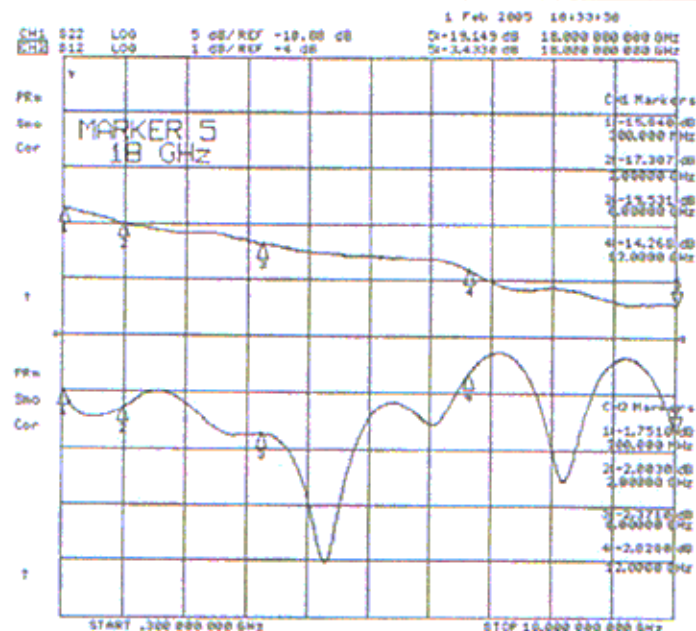
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## J1 TO J2 REVERSE INSERTION LOSS---OUTPUT RETURN LOSS



## J1 TO J3 REVERSE INSERTION LOSS---OUTPUT RETURN LOSS



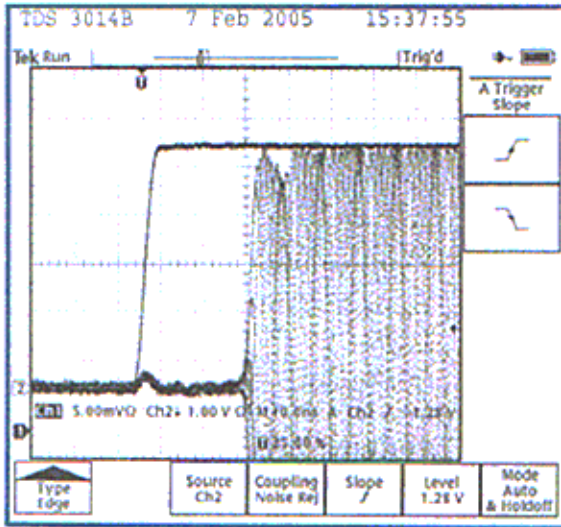
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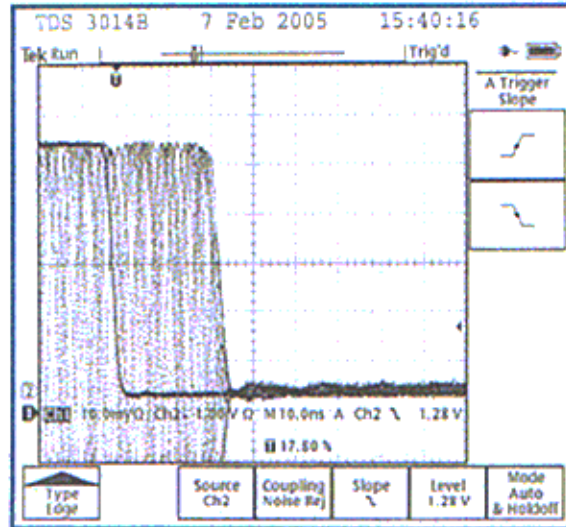
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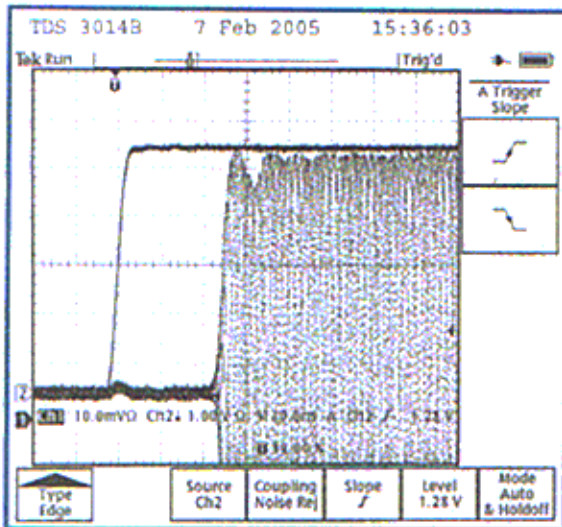
**J1 TO J2 RISE/FALL & ON/OFF**



