



TEST REPORT
ON
16 GHz FIXED FREQUENCY
SINGLE POLE FOUR THROW
REFLECTIVE SWITCH MODULE

AMC MODEL No:
SWN-1140-4DR-STANDARD
OPTION SS, 16F, PIVS, HPR6W

Serial Numbers: 4MS411117 THRU 4MS411119

DESIGNED
BY
R. Afable & E. Elder

TESTED
BY
T. Phung & P. Kuhn

REPORTED
BY
E. Elder

April 18, 2005

AMERICAN MICROWAVE CORPORATION., 7311-G Grove Road, Frederick, MD 21704
Tel: 301-662-4700 • Fax: 301-662-4938 • Email: sales@americanmicrowavecorp.com
Website: <http://www.americanmicrowavecorp.com>

ISO9001 : 2000 CERTIFIED

TABLE OF CONTENTS

●	PRODUCT DESCRIPTION AND ELECTRICAL SPECIFICATIONS	PAGE 3
●	PRODUCT FEATURE AND ENVIRONMENTAL SPECIFICATIONS	PAGE 4
●	OUTLINE DRAWING	PAGE 5
●	FUNCTIONAL SCHEMATIC	PAGE 6
●	TEST DATA ON SWN-1140-4DR-STANDARD OPTION SS, 16F, PIVS, HPR6W SERIAL NUMBERS 4MS411117 THRU 4MS411119	PAGE 7
●	TEST DATA FOR SWN-1140-4DR-STANDARD OPTION SS, 16F, PIVS, HPR6W SERIAL NUMBER 4MS411117	PAGE 8
●	TEST DATA FOR SWN-1140-4DR-STANDARD OPTION SS, 16F, PIVS, HPR6W SERIAL NUMBER 4MS411118	PAGE 9
●	TEST DATA FOR SWN-1140-4DR-STANDARD OPTION SS, 16F, PIVS, HPR6W SERIAL NUMBER 4MS411119	PAGE 10

**SINGLE POLE FOUR THROW
REFLECTIVE SWITCH MODULE
AMC MODEL No:
SWN-1140-4DR-STANDARD OPTION SS, 16F, PIVS, HPR6W**

FEATURES:

- **16 GHz FIXED FREQUENCY**
- **6 W HIGH POWER CAPABILITY**
- **+10 V SINGLE SUPPLY**
- **INTEGRAL TTL DRIVER**

SPECIFICATIONS:

- | | | |
|------------------|---|--|
| ● FREQUENCY | : | 16 GHz |
| ● INSERTION LOSS | : | 1.5 dB TYPICAL, 2.0 dB MAXIMUM |
| ● ISOLATION | : | 35 dB MINIMUM |
| ● VSWR | : | 2.0:1 |
| ● SPEED | : | RISE: 10 ns TYPICAL, 15 ns MAXIMUM |
| | : | FALL: 10 ns TYPICAL, 15 ns MAXIMUM |
| | : | DELAY ON: 75 ns TYPICAL, 100 ns MAXIMUM |
| | : | DELAY OFF: 75 ns TYPICAL, 100 ns MAXIMUM |
| ● POWER INPUT | : | (CW)+20dBm (STANDARD), +10dBm (HIGH SPEED) |
| ● CONTROL | : | TTL LOGIC "0" = ON, "1" = OFF |
| ● POWER SUPPLY | : | +10 V SINGLE SUPPLY |

