



TEST REPORT
ON
2 TO 18 GHz
SINGLE POLE DOUBLE THROW
REFLECTIVE PIN DIODE SWITCH

AMC MODEL No:
SWN-2181-2A
OPTION NRL

Serial Numbers: 2MS909709 THRU 2MS909711 AND 2MS912877

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October 6, 2004

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ISO9001 : 1994 CERTIFIED

TABLE OF CONTENTS

●	PRODUCT DESCRIPTION AND ELECTRICAL SPECIFICATIONS	PAGE 3
●	PRODUCT FEATURE AND ENVIRONMENTAL SPECIFICATIONS	PAGE 4
●	MECHANICAL OUTLINE	PAGE 5
●	FUNCTIONAL SCHEMATIC	PAGE 6
●	TEST DATA ON SWN-2181-2A OPTION NRL, SERIAL NUMBERS 2MS909709 THRU 2MS909711 AND 2MS912877	PAGE 7
●	TEST DATA FOR SWN-2181-2A OPTION NRL, SERIAL NUMBER 2MS909709	PAGE 8
●	TEST DATA FOR SWN-2181-2A OPTION NRL, SERIAL NUMBER 2MS909710	PAGE 9
●	TEST DATA FOR SWN-2181-2A OPTION NRL, SERIAL NUMBER 2MS909711	PAGE 10
●	TEST DATA FOR SWN-2181-2A OPTION NRL, SERIAL NUMBER 2MS912877	PAGE 11

SINGLE POLE DOUBLE THROW REFLECTIVE PIN DIODE SWITCH AMC MODEL No: SWN-2181-2A OPT NRL

FEATURES:

- **2 TO 18 GHz BROAD BAND FREQUENCY RANGE**
- **COMPACT PACKAGE**
- **±5 V SUPPLIES**
- **INTEGRAL TTL DRIVER**

SPECIFICATIONS:

- **FREQUENCY** : 2 TO 18 GHz
- **INSERTION LOSS** : 2 TO 4 GHz: 1.3 dB MAXIMUM
: 4 TO 8 GHz: 1.8 dB MAXIMUM
: 8 TO 12 GHz: 2.3 GHz MAXIMUM
: 12 TO 18 GHz: 2.9 dB MAXIMUM
- **ISOLATION** : 50 dB MINIMUM
- **VSWR** : 1.8:1
- **SPEED** : RISE: 75 nS MAXIMUM
: FALL: 75 nS MAXIMUM
- **POWER INPUT** : (CW) +20 dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER** : 1 WATT CW, 10 WATTS PEAK 1 uSEC
- **CONTROL** : TTL LOGIC "0" = ON J1=J2, "1" = OFF J1-J3
- **POWER SUPPLY** : +5V @ 65 mA MAXIMUM
: -5V @ 50 mA MAXIMUM

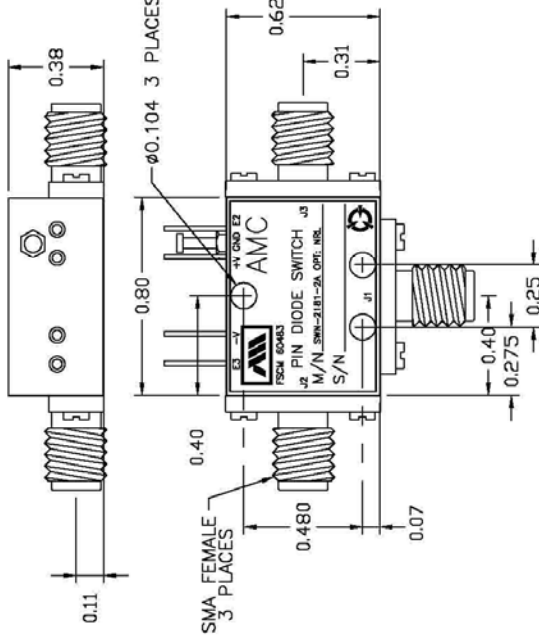
PRODUCT FEATURE

ZONE	REV.	DESCRIPTION	DATE	APPROVED
—	—	ORIGINAL RELEASE, JOB# 909159E	11/06/08	

DESCRIPTION:
 AMC MODEL NUMBER SWN-2181-2A OPTION NRL IS A REFLECTIVE SINGLE POLE MIC MODEL PIN DIODE SWITCH DESIGNED FOR 2 GHz TO 18 GHz FREQUENCY RANGE.

