



TEST DATA
ON
DC TO 3 GHz (USABLE TO 4 GHz)
AND
135 MHz TO 185 MHz
LOW INSERTION LOSS
ULTRA HIGH SPEED
LOW VIDEO TRANSIENT
SINGLE POWER SUPPLY
SOLID STATE TRANSFER SWITCH

AMC MODEL No:
SWN-218-TRA OPTIONS 160M, LVT10MV, PAM
(Serial Number: TMS009027)

PREPARED
BY
KATIE BAISEY

TESTED
BY
RENE AFABLE

SEPTEMBER 21, 2000

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

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**AMERICAN MICROWAVE
CORPORATION**

**LOW INSERTION LOSS, ULTRA HIGH
SPEED, LOW VIDEO TRANSIENT, SINGLE
POWER SUPPLY, SOLID STATE
TRANSFER SWITCH**

KEY FEATURES

- DC TO 3 GHz (USABLE TO 4 GHz)
- LOW INSERTION LOSS
- ULTRA HIGH SPEED
- LOW VIDEO TRANSIENT
- TTL COMPATIBLE



AMC MODEL No: SWN-218-TRA OPTIONS 160M, LVT10MV, PAM

SPECIFICATIONS: (REFLECTIVE)

• FREQUENCY RANGE	:	DC to 3 GHz (USABLE TO 4 GHz)
• INSERTION LOSS	:	1.50 dB MAX.
	:	0.80 dB TYP. @ 40 MHz
	:	0.95 dB TYP. @ 500 GHz
	:	1.10 dB TYP. @ 1 GHz
	:	1.35 dB TYP. @ 2 GHz
	:	1.50 dB TYP. @ 3 GHz
• ISOLATION	:	> 40 dB MIN.
	:	> 70 dB TYP. @ 40 MHz
	:	> 37 dB TYP. @ 500 GHz
	:	> 45 dB TYP. @ 1 GHz
	:	> 40 dB TYP. @ 2 GHz
	:	> 40 dB TYP. @ 3 GHz
• VSWR	:	1.6:1
• SWITCHING SPEED	:	"RISE" 5nS MAX., 2nS TYP.
	:	"FALL" 5nS MAX., 2nS TYP.
	:	"ON" 15nS MAX., 10nS TYP.
	:	"OFF" 15nS MAX., 10nS TYP.
• CONTROL	:	Single Control TTL compatible
• VIDEO TRANSIENT	:	≤ 37mV peak to peak at 300 MHz bandwidth
	:	≤ 5mV peak to peak at 20 MHz bandwidth
• RF INPUT POWER	:	+20dBm (CW)(other power levels available)
• DC POWER SUPPLY	:	-5vdc @ 25mA MAX.
(Other supply voltages available)	:	
• SIZE	:	1.5" (L) X 1.5" (W) X 0.75" (H)
• WEIGHT	:	≤ 2.5 oz. TYPICAL

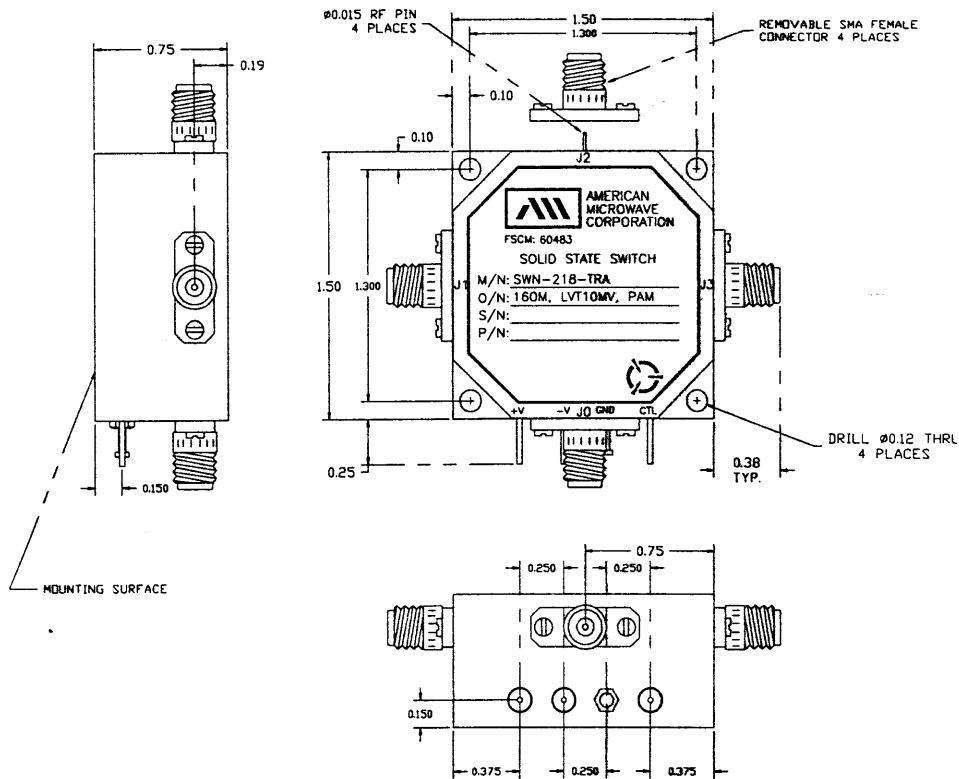
SEPTEMBER 21, 2000

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SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009027
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA



ALL DIMENSIONS ARE IN INCHES

TOLERANCES:

X.XX	±0.020
X.XXX	±0.010

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: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION.

SEPTEMBER 21, 2000

ZONE	REV.	DESCRIPTION	DATE	APPROVED
		ORIGINAL JOB # 005104E	08/07/00	

DESCRIPTION:
 AMC MODEL SWN-218-TRA OPTIONS 160M, LVT10MV, PAM IS A TRANSER SWITCH MODULE WITH LOW INSERTION LOSS, ULTRA HIGH SPEED, VERY LOW VIDEO TRANSIENT, HIGH ISOLATION AND WITH INTEGRAL TTL DRIVER DESIGNED FOR 160 MHz \pm 25 MHz OPERATION.

SPECIFICATIONS:

- FREQUENCY: 160 MHz \pm 25 MHz
- INSERTION LOSS: 1.0 dB MAXIMUM
- ISOLATION: .50 dB MINIMUM
- VSWR: 1.6:1 INPUT AND OUTPUT
- AMPLITUDE BALANCE: +0.2 dB
- PHASE BALANCE: +3 DEG.
- P1dB: +20 dBm MINIMUM
- IP3: +35 dBm MINIMUM
- LOGIC: SEE LOGIC TABLE BELOW
- RISE/FALL TIME: .300 nsec MAXIMUM
 (10% RF TO 90% RF)
- VIDEO TRANSIENTS: 10 mV PEAK TO PEAK OVER 50 MHz BW
- POWER SUPPLY: +12V Φ 75 mA MAXIMUM
 -12V Φ 75 mA MAXIMUM
- SIZE: 1.5" (L) x 1.5" (W) x 0.75" (H)
- WEIGHT: 2.0 OUNCE TYPICAL

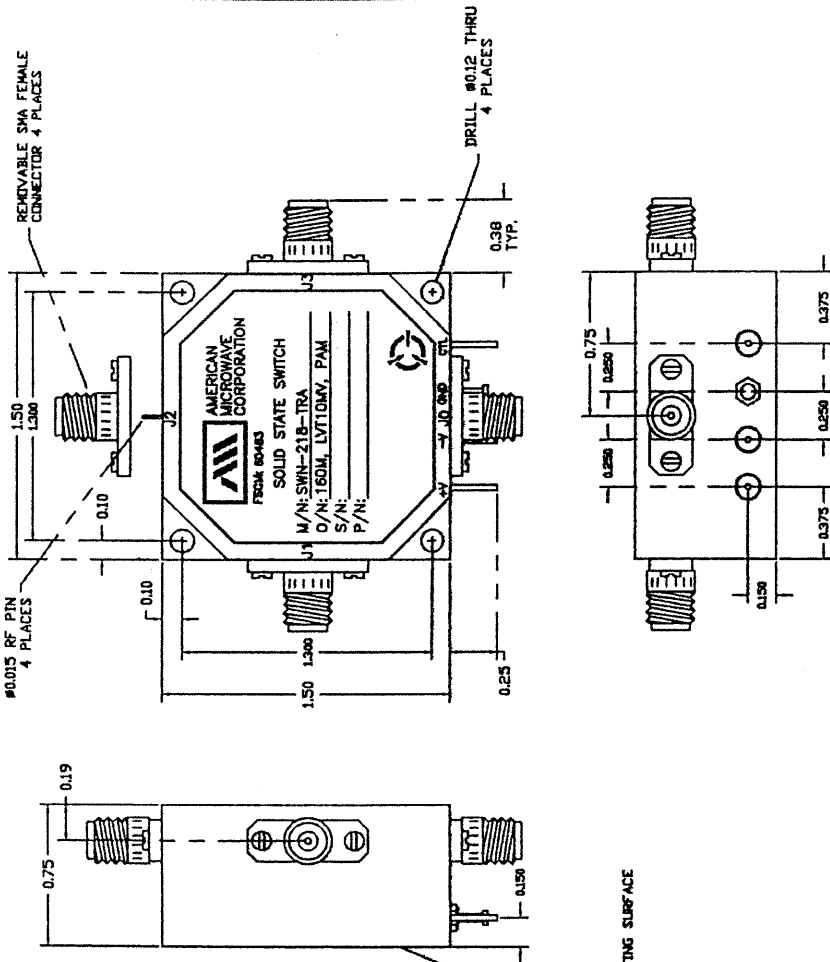
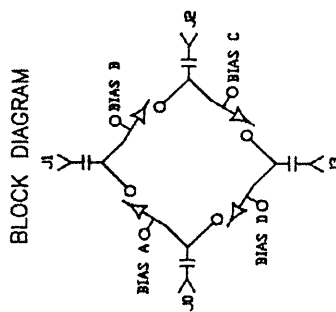


TABLE 1

TTL LOGIC	LOW LOSS PATH	ISOLATED PATH
0	J0-J1 J2-J3	J0-J3 J1-J2
1	J0-J3 J1-J2	J0-J1 J2-J3



M/N = MANUFACTURER PART NUMBER
 O/N = OPTION NUMBER
 S/N = SERIAL NUMBER

ENVIRONMENTAL RATINGS

- TEMPERATURE: -65°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

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX \pm 0.020
 X.XXX \pm 0.010

CONFIDENTIAL AND PROPRIETARY

		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN WFLC	08/07/00	PRODUCT FEATURE	
CHECKED LA	7/28/00	SWN-218-TRA	
ISSUED JUP	9/28/00	OPTIONS: 160M, LVT10MV, PAM	
SIZE	F5CH NO.	DWG NO.	REV.
A	60483	100-5614-1	-
SCALE N/S		SHEET 1 of 3	

DESCRIPTION:
 AMC MODEL SWN-2181-TRA IS A TRANSFER SWITCH MODULE WITH LOW INSERTION LOSS, HIGH ISOLATION AND WITH INTEGRAL TTL DRIVER IN A SMALL 1.0" x 1.0" x 0.5" PACKAGE, DESIGNED FOR 0.5 GHz TO 18 GHz OPERATION.

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: 3.5 dB MAX. @ 18 GHz
- ISOLATION: 0.5 GHz TO 18 GHz: 60 dB MINIMUM
- VSWR: IN/OUT: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAXIMUM
 FALL: 10ns TYPICAL, 15ns MAXIMUM
 DELAY ON: 75ns TYPICAL, 100ns MAXIMUM
 DELAY OFF: 75ns TYPICAL, 100ns MAXIMUM
- POWER INPUT: (CW)+27 dBm(500 mW) (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 75 WATTS CW, 10 WATTS PEAK 1 usec PULSE WIDTH
- POWER SUPPLY: +5V @ 100 mA MAXIMUM
 -5V @ 100 mA MAXIMUM
- CONTROL: SEE TABLE 1
- SIZE: 1.00 (L) x 1.00 (W) x 0.50 (H)
- WEIGHT: 1.5 OUNCES TYPICAL

OPTIONS:

- SINGLE CONTROL WITH SOLDER PIN STANDARD
- IND-SP INDEPENDANT CONTROL WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC
- B05 HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION HS
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55C TO +85C (OPERATING)
 -65C TO +125C (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: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

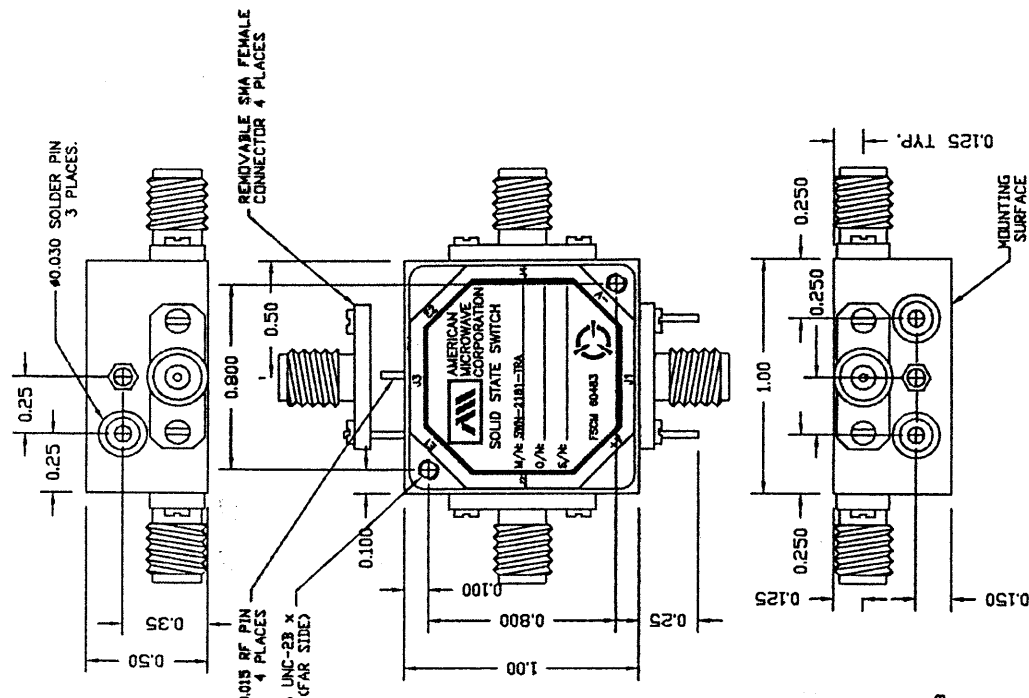
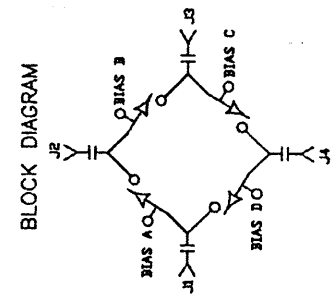


TABLE 1

TTL LOGIC	LOW LOSS PATH	ISOLATED PATH
0	J1-J2 J3-J4	J1-J4 J2-J3
1	J1-J4 J2-J3	J1-J2 J3-J4



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CONTRACT NO. _____

APPROVALS: _____ DATE 02/18/00

DRAWN: WSP & RJA
 CHECKED: PA
 ISSUED: WSP 9/28/00

TITLE: PRODUCT FEATURE
 SWN-2181-TRA
 TRANSFER SWITCH

SCALE: N/S
 SIZE: A
 FSCM NO.: 60483
 DWG NO.: 100-4708-1
 REV. 1

AMERICAN MICROWAVE CORPORATION
 FREDERICK, MARYLAND

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

ZONE	REV.	DESCRIPTION	DATE	APPROVED
		ORIGINAL RELEASE	02/18/00	

DESCRIPTION:
 AMC MODEL SWN-2181-TRA-IND-SP IS A TRANSFER SWITCH MODULE WITH LOW INSERTION LOSS, HIGH ISOLATION AND WITH INTEGRAL TTL DRIVER IN A SMALL 1.0" x 1.0" x 0.5" PACKAGE, DESIGNED FOR 0.5 GHz TO 18 GHz OPERATION.

