



**SUMMARY**

**TEST DATA**

**ON**

**3 MHz TO 200 MHz,**

**10 MHz TO 2.0 GHz**

**AND**

**10 MHz TO 4.0 GHz**

**REFLECTIVE**

**2 WATTS HIGH POWER**

**SPDT, DRIVERLESS, PIN DIODE SWITCH**

**AMC MODEL No:**

**SW-2001-2NM**

Serial Number: 2MS809870

**TESTED  
BY  
RENE AFABLE**

**REPORT  
BY  
PETER WOOD**

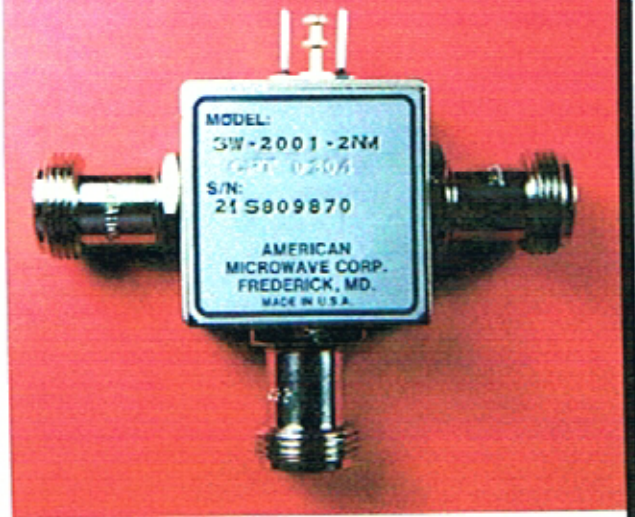
**DECEMBER 12, 2000**



**AMERICAN MICROWAVE  
CORPORATION**

### KEY FEATURES

- 3MHz TO 200MHz
- DRIVERLESS
- SPDT, REFLECTIVE
- 2 WATTS HIGH POWER



## AMC MODEL No: **SW-2001-2NM**

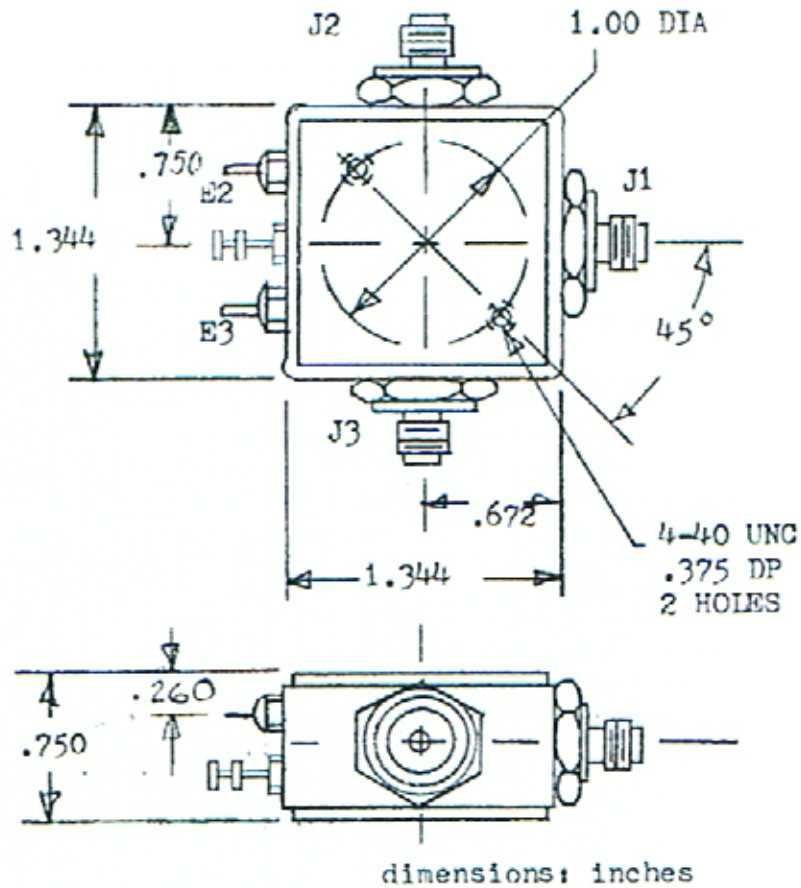
### SPECIFICATIONS

- |                               |                                         |
|-------------------------------|-----------------------------------------|
| ● FREQUENCY RANGE             | : 3 MHz TO 200 MHz                      |
| ● INSERTION LOSS              | : 2.2 dB Maximum                        |
| ● ISOLATION                   | : 30 dB Minimum                         |
| ● VSWR                        | : 1.5:1 Maximum                         |
| ● SWITCHING SPEED (RISE/FALL) | : 5 $\mu$ S Maximum (1 $\mu$ S Typical) |
| ● RF INPUT POWER HANDLING     | : 2 WATTS CW                            |
| ● BIAS                        | : 40 mA On, -5V Off                     |
| ● TEMPERATURE RANGE           | : -50°C TO +85°C                        |
| ● IMPEDANCE                   | : 50 $\Omega$                           |
| ● CONNECTORS AVAILABLE        | : BNC, TNC, SMA & N                     |
| ● VIDEO TRANSIENTS            | : 180 mV Peak to Peak Typical           |
| ● SIZE                        | : 1.34"(L) X 1.34"(W) X 0.75"(H)        |
| ● WEIGHT                      | : 3.5 oz. Typical                       |

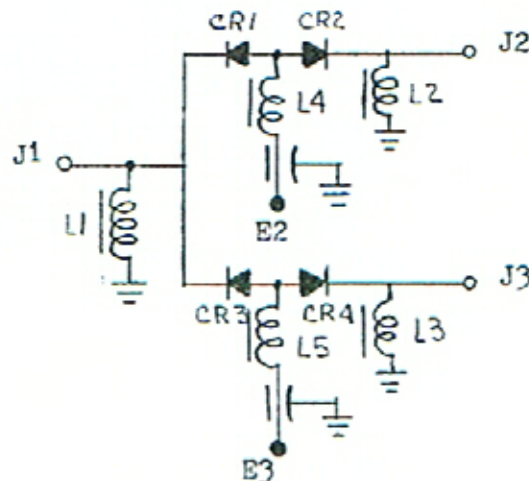
AMC MODEL No. : SW-2001-2NM  
 SERIAL No. : 2MS809870  
 TEST ENGINEER : RENE AFABLE