PRODUCT FEATURE

REV	DESCRIPTION	DATE	APPROVED
1	ORIGINAL RELEASE JOB# 408204PE	10/21/04	

DESCRIPTION

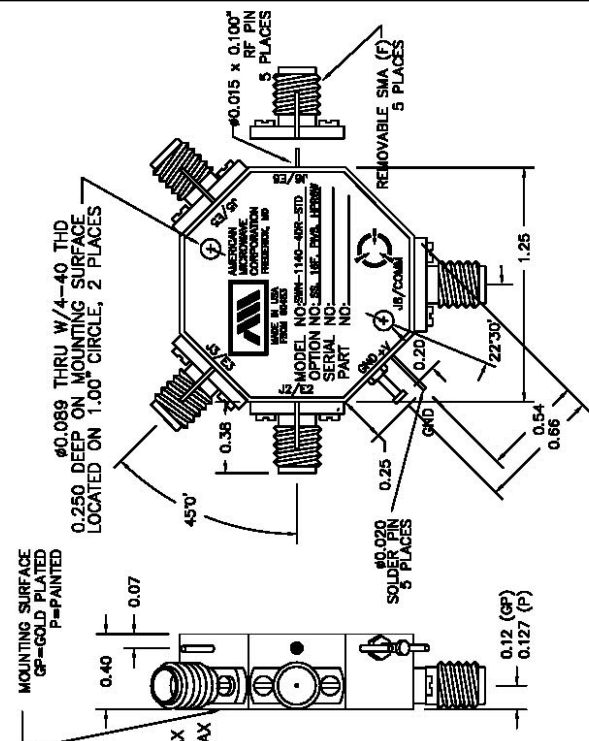
AMC MODEL SWN-1140-4DR-STANDARD OPTION SS, 16F, PIVS, HPR6W IS A SINGLE POLE FOUR THROW, REFLECTIVE SOLID STATE SWITCH MODULE DESIGNED FOR HIGH POWER WITH SINGLE SUPPLY AND INTEGRAL TTL DRIVER FOR OPERATION AT 16 GHz FIXED FREQUENCY.

SPECIFICATIONS

- FREQUENCY RANGE: 16 GHz
- INSERTION LOSS: 1.5 dB TYPICAL, 2.0 dB MAXIMUM
- ISOLATION: 35 dB MINIMUM
- VSWR: 2.0:1
- SPEED: RISE: 10 ns TYPICAL, 15 ns MAX
FALL: 10 ns TYPICAL, 15 ns MAX
DELAY ON: 75 ns TYPICAL, 100 ns MAX
DELAY OFF: 75 ns TYPICAL, 100 ns MAX
(CW)+20 dBm (STANDARD),
+10 dBm (HIGH SPEED)
- POWER INPUT: TTL LOGIC "0"=ON, "1"=OFF
..... +10 V SINGLE SUPPLY
- CONTROL:
- POWER SUPPLY:

OPTIONS

- SS SINGLE SUPPLY OF +10V
- 16F OPTIMIZED FOR 16 GHz
- PIVS SPECIAL FOR CUSTOMER
- HPR6W HIGH POWER 6 WATTS



45°

0.075 THRU W/4-40 THD
0.250 DEEP ON MOUNTING SURFACE
LOCATED ON 1.00" CIRCLE, 2 PLACES

45°

0.38

0.25

0.20

0.54

0.66

1.25

22°30'

0.12 (GP)
0.127 (P)

0.015 x 0.100"
RP PIN
5 PLACES

REMOVABLE SMA (F)
5 PLACES

16 000
SOLDER
5 PLACES

0.40

0.07

MOUNTING SURFACE
GP-GOLD PLATED
P-PAINTED

AMERICAN MICROWAVE CORPORATION
7311-G GROVE ROAD
FREDERICK, MD 21704 USA
TEL: 301-662-4700 FAX: 301-662-4938
WEBSITE: www.americamicrowavecorp.com
E-MAIL: sales@americamicrowavecorp.com
ISO 9001:2000 CERTIFIED

ENVIRONMENTAL RATINGS

- TEMPERATURE: -40°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- HUMIDITY:
- SHOCK: MIL-STD-202F, METHOD 103B COND. B
- VIBRATION: MIL-STD-202F, METHOD 213B COND. B
- ALTITUDE: MIL-STD-202F, METHOD 204D COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 105C COND. B
- NOTE: OPERATIONS WILL VARY OVER OPERATING TEMPERATURE
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE ON REVISION