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: 3.5 dB MAX. @ 18 GHz
- ISOLATION: 0.5 GHz TO 18 GHz: 60 dB MINIMUM
- VSWR: IN/OUT: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAXIMUM
 FALL: 10ns TYPICAL, 15ns MAXIMUM
 DELAY ON: 75ns TYPICAL, 100ns MAXIMUM
 DELAY OFF: 75ns TYPICAL, 100ns MAXIMUM
- POWER INPUT: (CW)+27 dBm(500 mW) (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 75 WATTS CW, 10 WATTS PEAK 1 usec PULSE WIDTH
- POWER SUPPLY: +5V @ 100 mA MAXIMUM
 -5V @ 100 mA MAXIMUM
- CONTROL: SEE TABLE 1
- SIZE: 1.00 (L) x 1.00 (W) x 0.50 (H)
- WEIGHT: 1.5 OUNCES TYPICAL

OPTIONS:

- SINGLE CONTROL WITH SOLDER PIN STANDARD
- IND-SP INDEPENDANT CONTROL WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC
- B05 HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION HS
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

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: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

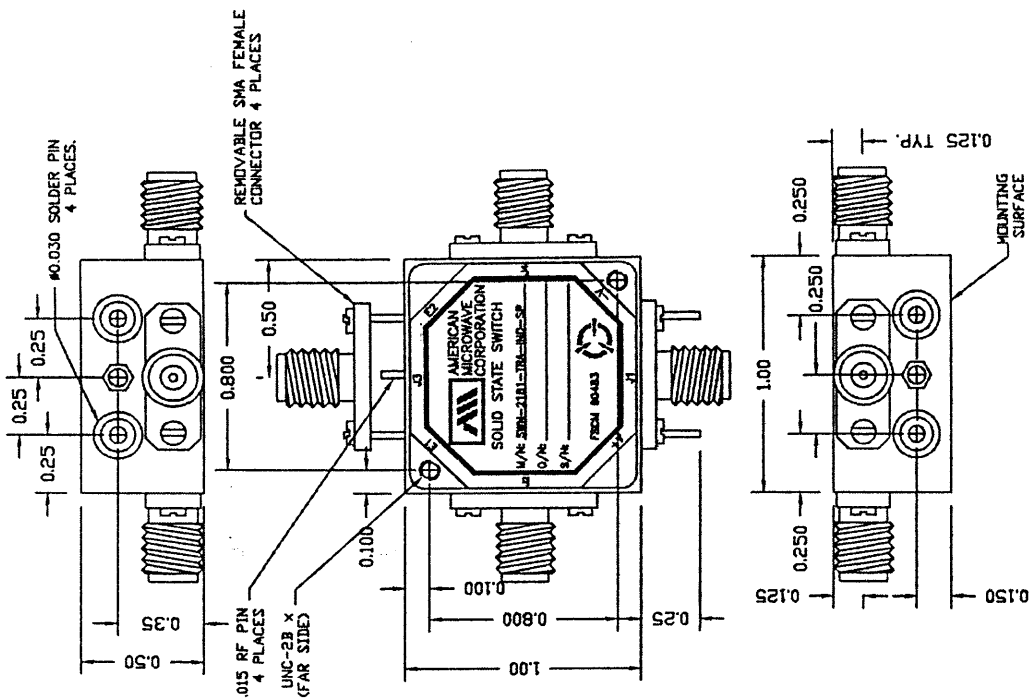
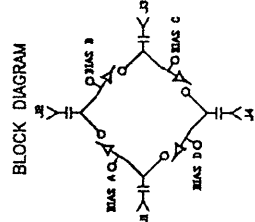


TABLE 1

CTL	TTL LOGIC	LOW LOSS PATH	ISOLATED PATH
E1	0	J1-J2 J3-J4	J1-J2 J3-J4
E2	0	J1-J4 J2-J3	J1-J4 J2-J3



CONFIDENTIAL AND PROPRIETARY

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
WGP & RJA	02/18/00	PRODUCT FEATURE	
CHECKED	02/18/00	SWN-2181-TRA-IND-SP	
ISSUED	02/29/00	TRANSFER SWITCH	
SIZE	FORM NO.	DWG NO.	REV.
A	60483	100-4708-2	-
SCALE	N/S	SHEET	1 of 3



TEST DATA

FROM

40 MHz TO 3 GHz

LOW INSERTION LOSS

ULTRA HIGH SPEED

LOW VIDEO TRANSIENT

SINGLE POWER SUPPLY

SOLID STATE TRANSFER SWITCH

AMC MODEL No:

SWN-218-TRA OPTIONS 160M, LVT10MV, PAM

(Serial Number: TMS009027)

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

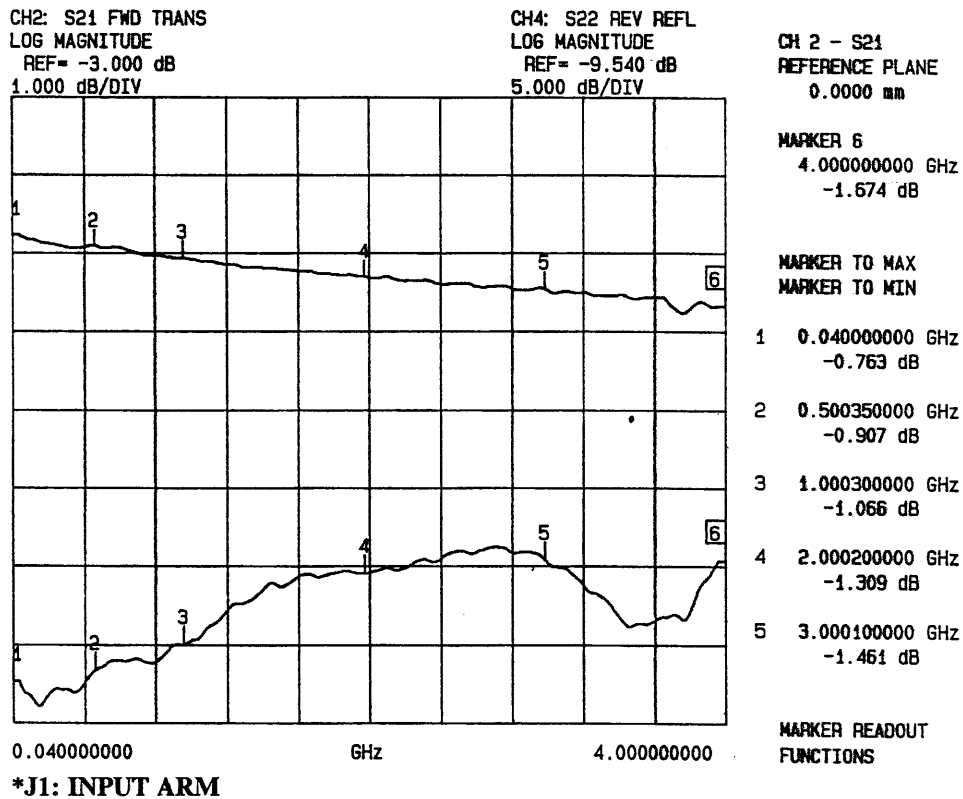
SEPTEMBER 21, 2000



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS* J1-J0



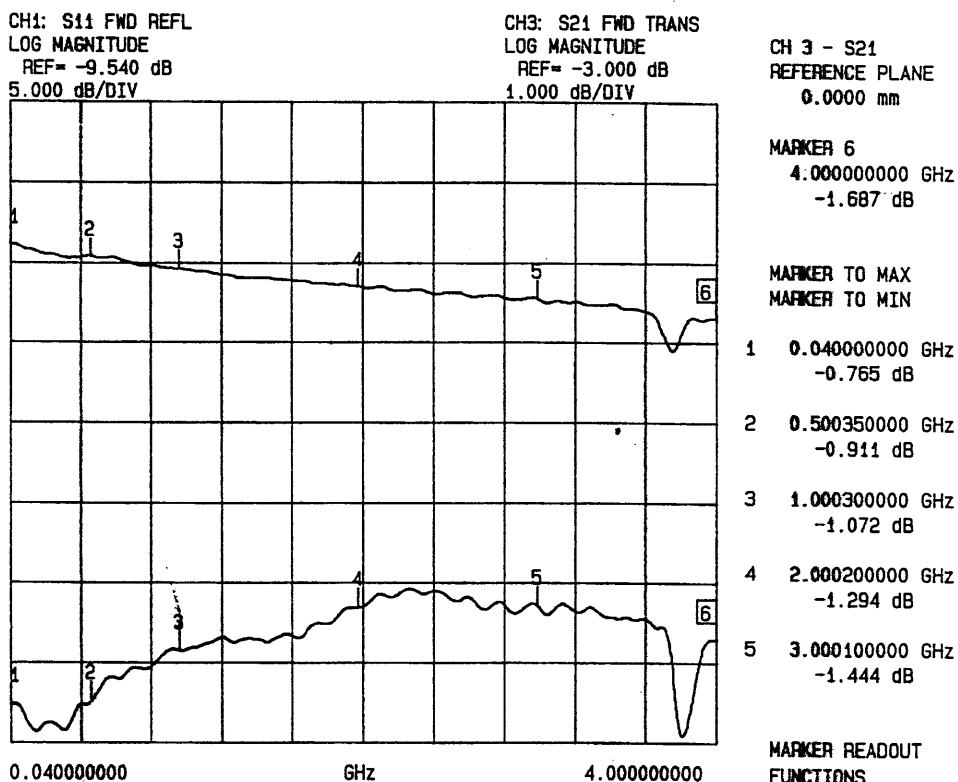
FREQUENCY	INSERTION LOSS	RETURN LOSS
40 MHz	0.76 dB	26.88 dB
500 MHz	0.90 dB	26.10 dB
1.0 GHz	1.06 dB	24.46 dB
2.0 GHz	1.30 dB	19.97 dB
3.0 GHz	1.46 dB	19.14 dB
4.0 GHz	1.67 dB	19.16 dB



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS* J2-J3



*J2: INPUT ARM

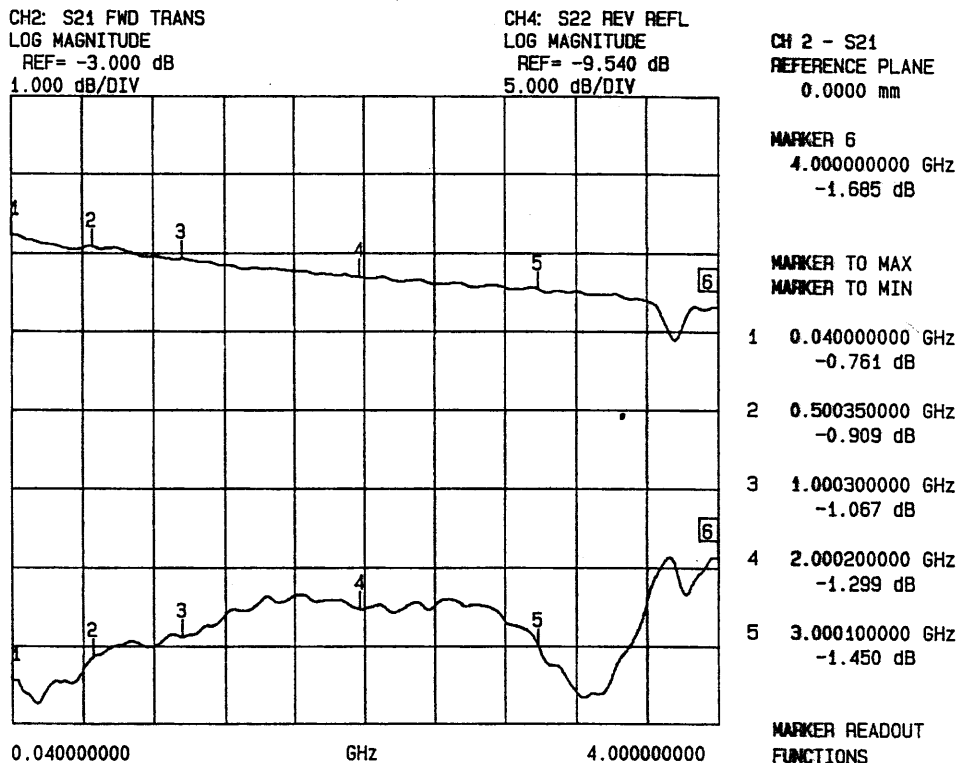
FREQUENCY	INSERTION LOSS	RETURN LOSS
40 MHz	0.76 dB	27.12 dB
500 MHz	0.91 dB	26.87 dB
1.0 GHz	1.07 dB	23.75 dB
2.0 GHz	1.29 dB	21.03 dB
3.0 GHz	1.44 dB	20.95 dB
4.0 GHz	1.68 dB	23.05 dB



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS* J3-J2



*J3: INPUT ARM

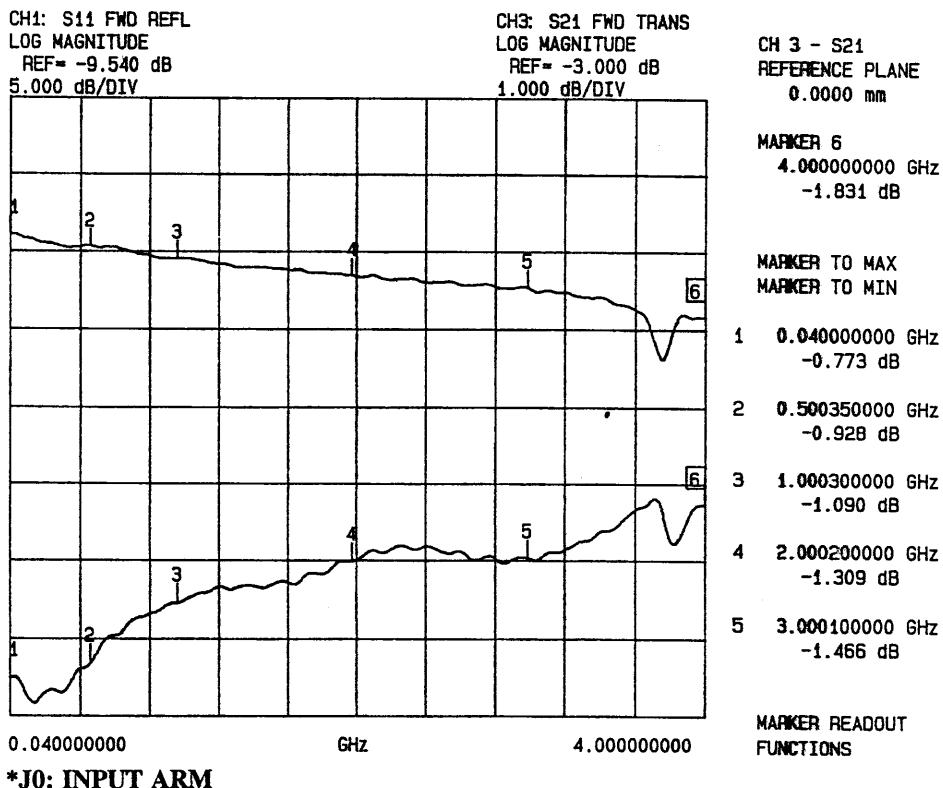
FREQUENCY	INSERTION LOSS	RETURN LOSS
40 MHz	0.76 dB	26.77 dB
500 MHz	0.90 dB	25.17 dB
1.0 GHz	1.06 dB	23.91 dB
2.0 GHz	1.29 dB	22.14 dB
3.0 GHz	1.45 dB	24.53 dB
4.0 GHz	1.68 dB	18.87 dB



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS* J0-J3



FREQUENCY	INSERTION LOSS	RETURN LOSS
40 MHz	0.77 dB	27.00 dB
500 MHz	0.92 dB	26.01 dB
1.0 GHz	1.09 dB	22.18 dB
2.0 GHz	1.30 dB	19.55 dB
3.0 GHz	1.46 dB	19.35 dB
4.0 GHz	1.83 dB	15.88 dB

