AMERICAN MICROWAVE CORPORATION

TEST DATA

ON

LOW VIDEO TRANSIENT

8.0 TO 18.0 GHz

SPDT

REFLECTIVE, PIN DIODE SWITCH

MODEL No: SWN-RRA-2DR-LSI

(Serial No: 2MS50338)

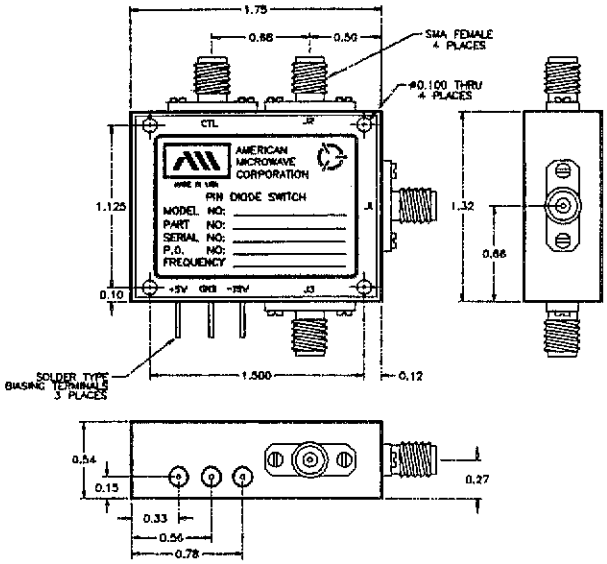
BY
AMERICAN MICROWAVE CORPORATION

APRIL 15, 1995

7311 G GROVE ROAD, FREDERICK, MARYLAND 21701 • Tel. (301) 662-4700 • Fax (301) 662-4938

AMERICAN MICROWAVE CORPORATION

LOW VIDEO TRANSIENT REFLECTIVE, SPDT SWITCH/MODULATOR



- **<20mV P-P TRANSIENT**
  (100 MHz BANDWIDTH)
- **LOW LOSS**
- **HIGH ISOLATION**
- **FAST SWITCHING SPEED**

AMC MODEL No: SWN-RRA-2DR-LSI

SPECIFICATIONS:

• **FREQUENCY RANGE**	:	**8.0 to 18.0 GHz (2.0 TO 18.0 GHz) Available**
• **INSERTION LOSS**	:	**3.0dB MAX.**
• **ISOLATION**	:	**60dB MIN., 75dB Typical**
• **INPUT VSWR**	:	**2.0:1 MAX.**
• **SWITCHING SPEED**		
"RISE TIME"	:	**10nS MAX., 8nS Typical**
"FALL TIME"	:	**15nS MAX., 10nS Typical**
DELAY "ON"	:	**60nS MAX., 50nS Typical**
DELAY "OFF"	:	**60nS MAX., 50nS Typical**
• **VIDEO TRANSIENTS(PEAK-PEAK VOLTAGE, 100 MHz BANDWIDTH, 50 OHM SYSTEM)**		
J1	:	**20mV P-P MAX., <10mV Typical**
J2	:	**20mV P-P MAX., <6mV Typical**
J3	:	**20mV P-P MAX., <9mV Typical**
• **CONTROL**	:	**TTL Compatible**
• **RF POWER**	:	**+20dBm Operating, 1 Watt Survival**
• **DC POWER SUPPLY**	:	**+5vdc @ 80mA, -15vdc @ 50mA**
• **SIZE**	:	**1.75" X 1.32" X 0.54"**