AMERICAN MICROWAVE CORPORATION

7311-G GROVE ROAD
FREDERICK, MARYLAND 21704 USA
TEL: 301-662-4700 FAX: 301-662-4938
WEBSITE: www.americamicrowavecorp.com
E-MAIL: sales@americamicrowavecorp.com
ISO 9001:2000 CERTIFIED

PRODUCT FEATURE

SWN-1140-4DR-STANDARD
 OPTION: SS, 16F, PIVS, HPR6W

DATE: 10/21/04

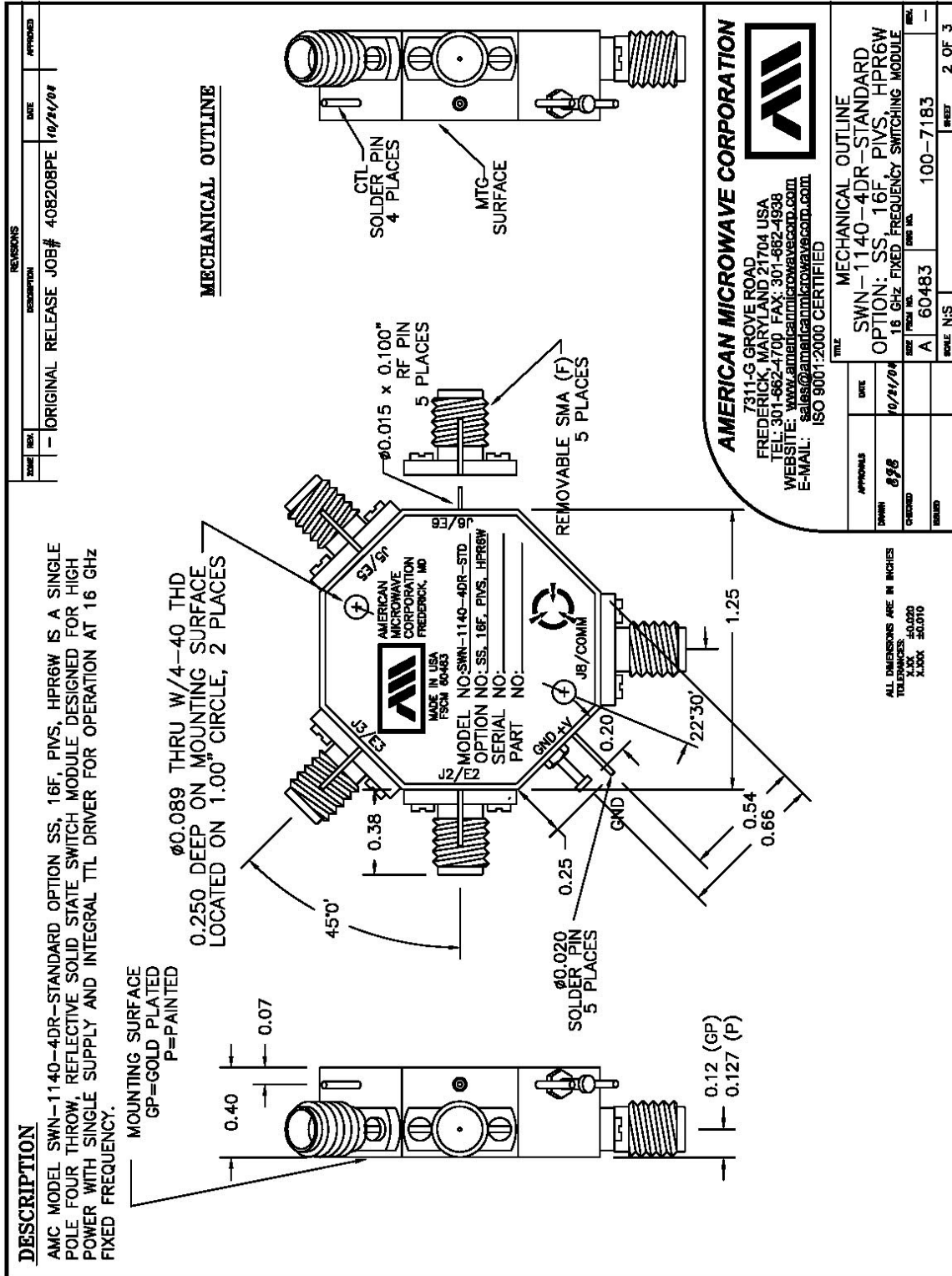
SIZE FROM INCH: A 60.483

REV NO: 100-7183

SCALE: NIS

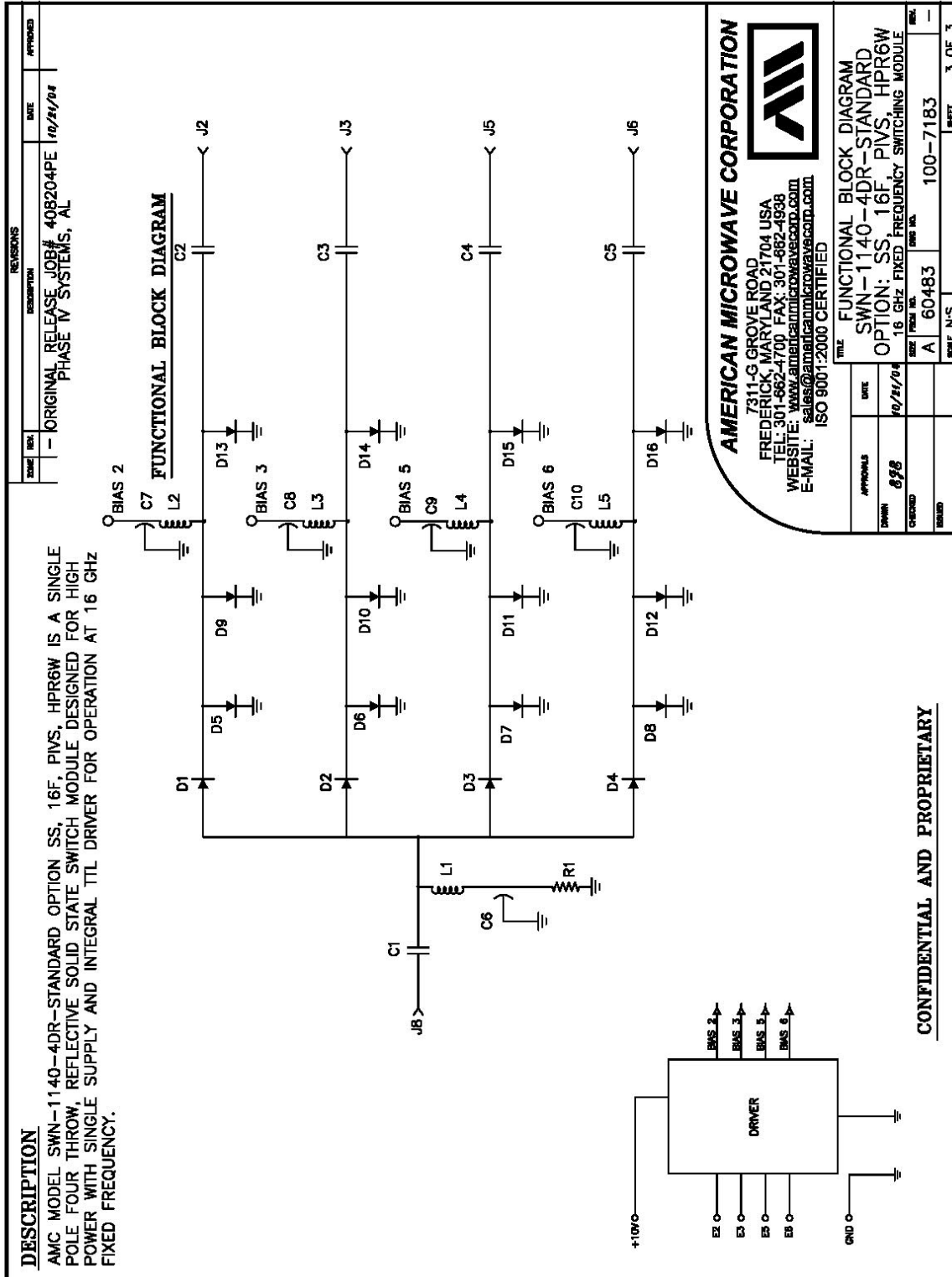
SHEET: 1 OF 3

OUTLINE DRAWING





FUNCTIONAL SCHEMATIC



FINAL TEST DATA

FINAL TEST DATA SHEETS

FOR

AMC MODEL NUMBER

SWN-1140-4DR-STANDARD
OPTION SS, 16F, PIVS, HPR6W

Serial Numbers:

4MS411117 THRU 4MS411119



FINAL TEST DATA

AMC MODEL NO: SWN-1140-4DR-STANDARD OPTIONS SS, 16F, PIVS, HPR6W
 SERIAL NUMBER: 4MS411117

FORM: 544-SW-DT ✓
 DATE: 4 January 2005

AMERICAN MICROWAVE CORPORATION