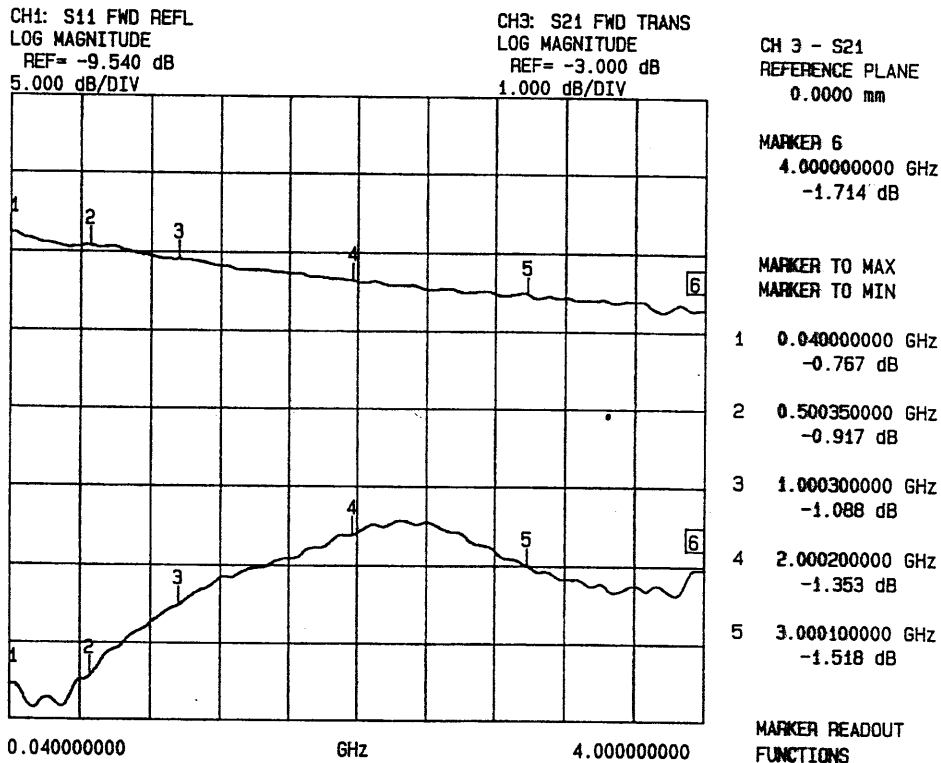


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J1-J2



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
40 MHz	0.76 dB	27.23 dB
500 MHz	0.91 dB	26.58 dB
1.0 GHz	1.08 dB	22.01 dB
2.0 GHz	1.35 dB	17.55 dB
3.0 GHz	1.51 dB	19.53 dB
4.0 GHz	1.71 dB	19.69 dB

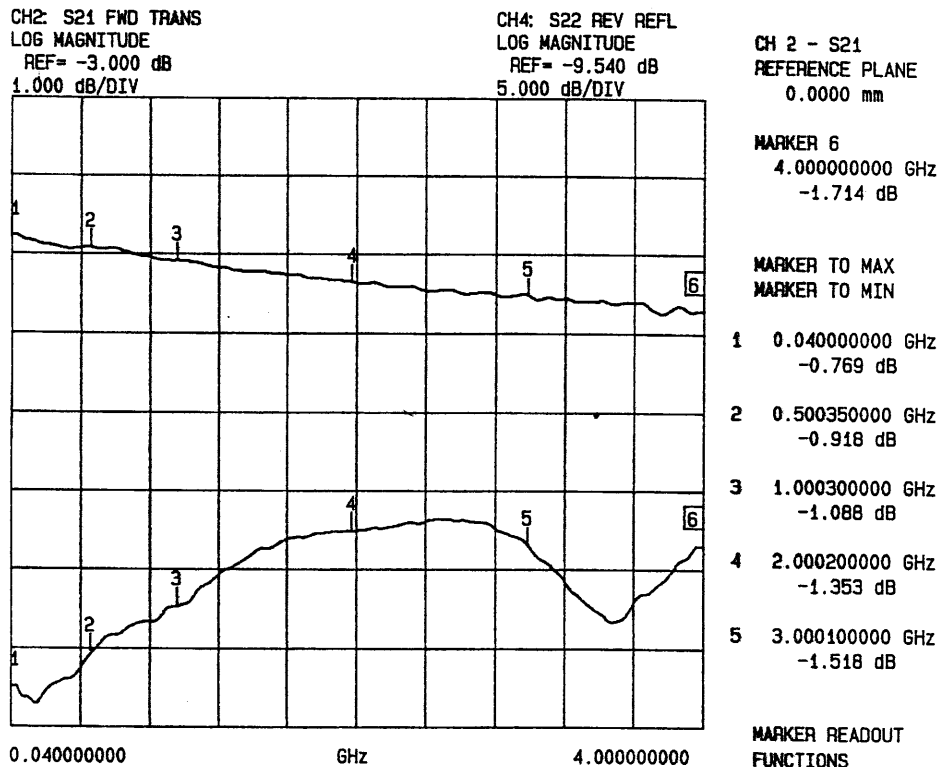


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J2-J1



*J2: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
40 MHz	0.76 dB	26.94 dB
500 MHz	0.91 dB	24.81 dB
1.0 GHz	1.08 dB	21.85 dB
2.0 GHz	1.35 dB	17.07 dB
3.0 GHz	1.51 dB	17.99 dB
4.0 GHz	1.71 dB	18.01 dB



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009027
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

ISOLATION*

(AS MEASURED ON A VECTOR NETWORK ANALYZER CW MODE)

FREQUENCY	J0-J1	J2-J3	J0-J3	J1-J2
40 MHz	74 dB	70 dB	70 dB	70 dB
100 MHz	60 dB	60 dB	60 dB	58 dB
200 MHz	51 dB	52 dB	52 dB	50 dB
300 MHz	46 dB	46 dB	46 dB	46 dB
500 MHz	40 dB	40 dB	39 dB	37 dB
750 MHz	45 dB	46 dB	47 dB	46 dB
1 GHz	49 dB	49 dB	48 dB	45 dB
1.25 GHz	51 dB	52 dB	46 dB	43 dB
1.5 GHz	52 dB	53 dB	45 dB	41 dB
1.75 GHz	53 dB	53 dB	43 dB	43 dB
2 GHz	54 dB	54 dB	42 dB	42 dB
2.25 GHz	58 dB	56 dB	40 dB	43 dB
2.5 GHz	53 dB	53 dB	41 dB	43 dB
2.75 GHz	46 dB	47 dB	41 dB	42 dB
3 GHz	42 dB	42 dB	42 dB	40 dB
3.25 GHz	40 dB	40 dB	43 dB	41 dB
3.5 GHz	36 dB	36 dB	47 dB	37 dB
3.75 GHz	28 dB	28 dB	30 dB	38 dB
4 GHz	34 dB	35 dB	37 dB	34 dB

SEPTEMBER 21, 2000

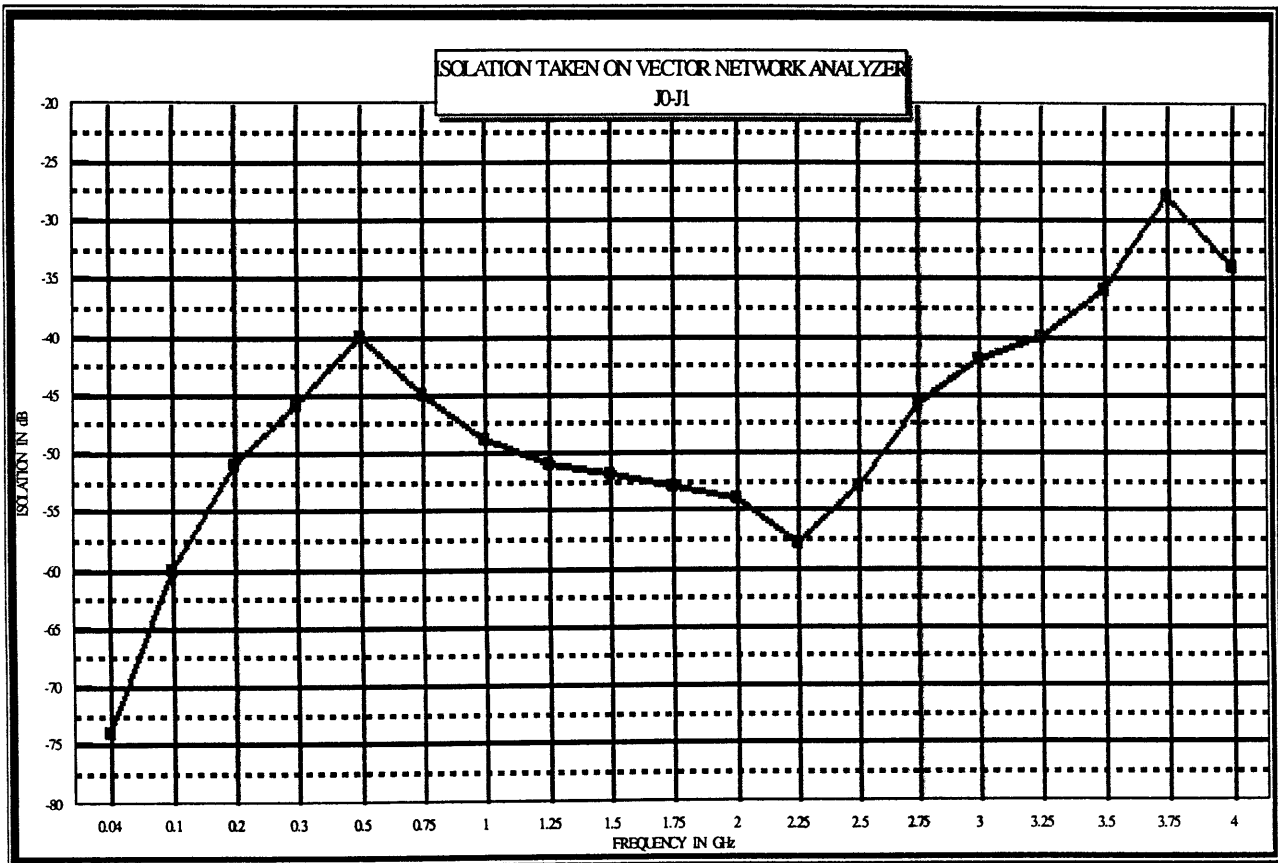
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MODEL NUMBER
 OPTION NUMBER
 SERIAL NUMBER
 ENGINEER
 VOLTAGE & CURRENT DRAW