**MECHANICAL OUTLINE**



**FUNCTIONAL SCHEMATIC**



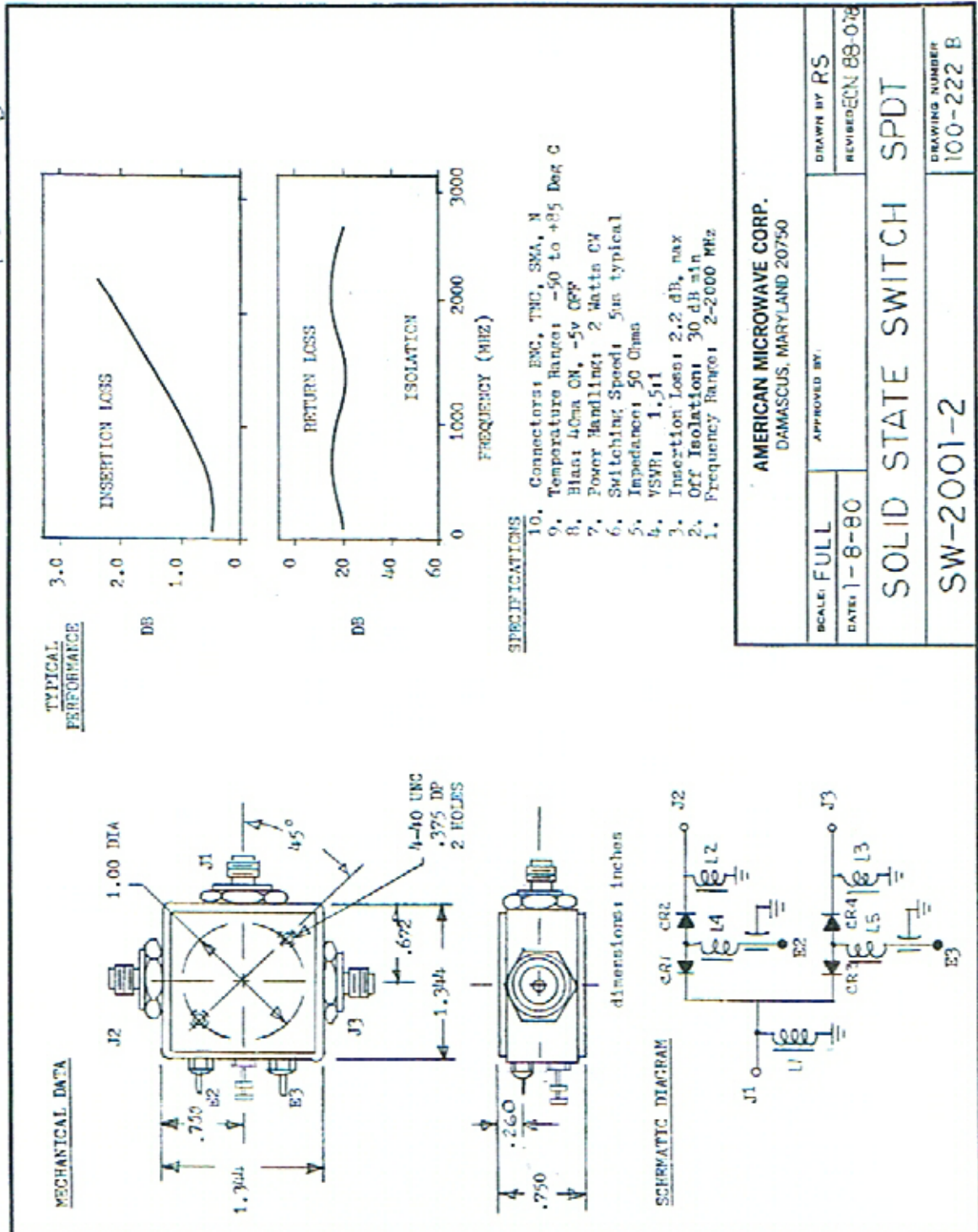


AMC MODEL No. : SW-2001-2NM  
 SERIAL No. : 2MS809870  
 TEST ENGINEER : RENE AFABLE



PRODUCT FEATURE

100-222 B





AMC MODEL No. : SW-2001-2NM  
SERIAL No. : 2MS809870  
TEST ENGINEER : RENE AFABLE



**SUMMARY**  
**TEST DATA**  
**ON**  
**2 TO 200 MHz**  
**REFLECTIVE**  
**2 WATTS HIGH POWER**  
**SPDT, DRIVERLESS, PIN DIODE SWITCH**

**AMC MODEL No:**  
**SW-2001-2NM**

Serial Number: 2MS809870

**CONTENTS**

- **RISE & FALL MEASUREMENTS**
- **VIDEO TRANSIENTS MEASUREMENTS**
- **INSERTION LOSS, RETURN LOSS & ISOLATION @ 3 TO 200 MHz**
- **INSERTION LOSS, RETURN LOSS & ISOLATION @ 3 TO 2000 MHz**
- **INSERTION LOSS, RETURN LOSS & ISOLATION @ 10 TO 2000 MHz**
- **INSERTION LOSS, RETURN LOSS & ISOLATION @ 10 TO 4000 MHz**
- **ORIGINAL TEST DATA**

AMC MODEL No. : SW-2001-2NM  
SERIAL No. : 2MS809870  
TEST ENGINEER : RENE AFABLE



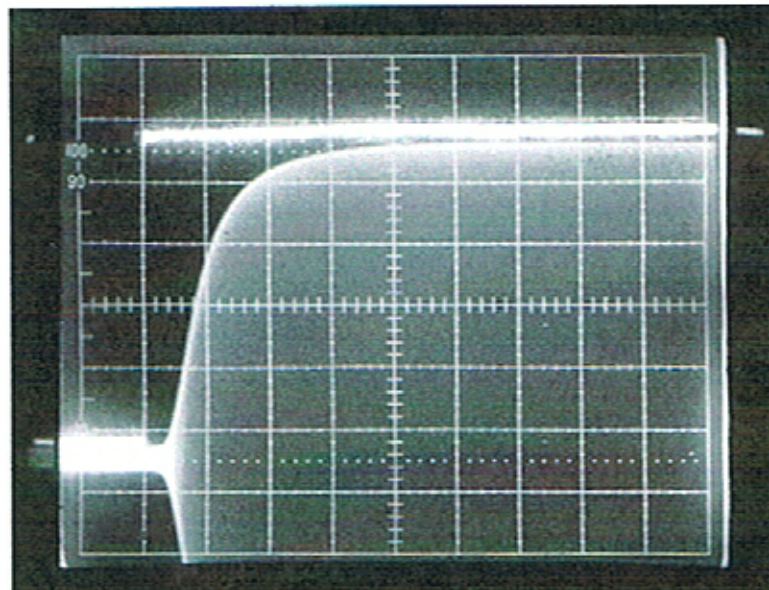
**RISE & FALL**

10% RF TO 90% RF (RISE) & 90% RF TO 10% RF (FALL)

SCALE:

VERTICAL  
10 mV/Div.

HORIZONTAL  
200 nS/Div.

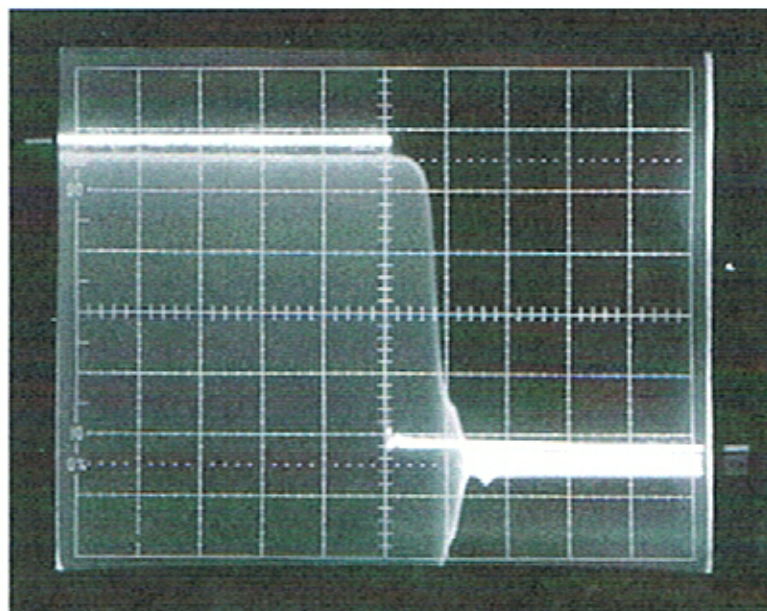


RISE TIME 280 nS

SCALE:

VERTICAL  
10 mV/Div.

HORIZONTAL  
200 nS/Div.



FALL TIME 110 nS



AMC MODEL No. : SW-2001-2NM  
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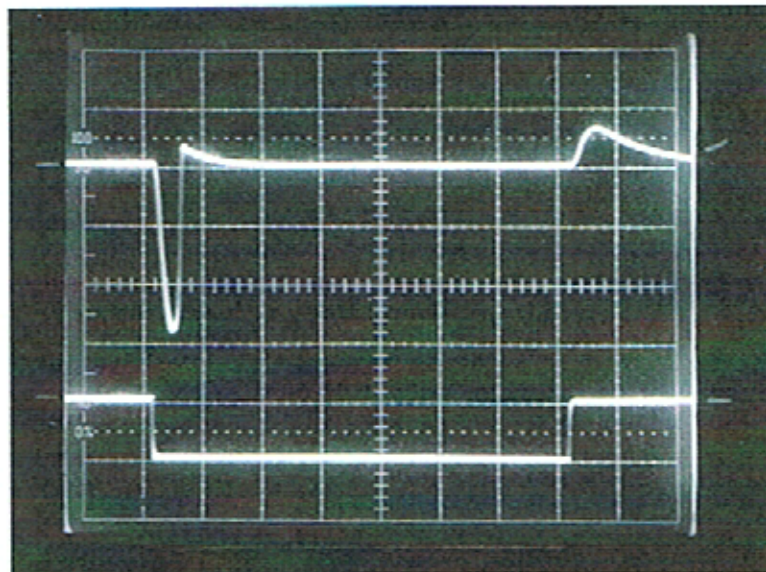


**VIDEO TRANSIENTS**  
(VOLTAGE TRANSIENTS WITHIN THE RF)

SCALE:  
VERTICAL  
50 mV/Div.

HORIZONTAL  
500 nS/Div.