ABSORPTIVE, MULTITHROW AND OTHER FREQUENCY BANDWIDTH VERSIONS AVAILABLE

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SUMMARY TEST DATA
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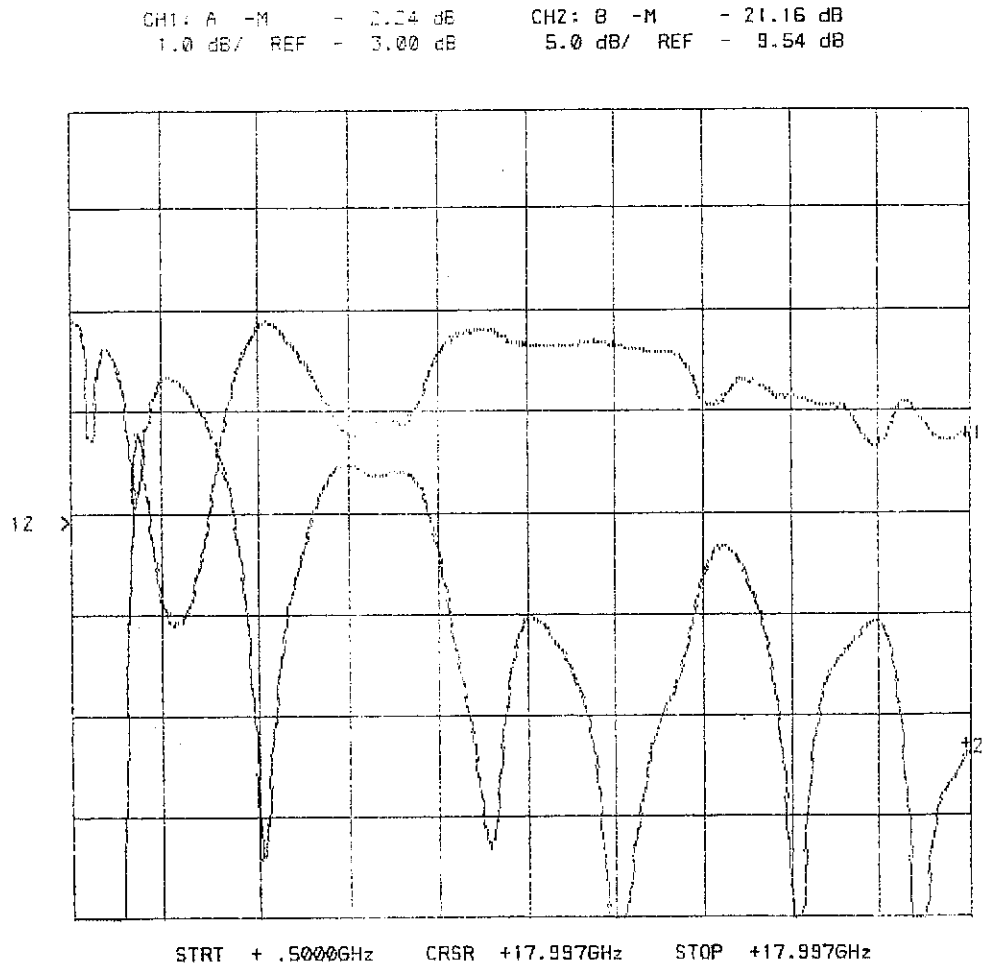
SERIAL NUMBER	: 2MS50338
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc @ 80mA, -15vdc @ 46mA

J1-J2
INSERTION LOSS vs. VSWR
(MEASURED FROM 0.5 TO 18.0 GHz)



