



TEST REPORT
ON
8 TO 18 GHz
SINGLE POLE SINGLE THROW
NON-REFLECTIVE PULSE MODULATOR

AMC MODEL No:
SWN-2184-1DT
OPTION SHL, HPR05W, HS15NS

Serial Numbers: 1MS208182, 1MS208183, AND 1MS208185 THRU 1MS208187

**DESIGNED
BY
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**TESTED
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**REPORTED
BY
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October 27, 2004

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ISO9001 : 2000 CERTIFIED

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SINGLE POLE SINGLE THROW NON-REFLECTIVE PULSE MODULATOR AMC MODEL No: SWN-2184-1DT OPT SHL, HPR05W, HS15NS

FEATURES:

- **8 TO 18 GHz FREQUENCY RANGE**
- **HIGH ISOLATION**
- **HIGH SPEED**
- **HIGH POWER CAPABILITIES**

SPECIFICATIONS:

- | | |
|--------------------|--|
| ● FREQUENCY | : 8 TO 18 GHz |
| ● INSERTION LOSS | : 3.5 dB MAXIMUM |
| ● ISOLATION | : 80 dB MINIMUM |
| ● VSWR | : 2.0:1 |
| ● POWER HANDLING | : 500 mW CW WITHOUT PERFORMANCE
DEGRADATION |
| ● RISE / FALL TIME | : 10 nSEC MAXIMUM |
| ● ON TIME | : 30 nSEC MAXIMUM |
| ● OFF TIME | : 15 nSEC MAXIMUM |
| ● RF CONNECTORS | : SMA FEMALE |
| ● DC POWER | : +5V @ 90 mA, -12V @ 75 mA |



PRODUCT FEATURE

ZONE REV. DATE APPROVED DESCRIPTION ORIGINAL JOB# 205084E 10/05/04	<p style="text-align: center;">MECHANICAL DRAWING</p> <p style="text-align: center;">BLOCK DIAGRAM</p> <p style="text-align: center;">ALL DIMENSIONS ARE IN INCHES TOLERANCES: X.XX ±0.020 X.XXX ±0.010</p> <p style="text-align: center;">ENVIRONMENTAL RATINGS</p> <ul style="list-style-type: none"> • OPERATING TEMPERATURE.....-65°C TO 110°C • NON-OPERATING TEMPERATURE.....-65°C TO 125°C • 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 • TEMPERATURE CYCLE.....MIL-STD-202F, METHOD 107D CONDITION A <p>NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION</p>
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PRODUCT DESCRIPTION:
 AMC MODEL SWN-2184-1DT OPTION: SHL, HPR05W, HS15NS IS A 8.0 TO 18.0 GHz, HIGH SPEED, HIGH ISOLATION, NON-REFLECTIVE, 0.5 WATT SPST/PULSE MODULATOR.