175mV P-P

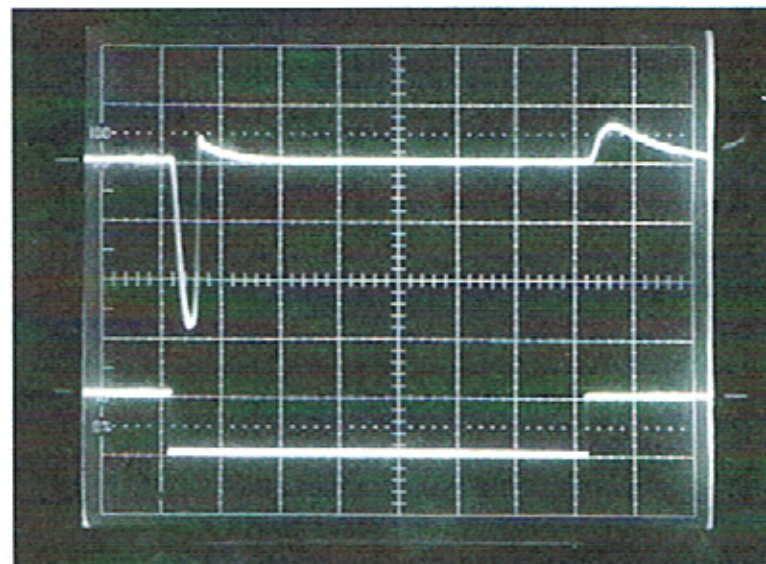


20 MHz BANDWIDTH

SCALE:  
VERTICAL  
50 mV/Div.

HORIZONTAL  
500 nS/Div.

175mV P-P



300 MHz BANDWIDTH

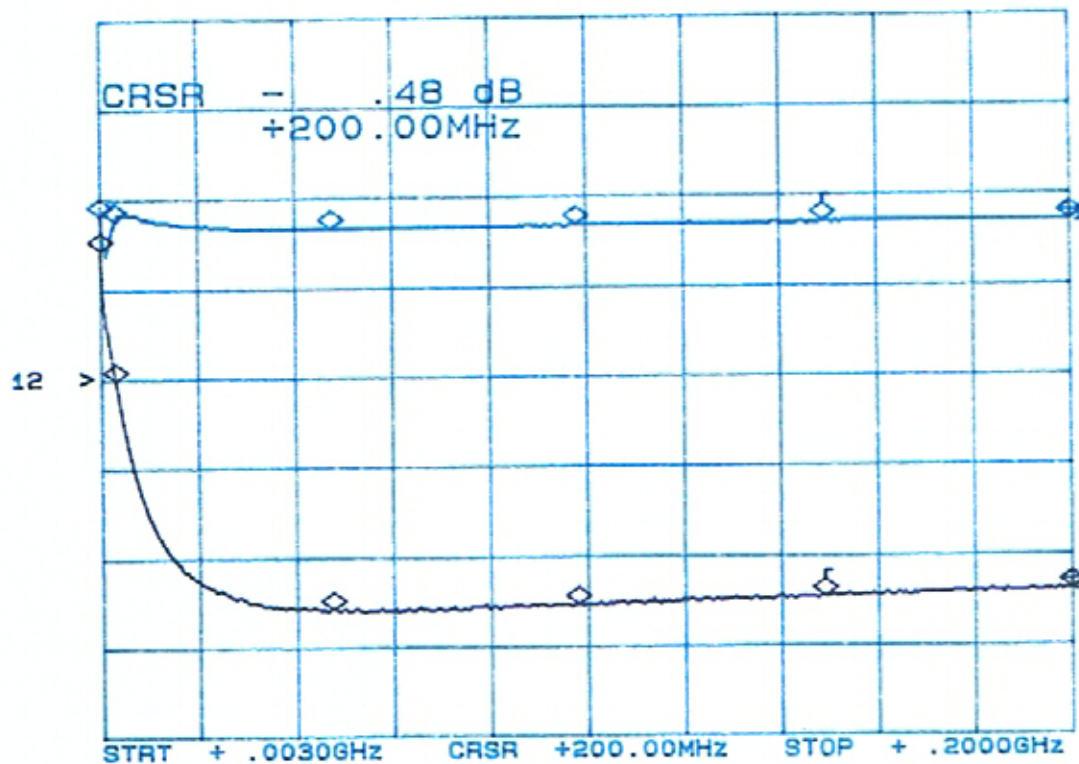


AMC MODEL No. : SW-2001-2NM  
 SERIAL No. : 2MS809870  
 TEST ENGINEER : RENE AFABLE



**SWEPT DATA: INSERTION LOSS & RETURN LOSS**  
**AS MEASURED ON A SCALAR NETWORK ANALYSER**  
**ARM J2 @ 3 TO 200 MHz**

CH1: R -M REF - .48 dB CH2: B -M REF - 25.88 dB  
 1.0 dB/ REF - 2.20 dB 5.0 dB/ REF - 13.98 dB



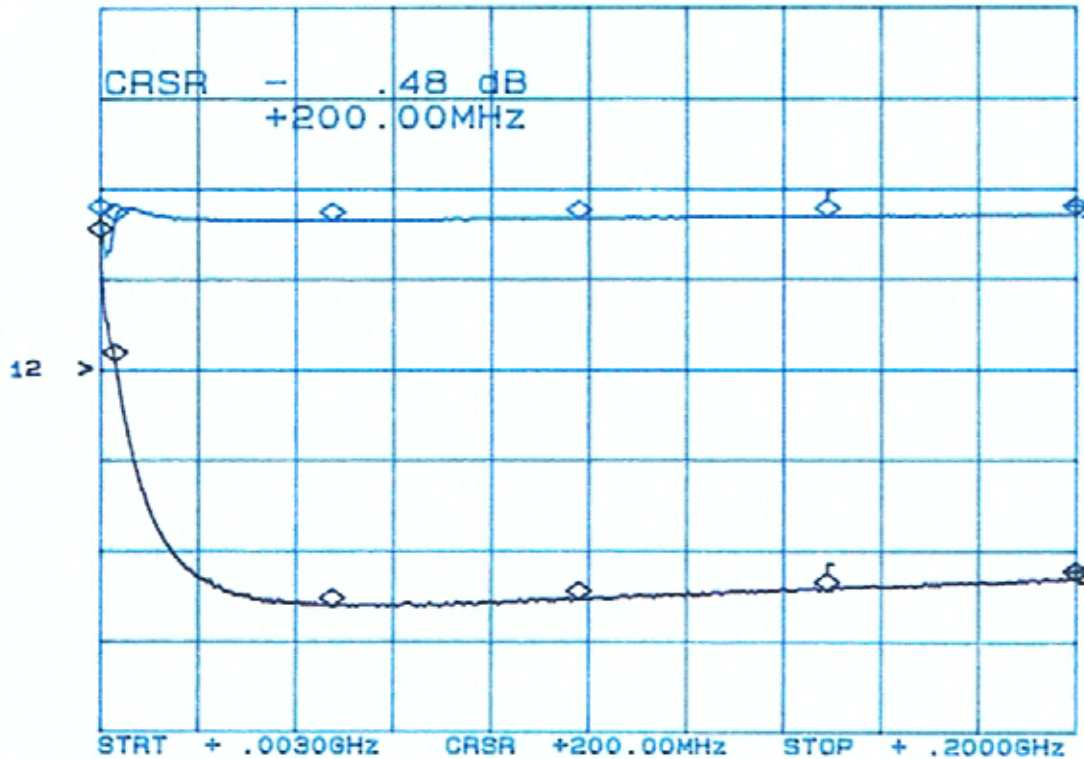
S/N	FREQUENCY	CHANNEL 1 INSERTION LOSS	CHANNEL 2 RETURN LOSS
1	3 MHz	0.36 dB	6.82 dB
2	6 MHz	0.126 dB	14.08 dB
3	50 MHz	0.525 dB	26.912 dB
4	100 MHz	0.503 dB	26.618 dB
5	150 MHz	0.186 dB	26.217 dB
6	200 MHz	0.175 dB	25.876 dB

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**SWEPT DATA: INSERTION LOSS & RETURN LOSS**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J3 @ 3 TO 200 MHz

CH1: R -M REF - .48 dB      CH2: B -M REF - 25.52 dB  
 1.0 dB/      2.20 dB      5.0 dB/      13.98 dB