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SUMMARY TEST DATA
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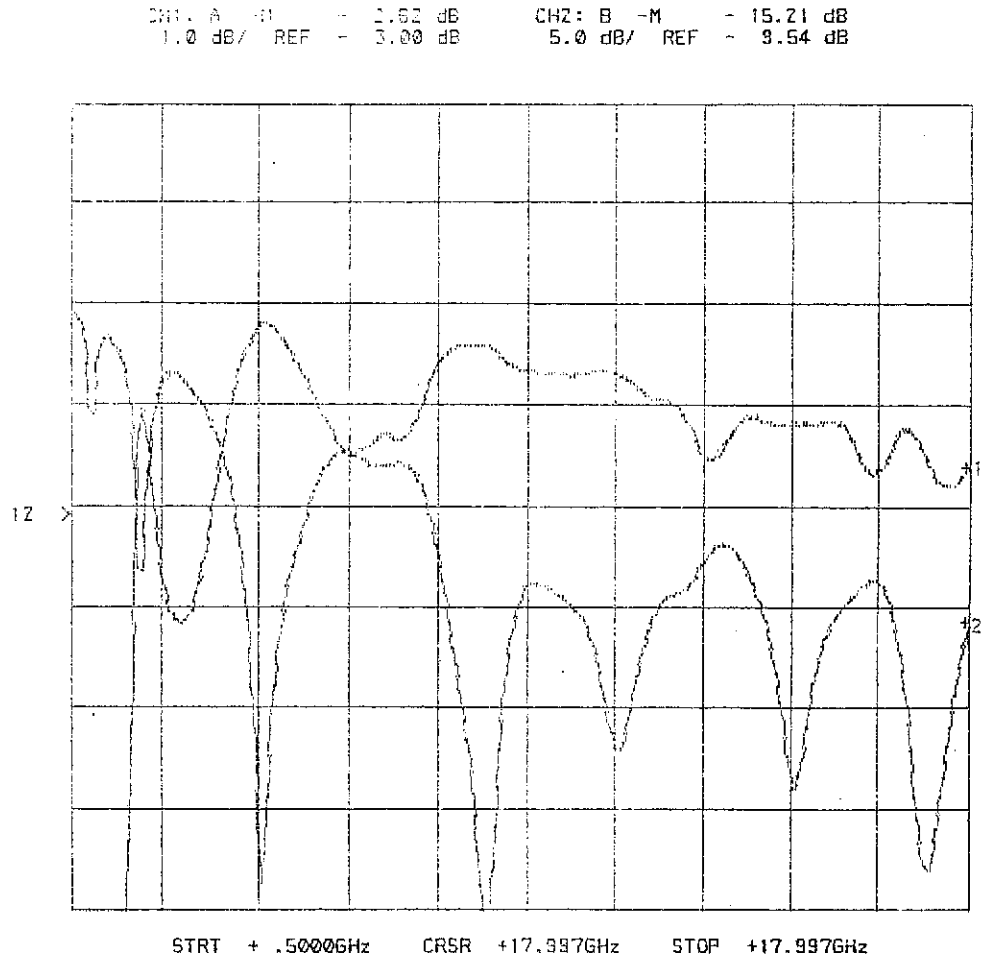
PAGE 4

SERIAL NUMBER	: 2MS50338
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc @ 80mA, -15vdc @ 46mA

J1-J3
INSERTION LOSS vs. VSWR
(MEASURED FROM 0.5 TO 18.0 GHz)



