



TEST DATA

ON

10 MHz TO 2 GHz
(10 MHz GHz TO 18 GHz ALSO AVAILABLE)

LOW LOSS

HIGH ISOLATION

ABSORPTIVE & REFLECTIVE

SP8T PIN DIODE SWITCH

AMC MODEL Nos:

SWN-2000-8DT-0012 (ABSORPTIVE)

SWN-2000-8DR-0012 (REFLECTIVE)

Serial No: 8MS60475

AND

MSN-8DR/DT-05-10M2 (REFLECTIVE or ABSORPTIVE)

MSN-8DR/DT-06-10M2 (REFLECTIVE or ABSORPTIVE)

MSNC-8DR/DT-06-10M2 (REFLECTIVE or ABSORPTIVE)

**DESIGNED
BY
A. K. GORWARA**

**REPORTED
BY
P. D. WOOD**

MAY 29, 1998

WEBSITE: [HTTP://WWW.AMWAVE.COM](http://www.amwave.com)

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7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938



AMERICAN MICROWAVE CORPORATION

**10 MHz TO 2 GHz
ABSORPTIVE
LOW LOSS, HIGH ISOLATION
SP8T PIN DIODE SWITCH**

- LOW LOSS
- ABSORPTIVE
- HIGH ISOLATION

AMC MODEL Nos:

SWN-2000-8DR/DT-0012 (ABSORPTIVE or REFLECTIVE)

MSN-8DR/DT-05-10M2 (ABSORPTIVE or REFLECTIVE)

MSN-8DR/DT-06-10M2 (ABSORPTIVE or REFLECTIVE)

MSNC-8DR/DT-06-10M2 (ABSORPTIVE or REFLECTIVE)

SPECIFICATIONS:

- **FREQUENCY RANGE** : 10 MHz GHz TO 2 GHz
- **INSERTION LOSS** : 2.50 dB MAX.
(For Absorptive, Non-Absorptive or Reflective reduces Loss by about 0.5 dB)
 - : 1.50 dB TYP. @ 0.01 GHz
 - : 1.30 dB TYP. @ 0.5 GHz
 - : 1.50 dB TYP. @ 1.0 GHz
 - : 2.00 dB TYP. @ 2.0 GHz
- **ISOLATION** : 75 dB MIN.
 - : 90 dB TYP. @ 0.05 GHz
 - : 95 dB TYP. @ 0.1 GHz
 - : 95 dB TYP. @ 0.5 GHz
 - : 90 dB TYP. @ 1.0 GHz
 - : 80 dB TYP. @ 2.0 GHz
- **VSWR** : 2.0:1
- **SWITCHING SPEED** :

	<u>ALL SERIES DESIGN</u>	<u>SERIES/SHUNT DESIGN</u>
RISE	50 nS Maximum	25 nS Maximum
FALL	50 nS Maximum	25 nS Maximum
ON	250 nS Maximum	100 nS Maximum
OFF	250 nS Maximum	100 nS Maximum
- **CONTROL** : TTL Compatible (Independent Control, Standard; 3-bit Binary Decoder Available)
- **VIDEO TRANSIENTS** : 2.5 V Peak to Peak in a 20 MHz BW (Without Video Filters)
: 3.0 V Peak to Peak in a 300 MHz BW (Without Video Filters)
- **RF INPUT POWER** : +20 dBm Operating, 1 Watt Survival
- **DC POWER SUPPLY** : +5vdc @ 250 mA MAX., <200 mA TYP. (+5/-5vdc Standard,
: -5vdc @ 75 mA MAX., <50 mA TYP. Other Voltage Options Also Available)
- **SIZE & WEIGHT** : SWN : 5.1" X 2.0" X 0.56" @ <7.0 oz. (5.10 " X 2.0" X 0.75" Also Available)
: MSN-05: 4.0" X 1.5" X 0.40", MSN-06: 4.75" X 1.5" X 0.5" Both <6.0oz.
: MSNC-06: 4.76" X 1.5" X 0.40" <6.0oz.

ABOVE DATA IS TYPICAL FOR ABSORPTIVE OR REFLECTIVE VERSIONS.
OTHER MULTI-THROW (SP2T, SP3T, SP4T, SP5T, SP6T & SP7T) DESIGNS AVAILABLE.

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SUMMARY TEST DATA

MODEL NUMBER

: SWN-2000-8DR/DT-0012

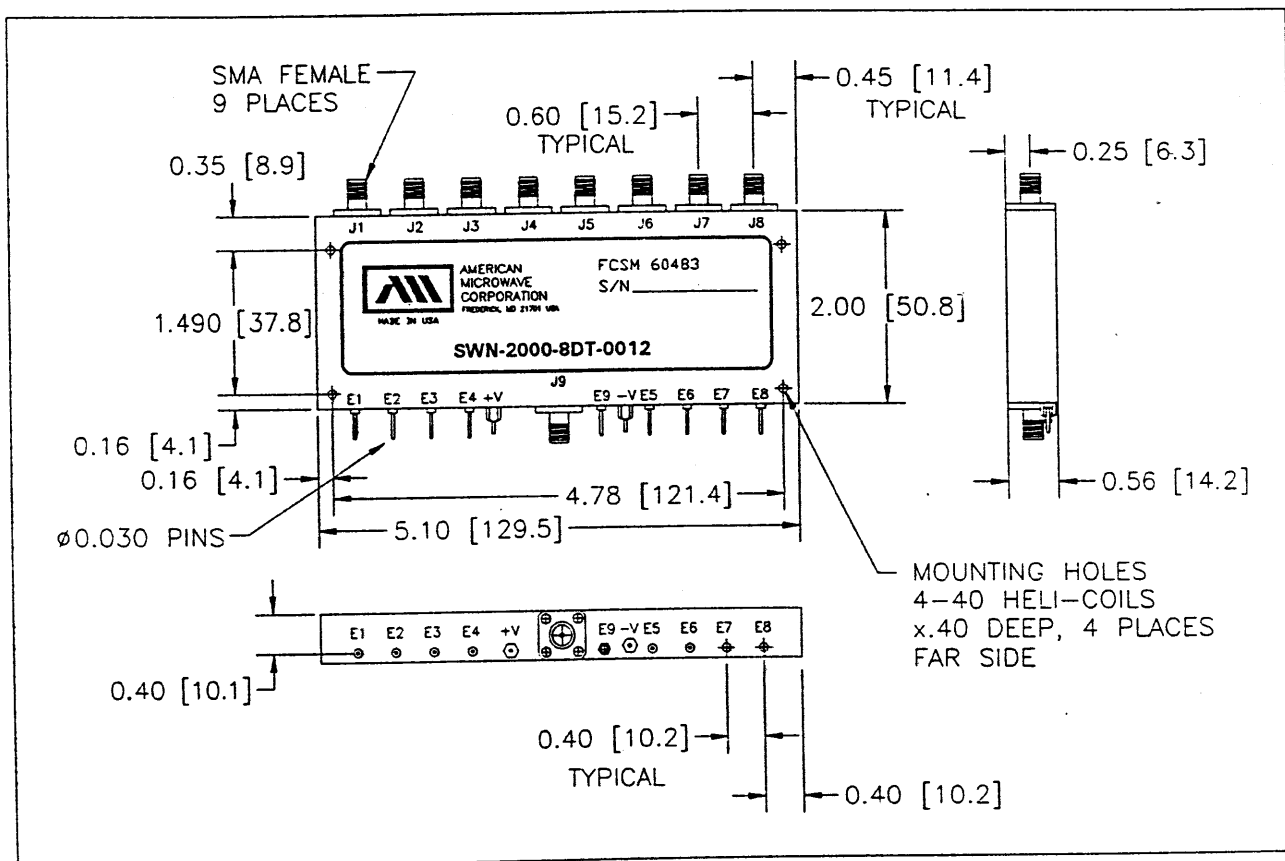
: MSN-8DR/DT-05-10M2

: MSN-9DR/DT-06-10M2

TECHNICIAN

: R. AFABLE

MECHANICAL OUTLINES



SWN-2000-8DT-0012

TOLERANCE: X.XX ±0.05 INCHES, X.XXX ±0.002 INCHES

ENVIRONMENTAL RATINGS

- TEMPERATURE -54°C TO +85°C (OPERATING)
-65°C TO +100°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