: SWN-218-TRA
 : 160M, LVT10MV, PAM
 : TMS009029
 : RENE AFABLE
 : -5vdc @ 2.6mA

ISOLATION*
 (AS MEASURED ON A VECTOR NETWORK ANALYZER CW MODE)
 J0-J1



*J0: INPUT ARM

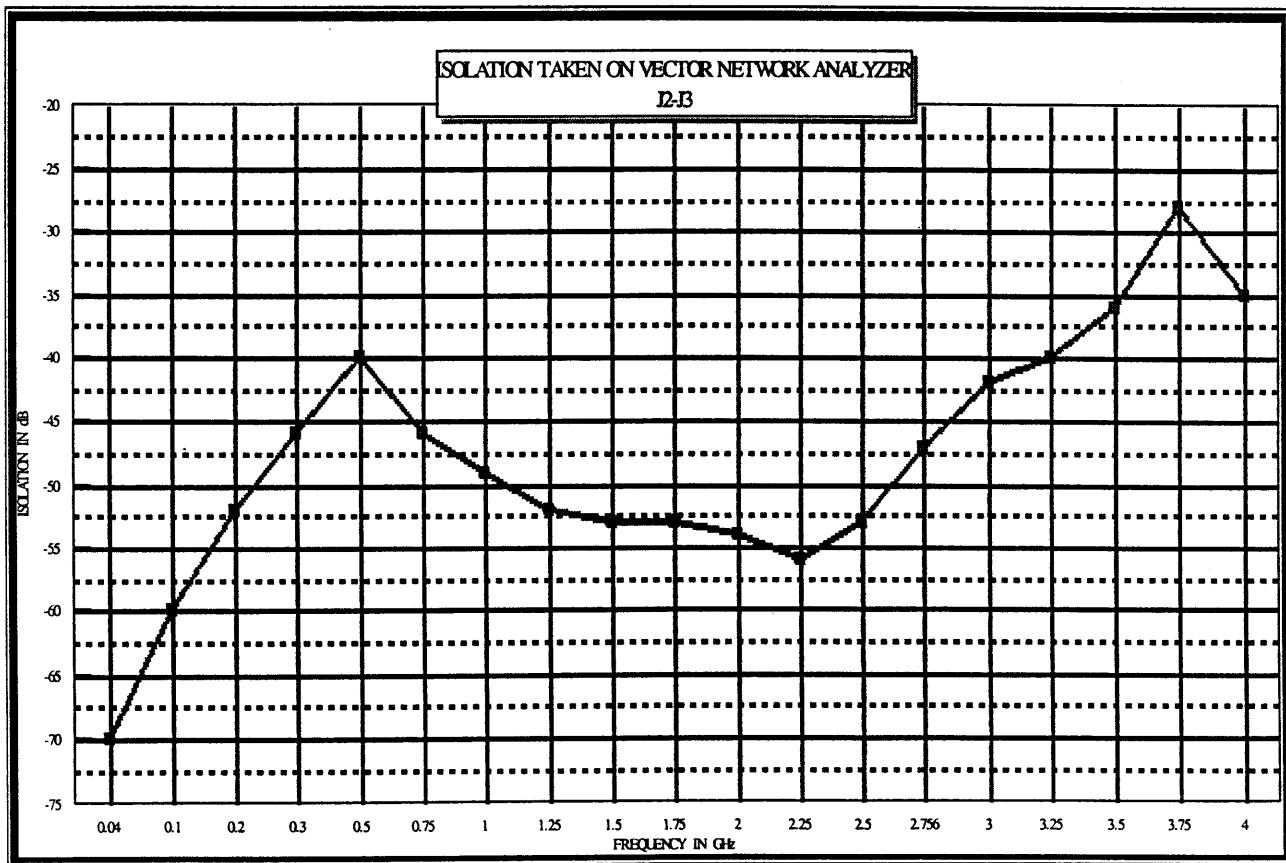
SEPTEMBER 21, 2000



MODEL NUMBER
 OPTION NUMBER
 SERIAL NUMBER
 ENGINEER
 VOLTAGE & CURRENT DRAW

: SWN-218-TRA
 : 160M, LVT10MV, PAM
 : TMS009029
 : RENE AFABLE
 : -5vdc @ 2.6mA

ISOLATION*
 (AS MEASURED ON A VECTOR NETWORK ANALYZER CW MODE)
 J2-J3



*J2: INPUT ARM

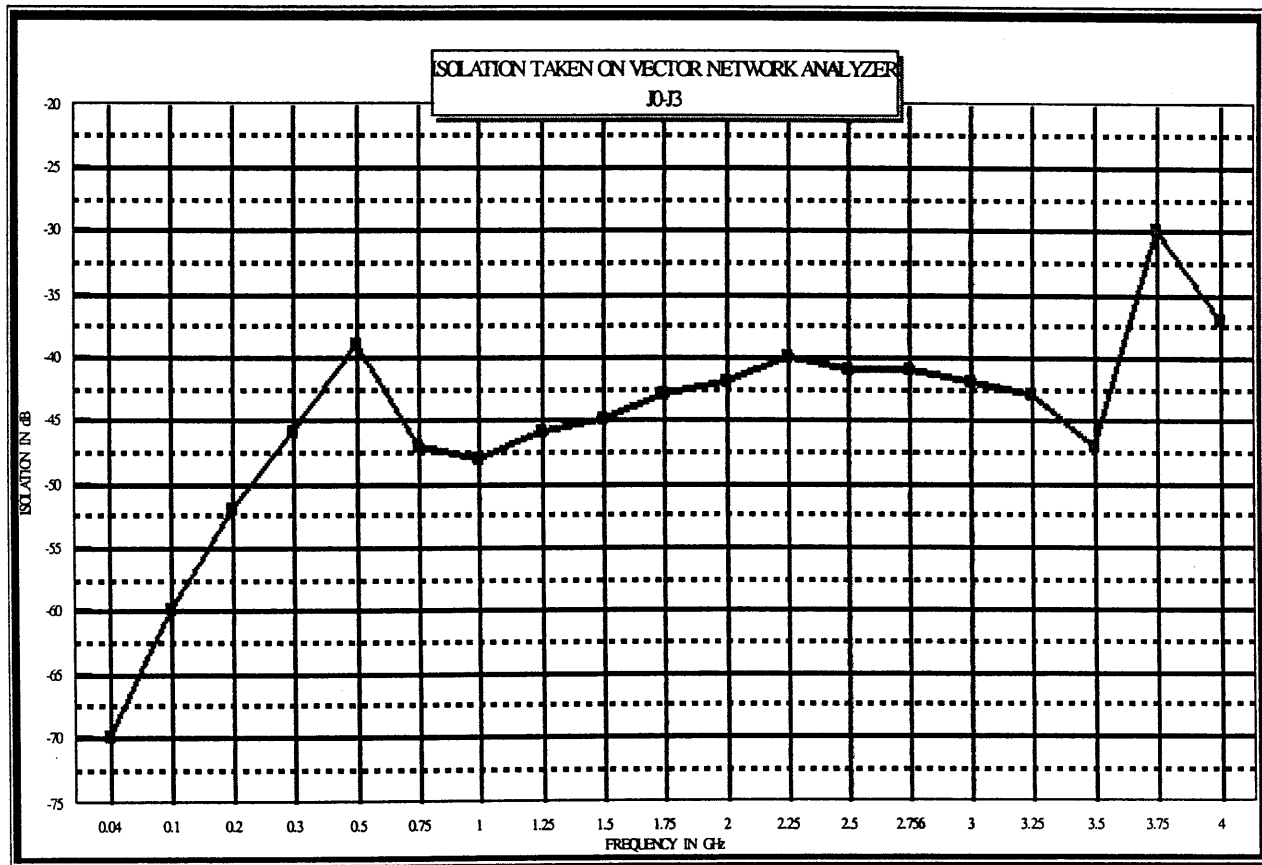
SEPTEMBER 21, 2000



MODEL NUMBER
 OPTION NUMBER
 SERIAL NUMBER
 ENGINEER
 VOLTAGE & CURRENT DRAW

: SWN-218-TRA
 : 160M, LVT10MV, PAM
 : TMS009029
 : RENE AFABLE
 : -5vdc @ 2.6mA

ISOLATION*
 (AS MEASURED ON A VECTOR NETWORK ANALYZER CW MODE)
 J0-J3



*J0: INPUT ARM

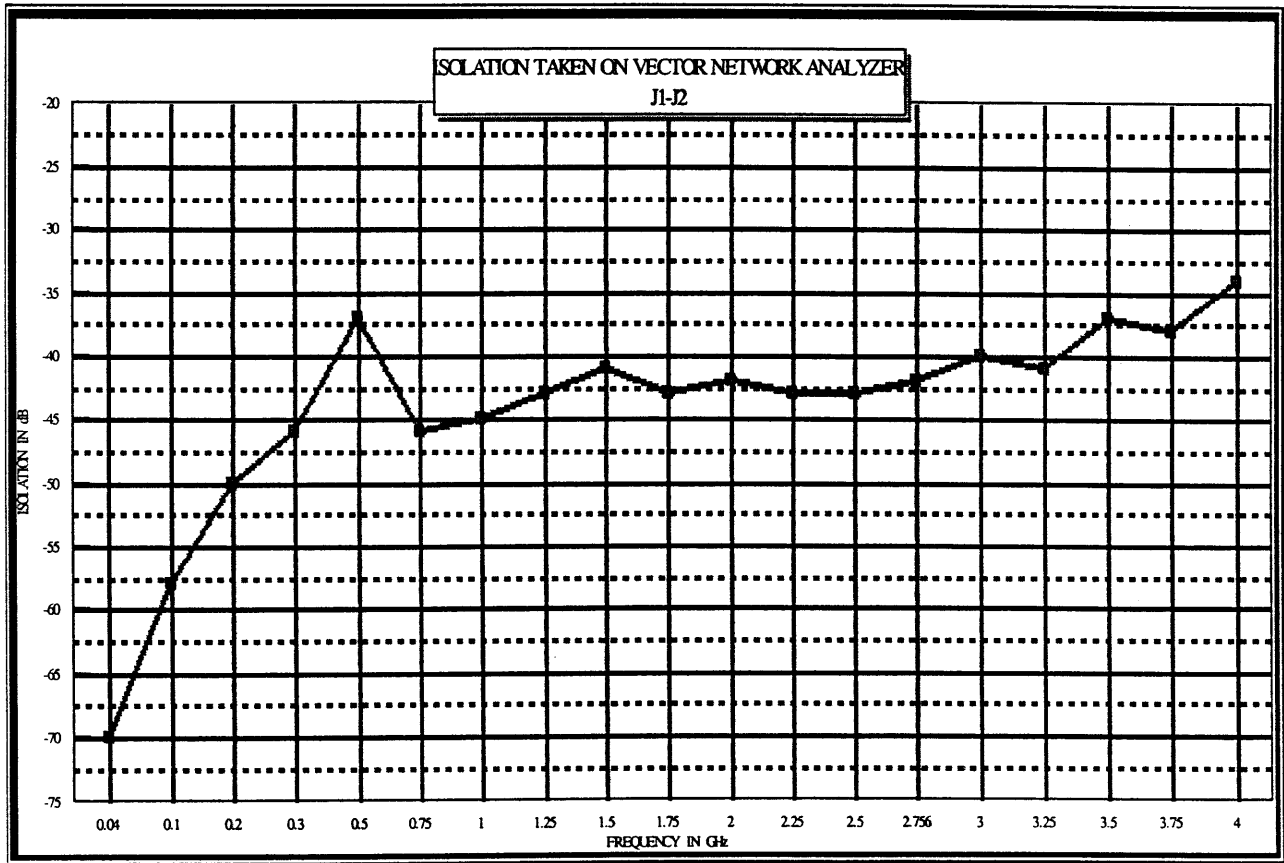
SEPTEMBER 21, 2000



MODEL NUMBER
 OPTION NUMBER
 SERIAL NUMBER
 ENGINEER
 VOLTAGE & CURRENT DRAW

: SWN-218-TRA
 : 160M, LVT10MV, PAM
 : TMS009029
 : RENE AFABLE
 : -5vdc @ 2.6mA

ISOLATION*
 (AS MEASURED ON A VECTOR NETWORK ANALYZER CW MODE)
 J1-J2



*J1: INPUT ARM

SEPTEMBER 21, 2000



TEST DATA

FROM

135 MHz TO 185 MHz

LOW INSERTION LOSS

ULTRA HIGH SPEED

LOW VIDEO TRANSIENT

SINGLE POWER SUPPLY

SOLID STATE TRANSFER SWITCH

AMC MODEL No:

SWN-218-TRA OPTIONS 160M, LVT10MV, PAM

(Serial Number: TMS009027)

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

SEPTEMBER 21, 2000

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



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J0-J1

CH1: S11 FWD REFL
LOG MAGNITUDE
REF= -12.740 dB
5.000 dB/DIV

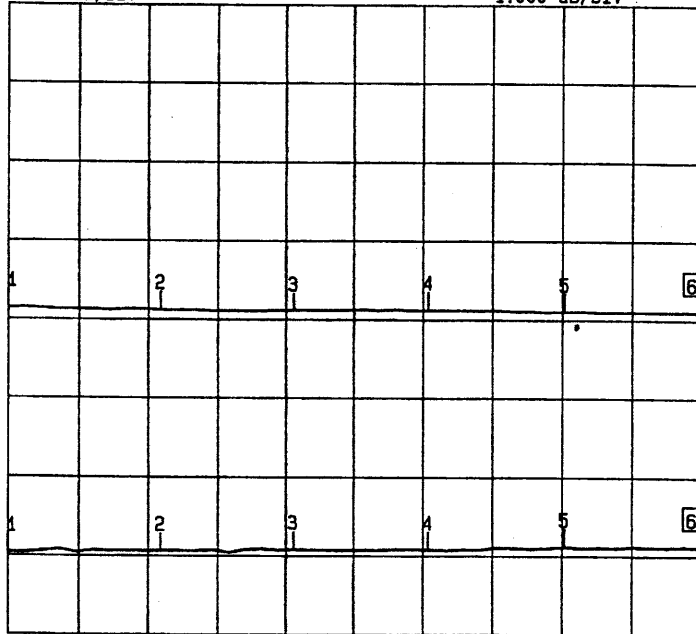
CH3: S21 FWD TRANS
LOG MAGNITUDE
REF= -1.000 dB
1.000 dB/DIV

CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 6
0.185364908 GHz
-0.893 dB

MARKER TO MAX
MARKER TO MIN

- 1 0.134856762 GHz
-0.851 dB
- 2 0.145943916 GHz
-0.870 dB
- 3 0.155799164 GHz
-0.874 dB
- 4 0.165654412 GHz
-0.872 dB
- 5 0.175509660 GHz
-0.888 dB



0.134856762 GHz 0.185364908

MARKER READOUT
FUNCTIONS

*J0: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
135 MHz	0.85 dB	27.53 dB
145 MHz	0.87 dB	27.41 dB
155 MHz	0.87 dB	27.31 dB
165 MHz	0.87 dB	27.39 dB
175 MHz	0.88 dB	27.14 dB
185 MHz	0.89 dB	27.19 dB

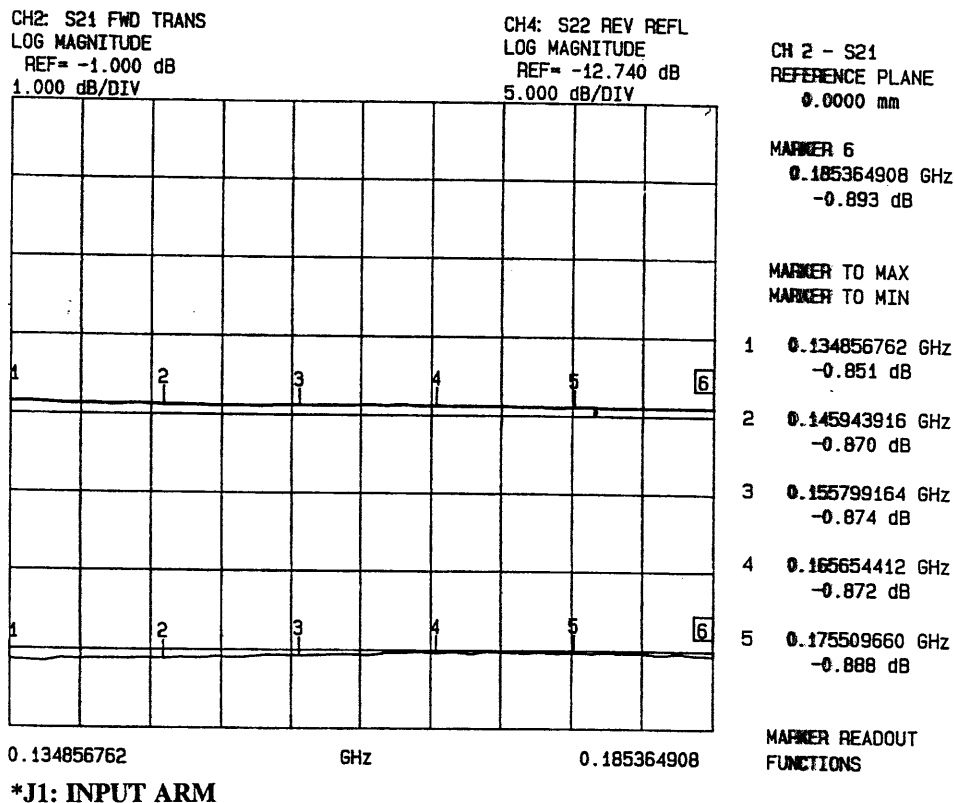


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J1-J0



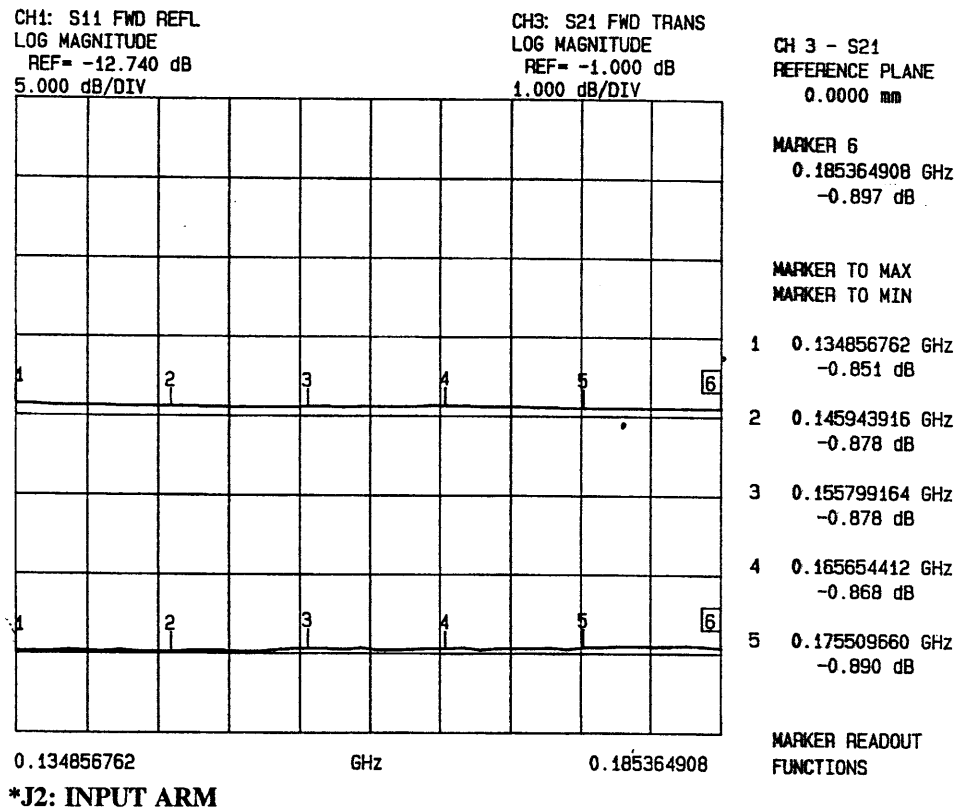
FREQUENCY	INSERTION LOSS	RETURN LOSS
135 MHz	0.85 dB	28.42 dB
145 MHz	0.87 dB	28.31 dB
155 MHz	0.87 dB	28.09 dB
165 MHz	0.87 dB	27.93 dB
175 MHz	0.88 dB	27.85 dB
185 MHz	0.89 dB	28.07 dB



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS* J2-J3



FREQUENCY	INSERTION LOSS	RETURN LOSS
135 MHz	0.85 dB	27.61 dB
145 MHz	0.87 dB	27.59 dB
155 MHz	0.87 dB	27.39 dB
165 MHz	0.86 dB	27.40 dB
175 MHz	0.89 dB	27.32 dB
185 MHz	0.89 dB	27.34 dB

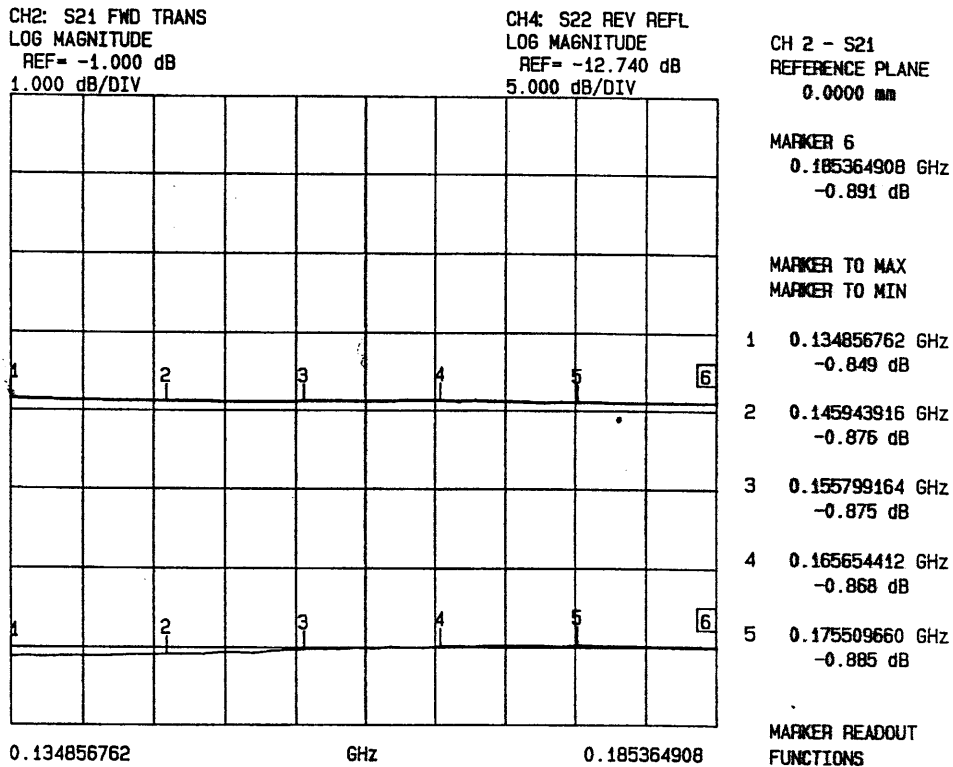


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J3-J2



*J3: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
135 MHz	0.84 dB	28.36 dB
145 MHz	0.87 dB	28.14 dB
155 MHz	0.87 dB	27.87 dB
165 MHz	0.86 dB	27.67 dB
175 MHz	0.88 dB	27.57 dB
185 MHz	0.89 dB	27.73 dB