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SUMMARY TEST DATA
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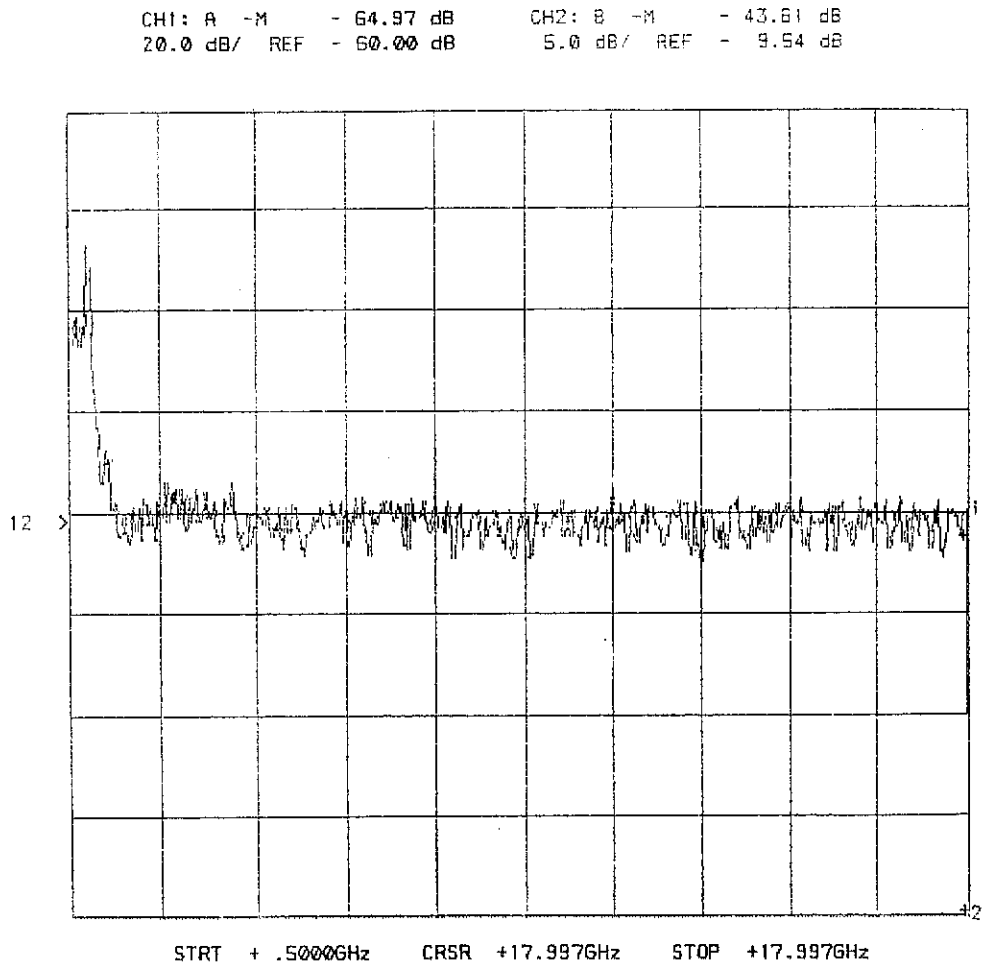
SERIAL NUMBER	: 2MS50338
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc @ 80mA, -15vdc @ 46mA

J1-J2
ISOLATION

(AS MEASURED ON A NETWORK ANALYSER FROM 0.5 TO 18.0 GHz)



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SUMMARY TEST DATA
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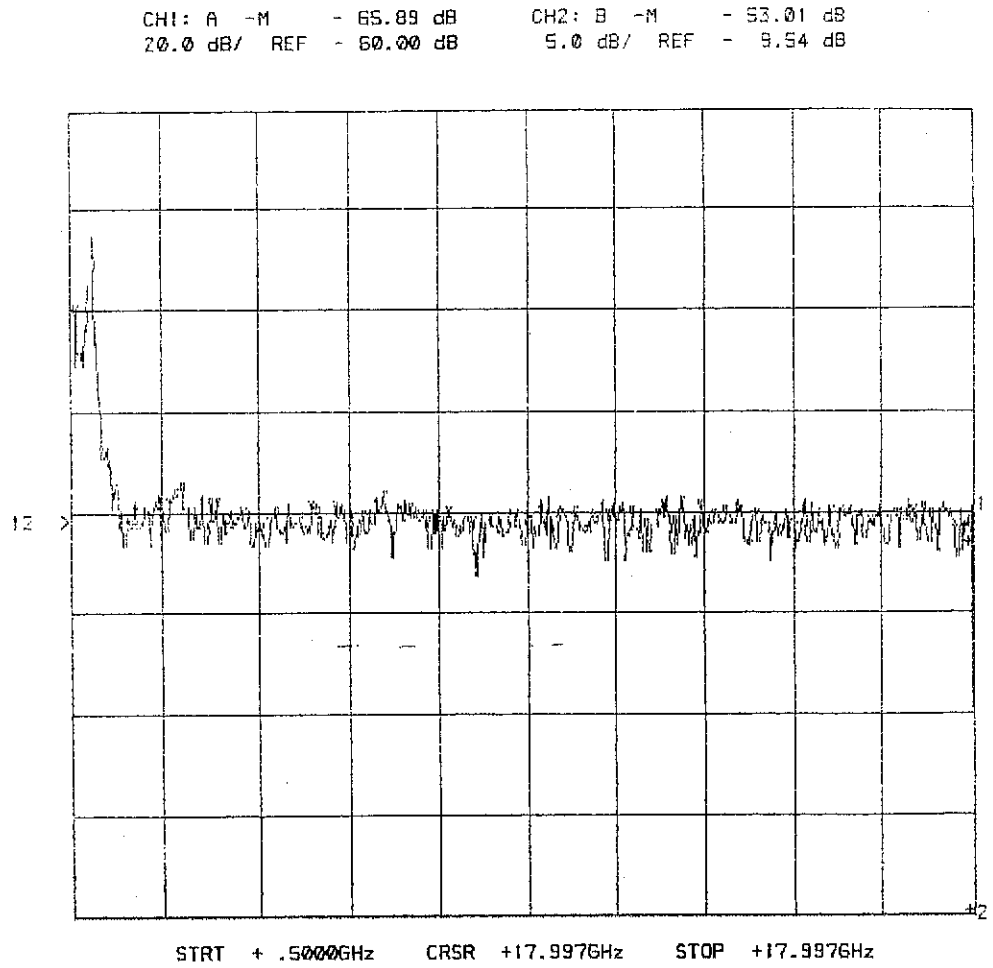
PAGE 6