MAY 25, 1998



SUMMARY TEST DATA

MODEL NUMBER

: SWN-2000-8DR/DT-0012

: MSN-8DR/DT-05-10M2

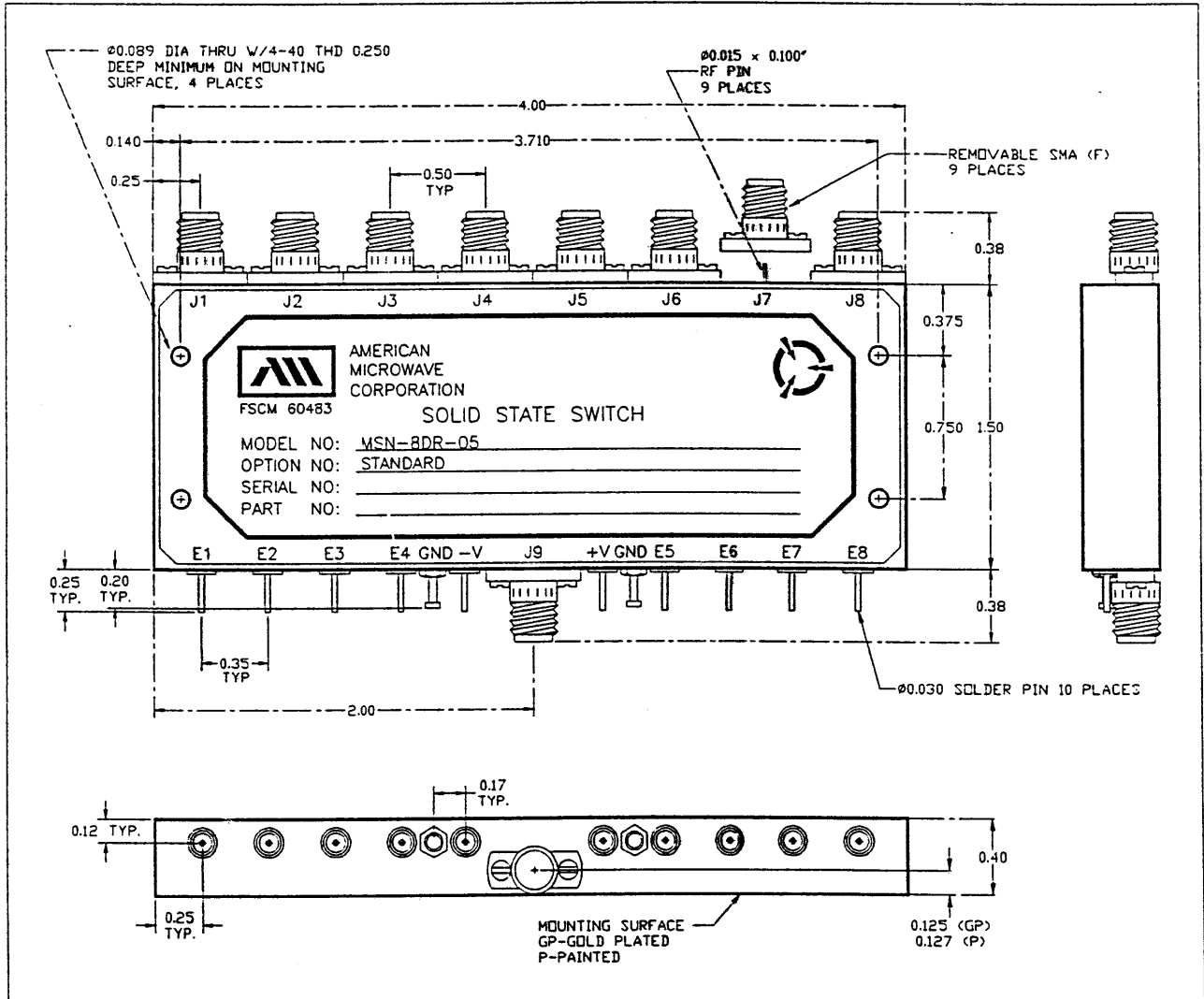
: MSN-9DR/DT-06-10M2

TECHNICIAN

: R. AFABLE

MECHANICAL OUTLINES

(CONTINUED)



MSN-8DR/DT-05-STANDARD
WITH INDEPENDENT CONTROLS

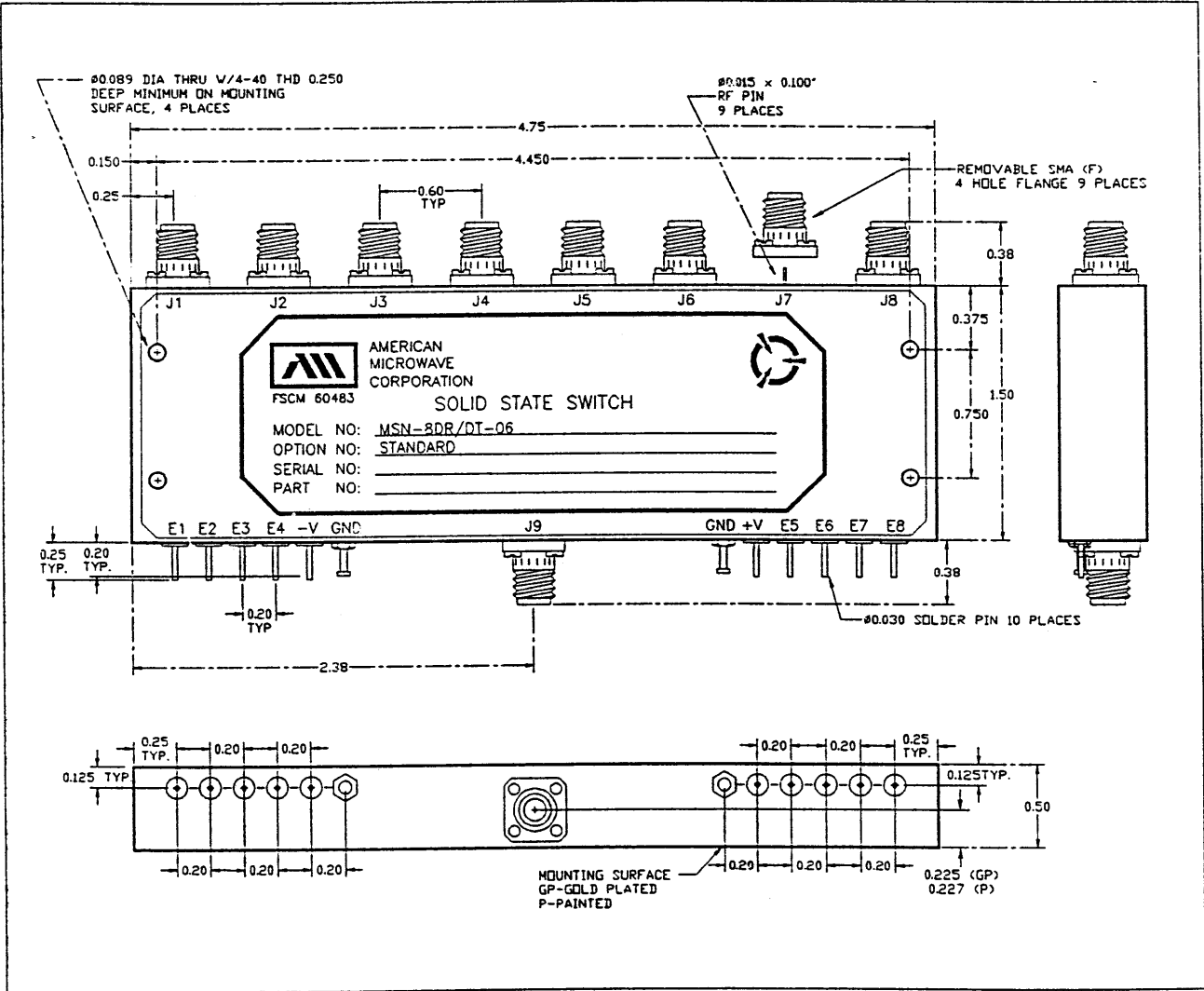
MAY 25, 1998



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE

MECHANICAL OUTLINES (CONTINUED)



**MSN-8DR/DT-06-STANDARD
WITH INDEPENDENT CONTROLS**

MAY 25, 1998



SUMMARY TEST DATA

MODEL NUMBER

: SWN-2000-8DR/DT-0012

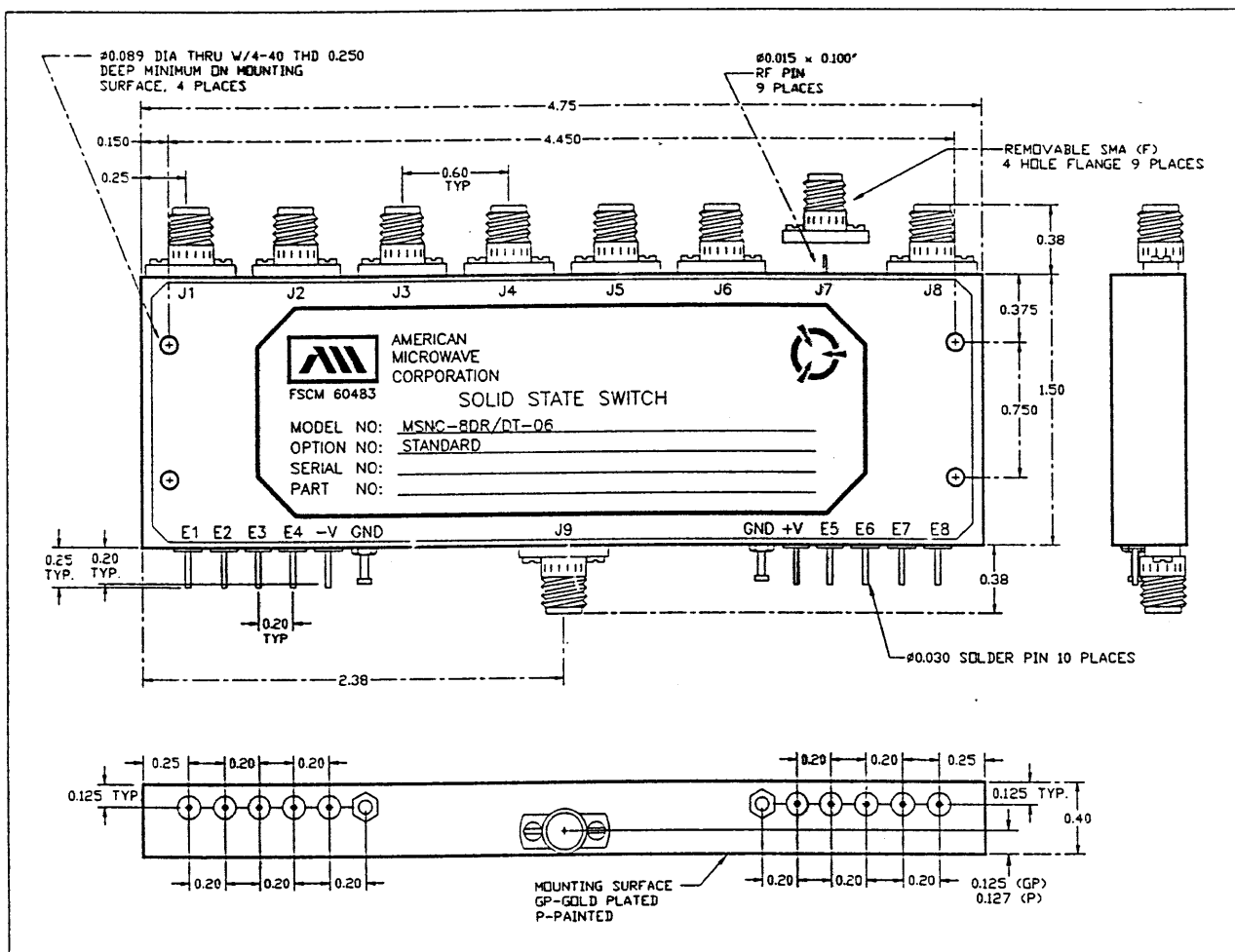
: MSN-8DR/DT-05-10M2

: MSN-9DR/DT-06-10M2

TECHNICIAN

: R. AFABLE

MECHANICAL OUTLINES (CONTINUED)