SPECIFICATIONS:

- FREQUENCY: 2 GHz TO 18 GHz
- INSERTION LOSS: 2 GHz TO 4 GHz: 1.3 dB MAXIMUM
 4 GHz TO 6 GHz: 1.8 dB MAXIMUM
 6 GHz TO 8 GHz: 2.3 dB MAXIMUM
 8 GHz TO 12 GHz: 2.9 dB MAXIMUM
 12 GHz TO 18 GHz: 2.9 dB MAXIMUM
- ISOLATION: 2 GHz TO 18 GHz: 50 dB MINIMUM
- VSWR: 1.8:1
- SPEED: RISE: 75 nS MAXIMUM
 FALL: 75 nS MAXIMUM
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON, J1-J2 "1"=OFF, J1-J3
- POWER SUPPLY: +5V @ 65 mA MAXIMUM
 -5V @ 50 mA MAXIMUM

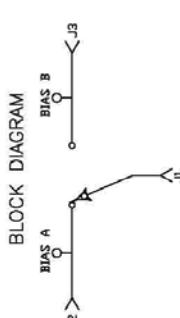


ENVIRONMENTAL RATINGS:

- 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 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

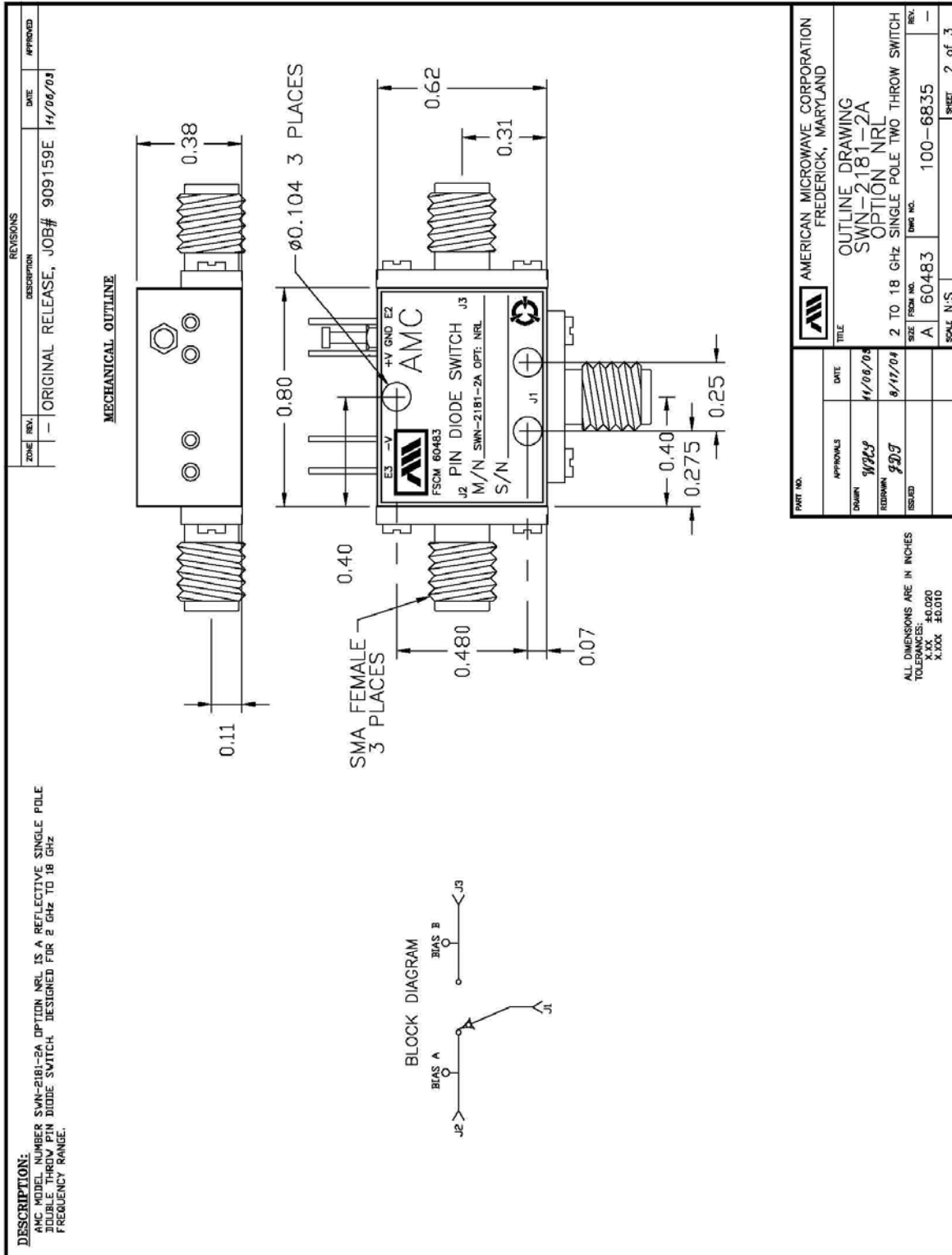
NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE
 NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