 7311-G GROVE RD., FREDERICK MD. 21704
 TEL: 301-662-4700 FAX: 301-662-4938
 URL: WWW.AMERICANMICROWAVECORP.COM
 E-MAIL: SALES@AMERICANMICROWAVECORP.COM

FINAL TEST DATA ON MICROWAVE SWITCH

CUSTOMER: <u>PHASE IV SYSTEMS</u>	TECHNICIAN: <u>T. PHUNG E #29</u>
JOB NO: <u>408204PE</u>	
MODEL NO: <u>SWN-1140-4DR-STANDARD</u>	OPTION NO: <u>SS, 16F, PIVS, HPR6W</u>
SERIAL NO: <u>4MS411117</u>	SPECIFICATION: _____
CURRENT DRAW: <u>+ 10 VDC @ 98 mA</u>	FREQUENCY RANGE: <u>16 GHz</u>

	RETURN LOSS (WORST CASE)							
	INSERTION LOSS (WORST CASE)		INPUT dB	INPUT VSWR	OUTPUT ON db	OUTPUT ON VSWR	OUTPUT OFF db	OUTPUT OFF VSWR
J8-J2	2.60dB @	16 GHz	15.62 dB	1.34 : 1	15.52 dB	1.40 : 1	dB:1.	: 1
J8-J3	2.22dB @	16 GHz	16.57 dB	1.34 : 1	15.49 dB	1.40 : 1	dB:1.	: 1
J8-J5	1.86dB @	16 GHz	21.69 dB	1.17 : 1	27.02 dB	1.09 : 1	dB:1.	: 1