**MSNC-8DR/DT-06-STANDARD
WITH INDEPENDENT CONTROLS**

MAY 25, 1998



AVAILABLE OPTIONS AND HOW TO ORDER

SWN-2000 SERIES OF SWITCHES

EXAMPLE :

SWN - 2000 - 8 D T - XXXX - ###
 1 2 3 4 5 6 7

- 1. : SWN : Switch Designator (SW = Older Models, SWN = Newer Models)
- 2. : 2000 : Series Designator (2181 = Older Models, 218 or 1170 = Newer Models)
- 3. : 8 : Number of Throws, ie: 3 (SP3T), 4 (SP4T), 5 (SP5T), 6 (SP6T), 7 (SP7T), 8 (SP8T)
- 4. : D : Indicates Integral Driver
- 5. : T : T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
- 6. : XXXX : Frequency Range of Switch as Illustrated Below
- 7. : ### : Available Options as Noted Below

OPTION:	MULTI-THROW SWITCH OPTIONS
001	SMA Male RF Connectors (Increases Insertion Loss by 0.25dB per Arm)
002	Inverted Logic, "0" = ON (Standard TTL Logic is "1" = ON)
003	+ 12vdc DC Power Supply (Standard is \pm 5vdc)
004	+ 15vdc DC Power Supply (Standard is \pm 5vdc)
005	3-bit Binary Decoder
006	- 12vdc DC Power Supply (Standard is \pm 5vdc)
007	- 15vdc DC Power Supply (Standard is \pm 5vdc)
008	MULTIPIN CONNECTOR
009	0.4" THICK OPTION AVAILABLE (Consult Factory For Details)
XXXX	<p style="text-align: center;">Indicates the Frequency for which the Switch has been Adjusted</p> <p>For Example:</p> <p style="margin-left: 40px;">10M2 = 10 MHz to 2.0 GHz</p> <p style="margin-left: 40px;">40M2 = 40 MHz to 2.0 GHz</p> <p style="margin-left: 40px;">12 = 1.0 GHz to 2.0 GHz</p> <p style="margin-left: 40px;">1052 = 1.5 GHz to 2.0 GHz</p>

AMERICAN MICROWAVE CORPORATION
7311-G GROVE ROAD, FREDERICK, MARYLAND 21704
TELEPHONE NUMBER : 301-662-4700
FACIMILE NUMBER : 301-662-4938

PLEASE CALL OR FAX FOR CATALOGS, TEST REPORTS AND ORDERING INFORMATION
ON ANY OF OUR PRODUCTS

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AVAILABLE OPTIONS AND HOW TO ORDER MSN SERIES OF SWITCHES

EXAMPLE :

MSN - 8 DR/DT - 05 - XXX - ###
1 2 3 4 5 6

- 1. : MSN : Switch Designator Microwave Switch New
- 2. : 8 : Number of Throws, ie: 3 (SP3T), 4 (SP4T), 5 (SP5T), 6 (SP6T), 7 (SP7T), 8 (SP8T)
- 3. : DT/DR : D=Integral Driver, T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
- 4. : 05 : 05=0.5" between SMA connectors center to center, 06=0.6" between SMA connectors center to center
- 5. : XXXX : Available Options as Noted Below
- 6. : ### : Frequency Range of Switch as Illustrated Below

OPTION:	MSN MULTI-THROW SWITCH OPTIONS
(NOTE)	INDEPENDENT CONTROL WITH SOLDER PINS IN STANDARD
DEC-MP	3-BIT BINARY DECODER WITH MULTIPIN CONNECTOR
DEC-SP	3-BIT BINARY DECODER WITH SOLDER PINS
MP-IND	INDEPENDENT CONTROL WITH MULTIPIN CONNECTOR
10M2	10 Mhz TO 2.0 GHZ FREQUENCY RANGE
10M18	10 Mhz TO 18.0 GHZ FREQUENCY RANGE)
100M18	100 Mhz TO 18.0 Ghz
118	1 Ghz TO 18 Ghz
218	2 Ghz TO 18 Ghz
412	4 Ghz TO 12 Ghz
618	6 Ghz TO 18 Ghz
1218	12 Ghz TO 18 Ghz
100M20	100 Mhz TO 20.0 Ghz
220	2 Ghz TO 20 Ghz
1020	10 Ghz TO 20 Ghz
B01	-12 VOLT POWER SUPPLIES
B02	-15 VOLT POWER SUPPLIES
B03	REVERSE LOGIC "1" = ON, "0" = OFF
B04	DRIVERLESS CONFIGURATION (CURRENT CONTROLLED)
B05	HIGH SPEED, TURNON/TURNOFF 20 nS MAXIMUM WHEN APPLICABLE
B06	HIGH POWER - SPECIFY CW & PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
B07	CUSTOM DESIGNED PRODUCT - SPECIFY WITH INITIALS OF CUSTOMER
B08	LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
B09	LOW INSERTION LOSS VERSION
B10	HIGHER ISOLATION VERSION

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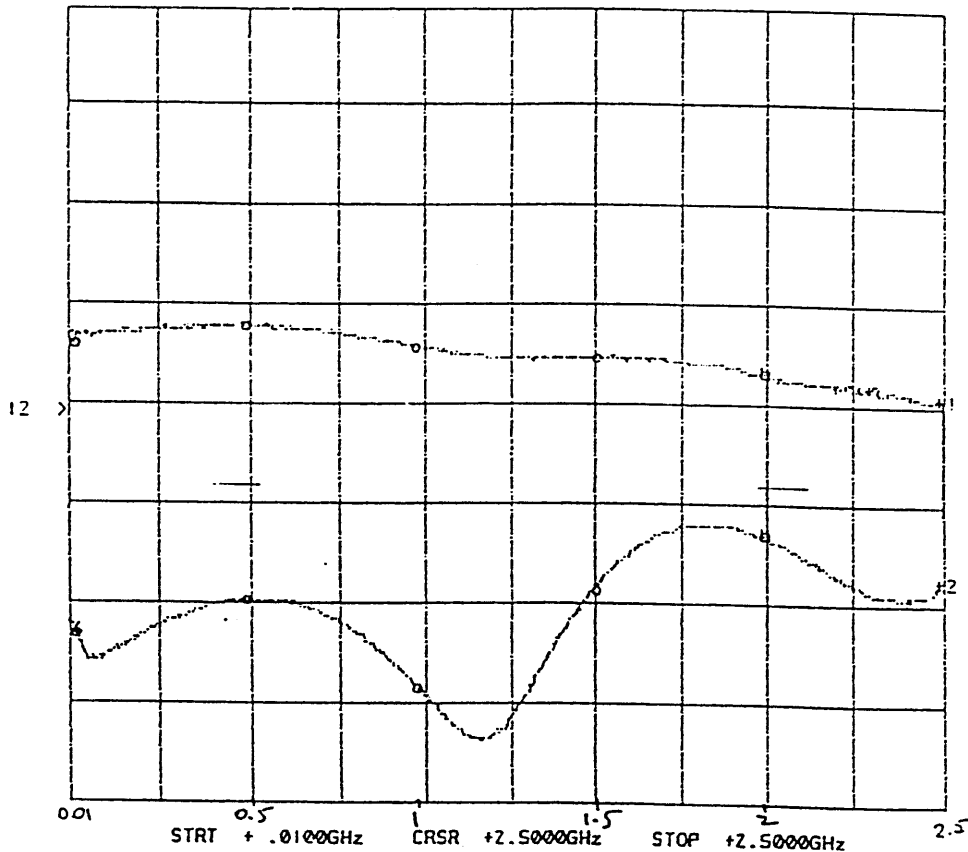
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS

J9 TO J1

CH1: A -M - 1.94 dB CH2: B -M - 18.41 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers				
	No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
60 kHz	1	1E+07	- 1.382	- 20.949
500 "	2	4.955501E+08	- 1.200	- 19.268
1 GHz	3	9.997751E+08	- 1.404	- 23.756
1.5 "	4	1.497775E+09	- 1.503	- 18.750
2 "	act	1.995775E+09	- 1.673	- 16.131

Cursors				
	No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
2.5 GHz	1	2.5E+09	- 1.936	- 18.416

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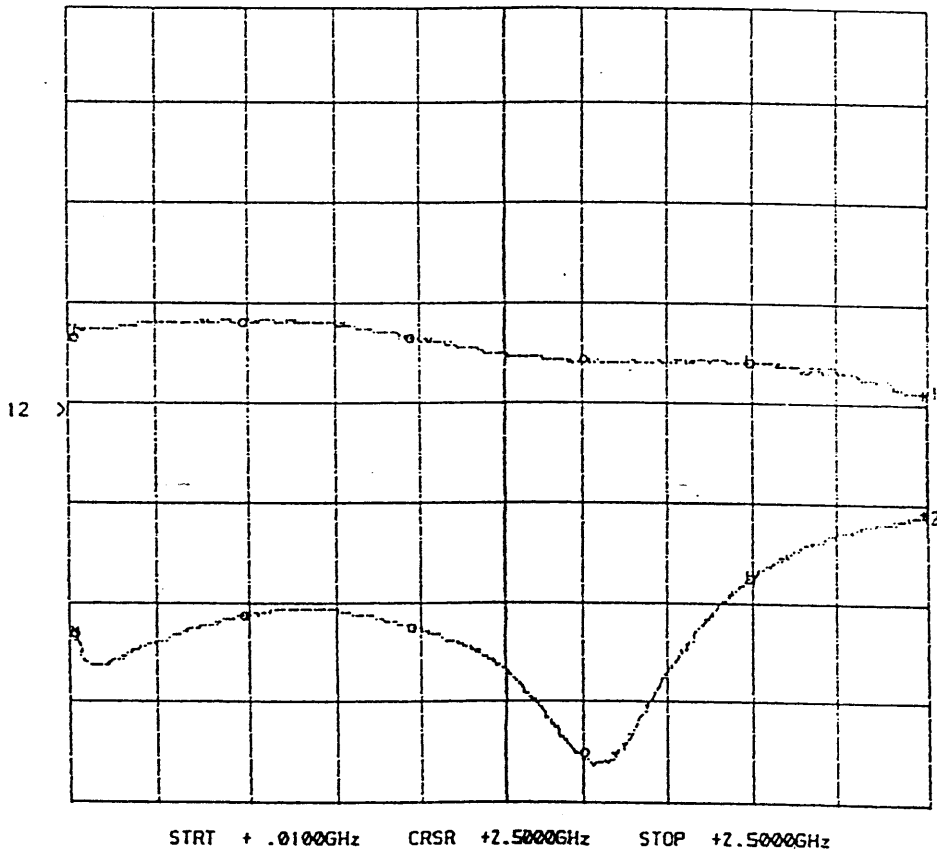