BLOCK DIAGRAM

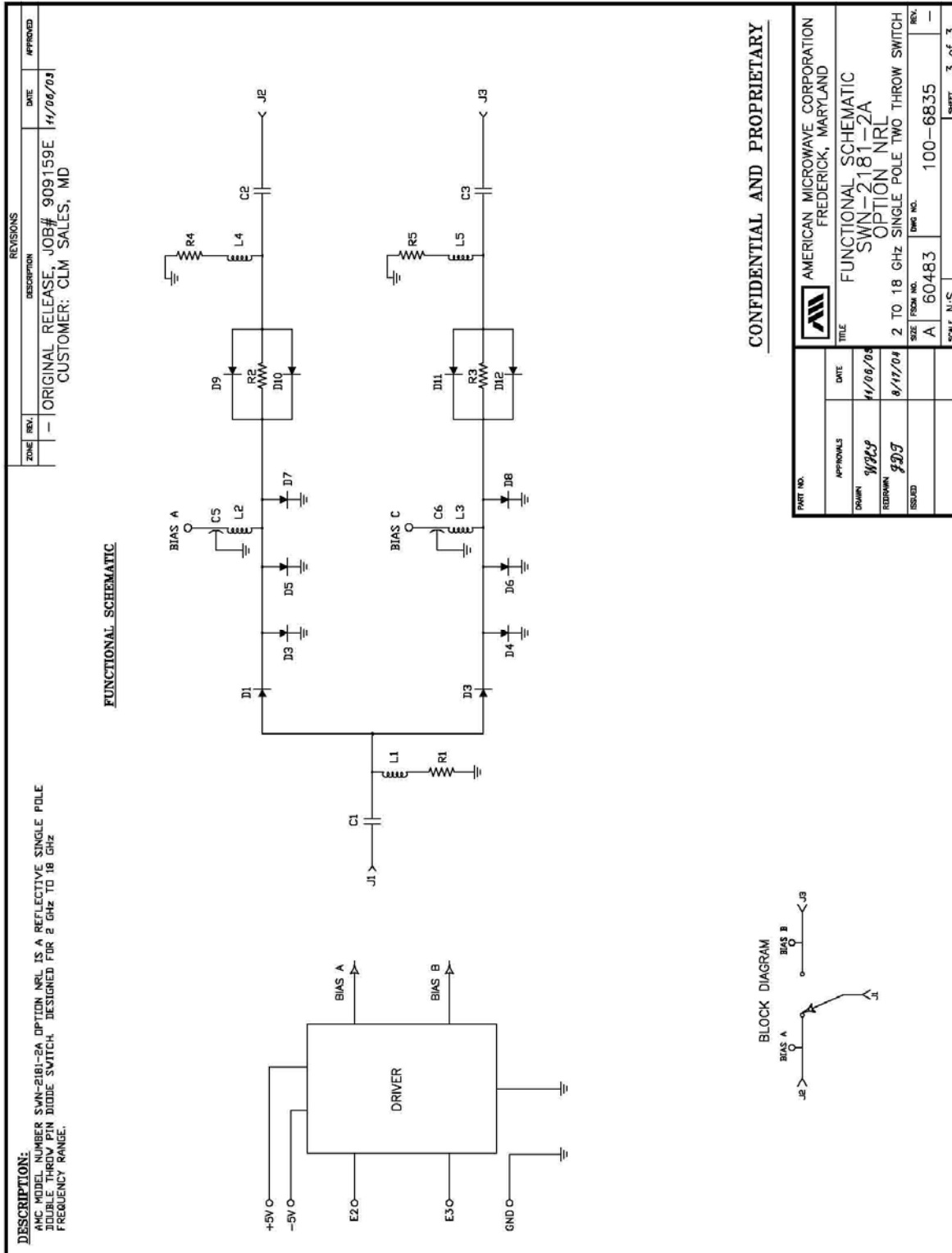


PART NO.	DATE	APPROVALS	TITLE	DRAWN	REVISION	ISSUED	SCALE	SHEET
AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	11/06/08	W222	PRODUCT FEATURE SWN-2181-2A OPTION NRL	W222	8/11/04	2 TO 18 GHz SINGLE POLE TWO THROW SWITCH	100-6835	1 of 3