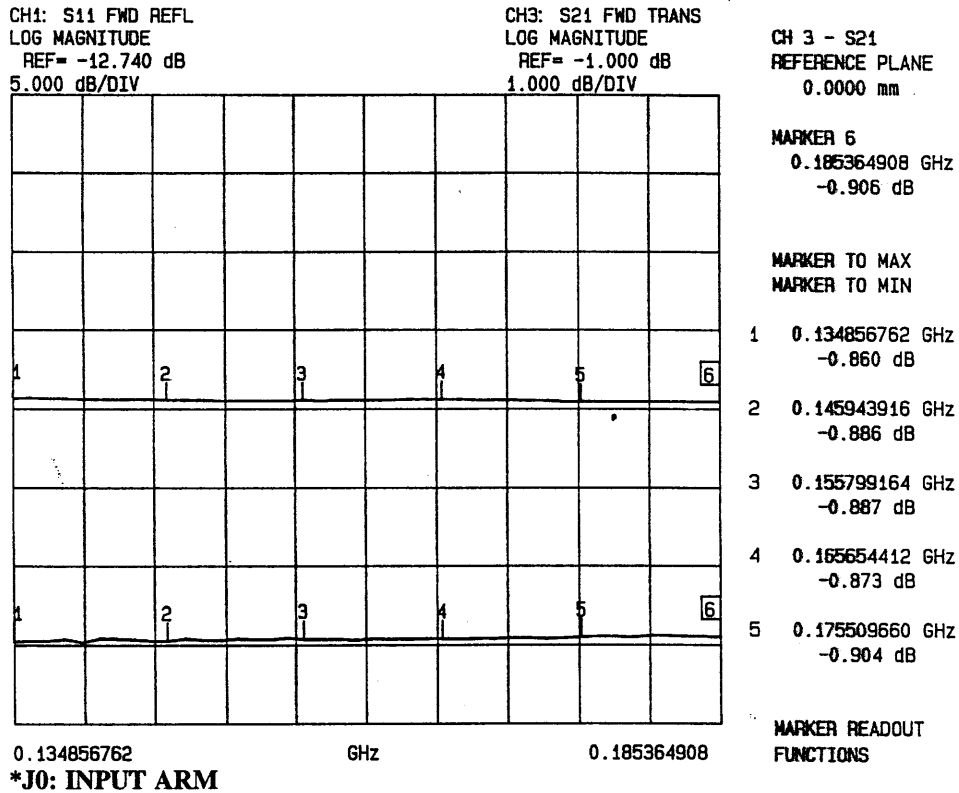


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J0-J3



FREQUENCY	INSERTION LOSS	RETURN LOSS
135 MHz	0.86 dB	27.49 dB
145 MHz	0.88 dB	27.46 dB
155 MHz	0.88 dB	27.34 dB
165 MHz	0.87 dB	27.32 dB
175 MHz	0.90 dB	27.23 dB
185 MHz	0.90 dB	27.23 dB

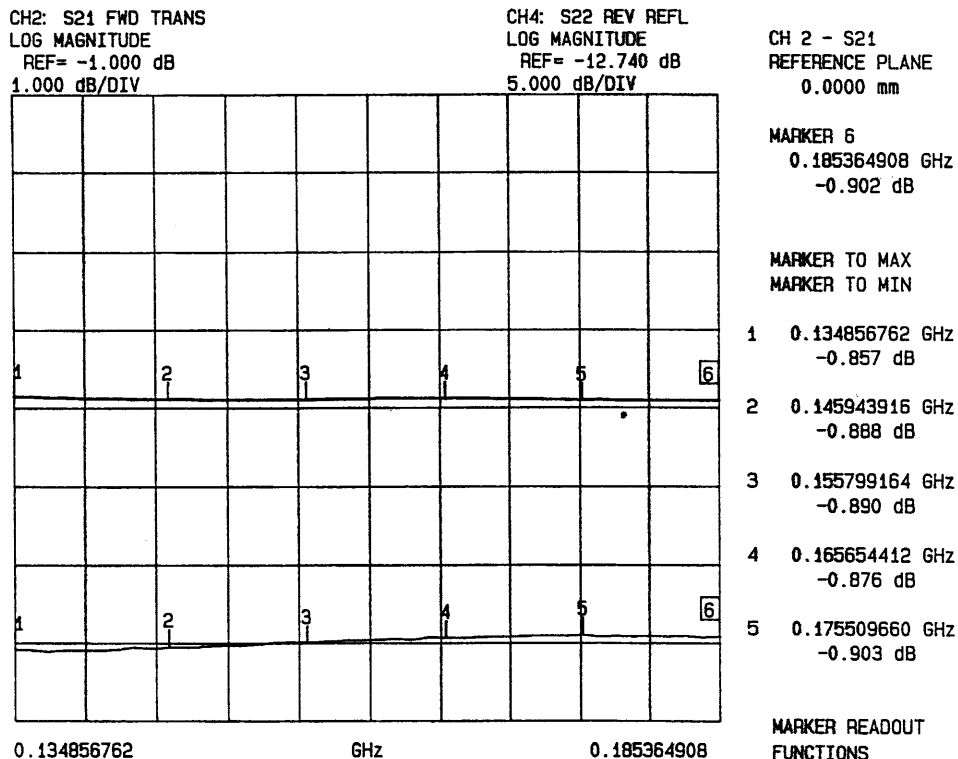


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J3-J0



*J3: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
135 MHz	0.85 dB	28.18 dB
145 MHz	0.88 dB	28.00 dB
155 MHz	0.89 dB	27.73 dB
165 MHz	0.87 dB	27.40 dB
175 MHz	0.90 dB	27.20 dB
185 MHz	0.90 dB	27.33 dB

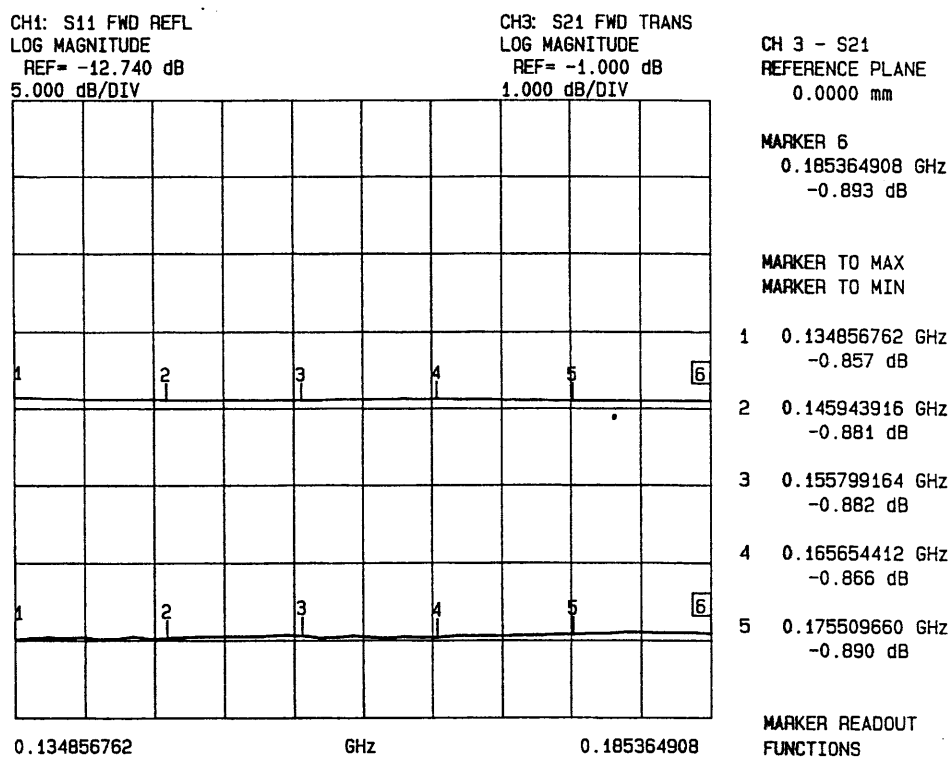


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J1-J2



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
135 MHz	0.85 dB	27.65 dB
145 MHz	0.88 dB	27.56 dB
155 MHz	0.88 dB	27.39 dB
165 MHz	0.86 dB	27.49 dB
175 MHz	0.89 dB	27.29 dB
185 MHz	0.89 dB	27.25 dB

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SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

INSERTION LOSS & RETURN LOSS*

J2-J1

CH2: S21 FWD TRANS
LOG MAGNITUDE
REF= -1.000 dB
1.000 dB/DIV

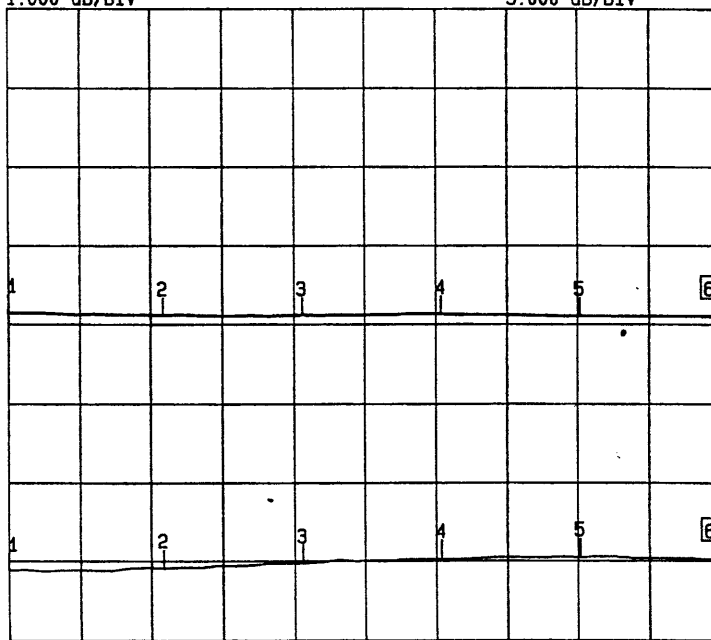
CH4: S22 REV REFL
LOG MAGNITUDE
REF= -12.740 dB
5.000 dB/DIV

CH 2 - S21
REFERENCE PLANE
0.0000 mm

MARKER 6
0.185364908 GHz
-0.890 dB

MARKER TO MAX
MARKER TO MIN

- 1 0.134856762 GHz
-0.851 dB
- 2 0.145943916 GHz
-0.881 dB
- 3 0.155799164 GHz
-0.878 dB
- 4 0.165654412 GHz
-0.868 dB
- 5 0.175509660 GHz
-0.894 dB



0.134856762 GHz 0.185364908

*J2: INPUT ARM

MARKER READOUT
FUNCTIONS

FREQUENCY	INSERTION LOSS	RETURN LOSS
135 MHz	0.85 dB	28.36 dB
145 MHz	0.88 dB	28.20 dB
155 MHz	0.87 dB	27.91 dB
165 MHz	0.86 dB	27.59 dB
175 MHz	0.89 dB	27.49 dB
185 MHz	0.89 dB	27.59 dB



**AMPLITUDE
DATA
BETWEEN
PORT TO PORT
FROM
40 MHz TO 3 GHz
ON A**

SOLID STATE TRANSFER SWITCH

**AMC MODEL No:
SWN-218-TRA OPTIONS 160M, LVT10MV, PAM
(Serial Number: TMS009027)**

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

SEPTEMBER 21, 2000

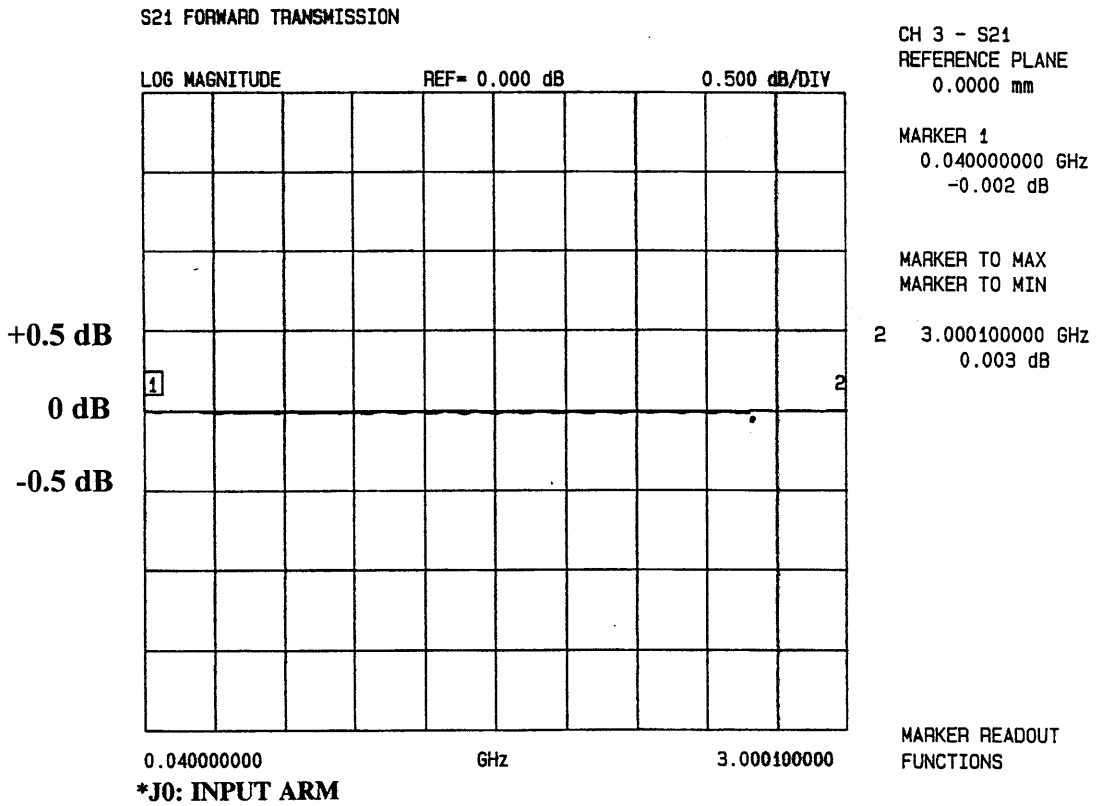


SUMMARY TEST DATA

MODEL NUMBER
OPTION NUMBER
SERIAL NUMBER
ENGINEER
VOLTAGE & CURRENT DRAW

: SWN-218-TRA
: 160M, LVT10MV, PAM
: TMS009029
: RENE AFABLE
: -5vdc @ 2.6mA

AMPLITUDE*
J0-J1 (REFERENCE)