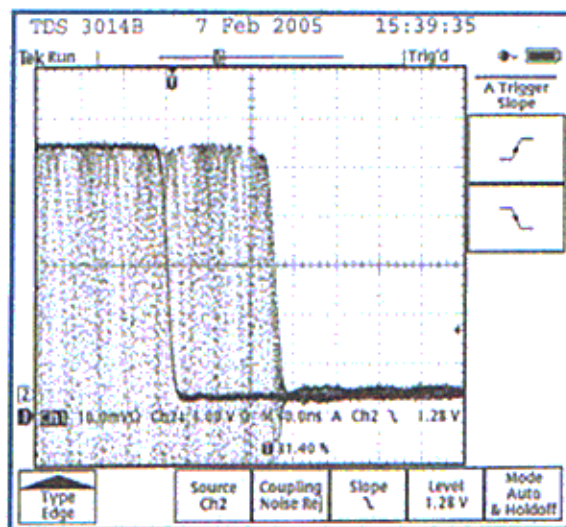
J1 to J2 Rise Time @ 6 GHz — 8nS—



J1 to J2 Fall Time @ 6 GHz — 5nS—

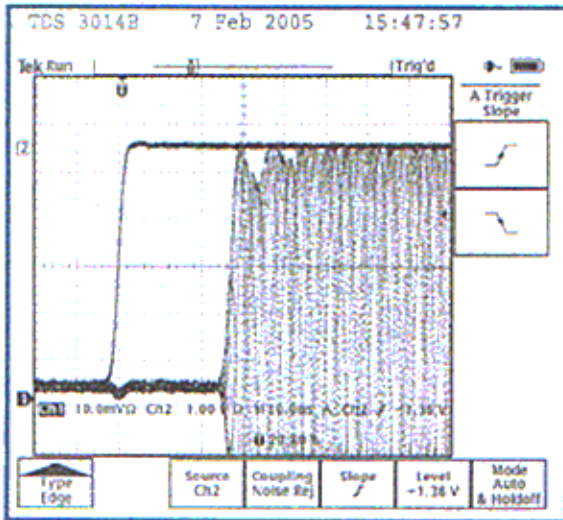


J1 to J2 Delay On @ 6 GHz — 35nS—

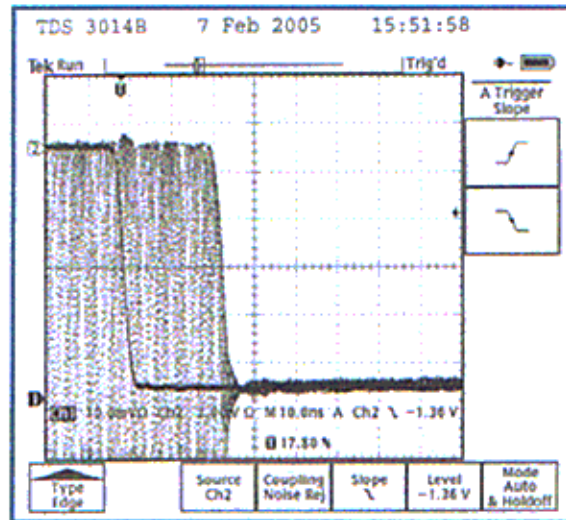


J1 to J2 Delay Off @ 6 GHz — 29nS—

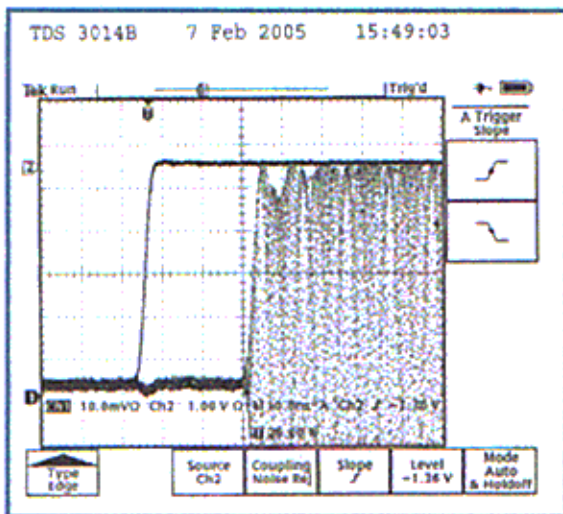
**J1 TO J3 RISE/FALL & ON/OFF**



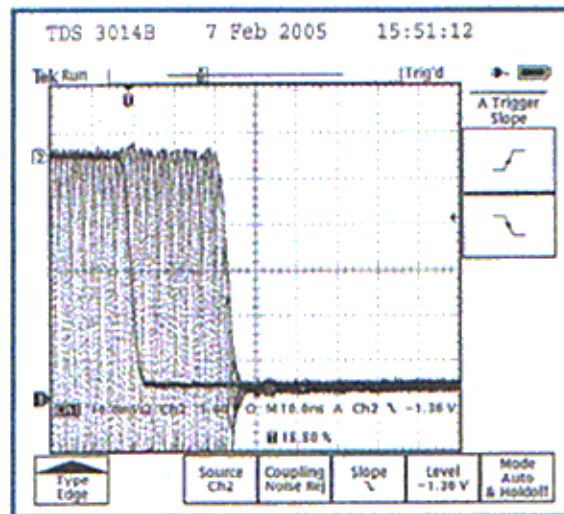
J1 to J3 Rise Time @ 6 GHz —9nS—



J1 to J3 Fall Time @ 6 GHz —5nS—



J1 to J3 Delay On @ 6 GHz —36nS—



J1 to J3 Delay Off @ 6 GHz —25nS—