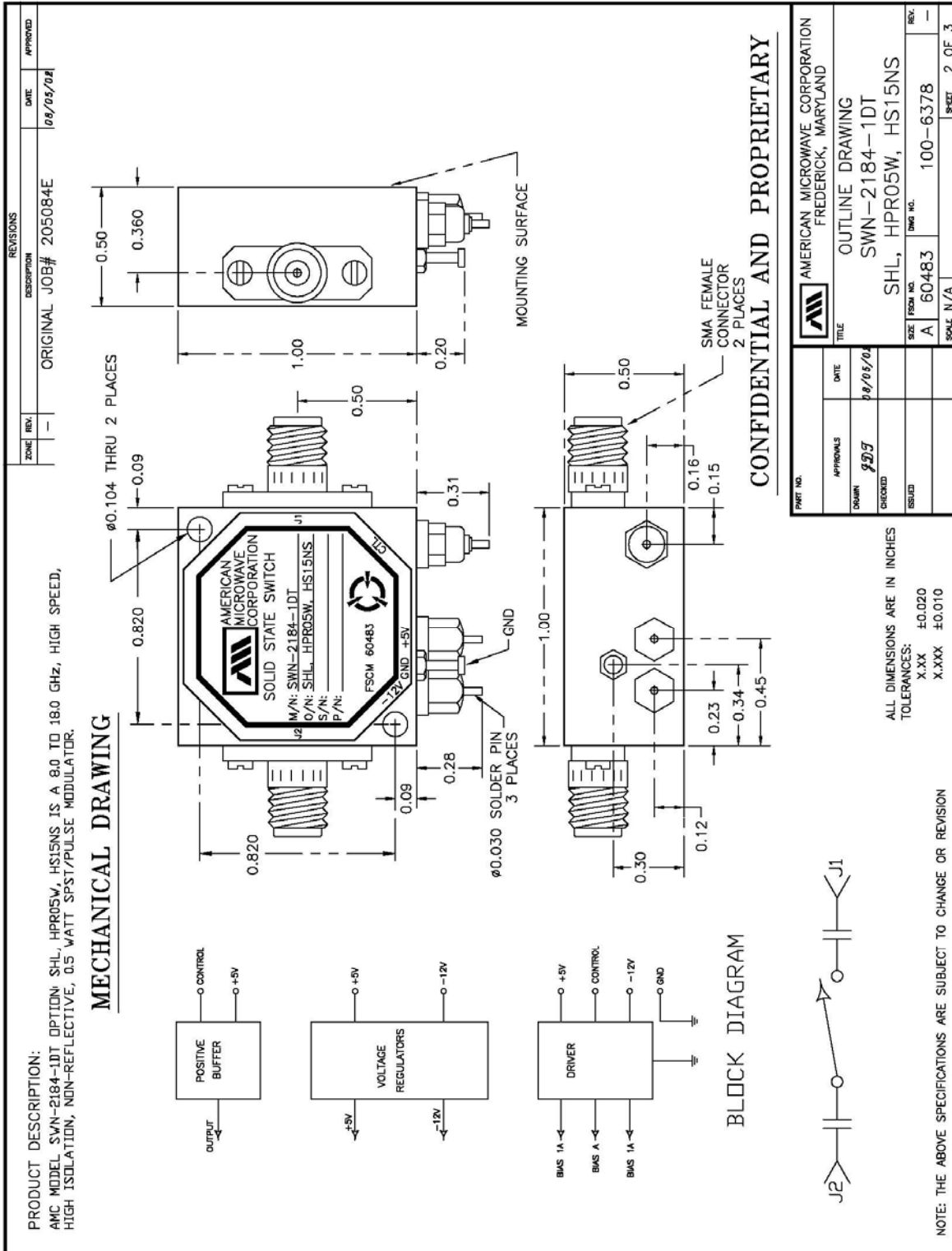
SPECIFICATIONS:

- FREQUENCY RANGE:.....8.0 TO 18.0 GHz
- ISOLATION:.....80 dB MINIMUM
- INSERTION LOSS:.....3.5 dB MAXIMUM
- VSWR:.....2.0:1
- POWER HANDLING:.....500 mW CW WITHOUT PERFORMANCE DEGRADATION
- RISE TIME:.....10 nSec MAXIMUM
- FALL TIME:.....10 nSec MAXIMUM
- ON TIME:.....30 nSec MAXIMUM
- OFF TIME:.....15 nSec MAXIMUM
- RF CONNECTORS:.....SMA FEMALE
- DC POWER:.....+5V @ 90 mA, -12V @ 75 mA