J8-J6	2.05dB @	16 GHz	19.76 dB	1.23 : 1	24.45 dB	1.12 : 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

	SWITCHING SPEED			
	ISOLATION	DELAY ON	RISE TIME	FALLTIME
J8-J2	56 dB @ 16 GHz	55 nS	nS	60 nS
J8-J3	45 dB @ 16 GHz	55 nS	nS	60 nS
J8-J5	43 dB @ 16 GHz	55 nS	nS	60 nS
J8-J6	44 dB @ 16 GHz	55 nS	nS	60 nS
	dB @ GHz	nS	nS	nS
	dB @ GHz	nS	nS	nS
	dB @ GHz	nS	nS	nS
	dB @ GHz	nS	nS	nS
	dB @ GHz	nS	nS	nS
	dB @ GHz	nS	nS	nS

NOTE: Any additional test data on back

TESTED ON: HP8722ES, E3631A, TDS3014

QA/QC APPROVAL: _____

DATED: 1/5/05



FINAL TEST DATA

AMC MODEL NO: SWN-1140-4DR-STANDARD OPTIONS SS, 16F, PIVS, HPR6W
 SERIAL NUMBER: 4MS411118

FORM: 544-SW-DT
 DATE: 4 January 2005



AMERICAN MICROWAVE CORPORATION
 7311-G GROVE RD., FREDERICK MD. 21704
 TEL: 301-662-4700 FAX: 301-662-4938
 URL: WWW.AMERICANMICROWAVECORP.COM
 E-MAIL: SALES@AMERICANMICROWAVECORP.COM