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J2

CH1: A -M - 1.89 dB CH2: B -M - 15.10 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.338	- 21.141
2	4.955501E+08	- 1.156	- 20.141
3	9.997751E+08	- 1.321	- 20.718
4	1.497775E+09	- 1.568	- 26.898
act	1.995775E+09	- 1.557	- 18.158

Cursors

1	2.5E+09	- 1.898	- 15.071
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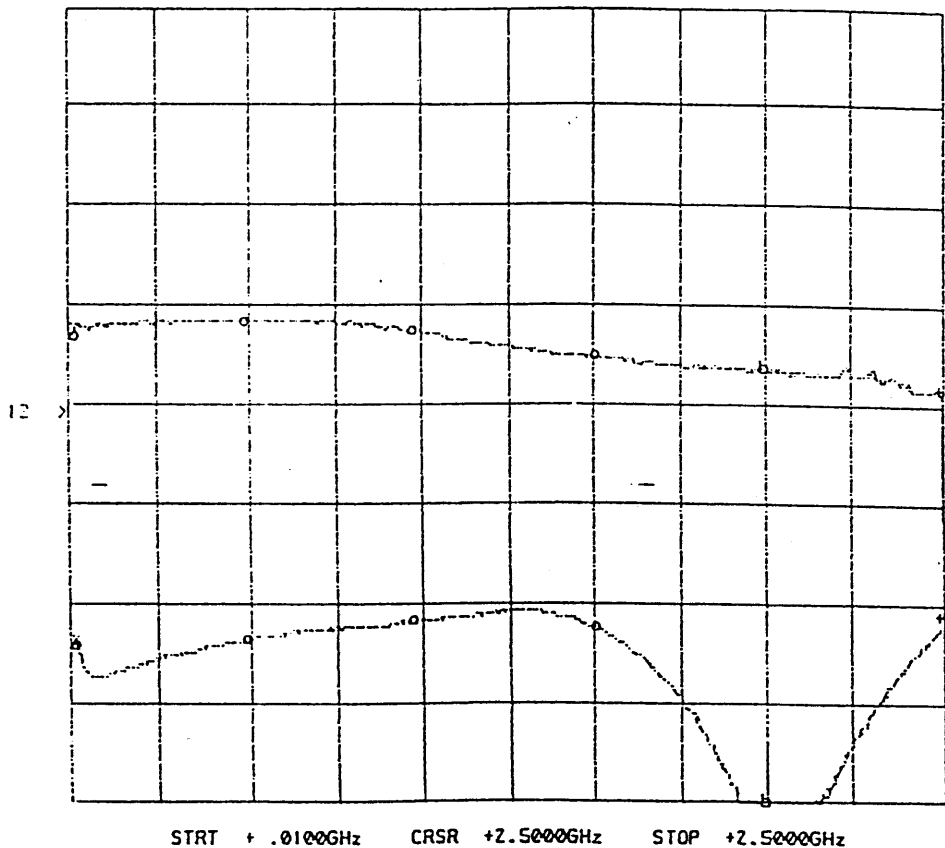
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS

J9 TO J3

CH1: A -M - 1.86 dB CH2: B -M - 20.25 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.283	- 21.410
2	4.955501E+08	- 1.134	- 21.306
3	9.997751E+08	- 1.233	- 20.317
4	1.497775E+09	- 1.492	- 20.460
act	1.995775E+09	- 1.629	- 31.304

Cursors

1	2.5E+09	- 1.860	- 20.229
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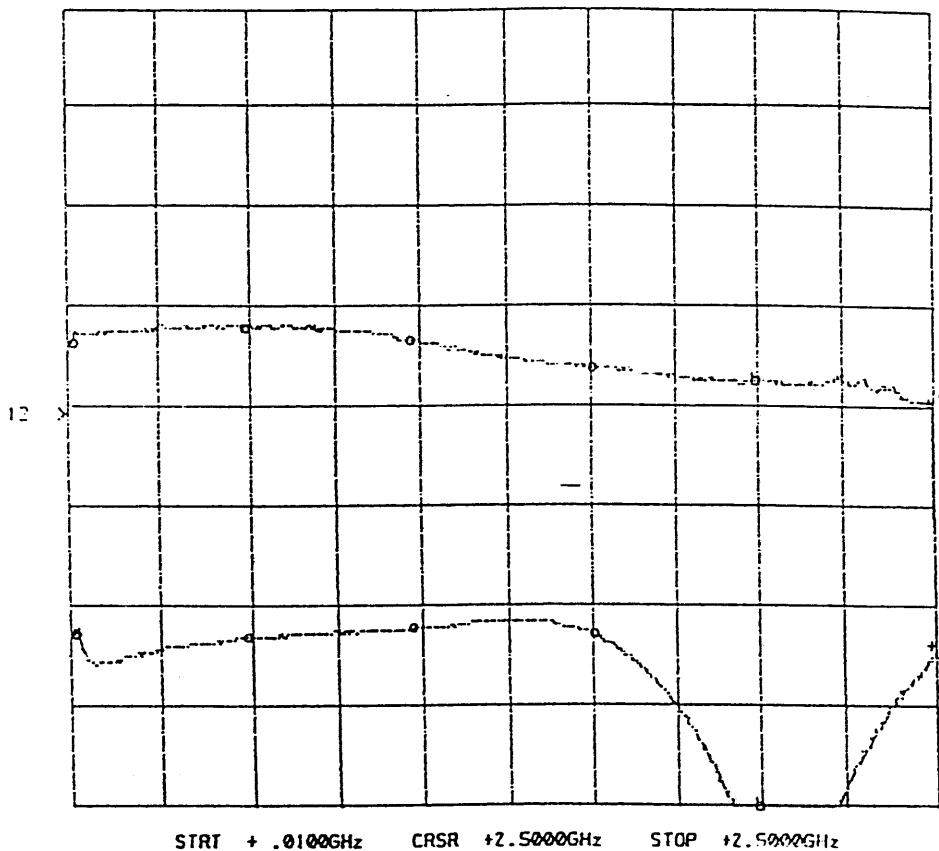
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS

J9 TO J4

CH1: A -M - 1.95 dB CH2: B -M - 21.64 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.365	- 21.031
2	4.955501E+08	- 1.178	- 21.130
3	9.997751E+08	- 1.316	- 20.630
4	1.497775E+09	- 1.590	- 20.828
act	1.995775E+09	- 1.733	- 32.545

Cursors

1	2.5E+09	- 1.942	- 21.603
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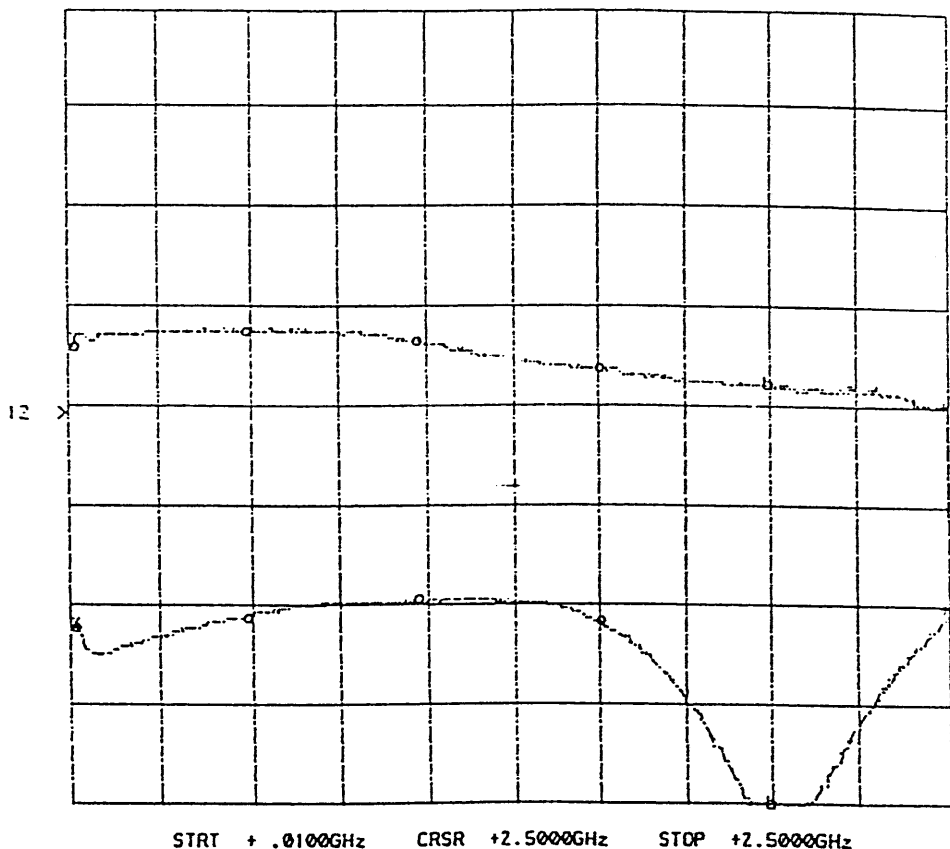


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE
SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J5

CH1: A -M - 2.01 dB CH2: B -M - 19.71 dB
1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.404	- 20.570
2	4.955501E+08	- 1.228	- 19.999
3	9.997751E+08	- 1.349	- 19.257
4	1.497775E+09	- 1.640	- 20.224
act	1.995775E+09	- 1.788	- 30.573