FREQUENCY	AMPLITUDE (PEAK) (POSITIVE SIDE)	AMPLITUDE (PEAK) (NEGATIVE SIDE)
40 MHz		-0.002 dB
3.0 GHz	0.003 dB	

SEPTEMBER 21, 2000

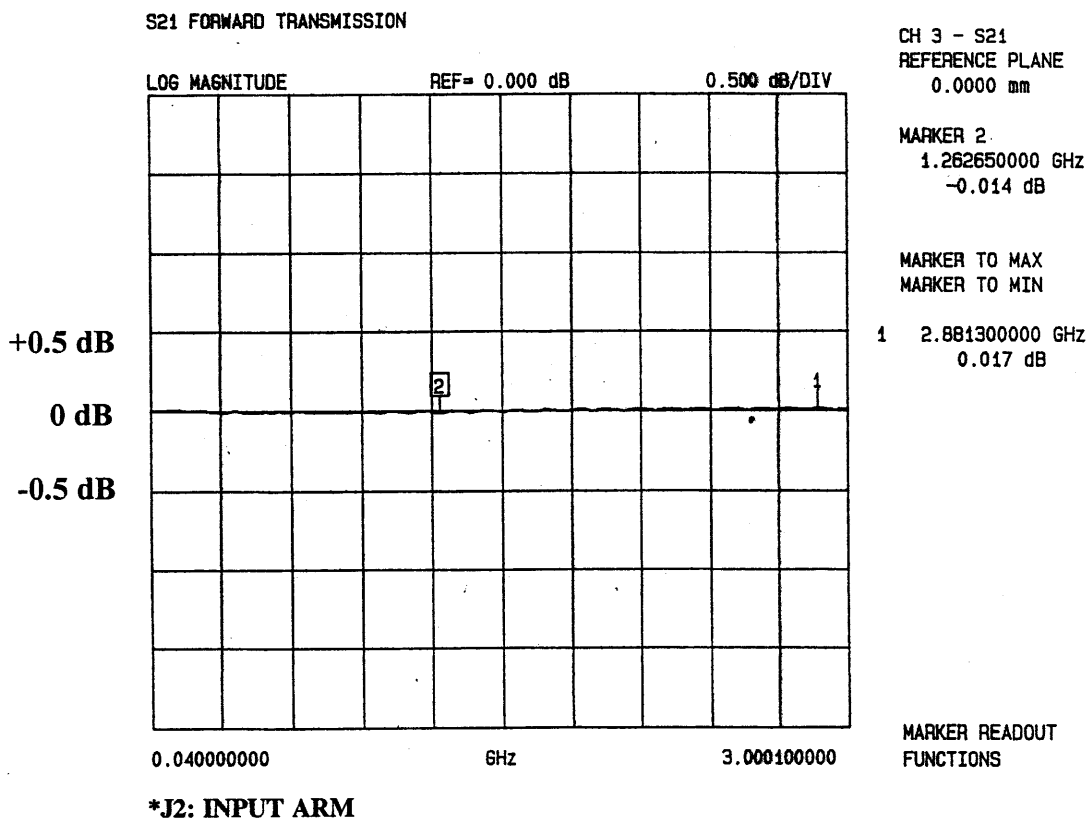


SUMMARY TEST DATA

MODEL NUMBER
OPTION NUMBER
SERIAL NUMBER
ENGINEER
VOLTAGE & CURRENT DRAW

: SWN-218-TRA
: 160M, LVT10MV, PAM
: TMS009029
: RENE AFABLE
: -5vdc @ 2.6mA

AMPLITUDE* J2-J3



FREQUENCY	AMPLITUDE (PEAK) (POSITIVE SIDE)	AMPLITUDE (PEAK) (NEGATIVE SIDE)
2.88 GHz	0.017 dB	
1.26 GHz		-0.014 dB

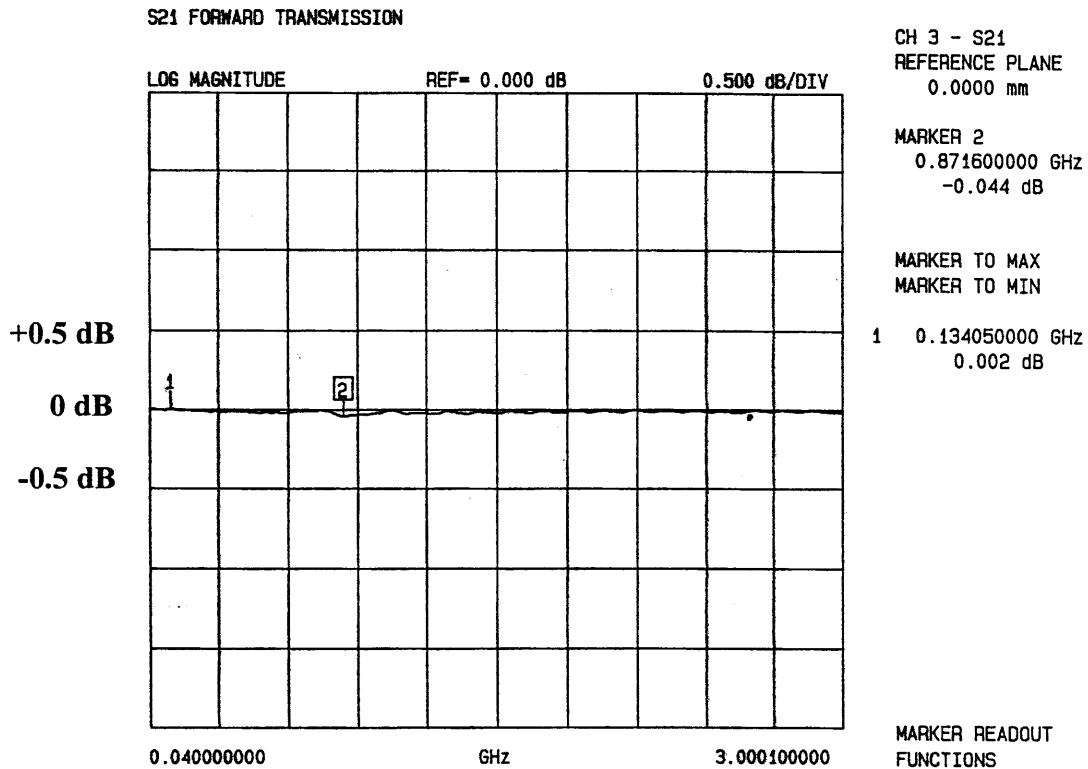
SEPTEMBER 21, 2000



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

AMPLITUDE*
J0-J3



***J0: INPUT ARM**

FREQUENCY	AMPLITUDE (PEAK) (POSITIVE SIDE)	AMPLITUDE (PEAK) (NEGATIVE SIDE)
134 MHz	0.002 dB	
871 MHz		-0.044 dB

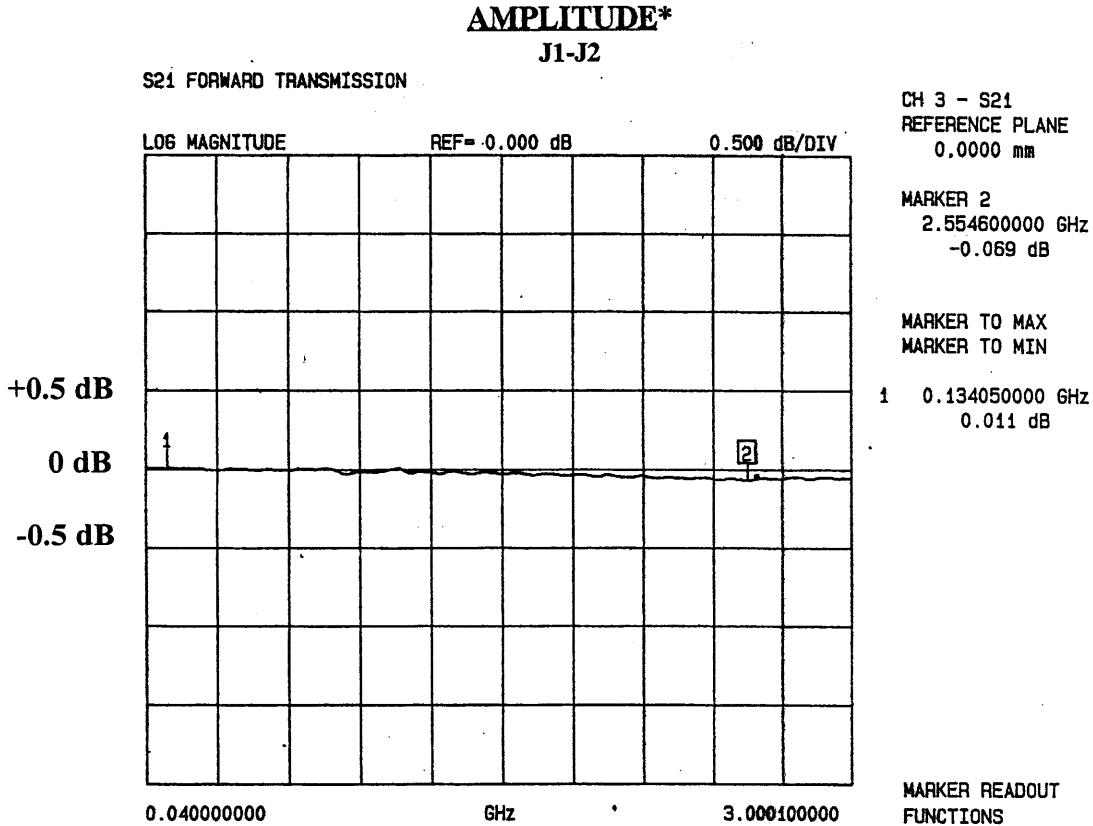
SEPTEMBER 21, 2000



SUMMARY TEST DATA

MODEL NUMBER
OPTION NUMBER
SERIAL NUMBER
ENGINEER
VOLTAGE & CURRENT DRAW

: SWN-218-TRA
: 160M, LVT10MV, PAM
: TMS009029
: RENE AFABLE
: -5vdc @ 2.6mA



***J1: INPUT ARM**

FREQUENCY	AMPLITUDE (PEAK) (POSITIVE SIDE)	AMPLITUDE (PEAK) (NEGATIVE SIDE)
134 MHz	0.011 dB	
2.55 GHz		-0.069 dB

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**PHASE
DATA
BETWEEN
PORT TO PORT
FROM
40 MHz TO 3 GHz
ON A**

SOLID STATE TRANSFER SWITCH

**AMC MODEL No:
SWN-218-TRA OPTIONS 160M, LVT10MV, PAM
(Serial Number: TMS009027)**

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

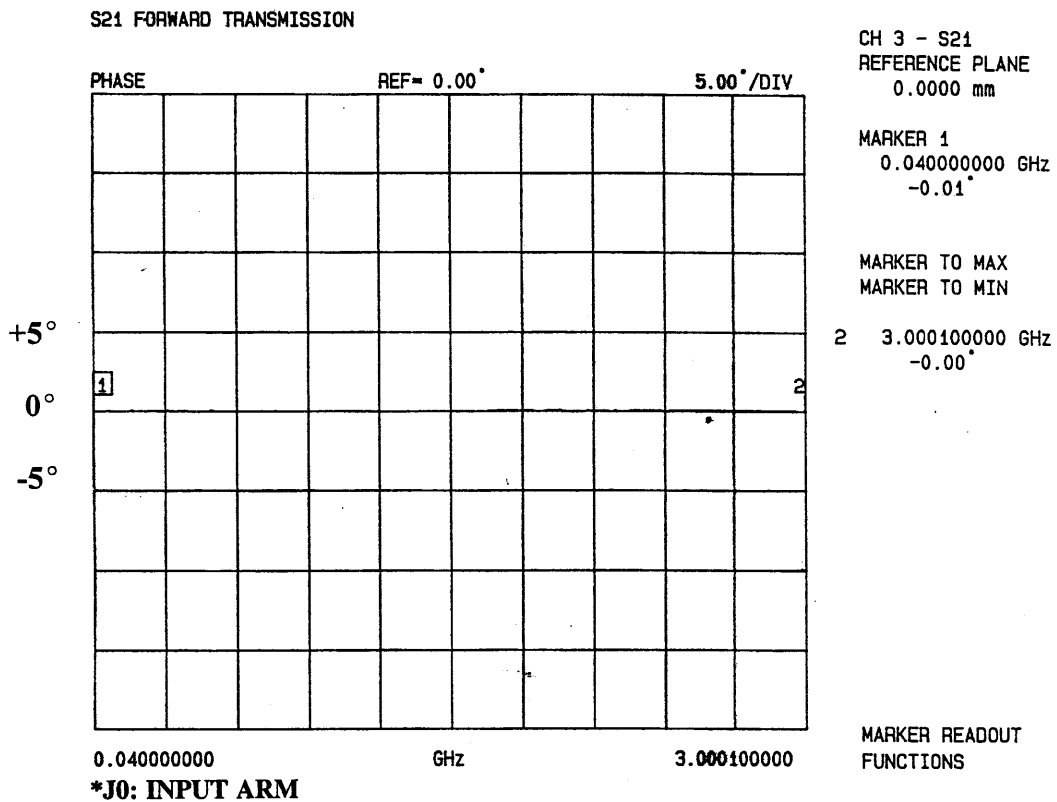
SEPTEMBER 21, 2000



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5V @ 2.6mA

PHASE*
J0-J1 (REFERENCE)