OUTLINE DRAWING



FUNCTIONAL SCHEMATIC



FINAL TEST DATA

FINAL TEST DATA SHEETS

FOR

AMC MODEL NUMBER

SWN-2181-2A
OPTION NRL

Serial Numbers:

2MS909709 THRU MS9090711 AND 2MA912877



FINAL TEST DATA

AMC MODEL NO: SWN-2181-2A OPT NRL, SERIAL NUMBER: 2MS909709

FORM: SW-DTA 12/10/99

AMERICAN MICROWAVE CORPORATION
 7311-G GROVE RD., FREDERICK MD. 21704
 TEL: 301-662-4700 FAX: 301-662-4938
 DATE: 12/15/99

FINAL TEST DATA
 ON
 MICROWAVE SWITCH

CUSTOMER: CLM SALES TECHNICIAN: RA
 JOB NO: 909159E
 MODEL NO: SWN-2181-2A OPTION NO: NRL
 SERIAL NO: 2MS909709 SPECIFICATION:
 CURRENT DRAW: + 5VDC @ 60 mA; - 5 VDC @ 34 mA FREQUENCY RANGE: 2 GHz TO 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 <u>2.07 dB</u>	<u>14.85 dB</u>	<u>1.44 : 1</u>	<u>15.74 dB</u>	<u>1.39 : 1</u>	<u>— dB</u>	<u>1. — : 1</u>
J1-J3 <u>1.87 dB</u>	<u>11.74 dB</u>	<u>1.70 : 1</u>	<u>12.93 dB</u>	<u>1.58 : 1</u>	<u>— dB</u>	<u>1. — : 1</u>
	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>
	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>
	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>
	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>
	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>
	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>
	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>	<u>dB</u>	<u>1. : 1</u>
SWITCHING SPEED						
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME		
J1-J2 <u>>50 dB</u>	<u>54 nS</u>	<u>4 nS</u>	<u>25 nS</u>	<u>3 nS</u>		
J1-J3 <u>>50 dB</u>	<u>56 nS</u>	<u>10 nS</u>	<u>30 nS</u>	<u>2 nS</u>		
	<u>nS</u>	<u>nS</u>	<u>nS</u>	<u>nS</u>		
	<u>nS</u>	<u>nS</u>	<u>nS</u>	<u>nS</u>		
	<u>nS</u>	<u>nS</u>	<u>nS</u>	<u>nS</u>		
	<u>nS</u>	<u>nS</u>	<u>nS</u>	<u>nS</u>		
	<u>nS</u>	<u>nS</u>	<u>nS</u>	<u>nS</u>		
	<u>nS</u>	<u>nS</u>	<u>nS</u>	<u>nS</u>		
	<u>nS</u>	<u>nS</u>	<u>nS</u>	<u>nS</u>		

NOTE: Any additional test data on back

TESTED ON: WILTRON 37347A

PROGRAM MANAGER/SUPERVISOR APPROVAL: [Signature] DATED: 12/16/99

QA/QC APPROVAL: [Signature] DATED: 12/16/99

VICE PRESIDENT/GENERAL MANAGER APPROVAL: [Signature] DATED: 12/16/99



FINAL TEST DATA

AMC MODEL NO: SWN-2181-2A OPT NRL, SERIAL NUMBER: 2MS909710

FORM: SW-DTA 12/10

ERICAN MICROWAVE CORPORATION
 7311-G GROVE RD., FREDERICK MD. 21704
 TEL: 301-662-4700 FAX: 301-662-4938

DATE: 12/15/99

FINAL TEST DATA
 ON
 MICROWAVE SWITCH

CUSTOMER: CLM SALES TECHNICIAN: PA
 JOB NO: 909159E
 MODEL NO: SWN-2181-2A OPTION NO: NRL
 SERIAL NO: 2MS909710 SPECIFICATION:
 CURRENT DRAW: + 5VDC @ 60 mA; - 5 VDC @ 34 mA FREQUENCY RANGE: 2 GHz TO 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 2.16 dB	14.06 dB	1.49 : 1	16.07 dB	1.37 : 1	- dB	1. - : 1
J1-J3 2.01 dB	13.42 dB	1.54 : 1	13.86 dB	1.51 : 1	- dB	1. - : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
ISOLATION	SWITCHING SPEED					
	DELAY ON	RISE TIME	DELAY OFF	FALL TIME		
J1-J2 >50 dB	52 nS	5 nS	27 nS	2 nS		
J1-J3 >50 dB	60 nS	7 nS	29 nS	2 nS		
	nS	nS	nS	nS		
	nS	nS	nS	nS		
	nS	nS	nS	nS		
	nS	nS	nS	nS		
	nS	nS	nS	nS		
	nS	nS	nS	nS		
	nS	nS	nS	nS		
	nS	nS	nS	nS		