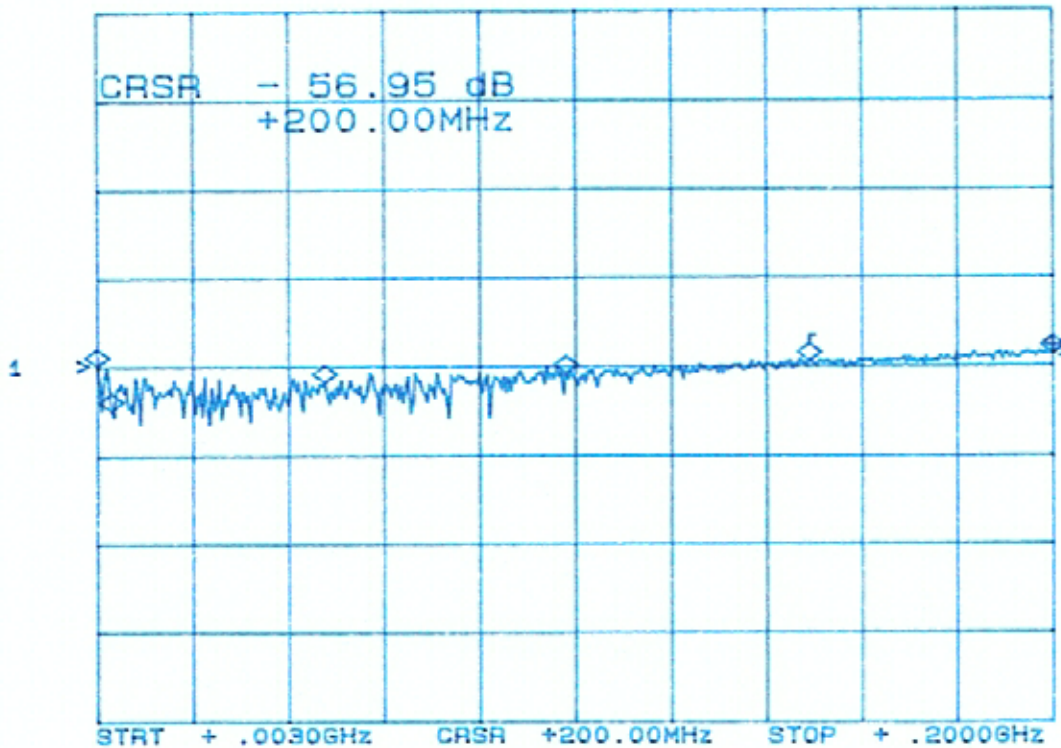
S/N	FREQUENCY	CHANNEL 1 INSERTION LOSS	CHANNEL 2 RETURN LOSS
1	3 MHz	0.475 dB	6.573 dB
2	6 MHz	0.481 dB	13.357 dB
3	50 MHz	0.541 dB	26.915 dB
4	100 MHz	0.514 dB	26.624 dB
5	150 MHz	0.492 dB	26.624 dB
6	200 MHz	0.481 dB	26.019 dB

AMC MODEL No. : SW-2001-2NM  
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**SWEPT DATA: ISOLATION**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J2 @ 3 TO 200 MHz

CH1: R -M - 56.95 dB  
 20.0 dB/ REF - 60.00 dB



S/N	FREQUENCY	ISOLATION
1	3 MHz	59.259 dB
2	6 MHz	63.313 dB
3	50 MHz	70.861 dB
4	100 MHz	65.121 dB
5	150 MHz	59.166 dB
6	200 MHz	57.007 dB

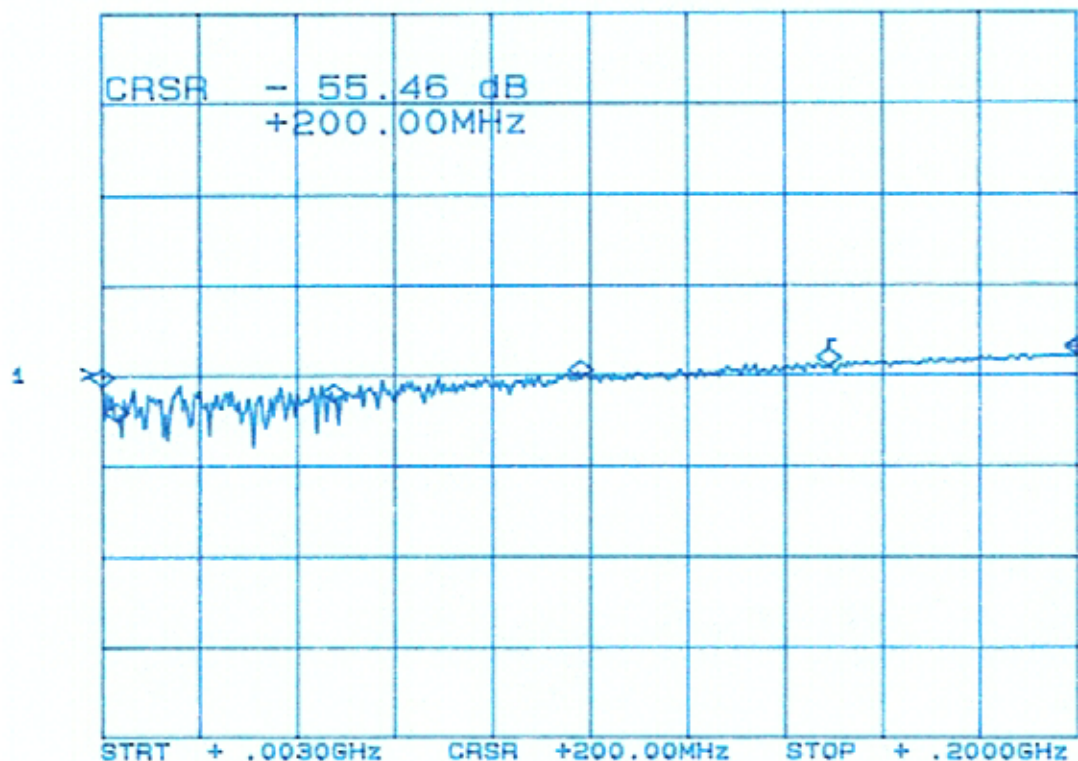


AMC MODEL No. : SW-2001-2NM  
 SERIAL No. : 2MS809870  
 TEST ENGINEER : RENE AFABLE



**SWEPT DATA: ISOLATION**  
**AS MEASURED ON A SCALAR NETWORK ANALYSER**  
**ARM J3 @ 3 TO 200 MHz**

CH1: R -M - 55.46 dB  
 20.0 dB/ REF - 60.00 dB



S/N	FREQUENCY	ISOLATION
1	3 MHz	60.611 dB
2	6 MHz	68.988 dB
3	50 MHz	70.105 dB
4	100 MHz	60.215 dB
5	150 MHz	57.103 dB
6	200 MHz	55.46 dB

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 TEST ENGINEER : RENE AFABLE



**SWEPT DATA: INSERTION LOSS & RETURN LOSS**  
**AS MEASURED ON A SCALAR NETWORK ANALYSER**  
ARM J2 @ 3 TO 2000 MHz

CH1: R -M - 1.40 dB      CH2: B -M - 14.06 dB  
 1.0 dB/ REF - 3.00 dB      5.0 dB/ REF - 9.54 dB



S/N	FREQUENCY	CHANNEL 1 INSERTION LOSS	CHANNEL 2 RETURN LOSS
1	3 MHz	0.294 dB	15.106 dB
2	250 MHz	0.164 dB	25.607 dB
3	500 MHz	0.503 dB	25.734 dB
4	1.0 GHz	1.047 dB	18.587 dB
5	1.5 GHz	1.085 dB	14.846 dB
6	2.0 GHz	1.404 dB	14.055 dB