FREQUENCY	PHASE (PEAK) (POSITIVE SIDE)	PHASE (PEAK) (NEGATIVE SIDE)
40 MHz		-0.01°
3.0 GHz	0.00°	

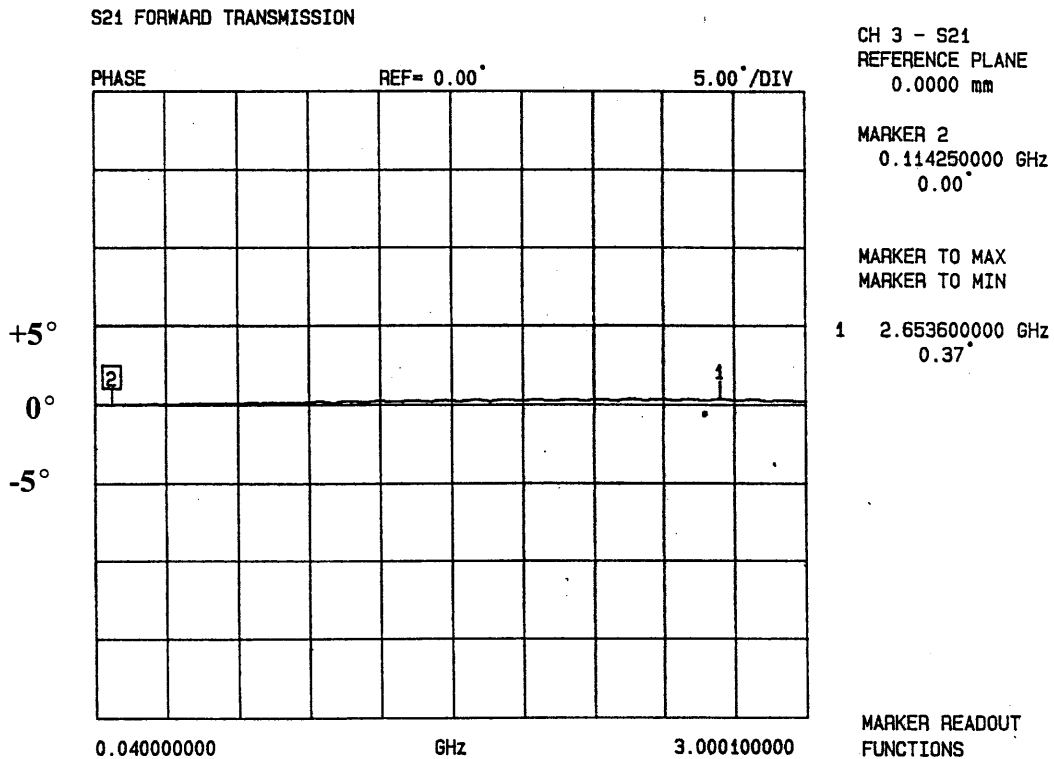
SEPTEMBER 21, 2000



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5V @ 2.6mA

PHASE* J2-J3



*J2: INPUT ARM

FREQUENCY	PHASE (PEAK) (POSITIVE SIDE)	PHASE (PEAK) (NEGATIVE SIDE)
2.65 GHz	0.37°	
114 MHz	0.00°	

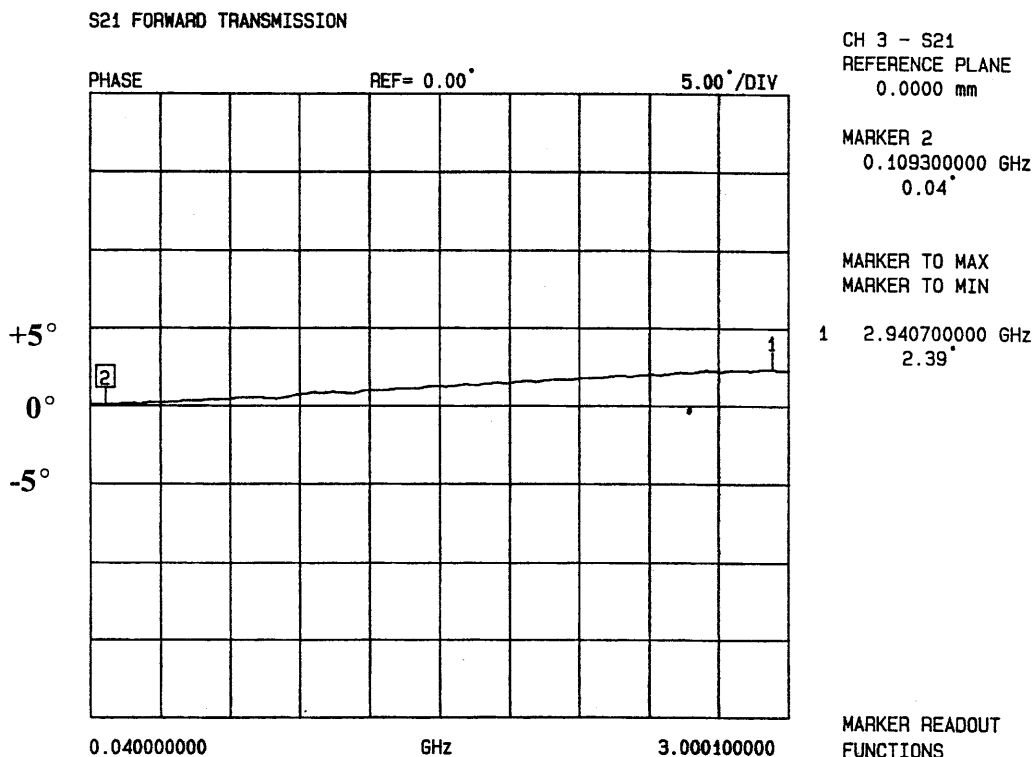
SEPTEMBER 21, 2000



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5V @ 2.6mA

PHASE* J0-J3



*J0: INPUT ARM

FREQUENCY	PHASE (PEAK) (POSITIVE SIDE)	PHASE (PEAK) (NEGATIVE SIDE)
2.94 GHz	2.39°	
109 MHz	0.04°	

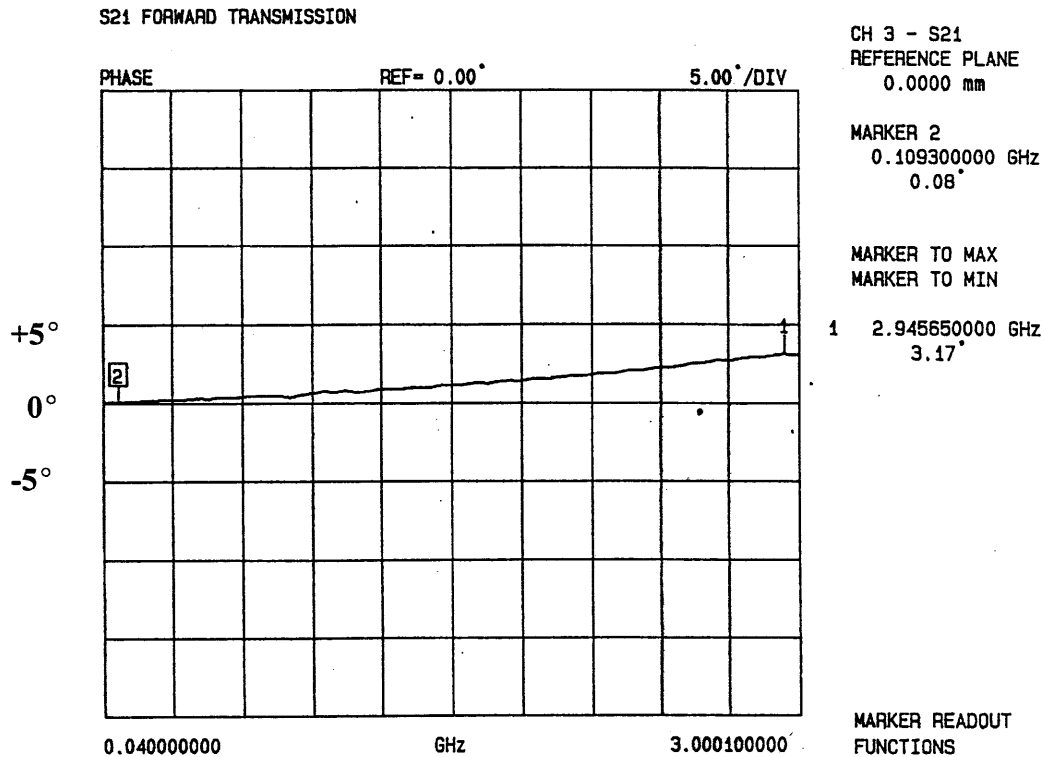
SEPTEMBER 21, 2000



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5V @ 2.6mA

PHASE* J1-J2



*J1: INPUT ARM

FREQUENCY	PHASE (PEAK) (POSITIVE SIDE)	PHASE (PEAK) (NEGATIVE SIDE)
2.94 GHz	3.17°	
109 MHz	0.08°	

SEPTEMBER 21, 2000



SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009027
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

SWITCHING SPEED

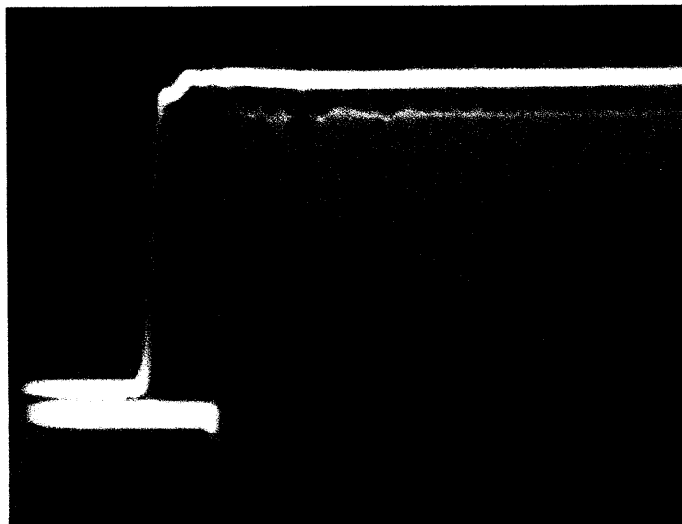
"Rise/Fall" Time: 10% RF to 90% RF & 90% RF to 10% RF
 "On/Off" Time: 50% TTL to 90% RF or 10% RF

TYPICAL OF ALL ARMS

DELAY ON: 11 nS
 RISE TIME: 2 nS

HORIZONTAL SCALE:
 10 nS PER DIVISION

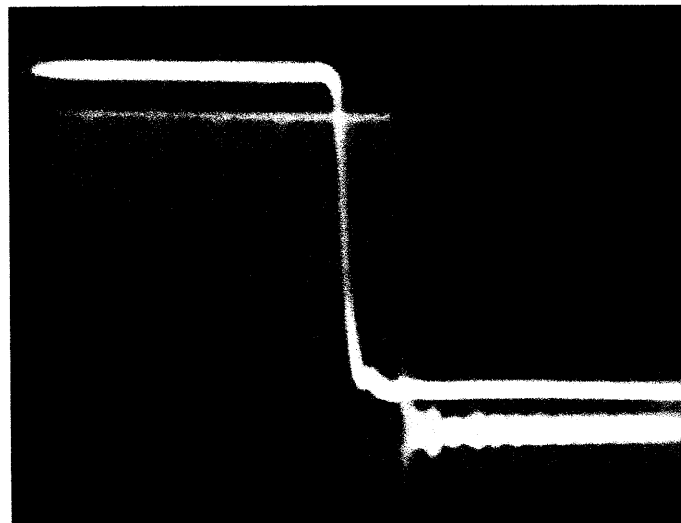
VERTICAL SCALE:
 10 mV PER DIVISION



DELAY OFF: 10 nS
 FALL TIME: 2 nS

HORIZONTAL SCALE:
 10 nS PER DIVISION

VERTICAL SCALE:
 10 mV PER DIVISION





SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009027
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

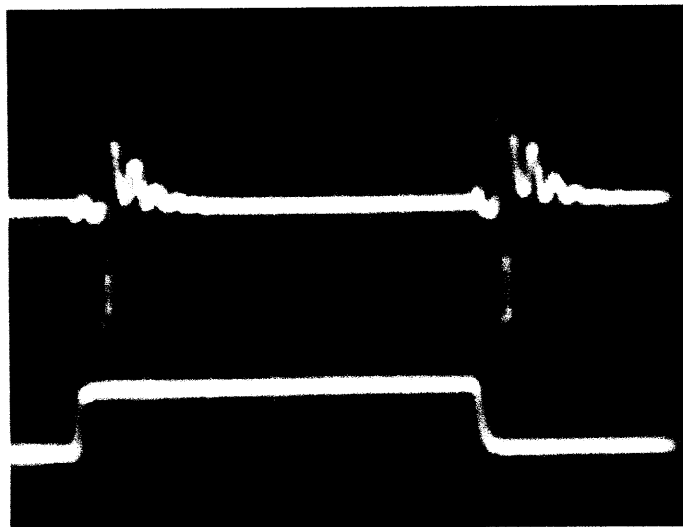
VIDEO TRANSIENTS

TYPICAL OF ALL ARMS

≤37 mV P-P
MEASURED IN A
300 MHZ BANDWIDTH

VERTICAL SCALE:
10 mV PER DIVISION

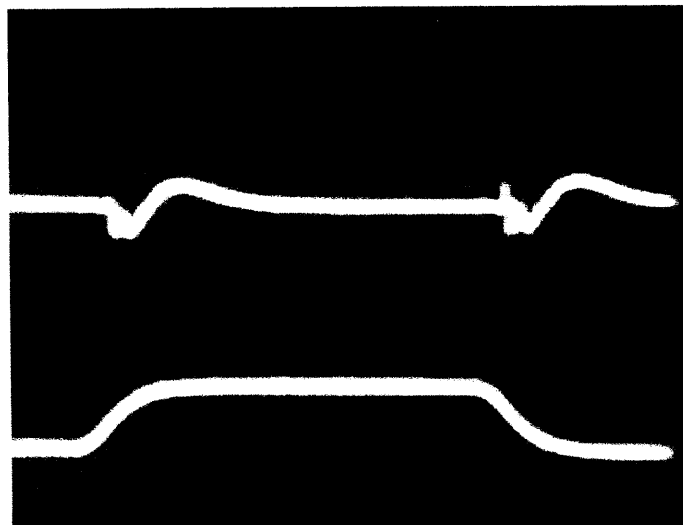
HORIZONTAL SCALE:
20 nS PER DIVISION



≤5 mV P-P
MEASURED IN A
20 MHZ BANDWIDTH

VERTICAL SCALE:
5 mV PER DIVISION

HORIZONTAL SCALE:
20 nS PER DIVISION



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APPENDIX A
MISCELLANEOUS
TEST DATA AND PLOTS
ON
ISOLATION
AS
MEASURED
ON A VECTOR NETWORK ANALYZER
ON A
SOLID STATE TRANSFER SWITCH
AMC MODEL No:
SWN-218-TRA OPTIONS 160M, LVT10MV, PAM
(Serial Number: TMS009027)
FROM
40 MHz TO 3 GHz
AND
FROM
135 MHz TO 185 MHz
SEPTEMBER 21, 2000



**ISOLATION
DATA AND PLOTS
FROM
40 MHz TO 3 GHz
AS
MEASURED
ON A VECTOR NETWORK ANALYZER
ON A
SOLID STATE TRANSFER SWITCH**

**AMC MODEL No:
SWN-218-TRA OPTIONS 160M, LVT10MV, PAM
(Serial Number: TMS009027)**

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

SEPTEMBER 21, 2000

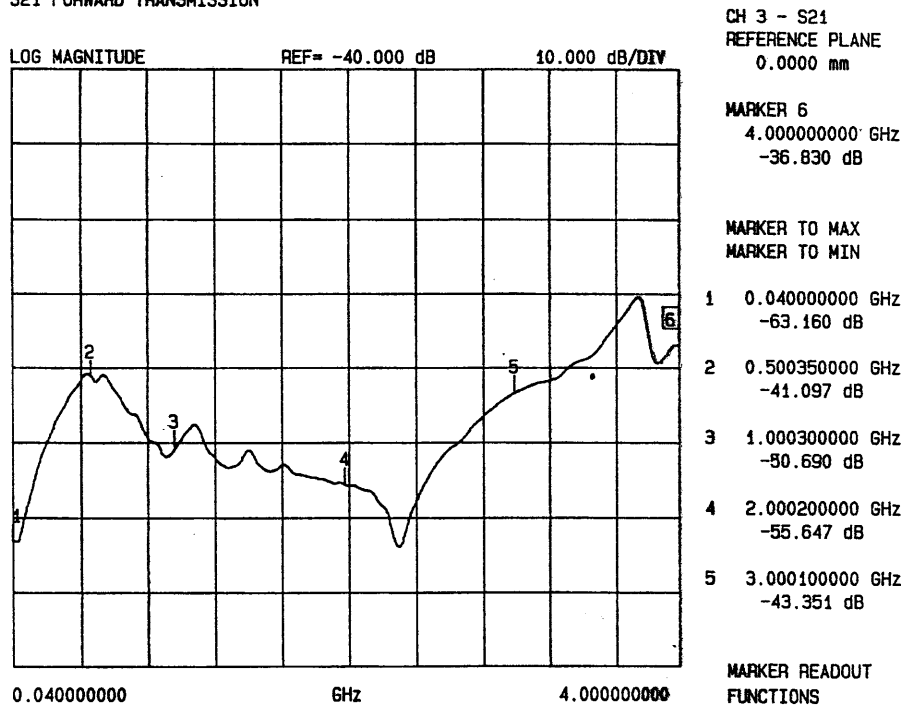


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

ISOLATION* (AS MEASURED ON A VECTOR NETWORK ANALYZER) J0-J1

S21 FORWARD TRANSMISSION



***J0: INPUT ARM**

FREQUENCY	ISOLATION
40 MHz	63.16 dB
500 MHz	41.09 dB
1.0 GHz	50.69 dB
2.0 GHz	55.64 dB
3.0 GHz	43.35 dB
4.0 GHz	36.83 dB

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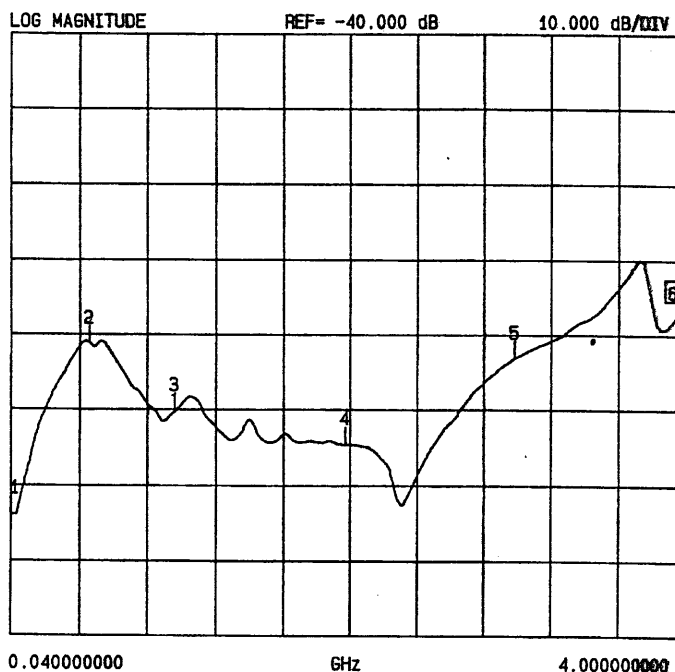