NOTE: Any additional test data on back

TESTED ON: WILTRON 37347A

PROGRAM MANAGER/SUPERVISOR APPROVAL: [Signature] DATED: 12/16/99

QA/QC APPROVAL: [Signature] DATED: 12/16/99

VICE PRESIDENT/GENERAL MANAGER APPROVAL: [Signature] DATED: 12/16/99

FINAL TEST DATA

AMC MODEL NO: SWN-2181-2A OPT NRL, SERIAL NUMBER: 2MS909711

FORM: SW-D1A 12/10



AMERICAN MICROWAVE CORPORATION
7311-G GROVE RD., FREDERICK MD. 21704
TEL: 301-662-4700 FAX: 301-662-4938

DATE: 12/15/99

FINAL TEST DATA
ON
MICROWAVE SWITCH

CUSTOMER: CLM SALES TECHNICIAN: PT

JOB NO: 909159E

MODEL NO: SWN-2181-2A OPTION NO: NRL

SERIAL NO: 2MS909711 SPECIFICATION:

CURRENT DRAW: + 5VDC @ 60 mA; - 5 VDC @ 34 mA FREQUENCY RANGE: 2 GHz TO 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 2.05 dB	14.24 dB	1.48 : 1	12.51 dB	1.62 : 1	— dB	1. — : 1
J1-J3 2.09 dB	14.70 dB	1.45 : 1	15.46 dB	1.71 : 1	— dB	1. — : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1

ISOLATION	SWITCHING SPEED			
	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 >50 dB	46 nS	5 nS	27 nS	3 nS
J1-J3 >50 dB	58 nS	7 nS	32 nS	2 nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS

NOTE: Any additional test data on back

TESTED ON: WILTRON 37347A

PROGRAM MANAGER/SUPERVISOR APPROVAL: [Signature] DATED: 12/16/99
QA/QC APPROVAL: QA [Signature] DATED: 12/16/99
VICE PRESIDENT/GENERAL MANAGER APPROVAL: [Signature] DATED: 12/16/99



FINAL TEST DATA

AMC MODEL NO: SWN-2181-2A OPT NRL, SERIAL NUMBER: 2MS912877

FORM: SW-DTA 12/10/99



AMERICAN MICROWAVE CORPORATION
 7311-G GROVE RD., FREDERICK MD. 21704
 TEL: 301-662-4700 FAX: 301-662-4938

DATE: 12/15/99

FINAL TEST DATA ON MICROWAVE SWITCH

CUSTOMER: <u>CLM SALES</u>	TECHNICIAN: <u>PA</u>
JOB NO: <u>909159E</u>	
MODEL NO: <u>SWN-2181-2A</u>	OPTION NO: <u>NRL</u>
SERIAL NO: <u>2MS912877</u>	SPECIFICATION: _____
CURRENT DRAW: <u>+5VDC @ 60 mA; -5 VDC @ 34 mA</u> FREQUENCY RANGE: <u>2 GHz TO 18 GHz</u>	

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 2.13 dB	15.24 dB	1.42 : 1	13.34 dB	1.55 : 1	- dB	1. - : 1
J1-J3 2.12 dB	16.71 dB	1.34 : 1	14.66 dB	1.45 : 1	- dB	1. - : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1
	dB	1. : 1	dB	1. : 1	dB	1. : 1

ISOLATION	SWITCHING SPEED			
	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 > 50 dB	56 nS	11 nS	27 nS	2 nS
J1-J3 > 50 dB	58 nS	10 nS	30 nS	2 nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS
	nS	nS	nS	nS

NOTE: Any additional test data on back

TESTED ON: WILTRON 37347A

PROGRAM MANAGER/SUPERVISOR APPROVAL: DATED: 12/16/99

QA/QC APPROVAL: QA DATED: 12/16/99

VICE PRESIDENT/GENERAL MANAGER APPROVAL: DATED: 12/16/99