SERIAL NUMBER	: 2MS50338
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc @ 80mA, -15vdc @ 46mA

J1-J3
ISOLATION

(AS MEASURED ON A NETWORK ANALYSER FROM 0.5 TO 18.0 GHz)



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SERIAL NUMBER : 2MS50338
TECHNICIAN : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc @ 80mA, -15vdc @ 46mA

ISOLATION

ISOLATION AS MEASURED ON A SPECTRUM ANALYSER 8.0 TO 18.0 GHz		
FREQUENCY	J1 TO J2	J1 TO J3
8 GHz	86dB	66dB
10 GHz	90dB	76dB
12 GHz	82dB	74dB
14 GHz	82dB	74dB
16 GHz	76dB	74dB
18 GHz	70dB	66dB

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SUMMARY TEST DATA
SWN-RRA-2DR-LSI
PAGE 8

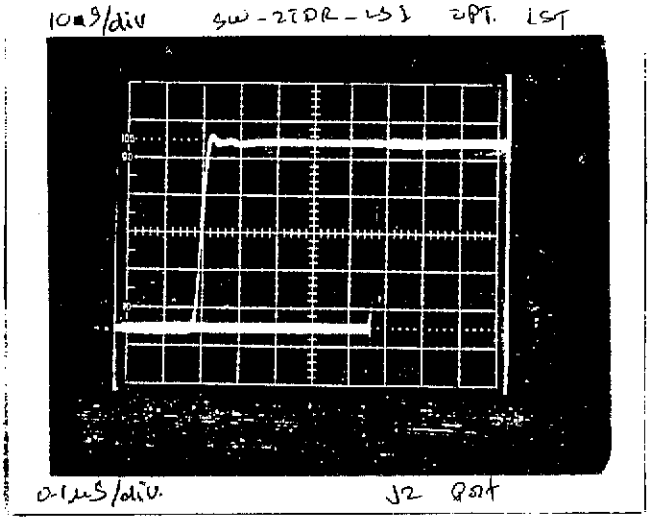
SERIAL NUMBER	: 2MS50338
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc @ 80mA, -15vdc @ 46mA

J2 PORT SWITCHING SPEED

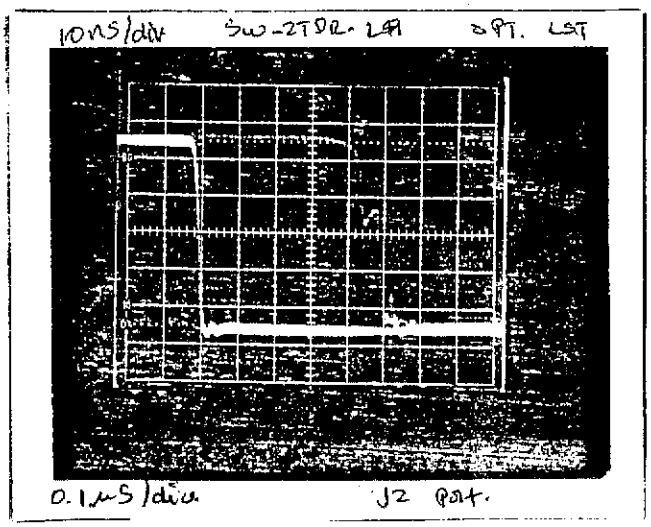
(RISE/FALL: 10% RF TO 90%RF/90% RF TO 10% RF)