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

ISOLATION*
(AS MEASURED ON A VECTOR NETWORK ANALYZER)
J2-J3

S21 FORWARD TRANSMISSION



CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 6
4.000000000 GHz
-37.619 dB

MARKER TO MAX
MARKER TO MIN

- 1 0.040000000 GHz
-63.821 dB
- 2 0.500350000 GHz
-41.142 dB
- 3 1.000300000 GHz
-50.176 dB
- 4 2.000200000 GHz
-54.652 dB
- 5 3.000100000 GHz
-43.081 dB

MARKER READOUT
FUNCTIONS

0.040000000 GHz 4.000000000
***J2: INPUT ARM**

FREQUENCY	ISOLATION
40 MHz	63.82 dB
500 MHz	41.14 dB
1.0 GHz	50.17 dB
2.0 GHz	54.65 dB
3.0 GHz	43.08 dB
4.0 GHz	37.61 dB

SEPTEMBER 21, 2000

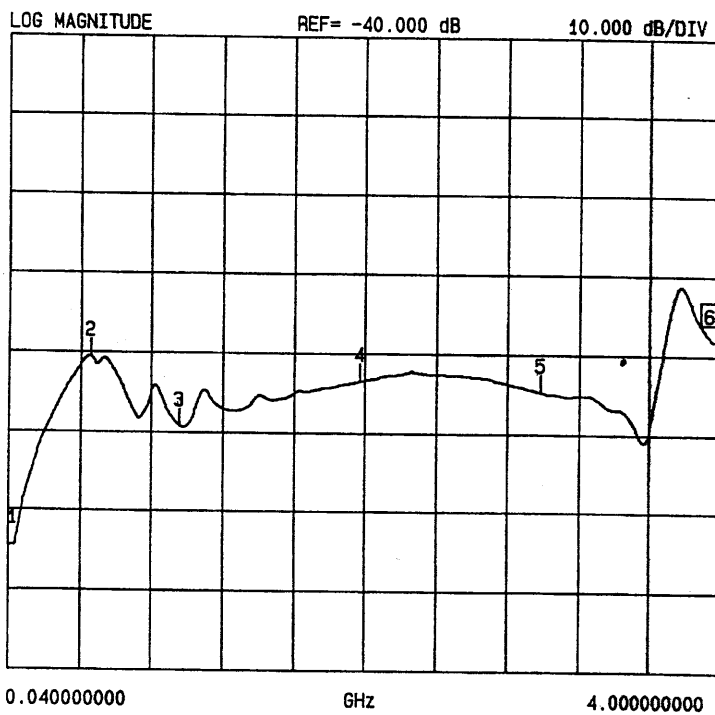


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

ISOLATION*
(AS MEASURED ON A VECTOR NETWORK ANALYZER)
J0-J3

S21 FORWARD TRANSMISSION



CH 3 - S21
REFERENCE PLANE
0.0000 mm
MARKER 6
4.000000000 GHz
-38.166 dB

MARKER TO MAX
MARKER TO MIN

- 1 0.040000000 GHz
-64.482 dB
- 2 0.500350000 GHz
-40.535 dB
- 3 1.000300000 GHz
-49.259 dB
- 4 2.000200000 GHz
-43.397 dB
- 5 3.000100000 GHz
-44.740 dB

MARKER READOUT
FUNCTIONS

0.040000000

GHz

4.000000000

*J0: INPUT ARM

FREQUENCY	ISOLATION
40 MHz	64.48 dB
500 MHz	40.53 dB
1.0 GHz	49.25 dB
2.0 GHz	43.39 dB
3.0 GHz	44.74 dB
4.0 GHz	38.16 dB

SEPTEMBER 21, 2000



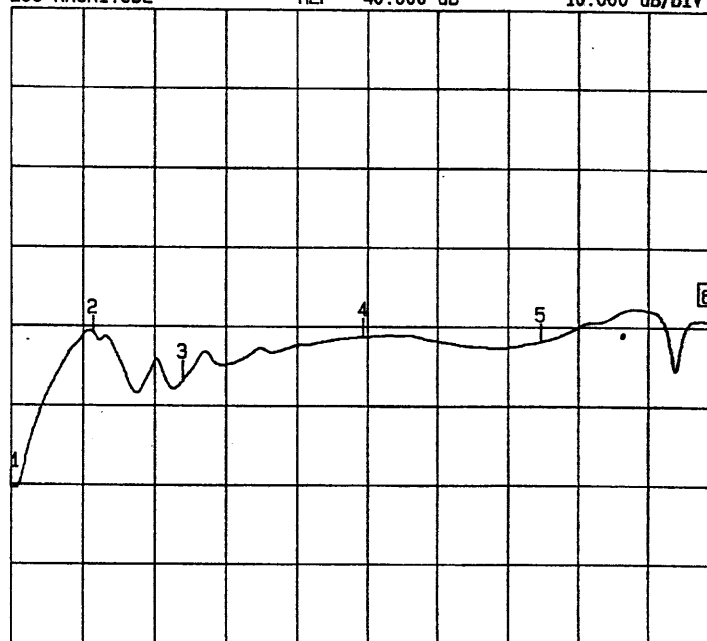
SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

ISOLATION*
(AS MEASURED ON A VECTOR NETWORK ANALYZER)
J1-J2

S21 FORWARD TRANSMISSION

LOG MAGNITUDE REF= -40.000 dB 10.000 dB/DIV



CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 6
4.000000000 GHz
-39.248 dB

MARKER TO MAX
MARKER TO MIN

- 1 0.040000000 GHz
-60.419 dB
- 2 0.500350000 GHz
-40.867 dB
- 3 1.000300000 GHz
-46.554 dB
- 4 2.000200000 GHz
-41.237 dB
- 5 3.000100000 GHz
-41.829 dB

0.040000000 GHz 4.000000000

MARKER READOUT
FUNCTIONS

*J1: INPUT ARM

FREQUENCY	ISOLATION
40 MHz	60.41 dB
500 MHz	40.86 dB
1.0 GHz	46.55 dB
2.0 GHz	41.23 dB
3.0 GHz	41.82 dB
4.0 GHz	39.24 dB

SEPTEMBER 21, 2000



**AMERICAN MICROWAVE
CORPORATION**

**ISOLATION
DATA AND PLOTS
FROM
135 MHz TO 185 MHz
AS
MEASURED
ON A VECTOR NETWORK ANALYZER
ON A
SOLID STATE TRANSFER SWITCH
AMC MODEL No:
SWN-218-TRA OPTIONS 160M, LVT10MV, PAM
(Serial Number: TMS009027)**

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

SEPTEMBER 21, 2000

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

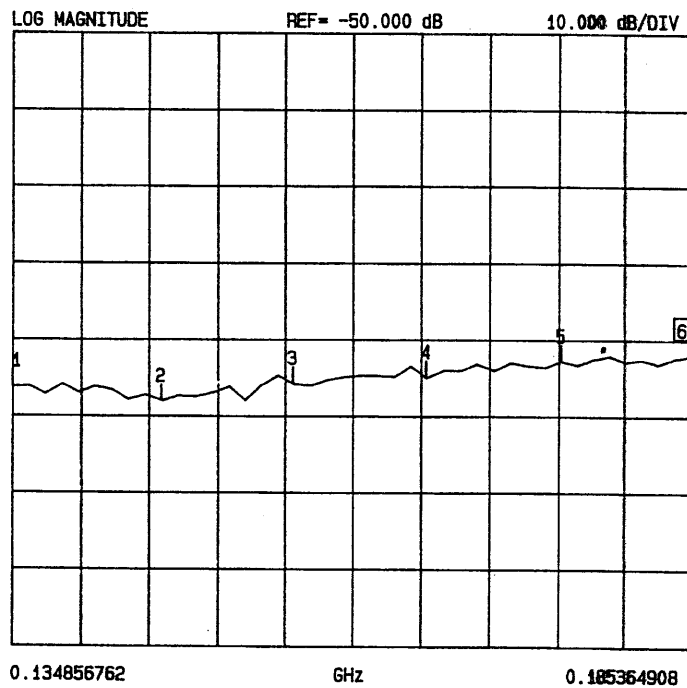


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

ISOLATION*
(AS MEASURED ON A VECTOR NETWORK ANALYZER)
J0-J1

S21 FORWARD TRANSMISSION



CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 6
0.185364908 GHz
-51.904 dB

MARKER TO MAX
MARKER TO MIN

1	0.134856762 GHz	-56.230 dB
2	0.145943916 GHz	-58.039 dB
3	0.155799164 GHz	-55.823 dB
4	0.165654412 GHz	-54.913 dB
5	0.175509660 GHz	-52.787 dB

MARKER READOUT
FUNCTIONS

*J0: INPUT ARM

FREQUENCY	ISOLATION
135 MHz	56.23 dB
145 MHz	58.03 dB
155 MHz	55.82 dB
165 MHz	54.91 dB
175 MHz	52.78 dB
185 MHz	51.90 dB

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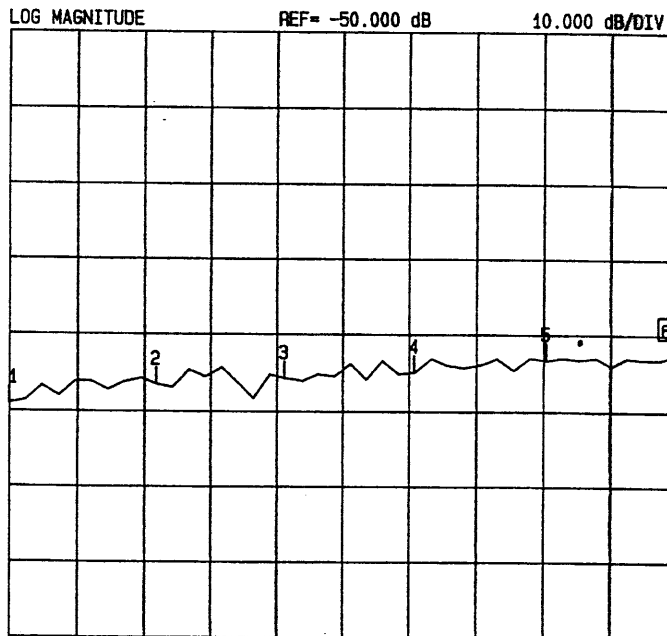


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

ISOLATION*
(AS MEASURED ON A VECTOR NETWORK ANALYZER)
J2-J3

S21 FORWARD TRANSMISSION



CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 6
0.185364908 GHz
-52.612 dB

MARKER TO MAX
MARKER TO MIN

1	0.134856762 GHz	-59.088 dB
2	0.145943916 GHz	-56.502 dB
3	0.155799164 GHz	-55.781 dB
4	0.165654412 GHz	-54.976 dB
5	0.175509660 GHz	-53.309 dB

MARKER READOUT
FUNCTIONS

0.134856762
*J2: INPUT ARM

GHz

0.185364908

FREQUENCY	ISOLATION
135 MHz	59.08 dB
145 MHz	56.50 dB
155 MHz	55.78 dB
165 MHz	54.97 dB
175 MHz	53.30 dB
185 MHz	52.61 dB

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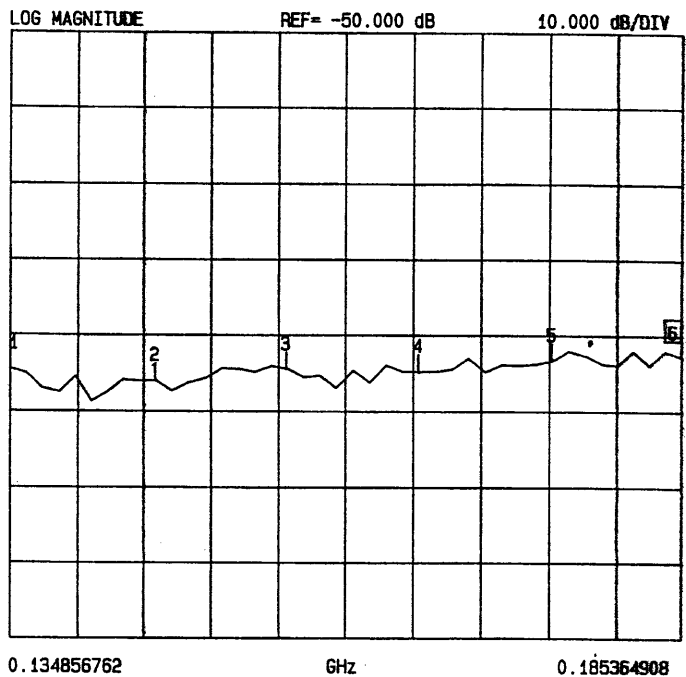


SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-TRA
OPTION NUMBER	: 160M, LVT10MV, PAM
SERIAL NUMBER	: TMS009029
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: -5vdc @ 2.6mA

ISOLATION*
(AS MEASURED ON A VECTOR NETWORK ANALYZER)
J0-J3

S21 FORWARD TRANSMISSION



CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 6
0.185364908 GHz
-52.752 dB

MARKER TO MAX
MARKER TO MIN

1	0.134856762 GHz	-54.589 dB
2	0.145943916 GHz	-56.047 dB
3	0.155799164 GHz	-54.472 dB
4	0.165654412 GHz	-54.808 dB
5	0.175509660 GHz	-53.322 dB

MARKER READOUT
FUNCTIONS

0.134856762 GHz 0.185364908

*J0: INPUT ARM

FREQUENCY	ISOLATION
135 MHz	54.58 dB
145 MHz	56.04 dB
155 MHz	54.47 dB
165 MHz	54.80 dB
175 MHz	53.32 dB
185 MHz	52.75 dB

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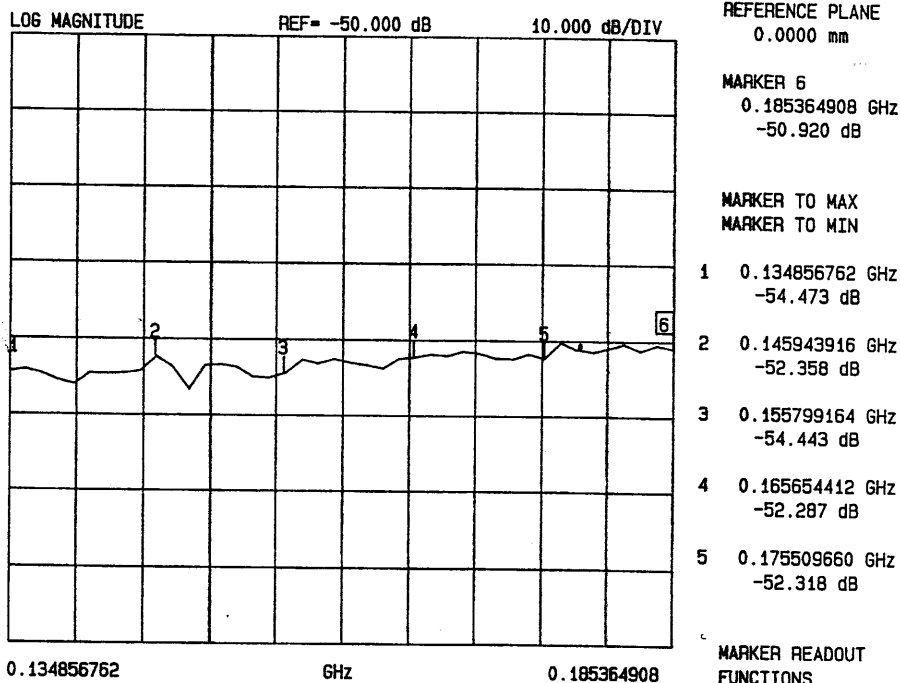


SUMMARY TEST DATA

MODEL NUMBER : SWN-218-TRA
OPTION NUMBER : 160M, LVT10MV, PAM
SERIAL NUMBER : TMS009029
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : -5vdc @ 2.6mA

ISOLATION*
 (AS MEASURED ON A VECTOR NETWORK ANALYZER)
 J1-J2

S21 FORWARD TRANSMISSION



*J1: INPUT ARM

FREQUENCY	ISOLATION
135 MHz	54.47 dB
145 MHz	52.35 dB
155 MHz	54.44 dB
165 MHz	52.28 dB
175 MHz	52.31 dB
185 MHz	50.92 dB

SEPTEMBER 21, 2000