Cursors

1	2.5E+09	- 2.019	- 19.790
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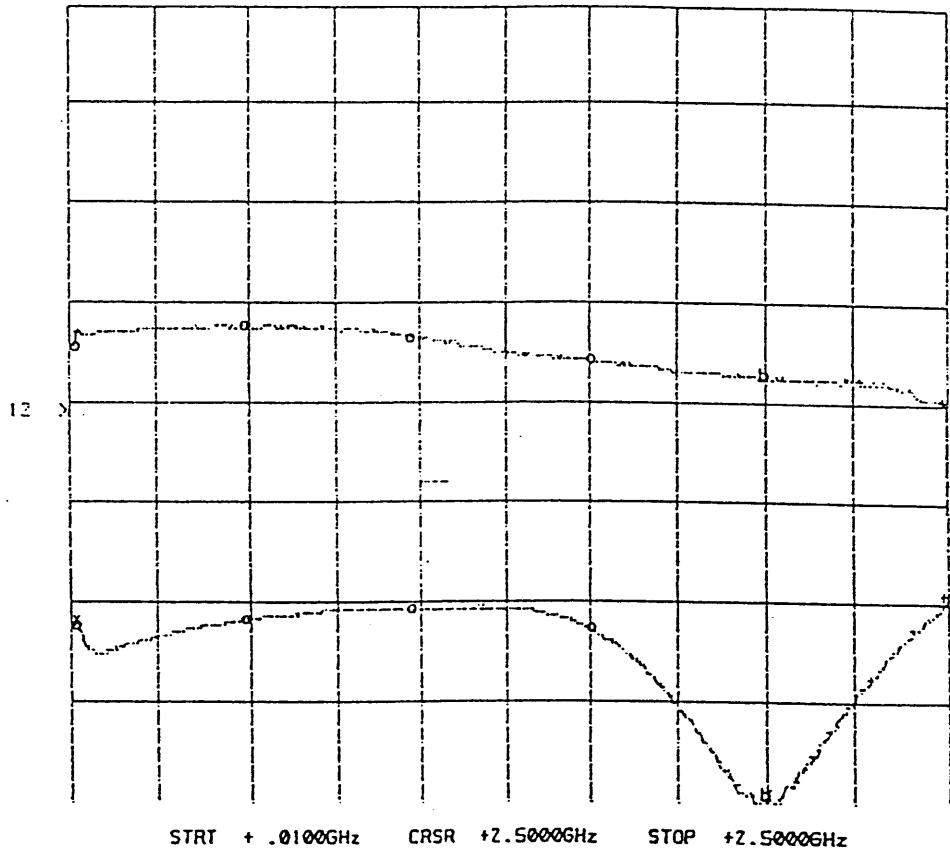


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J6

CH1: A -M - 1.96 dB CH2: B -M - 19.21 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.415	- 20.531
2	4.955501E+08	- 1.233	- 20.350
3	9.997751E+08	- 1.321	- 19.773
4	1.497775E+09	- 1.563	- 20.707
act	1.995775E+09	- 1.722	- 29.315

Cursors

1	2.5E+09	- 1.969	- 19.208
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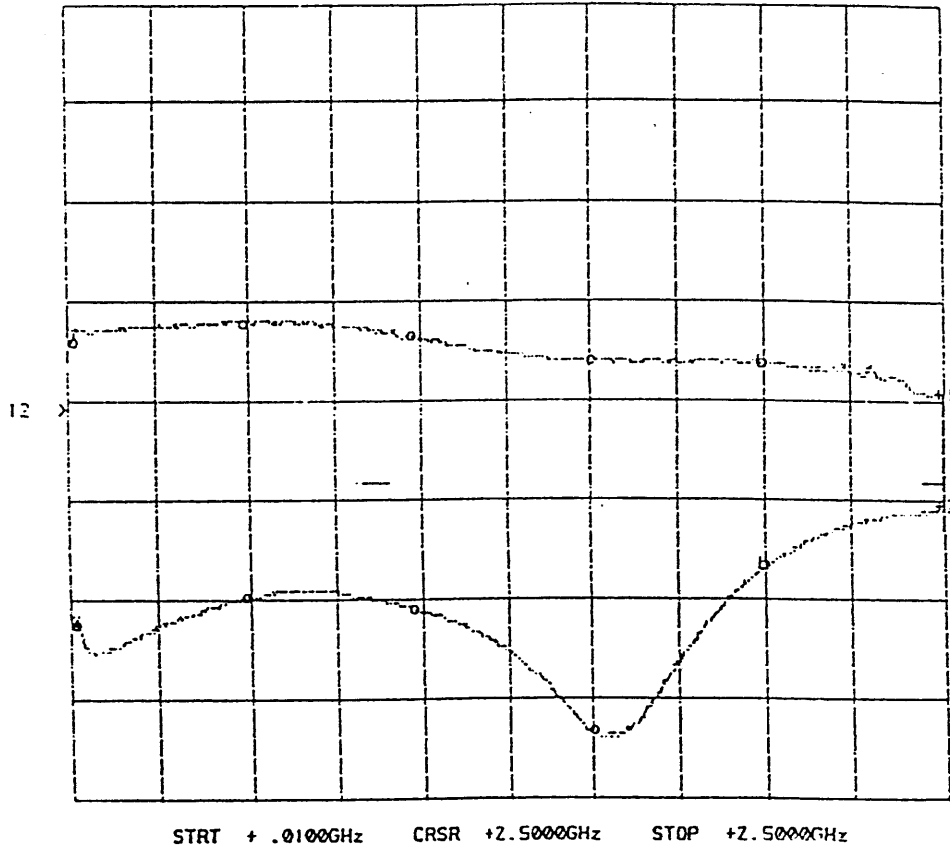
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 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS

J9 TO J7

CH1: A -M - 1.94 dB CH2: B -M - 14.99 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.376	- 20.680
2	4.955501E+08	- 1.189	- 19.433
3	9.997751E+08	- 1.327	- 19.316
4	1.497775E+09	- 1.579	- 25.816
act	1.995775E+09	- 1.607	- 17.851

Cursors

1	2.5E+09	- 1.953	- 14.862
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MAY 25, 1998

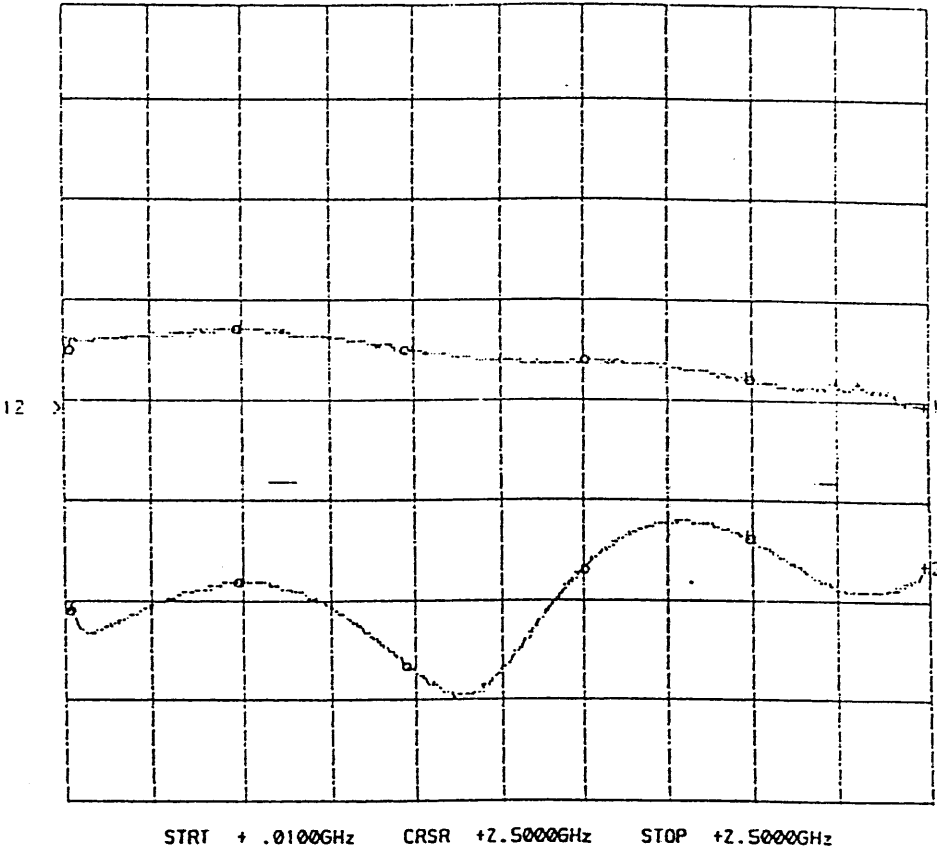


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J8

CH1: A -M - 2.05 dB CH2: B -M - 17.71 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.481	- 20.010
2	4.955501E+08	- 1.288	- 18.603
3	9.997751E+08	- 1.470	- 22.773
4	1.497775E+09	- 1.612	- 17.977
act	1.995775E+09	- 1.772	- 16.395

Cursors

1	2.5E+09	- 2.052	- 17.664
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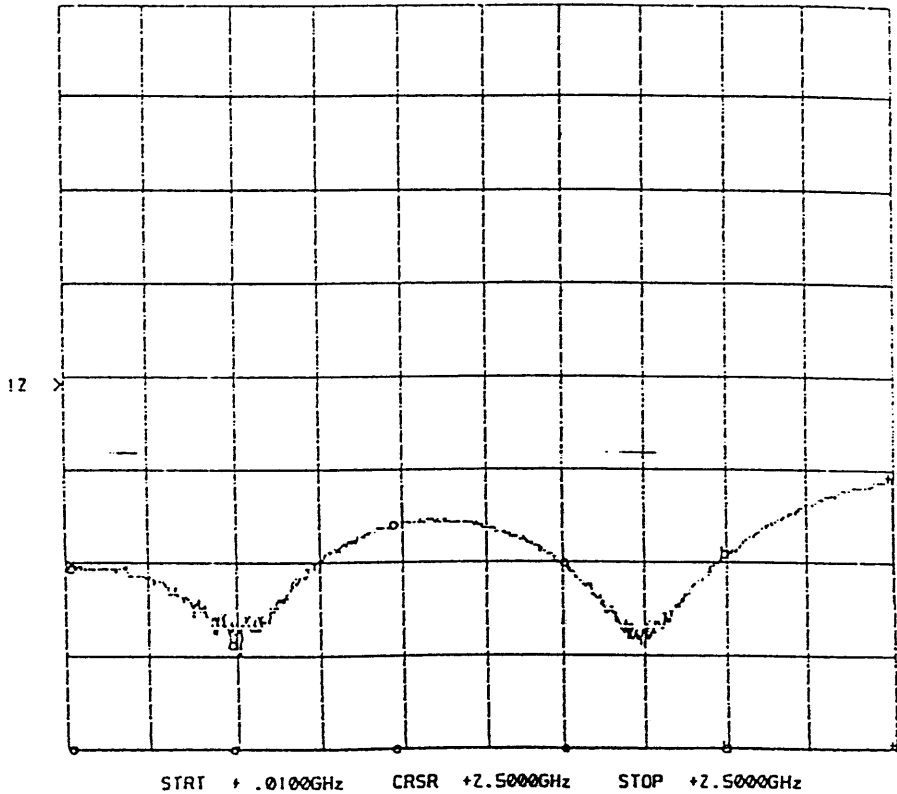
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 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J1-J9