FINAL TEST DATA
 ON
 MICROWAVE SWITCH

CUSTOMER: PHASE IV SYSTEMS
 JOB NO: 408204PE
 MODEL NO: SWN-1140-4DR-STANDARD
 SERIAL NO: 4MS411118
 CURRENT DRAW: +10 VDC @ 96 mA

TECHNICIAN: T.PHUNG #29
 OPTION NO: SS, 16F, PIVS, HPR6W
 SPECIFICATION:
 FREQUENCY RANGE: 16 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
J8-J2	2.00dB @ 16 GHz	25.83 dB:1.10	: 1	22.53 dB:1.16	: 1	dB:1.	: 1
J8-J3	2.06dB @ 16 GHz	24.22 dB:1.13	: 1	25.27 dB:1.11	: 1	dB:1.	: 1
J8-J5	2.11dB @ 16 GHz	22.77 dB:1.15	: 1	16.79 dB:1.33	: 1	dB:1.	: 1
J8-J6	2.00dB @ 16 GHz	19.75 dB:1.23	: 1	31.29 dB:1.05	: 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		
J8-J2	45 dB @ 16 GHz	55 nS	nS	60 nS	nS		
J8-J3	45 dB @ 16 GHz	55 nS	nS	60 nS	nS		
J8-J5	51 dB @ 16 GHz	55 nS	nS	60 nS	nS		
J8-J6	50 dB @ 16 GHz	55 nS	nS	60 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: HP8722ES,E3631A,TDS3014

QA/QC APPROVAL:

DATED: 1/15/05



FINAL TEST DATA

AMC MODEL NO: SWN-1140-4DR-STANDARD OPTIONS SS, 16F, PIVS, HPR6W
 SERIAL NUMBER: 4MS411119

FORM: 544-SW-DTA
 DATE: 4 January 2005



AMERICAN MICROWAVE CORPORATION
 7311-G GROVE RD., FREDERICK MD. 21704
 TEL: 301-662-4700 FAX: 301-662-4938
 URL: WWW.AMERICANMICROWAVECORP.COM
 E-MAIL: SALES@AMERICANMICROWAVECORP.COM

FINAL TEST DATA
 ON
 MICROWAVE SWITCH

CUSTOMER: PHASE IV SYSTEMS
 JOB NO: 408204PE
 MODEL NO: SWN-1140-4DR-STANDARD
 SERIAL NO: 4MS411119
 CURRENT DRAW: +10 VDC @ 68 mA

TECHNICIAN: P.Kuhn *P.Kuhn*
 OPTION NO: SS, 16F, PIVS, HPR6W
 SPECIFICATION: MIL-STD 454
 FREQUENCY RANGE: 16 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
J8-J2	1.93 dB @ 16 GHz	16.57 dB	1.35 : 1	25.98 dB	1.11 : 1		
J8-J3	1.94 dB @ 16 GHz	24.93 dB	1.12 : 1	26.05 dB	1.10 : 1		
J8-J5	1.91 dB @ 16 GHz	41.12 dB	1.02 : 1	29.75 dB	1.07 : 1		
J8-J6	1.81 dB @ 16 GHz	27.11 dB	1.09 : 1	20.21 dB	1.09 : 1		
ISOLATION		SWITCHING SPEED					
		DELAY ON	RISE TIME	DELAY OFF	FALLTIME		
J8-J2	49 dB @ 16 GHz	60 nS		80 nS			
J8-J3	52 dB @ 16 GHz	60 nS		80 nS			
J8-J5	49 dB @ 16 GHz	60 nS		80 nS			
J8-J6	46 dB @ 16 GHz	60 nS		80 nS			

NOTE: Any additional test data on back

TESTED ON: HP8722ES,E3631A,TDS3014

QA/QC APPROVAL: *[Signature]*

DATED: 1/18/05