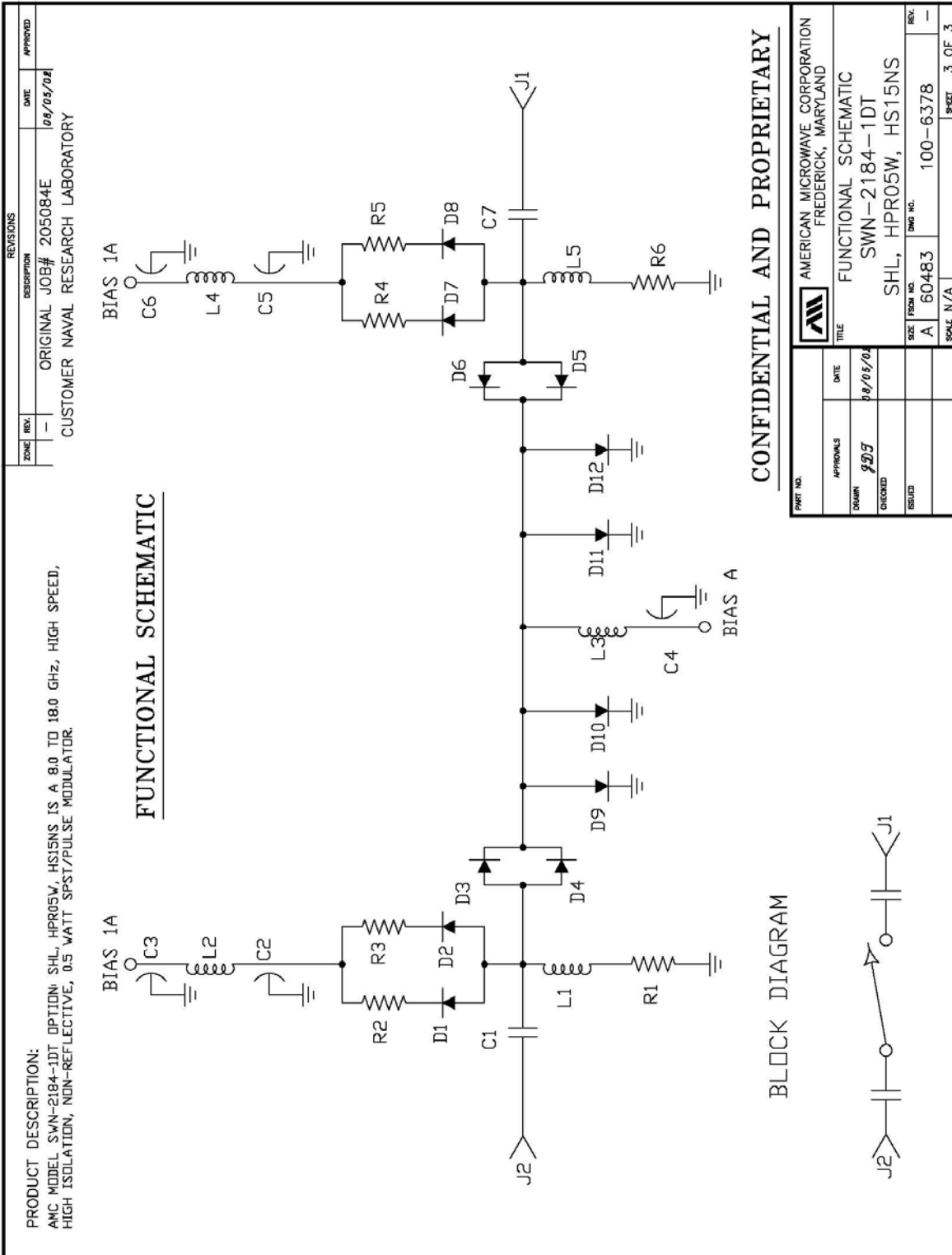
CONFIDENTIAL AND PROPRIETARY

PART NO.	AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
DATE	10/05/04	TITLE	PRODUCT FEATURE
DESIGN	gdy	SWN-2184-1DT	
CHECKED		SHL, HPR05W, HS15NS	
DRAWN			
SCALE	N/A	DWG NO.	100-6378
		REV.	-
			1 OF 3

OUTLINE DRAWING



FUNCTIONAL SCHEMATIC



FINAL TEST DATA

FINAL TEST DATA SHEETS

FOR

AMC MODEL NUMBER

SWN-2184-1DT
OPTION SHL, HPR05W, HS15NS

Serial Numbers:

1MS208182, 1MS208183, AND 1MS208185 THRU 1MS208187

FINAL TEST DATA

AMC MODEL NO: SWN-2184-1DT OPTIONS SHL, HPR05W, HS15NS
 SERIAL NUMBER: 1MS208182

FORMS: 283-SW-DTA



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

DATE: 11/20/02

FINAL TEST DATA
 ON
 MICROWAVE SWITCH

CUSTOMER: <u>NRL</u>	TECHNICIAN: <u>R. AFABLE</u>
JOB NO: <u>205084E</u>	
MODEL NO: <u>SWN-2184-1DT</u>	OPTION NO: <u>SHL, HPR05W, HS15NS</u>
SERIAL NO: <u>1MS208182</u>	SPECIFICATION:
CURRENT DRAW: <u>+5 VDC @ 57 mA; -12 VDC @ 21 mA</u>	FREQUENCY RANGE: <u>8 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 <u>3.43</u> dB @ 8-18 GHz	<u>11.07</u> dB	<u>1.77</u> : 1	<u>10.70</u> dB	<u>1.82</u> : 1	<u>9.85</u> dB	<u>1.95</u> : 1
dB @ GHz	dB	: 1	dB	: 1	<u>9.70</u> dB	<u>1.94</u> : 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
ISOLATION	SWITCHING SPEED					
	DELAY ON	RISE TIME	DELAY OFF	FALLTIME		
J1-J2 <u>> 80</u> dB @ 8-18 GHz	<u>19</u> nS	<u>5</u> nS	<u>10</u> nS	<u>1</u> nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		

NOTE: Any additional test data on back

TESTED ON: HP 8720D

QA/QC APPROVAL: ES DATED: 11/20/02

FINAL TEST DATA

AMC MODEL NO: SWN-2184-1DT OPTIONS SHL, HPR05W, HS15NS
SERIAL NUMBER: 1MS208183

FORMS: 283-SW-D1A



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

DATE: 11/20/02

FINAL TEST DATA ON MICROWAVE SWITCH

CUSTOMER:	<u>NRL</u>	TECHNICIAN:	<u>R. AFABLE</u>
JOB NO:	<u>205084E</u>		
MODEL NO:	<u>SWN-2184-1DT</u>	OPTION NO:	<u>SHL, HPR05W, HS15NS</u>
SERIAL NO:	<u>1MS208183</u>	SPECIFICATION:	
CURRENT DRAW:	<u>+5 VDC @ 13 mA; -12 VDC @ 2/ mA</u>	FREQUENCY RANGE:	<u>8 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 <u>3.41</u> dB @ 8-18 GHz	<u>10.65</u> dB	<u>1.83</u> : 1	<u>10.27</u> dB	<u>1.88</u> : 1	<u>10.05</u> dB	<u>1.92</u> : 1
dB @ GHz	dB:1. : 1		dB:1. : 1		<u>9.73</u> dB	<u>1.97</u> : 1
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	

ISOLATION	SWITCHING SPEED			
	DELAY ON	RISE TIME	DELAY OFF	FALLTIME
J1-J2 <u>>80</u> dB @ 8-18 GHz	<u>22</u> nS	<u>8</u> nS	<u>11</u> nS	<u>2</u> nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS

NOTE: Any additional test data on back

TESTED ON: HP 8720 D

QA/QC APPROVAL: _____ DATED: 11/20/02



FINAL TEST DATA

AMC MODEL NO: SWN-2184-1DT OPTIONS SHL, HPR05W, HS15NS
 SERIAL NUMBER: 1MS208185

FORMS: 283-SW-D1A



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

DATE: 11/20/02

FINAL TEST DATA
 ON
 MICROWAVE SWITCH

CUSTOMER: NRL TECHNICIAN: R. AFABLE

JOB NO: 205084E

MODEL NO: SWN-2184-1DT

OPTION NO: SHL, HPR05W, HS15NS

SERIAL NO: 1MS208185

SPECIFICATION:

CURRENT DRAW: +5 VDC @ 35 mA; -12 VDC @ 22 mA

FREQUENCY RANGE: 8 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>3.37</u> dB @ 8-18 GHz	<u>10.85</u> dB	<u>1.80</u> : 1	<u>11.03</u> dB	<u>1.78</u> : 1	<u>11.39</u> dB	<u>1.74</u> : 1
dB @ GHz	dB	: 1	dB	: 1	<u>10.03</u> dB	<u>1.92</u> : 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1
dB @ GHz	dB	: 1	dB	: 1	dB	: 1

ISOLATION	SWITCHING SPEED			
	DELAY ON	RISE TIME	DELAY OFF	FALLTIME
J1-J2 <u>> 80</u> dB @ 8-18 GHz	<u>2.2</u> nS	<u>7</u> nS	<u>11</u> nS	<u>1</u> nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS

NOTE: Any additional test data on back

TESTED ON: HP 8720 D

QA/QC APPROVAL: _____

DATED: 11/20/02



FINAL TEST DATA

AMC MODEL NO: SWN-2184-1DT OPTIONS SHL, HPR05W, HS15NS
 SERIAL NUMBER: 1MS208186

FORMS: 283-SW-D1A



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

DATE: 11/27/02

FINAL TEST DATA ON MICROWAVE SWITCH

CUSTOMER: <u>NRL</u>	TECHNICIAN: <u>R. AFABLE</u>
JOB NO: <u>205084E</u>	
MODEL NO: <u>SWN-2184-1DT</u>	OPTION NO: <u>SHL, HPR05W, HS15NS</u>
SERIAL NO: <u>1MS208186</u>	SPECIFICATION:
CURRENT DRAW: <u>+5 VDC @ 53 mA; -12 VDC @ 20 mA</u>	FREQUENCY RANGE: <u>8 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 <u>3.32</u> dB @ 8-18 GHz	<u>11.04</u>	<u>1.78</u> : 1	<u>9.66</u>	<u>1.88</u> : 1	<u>9.25</u>	<u>1.93</u> : 1
dB @ GHz	dB:1	: 1	dB:1	: 1	<u>9.56</u>	dB:2.00 : 1
dB @ GHz	dB:1	: 1	dB:1	: 1	dB:1	: 1
dB @ GHz	dB:1	: 1	dB:1	: 1	dB:1	: 1
dB @ GHz	dB:1	: 1	dB:1	: 1	dB:1	: 1
dB @ GHz	dB:1	: 1	dB:1	: 1	dB:1	: 1
dB @ GHz	dB:1	: 1	dB:1	: 1	dB:1	: 1
dB @ GHz	dB:1	: 1	dB:1	: 1	dB:1	: 1
dB @ GHz	dB:1	: 1	dB:1	: 1	dB:1	: 1
dB @ GHz	dB:1	: 1	dB:1	: 1	dB:1	: 1

ISOLATION	SWITCHING SPEED			
	DELAY ON	RISE TIME	DELAY OFF	FALLTIME
J1-J2 <u>>80</u> dB @ 8-18 GHz	<u>20</u> nS	<u>7</u> nS	<u>11</u> nS	<u>2</u> nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS
dB @ GHz	nS	nS	nS	nS

NOTE: Any additional test data on back

TESTED ON: HP 8720D

QA/QC APPROVAL: _____ DATED: 11/27/02

FINAL TEST DATA

AMC MODEL NO: SWN-2184-1DT OPTIONS SHL, HPR05W, HS15NS
 SERIAL NUMBER: 1MS208187

FORMS: 283-SW-DTA



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

DATE: 11/20/02

FINAL TEST DATA ON MICROWAVE SWITCH

CUSTOMER: <u>NRL</u>	TECHNICIAN: <u>R. AFABLE</u>
JOB NO: <u>205084E</u>	
MODEL NO: <u>SWN-2184-1DT</u>	OPTION NO: <u>SHL, HPR05W, HS15NS</u>
SERIAL NO: <u>1MS208187</u>	SPECIFICATION:
CURRENT DRAW: <u>+5 VDC @ 53 mA; -12 VDC @ 21 mA</u>	FREQUENCY RANGE: <u>8 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 <u>3.35</u> dB @ 8-18 GHz	<u>11.63</u> dB	<u>1.71</u> : 1	<u>12.35</u> dB	<u>1.64</u> : 1	<u>11.64</u> dB	<u>1.71</u> : 1
dB @ GHz	dB:1. : 1		dB:1. : 1		<u>10.65</u> dB	<u>1.83</u> : 1
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
dB @ GHz	dB:1. : 1		dB:1. : 1		dB:1. : 1	
ISOLATION	SWITCHING SPEED					
	DELAY ON	RISE TIME	DELAY OFF	FALLTIME		
J1-J2 <u>>80</u> dB @ 8-18 GHz	<u>21</u> nS	<u>7</u> nS	<u>12</u> nS	<u>3</u> nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		
dB @ GHz	nS	nS	nS	nS		

NOTE: Any additional test data on back

TESTED ON: HP 8720D

QA/QC APPROVAL: [Signature] DATED: 11/20/02