CH1: 0 -M - 47.22 dB CH2: 0 -M - 20.38 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



<u>Markers</u>			
<u>No.</u>	<u>Frequency (Hz)</u>	<u>Chan. 1 (dB)</u>	<u>Chan. 2 (dB)</u>
1	1E+07	- 50.596	- 29.529
2	4.955501E+08	- 48.053	- 37.028
3	9.997751E+08	- 53.178	- 25.415
4	1.497775E+09	- 48.399	- 29.425
act	1.995775E+09	- 49.789	- 28.678

<u>Cursors</u>			
<u>No.</u>	<u>Frequency (Hz)</u>	<u>Chan. 1 (dB)</u>	<u>Chan. 2 (dB)</u>
1	2.5E+09	- 48.102	- 20.389

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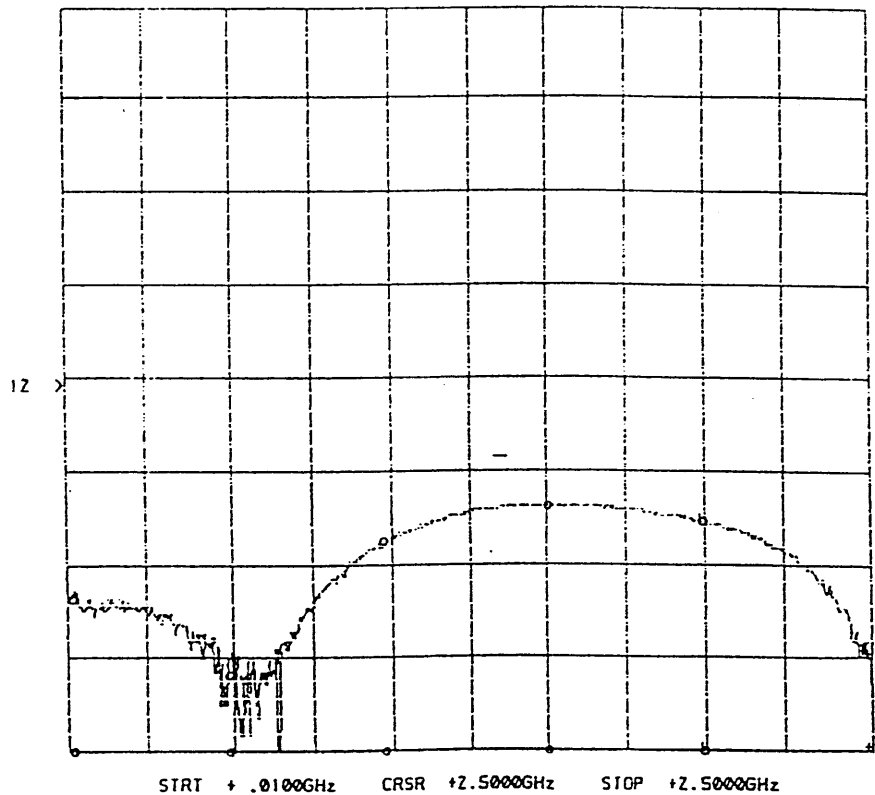
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MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J2-J9

CH1: A -M - 43.71 dB CH2: B -M - 39.51 dB
 10.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 43.213	- 33.029
2	4.955501E+08	- 47.674	- 40.368
3	9.997751E+08	- 52.673	- 27.206
4	1.457775E+09	- 45.317	- 23.119
act	1.995775E+09	- 46.042	- 24.822

Cursors

1	2.5E+09	- 49.866	- 43.114
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MAY 25, 1998

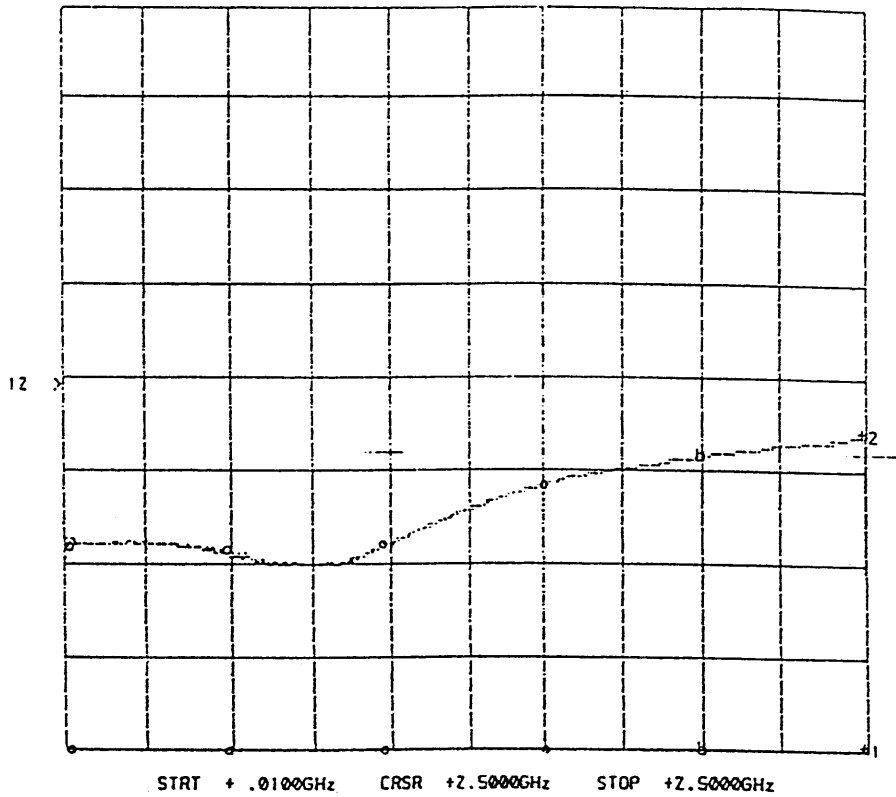


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 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION J3-J9

CH1: A -M - 47.35 dB CH2: B -M - 15.68 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 47.009	- 27.491
2	4.955501E+08	- 43.971	- 27.876
3	9.997751E+08	- 51.761	- 27.233
4	1.497775E+09	- 47.135	- 20.987
act	1.995775E+09	- 49.888	- 17.955

<u>Cursors</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	2.5E+09	- 48.218	- 15.697

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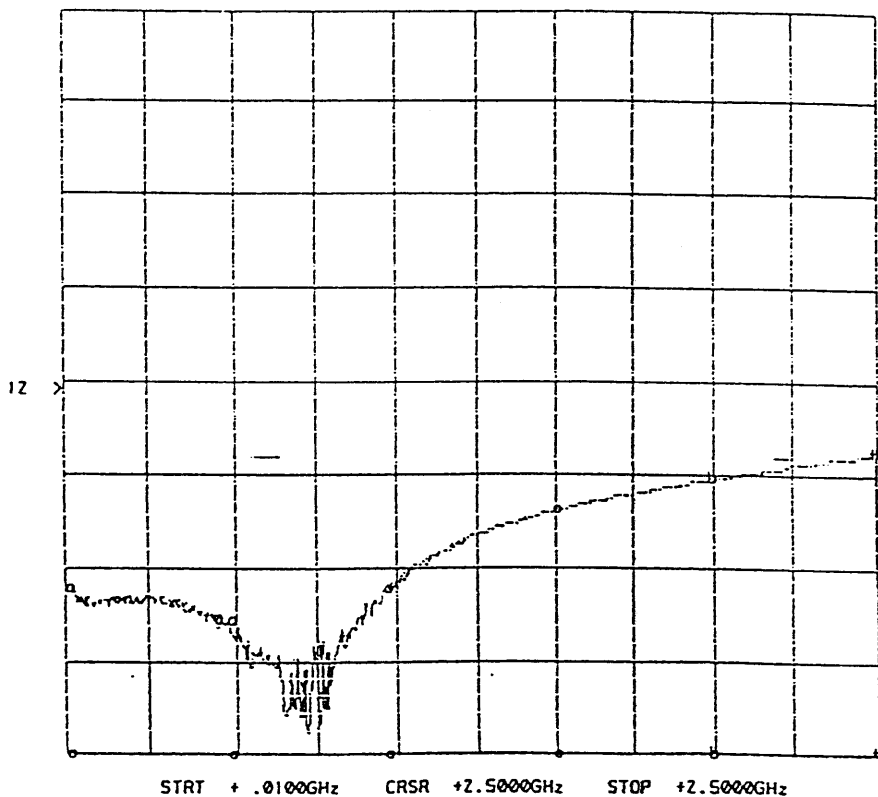
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J4-J9

CH1: A -M - 52.58 dB CH2: B -M - 17.13 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 46.224	- 32.468
2	4.955501E+08	- 44.543	- 35.742
3	9.997751E+08	- 44.713	- 31.359
4	1.497775E+09	- 50.811	- 23.437
act	1.995775E+09	- 46.916	- 19.839

Cursors

1	2.5E+09	- 44.872	- 17.126
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MAY 25, 1998