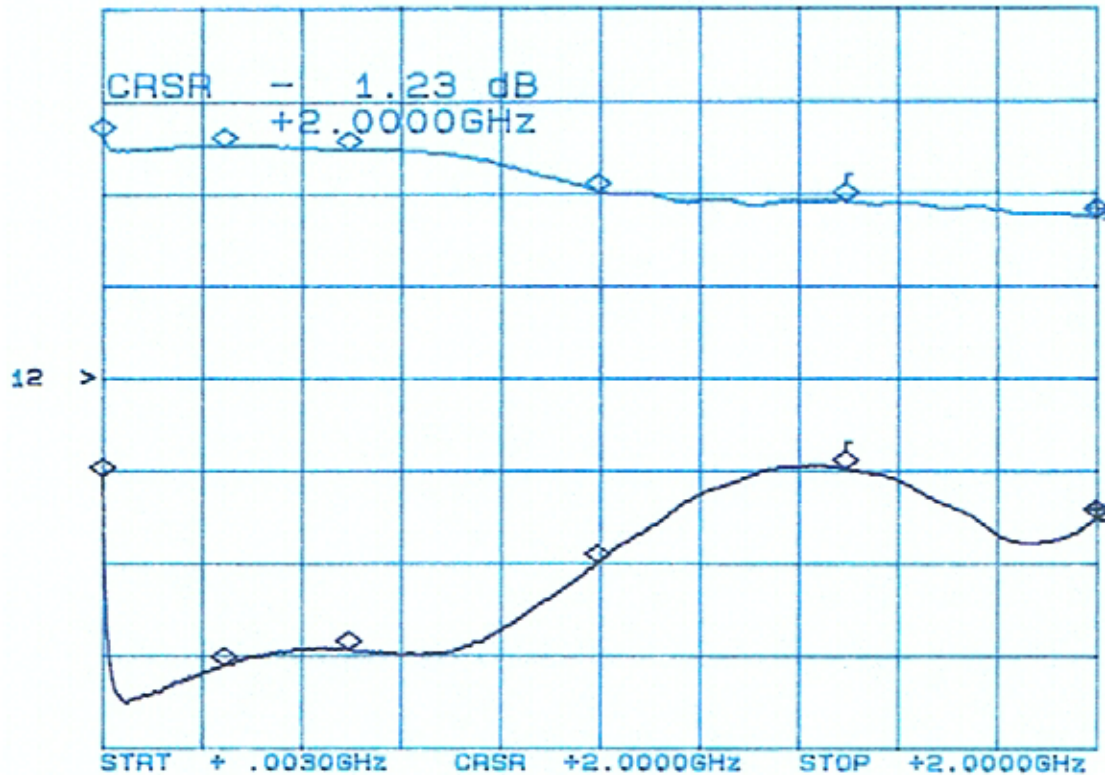


AMC MODEL No. : SW-2001-2NM  
 SERIAL No. : 2MS809870  
 TEST ENGINEER : RENE AFABLE



**SWEPT DATA: INSERTION LOSS & RETURN LOSS**  
**AS MEASURED ON A SCALAR NETWORK ANALYSER**  
**ARM J3 @ 3 TO 2000 MHz**

CH1: R -M REF - 1.23 dB      CH2: B -M REF - 17.09 dB  
 1.0 dB/ REF - 3.00 dB      5.0 dB/ REF - 9.54 dB



S/N	FREQUENCY	CHANNEL 1 INSERTION LOSS	CHANNEL 2 RETURN LOSS
1	3 MHz	0.343 dB	14.851 dB
2	250 MHz	0.461 dB	24.981 dB
3	500 MHz	0.508 dB	24.217 dB
4	1.0 GHz	0.970 dB	19.471 dB
5	1.5 GHz	1.069 dB	14.401 dB
6	2.0 GHz	1.222 dB	17.087 dB



AMC MODEL No. : SW-2001-2NM  
 SERIAL No. : 2MS809870  
 TEST ENGINEER : RENE AFABLE



**SWEPT DATA: ISOLATION**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J2 @ 3 TO 2000 MHz

CH1: R -M - 39.36 dB  
 20.0 dB/ REF - 60.00 dB



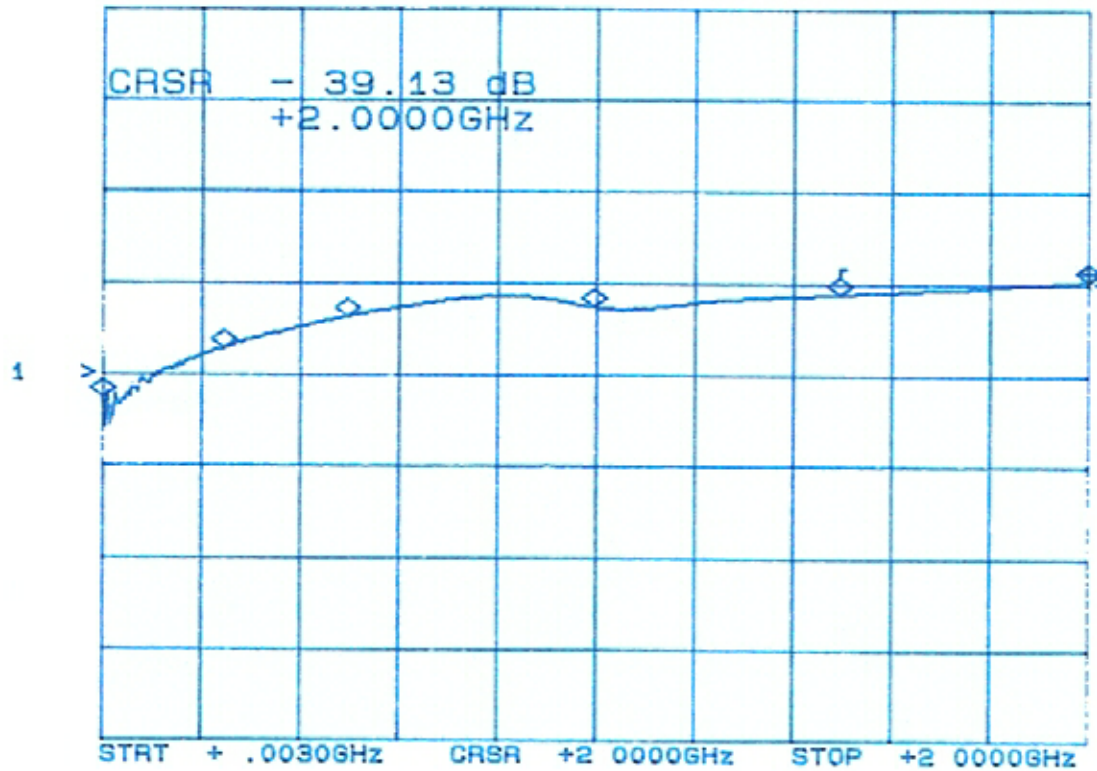
S/N	FREQUENCY	ISOLATION
1	3 MHz	65.522 dB
2	250 MHz	55.233 dB
3	500 MHz	48.619 dB
4	1.0 GHz	48.855 dB
5	1.5 GHz	43.087dB
6	2.0 GHz	39.363 dB

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**SWEPT DATA: ISOLATION**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J3 @ 3 TO 2000 MHz

CH1: R -M - 39.13 dB  
 20.0 dB/ REF - 60.00 dB



S/N	FREQUENCY	ISOLATION
1	3 MHz	62.621 dB
2	250 MHz	53.815 dB
3	500 MHz	47.064 dB
4	1.0 GHz	44.966 dB
5	1.5 GHz	42.060 dB
6	2.0 GHz	39.126 dB



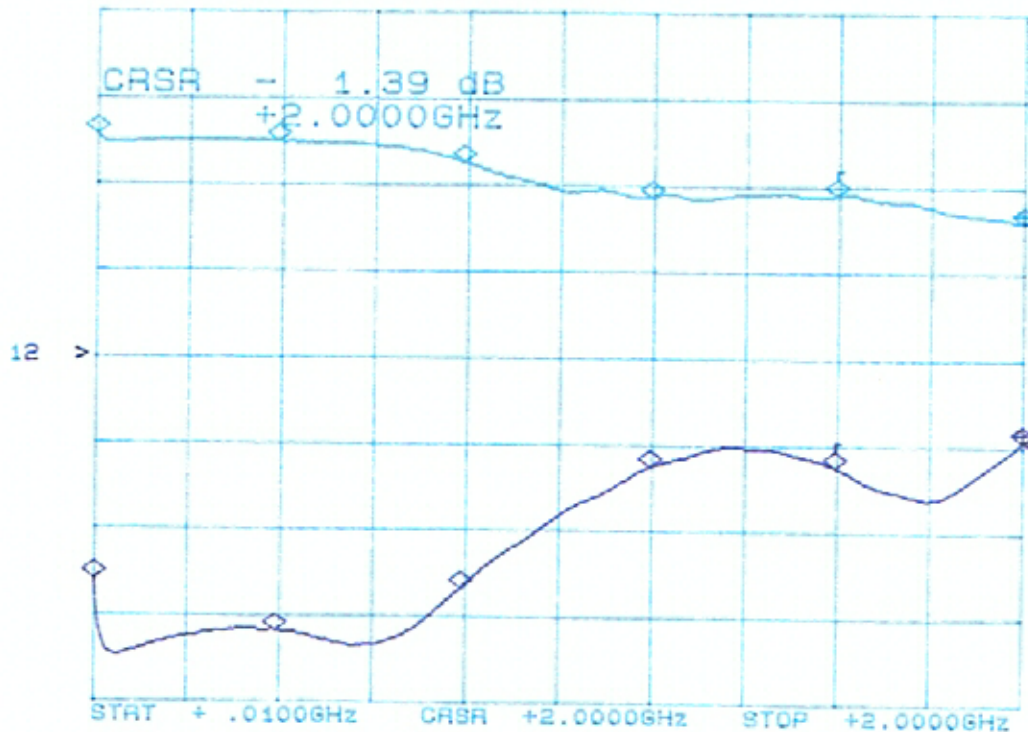
AMC MODEL No. : SW-2001-2NM  
 SERIAL No. : 2MS809870  
 TEST ENGINEER : RENE AFABLE