(DELAY ON/OFF: 50% TTL TO 90%/10% RF)

VERTICAL SCALE:
1.0μS/DIVISION



HORIZONTAL SCALE:
10nS/DIVISION



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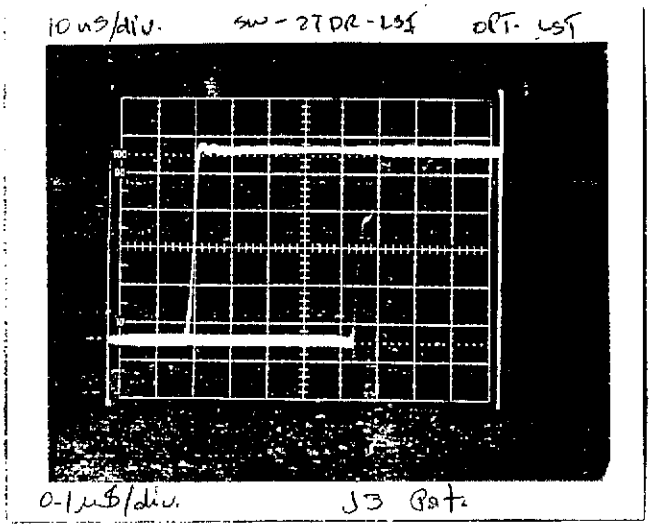
SERIAL NUMBER	: 2MS50338
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc @ 80mA, -15vdc @ 46mA

J3 PORT SWITCHING SPEED

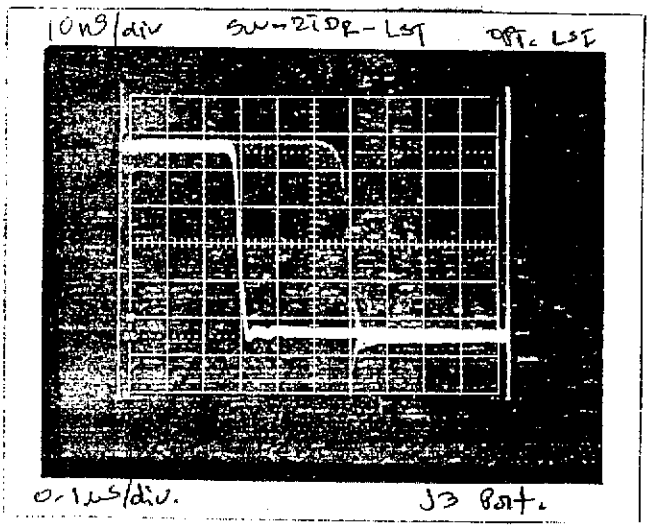
(RISE/FALL: 10% RF TO 90%RF/90% RF TO 10% RF)

(DELAY ON/OFF: 50% TTL TO 90%/10% RF)