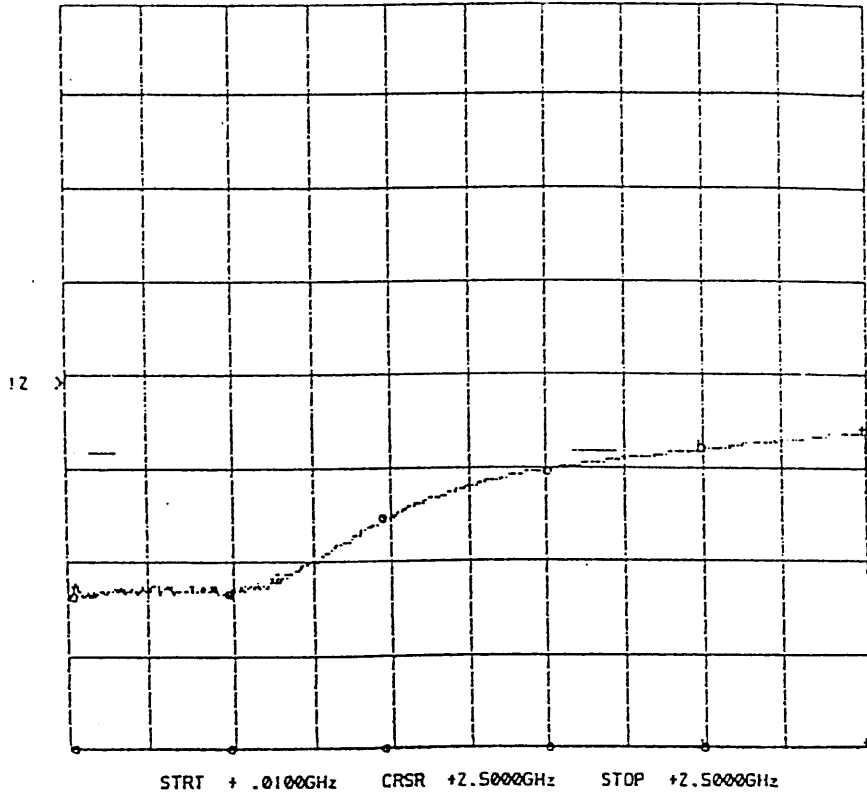
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J5-J9

CH1: A -M - 47.19 dB CH2: B -M - 15.59 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 49.910	- 32.974
2	4.955501E+08	- 48.102	- 32.639
3	9.997751E+08	- 45.312	- 24.866
4	1.497775E+09	- 49.025	- 19.592
act	1.995775E+09	- 49.053	- 17.367

Cursors

1	2.5E+09	- 51.091	- 15.609
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MAY 25, 1998



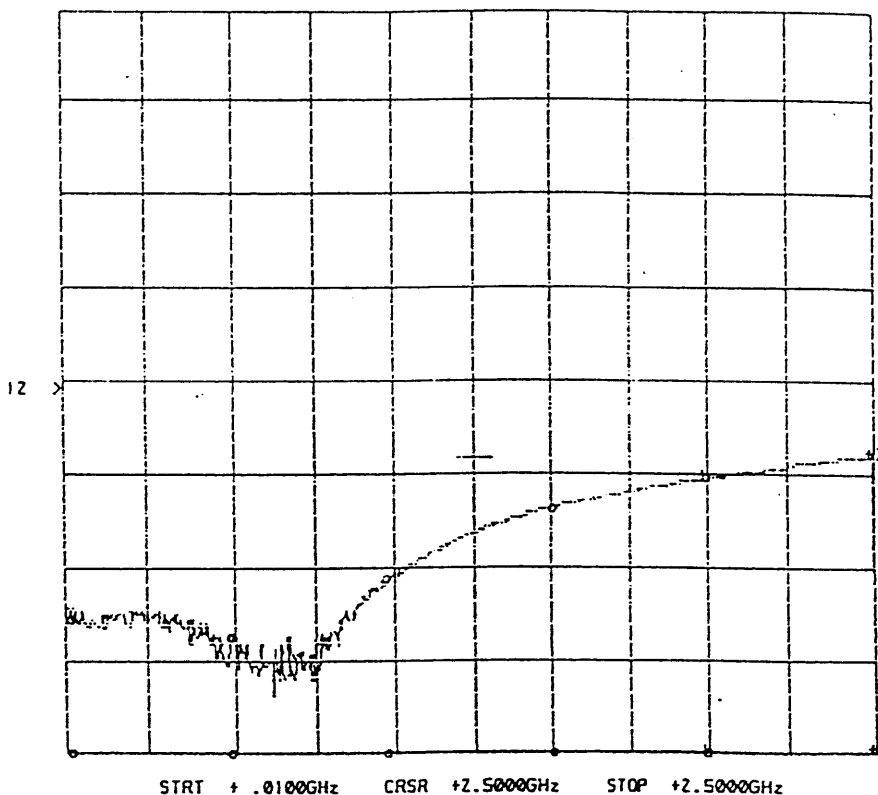
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J6-J9

CH1: A -M - 45.11 dB CH2: B -M - 17.40 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	-53.024	-35.308
2	4.955501E+08	-46.652	-35.924
3	9.997751E+08	-50.679	-30.469
4	1.497775E+09	-45.795	-23.108
act	1.995775E+09	-45.070	-19.872

Cursors

1	2.5E+09	-47.586	-17.395
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MAY 25, 1998



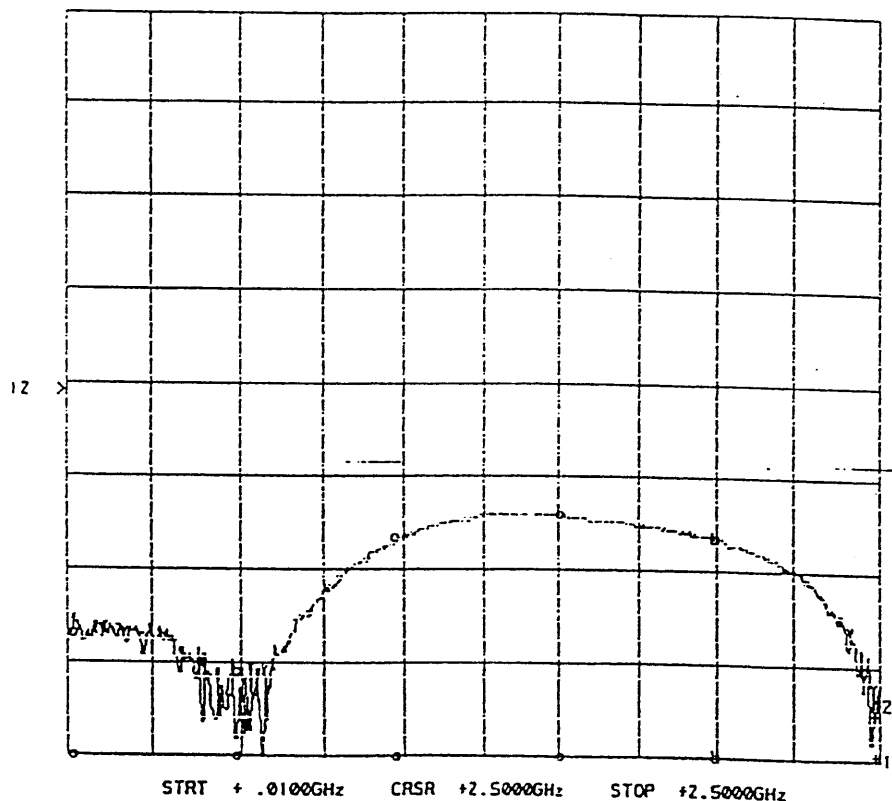
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE
SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J7-J9

CH1: A -M - 53.00 dB
1.0 dB/ REF - 2.00 dB
CH2: B -M - 44.97 dB
10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 46.608	- 37.121
2	4.955501E+08	- 46.603	- 44.993
3	9.997751E+08	- 45.911	- 25.953
4	1.497775E+09	- 49.119	- 23.652
act	1.995775E+09	- 52.711	- 26.025

Cursors

1	2.5E+09	- 47.295	- 47.388
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MAY 25, 1998



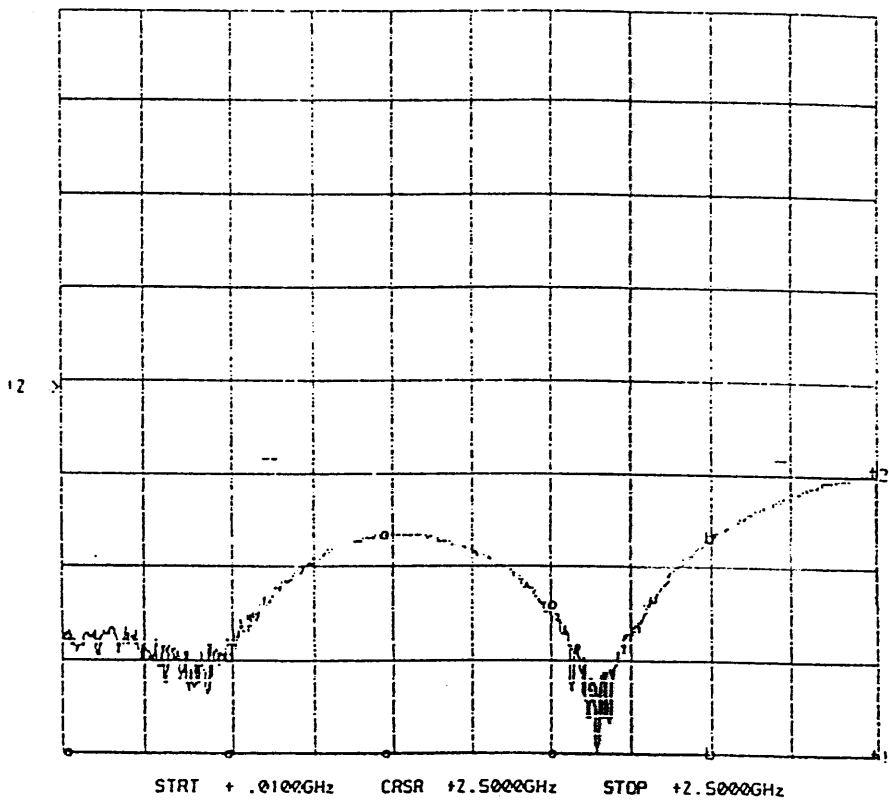
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J8-J9