**SWEPT DATA: INSERTION LOSS & RETURN LOSS**  
**AS MEASURED ON A SCALAR NETWORK ANALYSER**  
**ARM J2 @ 10 TO 2000 MHz**

CH1: R -M - 1.39 dB      CH2: B -M - 14.23 dB  
 1.0 dB/ REF - 3.00 dB      5.0 dB/ REF - 9.54 dB

32  
 205  
 +  
 VSWR  
 dB - 20



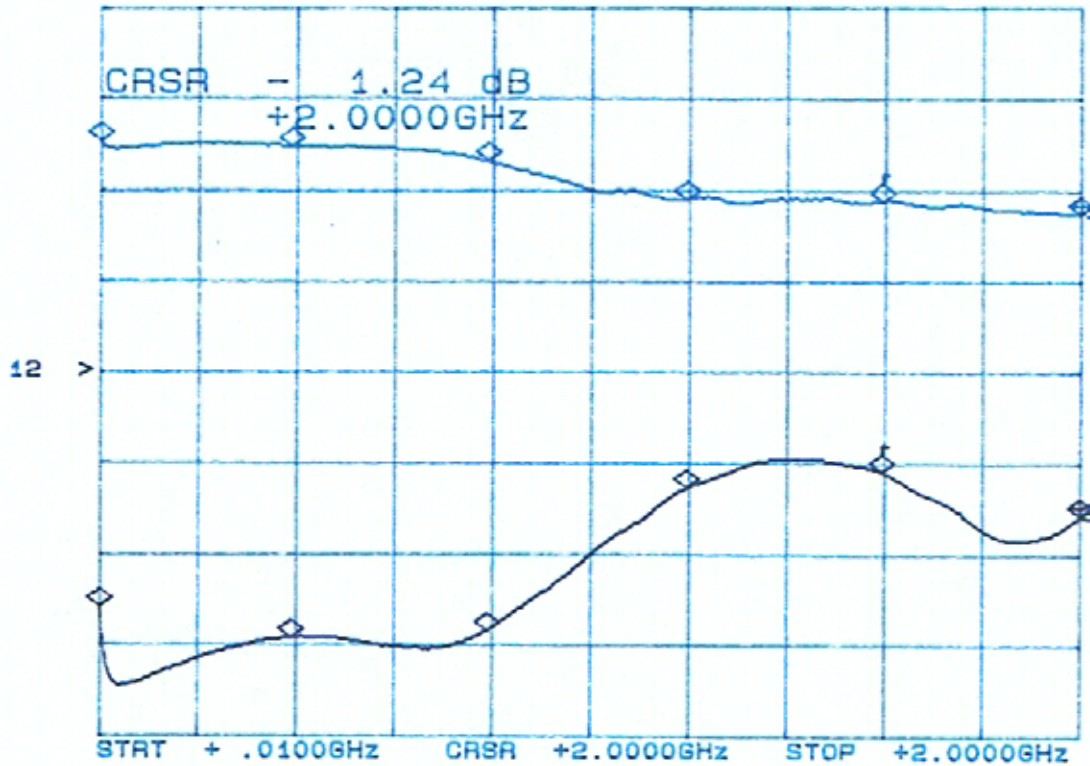
S/N	FREQUENCY	CHANNEL 1 INSERTION LOSS	CHANNEL 2 RETURN LOSS
1	10 MHz	0.415 dB	22.372 dB
2	400 MHz	0.497 dB	25.366 dB
3	800 MHz	0.728 dB	22.861 dB
4	1.2 GHz	1.118 dB	15.752 dB
5	1.6 GHz	1.096 dB	15.714 dB
6	2.0 GHz	1.387 dB	15.714 dB

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**SWEPT DATA: INSERTION LOSS & RETURN LOSS**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J3 @ 10 TO 2000 MHz

CH1: R -M - 1.24 dB      CH2: B -M - 17.37 dB  
 1.0 dB/ REF - 3.00 dB      5.0 dB/ REF - 9.54 dB



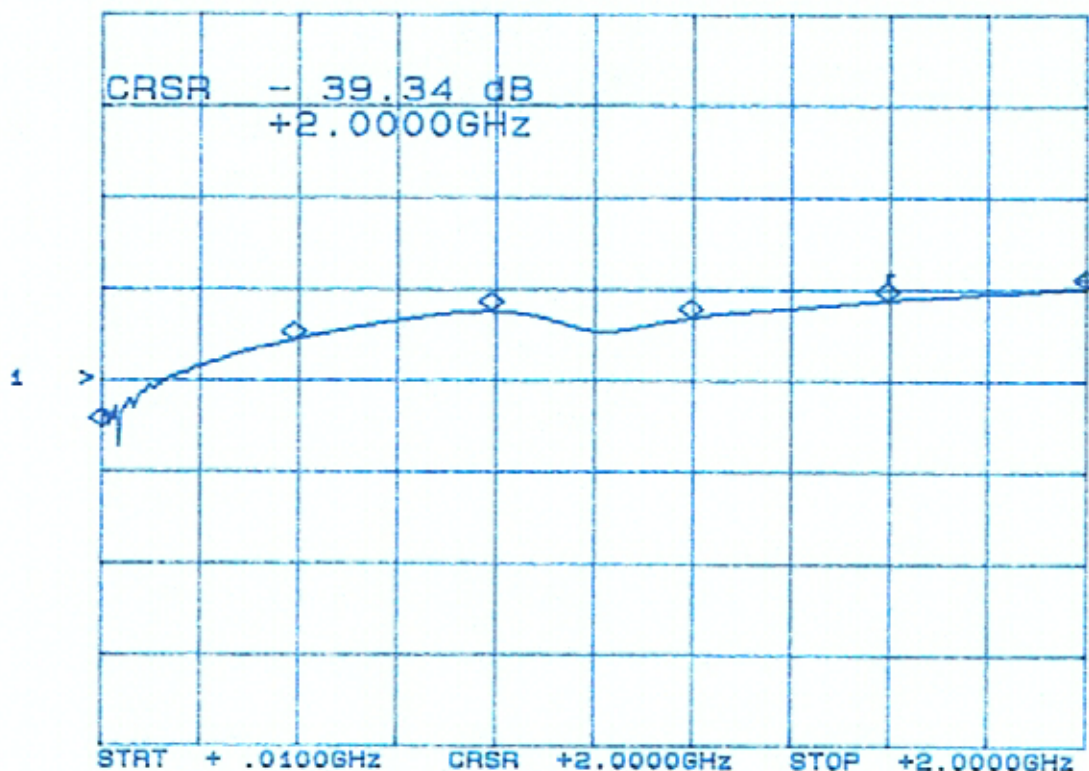
S/N	FREQUENCY	CHANNEL 1 INSERTION LOSS	CHANNEL 2 RETURN LOSS
1	10 MHz	0.470 dB	22.273 dB
2	400 MHz	0.508 dB	24.102 dB
3	800 MHz	0.673 dB	23.668 dB
4	1.2 GHz	1.080 dB	15.857 dB
5	1.6 GHz	1.107 dB	14.994 dB
6	2.0 GHz	1.244 dB	17.367 dB





**SWEPT DATA: ISOLATION**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J2 @ 10 TO 2000 MHz

CH1: R -M - 39.34 dB  
 20.0 dB/ REF - 80.00 dB

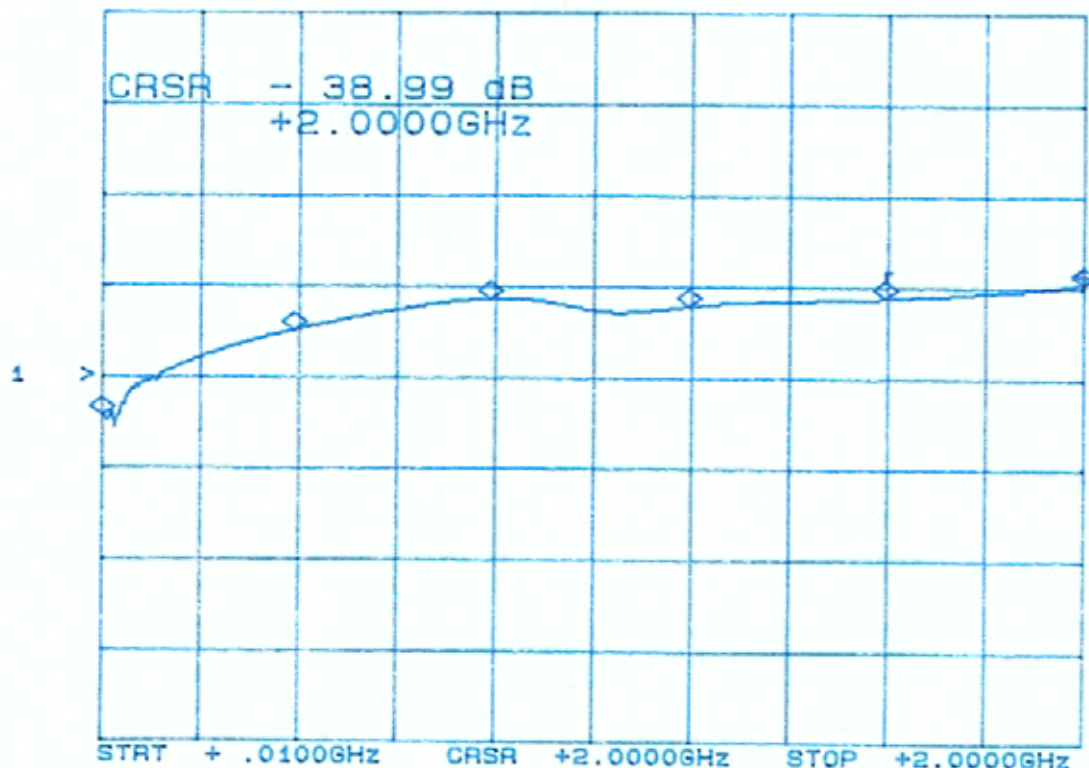


S/N	FREQUENCY	ISOLATON
1	10 MHz	71.757 dB
2	400 MHz	50.701 dB
3	800 MHz	44.625 dB
4	1.2 GHz	46.020 dB
5	1.6 GHz	42.142 dB
6	2.0 GHz	39.330 dB



**SWEPT DATA: ISOLATION**  
**AS MEASURED ON A SCALAR NETWORK ANALYSER**  
**ARM J3 @ 10 TO 2000 MHz**

CH1: R -M - 38.99 dB  
 20.0 dB/ REF - 60.00 dB



S/N	FREQUENCY	ISOLATION
1	10 MHz	76.366 dB
2	400 MHz	49.251 dB
3	800 MHz	42.381 dB
4	1.2 GHz	44.070 dB
5	1.6 GHz	42.230 dB
6	2.0 GHz	39.000 dB

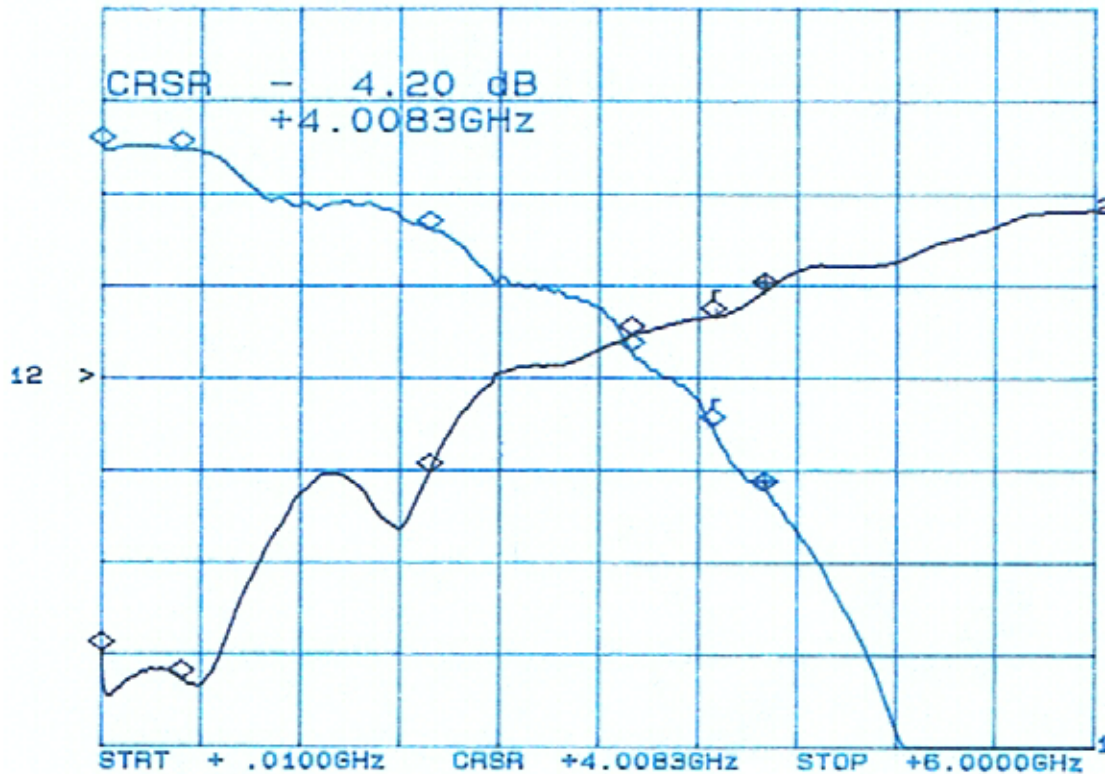


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 SERIAL No. : 2MS809870  
 TEST ENGINEER : RENE AFABLE



**SWEPT DATA: INSERTION LOSS & RETURN LOSS**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J2 @ 10 TO 4000 MHz

CH1: R -M REF - 4.20 dB      CH2: B -M REF - 4.78 dB  
 1.0 dB/ REF - 3.00 dB      5.0 dB/ REF - 9.54 dB

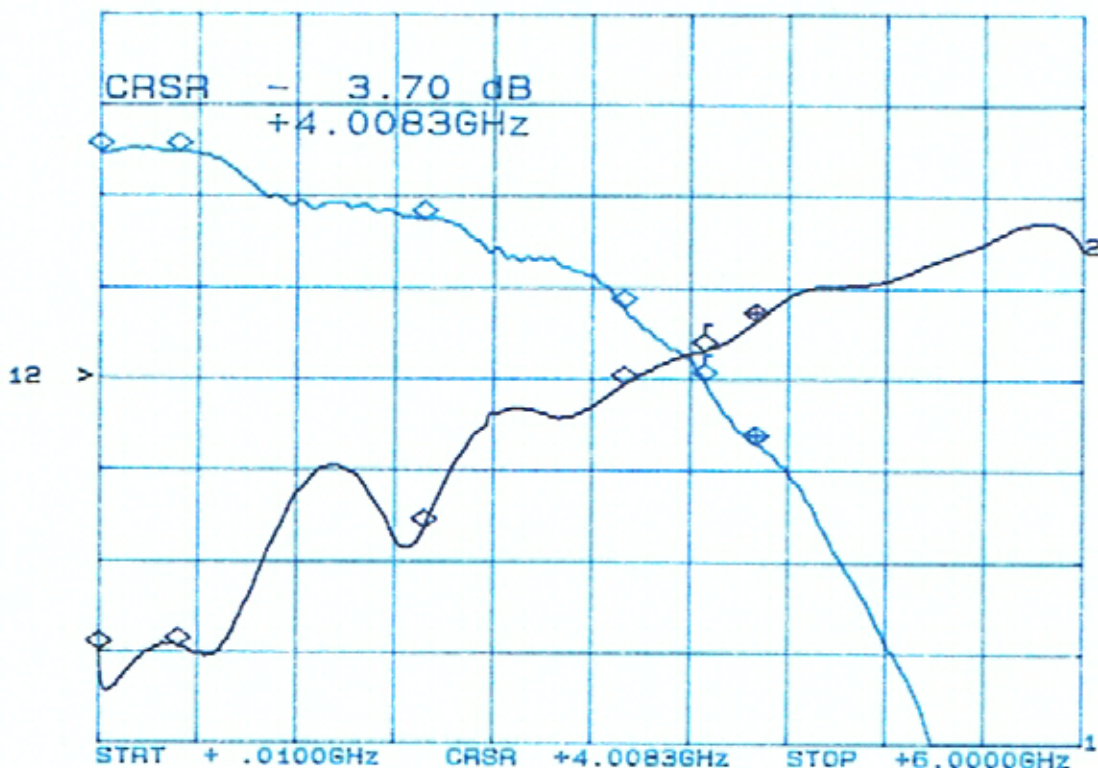


S/N	FREQUENCY	CHANNEL 1 INSERTION LOSS	CHANNEL 2 RETURN LOSS
1	10 MHz	0.464 dB	24.399 dB
2	500 MHz	0.508 dB	25.800 dB
3	2.0 GHz	1.382 dB	14.549 dB
4	3.2 GHz	2.711 dB	7.188 dB
5	3.7 GHz	3.519 dB	6.232 dB
6	4.0 GHz	4.20 dB	4.782 dB



**SWEPT DATA: INSERTION LOSS & RETURN LOSS**  
**AS MEASURED ON A SCALAR NETWORK ANALYSER**  
**ARM J3 @ 10 TO 4000 MHz**