CH1: A -M - 40.21 dB
 1.0 dB/ REF - 1.00 dB
 CH2: B -M - 19.02 dB
 10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 47.635	- 36.407
2	4.955501E+08	- 44.730	- 37.121
3	9.997751E+08	- 47.033	- 26.019
4	1.497775E+09	- 49.338	- 33.452
act	1.995775E+09	- 44.719	- 26.404

Cursors

1	2.5E+09	- 47.729	- 18.999
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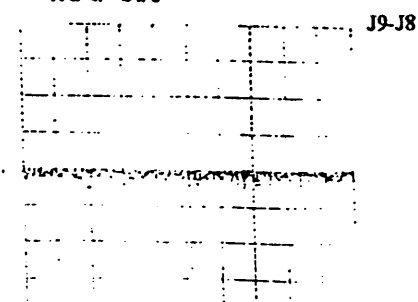
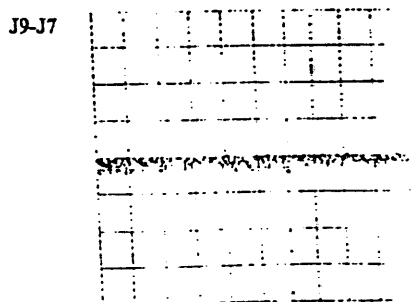
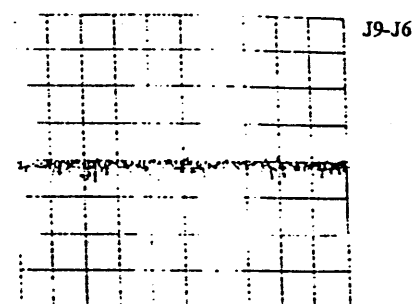
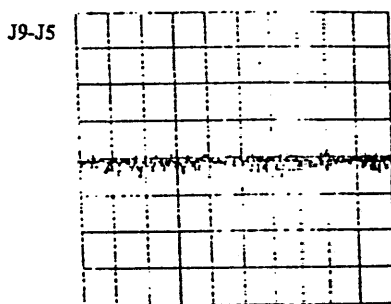
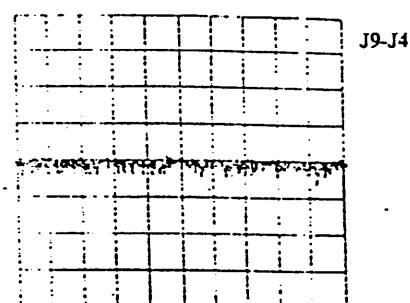
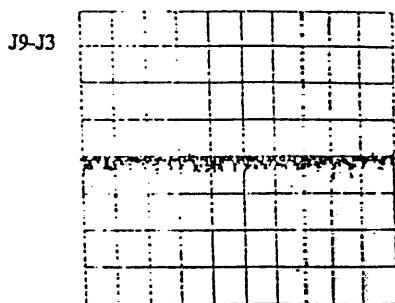
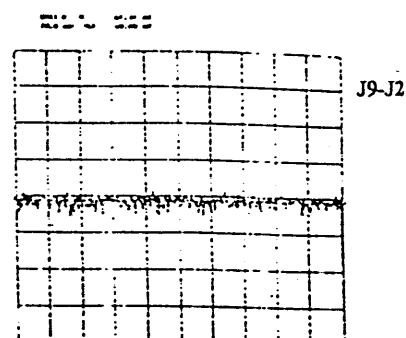
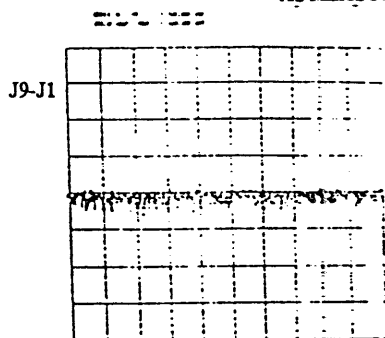


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE
SERIAL NUMBER : 8MS60475

ISOLATION

AS MEASURED ON A SCALAR NETWORK ANALYZER



MAY 25, 1998



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE
SERIAL NUMBER : 8MS60475

ISOLATION

ISOLATION AS MEASURED ON A SPECTRUM ANALYSES

J9 (COMMON ARM) TO:

	J1	J2	J3	J4	J5	J6	J7	J8
50 MHz	94 dB	96 dB	100 dB	96 dB	98 dB	93 dB	94	94 dB
100 MHz	102 dB	102 dB	104 dB	104 dB	104 dB	102 dB	102 dB	102 dB
500 GHz	98 dB	98 dB	98 dB	96 dB	99 dB	99 dB	102 dB	95 dB
1.0 GHz	98 dB	100 dB	100 dB	100 dB	102 dB	94 dB	90 dB	92 dB
2.0 GHz	88 dB	84 dB	81 dB	81 dB	86 dB	86 dB	86 dB	81 dB
2.5 GHz	92 dB	84 dB	84 dB	89 dB	84 dB	91 dB	82 dB	85 dB
3.0 GHz	86 dB	94 dB	96 dB	84 dB	90 dB	79 dB	91 dB	72 dB
3.5 GHz	90 dB	80 dB	80 dB	79 dB	82 dB	79 dB	72 dB	70 dB
4.0 GHz	84 dB	81 dB	78 dB	79 dB	80 dB	84 dB	86 dB	72 dB

MAY 25, 1998



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE

SERIAL NUMBER : 8MS60475

SWITCHING SPEED

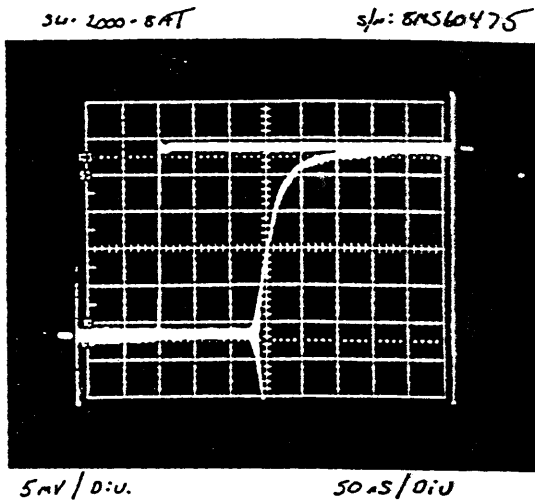
TYPICAL FOR ALL ARMS

"RISE/FALL" TIME: 10%RF TO 90%RF & 90%RF TO 10%RF
"ON/OFF" TIME: 50% TTL TO 90%RF OR 10%RF

"ON" 180nS, "RISE" 50nS

HORIZONTAL SCALE:
50nS/DIVISION

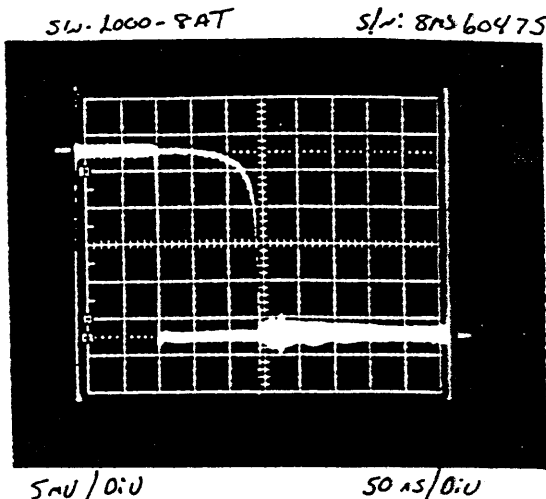
VERTICAL SCALE:
5mV/DIVISION



"OFF" 150nS, "FALL" 20nS

HORIZONTAL SCALE:
50nS/DIVISION

VERTICAL SCALE:
5mV/DIVISION



MAY 25, 1998



SUMMARY TEST DATA

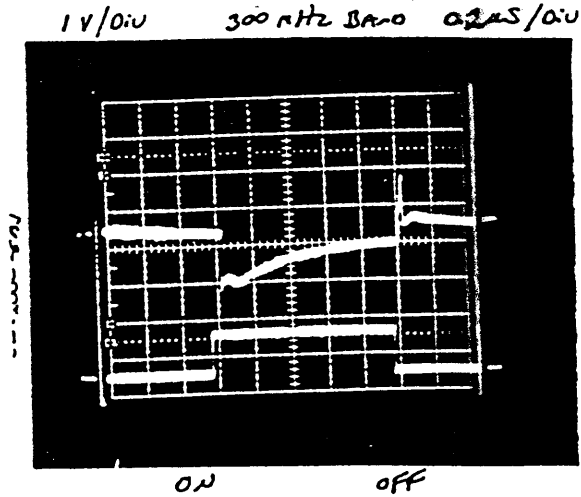
MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

VIDEO TRANSIENTS TYPICAL FOR ALL ARMS

AS MEASURED IN A
300MHz BANDWIDTH

HORIZONTAL SCALE:
0.2μS/DIVISION

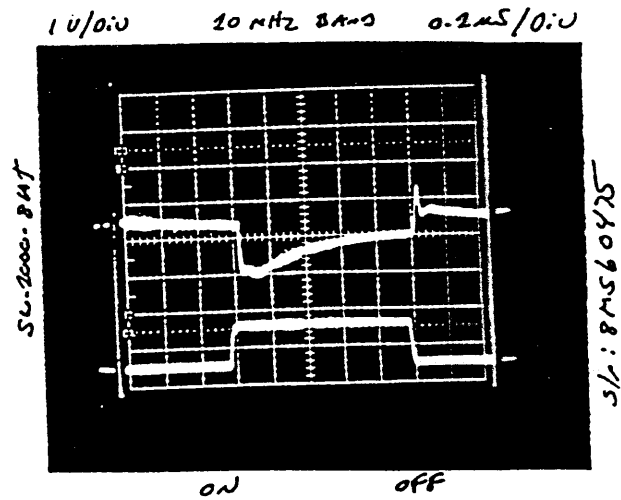
VERTICAL SCALE:
1.0 V/DIVISION



AS MEASURED IN A
20MHz BANDWIDTH

HORIZONTAL SCALE:
0.2μS/DIVISION

VERTICAL SCALE:
1.0 V/DIVISION



MAY 25, 1998