CH1: R -M - 3.70 dB      CH2: B -M - 6.29 dB  
 1.0 dB/ REF - 3.00 dB      5.0 dB/ REF - 9.54 dB



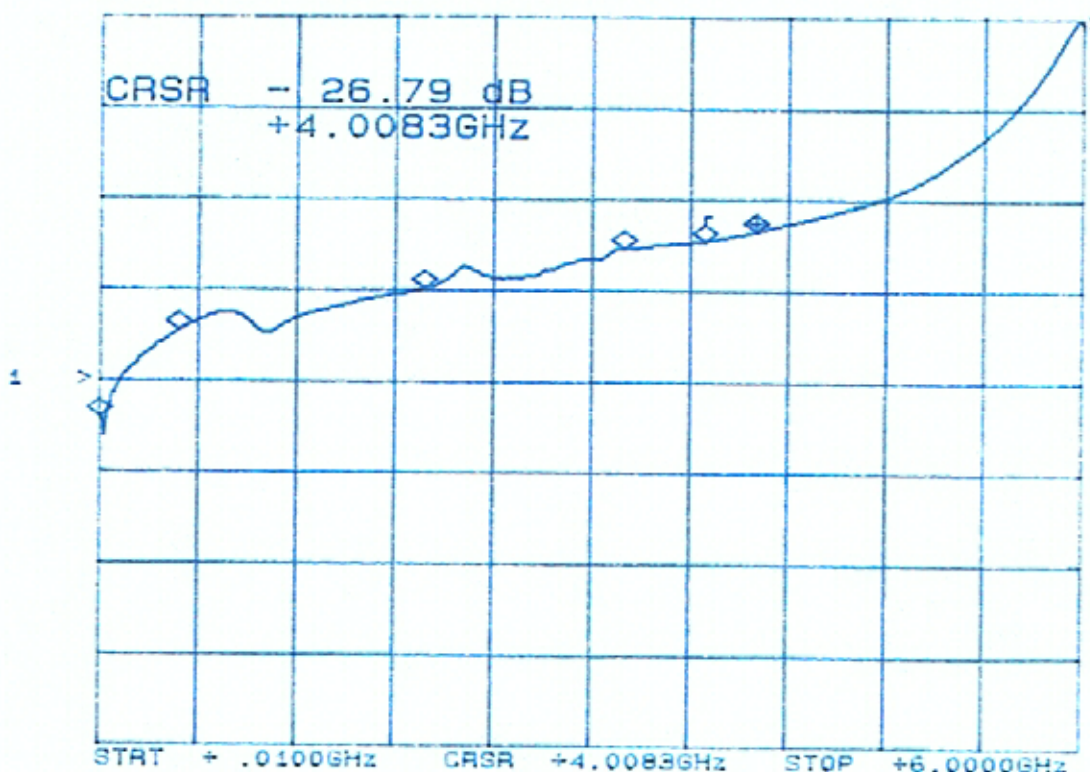
S/N	FREQUENCY	CHANNEL 1 INSERTION LOSS	CHANNEL 2 RETURN LOSS
1	10 MHz	0.508 dB	24.432 dB
2	500 MHz	0.519 dB	24.141 dB
3	2.0 GHz	1.233 dB	17.636 dB
4	3.2 GHz	2.206 dB	9.792 dB
5	3.7 GHz	3.008 dB	7.924 dB
6	4.0 GHz	3.70 dB	6.276 dB





**SWEPT DATA: ISOLATION**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J2 @ 10 TO 4000 MHz

CH1: R -M - 26.79 dB  
 20.0 dB/ REF - 60.00 dB



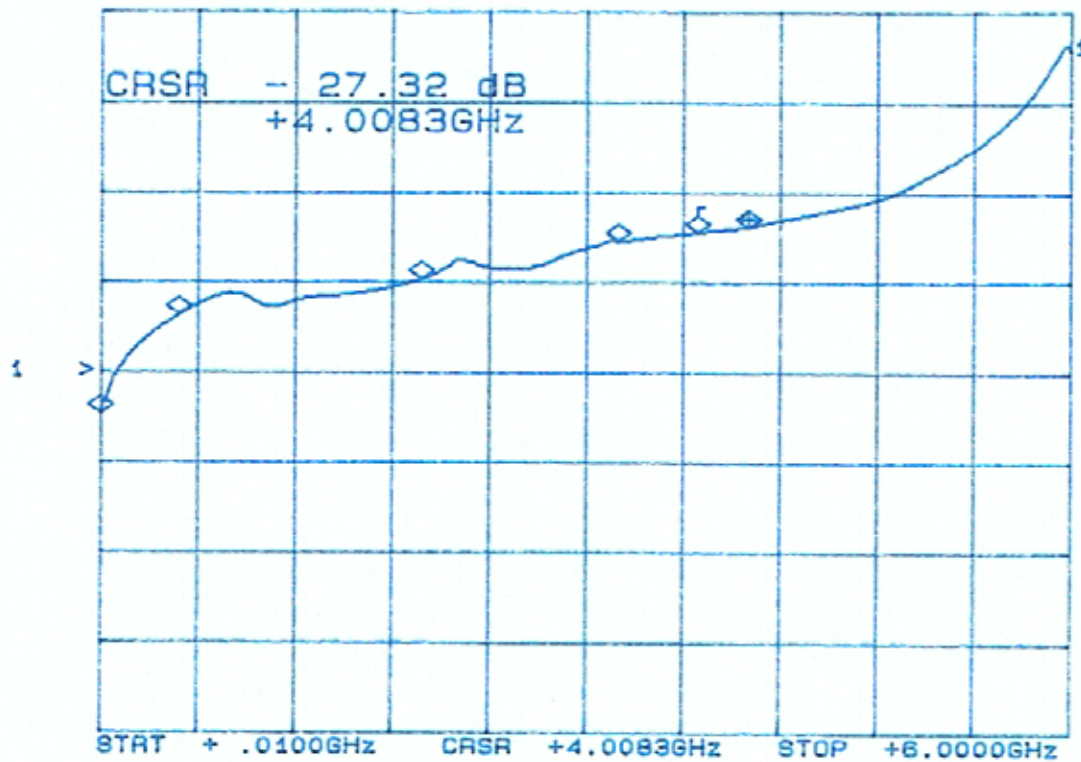
S/N	FREQUENCY	ISOLATION
1	10 MHz	70.861 dB
2	500 MHz	48.701 dB
3	2.0 GHz	39.167 dB
4	3.2 GHz	30.645 dB
5	3.7 GHz	28.961 dB
6	4.0 GHz	26.791 dB

AMC MODEL No. : SW-2001-2NM  
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 TEST ENGINEER : RENE AFABLE



**SWEPT DATA: ISOLATION**  
 AS MEASURED ON A SCALAR NETWORK ANALYSER  
ARM J3 @ 10 TO 4000 MHz

CH1: R -M - 27.32 dB  
 20.0 dB/ REF - 60.00 dB



S/N	FREQUENCY	ISOLATION
1	10 MHz	72.410 dB
2	500 MHz	47.097 dB
3	2.0 GHz	39.110 dB
4	3.2 GHz	30.569 dB
5	3.7 GHz	28.689 dB
6	4.0 GHz	27.321 dB





**ISOLATION**  
**AS MEASURED ON A SPECTRUM ANALYSER**  
**FROM 3 MHz TO 5 GHz**

S/N	FREQUENCY	ARM J2	ARM J3
1	3 MHz	68	67
2	10 MHz	69	68
3	30 MHz	66	66
4	100 MHz	64	62
5	200 MHz	58	56
6	500 MHz	50	48
7	1 GHz	50	46
8	2 GHz	39	39
9	3.5 GHz	29	30
10	4 GHz	27	28
11	5 GHz	16	18



**ORIGINAL TEST DATA**

FORM: SW-01/0698



DATE: 3/24/99

**MICROWAVE SWITCH FINAL TEST DATA**

JOB NO: 703036 MODEL NO: SW-2001-2NM SERIAL NO: 2MS809870  
 CUSTOMER: FAA TECHNICIAN: PA  
 SPECIFICATION: \_\_\_\_\_ FREQUENCY RANGE: 0.002 - 0.2 GHz

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 0.67 dB	11.98 dB	1.67 :1	11.96 dB	1.68 :1		
J1-J3 0.85 dB	11.46 dB	1.73 :1	11.41 dB	1.74 :1		

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 58 dB	400 ns	280 ns	240 ns	110 ns
J1-J3 56 dB	320 ns	220 ns	240 ns	110 ns

NOTE: Any additional Test Data on Back

TESTED ON: 8757A/8350B

TEST : PA  
 QA/QC : 110  
 DATE : 3/26/99