VERTICAL SCALE:
1.0μS/DIVISION



HORIZONTAL SCALE:
10nS/DIVISION



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SUMMARY TEST DATA
SWN-RRA-2DR-LSI
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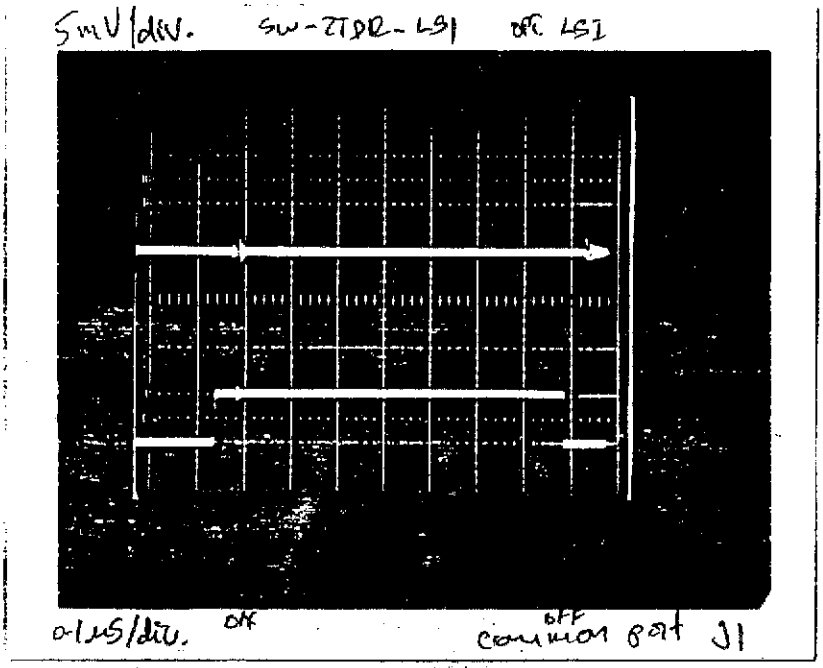
SERIAL NUMBER	: 2MS50338
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc @ 80mA, -15vdc @ 46mA

VIDEO TRANSIENTS

100 MHz BANDWIDTH, 50 OHM SYSTEM
VERTICAL SCALE: 5mV/DIVISION
HORIZONTAL SCALE: 0.1μS/DIVISION

J1 PORT:



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SUMMARY TEST DATA
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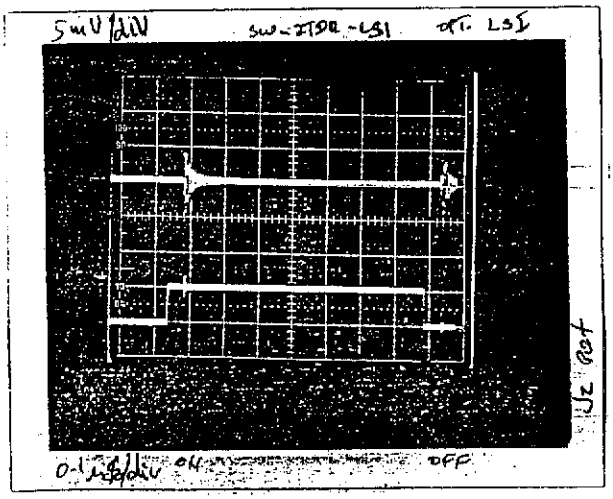
SERIAL NUMBER	: 2MS50338
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc @ 80mA, -15vdc @ 46mA

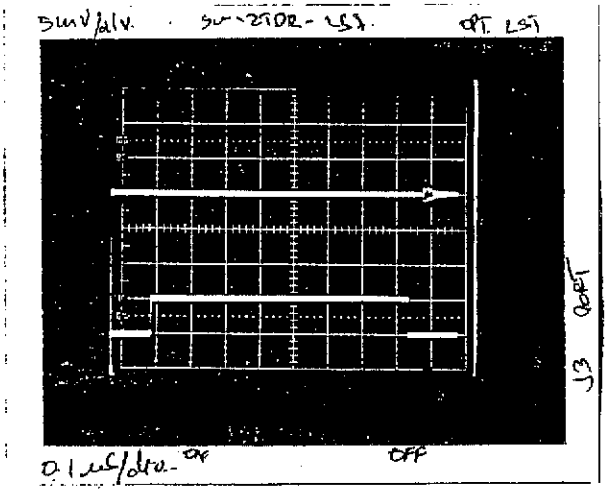
VIDEO TRANSIENTS

100 MHz BANDWIDTH, 50 OHM SYSTEM
VERTICAL SCALE: 5mV/DIVISION
HORIZONTAL SCALE: 0.1μS/DIVISION

J2 PORT:



J3 PORT:



APRIL 15, 1995

Drawing No: 100-3587
Revision: B

Lockheed Sanders
Model No: 8202761
Test Data Sheet I

Serial Number: 2MS50338

Technician: R. Mahler
Dated: 3/22/95

Approved: [signature]
Dated: 4/3/95

6.1.3 SWITCHING TIME (Delay time)

RF Path Common To	Delay ON ns	Delay OFF ns	Specified Time ns	PASS Y/N
J2	50 nS	50 nS	60 Max.	Y
J3	50 nS	32 nS	60 Max.	Y

6.1.4 SWITCHING TIME (Rise/Fall)

RF Path Common To	Rise ns	Fall ns	Specified Spec		PASS Y/N
			Rise ns	Fall ns	
J2	6 nS	10 nS	10 Max.	15 Max.	Y
J3	6 nS	10 nS	10 Max.	15 Max.	Y

6.1.6 VIDEO TRANSIENTS (PEAK - PEAK VOLTAGE, 50 OHM SYSTEM)

Tested Port	Measured Peak - Peak Voltage (mV)	Specified Video Transient Voltage(mV)	PASS Y/N
J1	13 mV P-P	20 Max. P-P	Y
J2	14 mV P-P	20 Max. P-P	Y
J3	5 mV P-P	20 Max. P-P	Y

Drawing No: 100-3587
Revision: B

Lockheed Sanders
Model No: 8202761
Test Data Sheet II

Serial Number: 2MS50338

Technician: R. Alfaro
Dated: 3/22/95

Approved: R Ward
Dated: 4/3/95

Frequency: Start: 8.0 GHz For VSWR and Isolation Tests
Stop : 18.0 GHz

PARA.
7.0 DC Power

DC Power	Measured Current	Specified Limit	Pass Y/N
+5 VDC	50 mA	250mA Max.	Y
-15 VDC	38 mA	100mA Max.	Y

PARA.
4.0 INPUT VSWR:

Enabled RF Path Common J1 To	Measured Input Maximum VSWR	Specified Input VSWR	PASS Y/N
J2	10.88 dBr	2.0:1 Max.	Y
J3	10.78 dBr	2.0:1 Max.	Y

PARA.
5.0 ISOLATION:

"OFF" RF Path Common J1 To	Measured Isolation Minimum	Specified Isolation	PASS Y/N
J2	>60 dB	60 dB min	Y
J3	>60 dB	60 dB min	Y

Drawing No: 100-3587
Revision: B

Lockheed Sanders
Model No: 8202761
Test Data Sheet III

Serial Number: 2MS50338

Technician: [signature]
Dated: 3/22/95

Approved: [signature]
Dated: 4/3/95

PARA.
8.0 Pulse Width Range/PRF Range Test

Path Common J1 To	Pulse Width Range Observed Y/N	PRF Range Observed Y/N	PASS Y/N
J2	Y	Y	Y
J3	Y	Y	Y

PARA.
9.0 Visual Inspection Checklist (per AMC Dwg #100-3588)

Parameter	Requirement	Visual Varification Y/N
Bias Connections	RFI Feedthru Solder Terminal	[signature] 4/3/95
RF Connectors	SMA Female(J1,J2, & J3)	[signature] 4/3/95
Control Connector	SMA Female(J4)	[signature] 4/3/95
Connector Locations	Per SCD No: 8202761	[signature] 4/3/95
Size	Per SCD No: 8202761	[signature] 4/3/95
Weight	4 Ounces Max.	Actual Weight: 1.67 oz

[signature] 4/3/95

Drawing No: 100-3587
Revision: B

Lockheed Sanders
Model No: 8202761
Test Data Sheet IV

Serial Number: 2MS50338

Technician: R. Hahn
Dated: 3/22/95

Approved: Peter Wood
Dated: 4/3/95

Frequency: Start: 8.0 GHz For Insertion Loss Tests
Stop : 18.0 GHz

PARA.
3.0 INSERTION LOSS @ +25°c:

Enabled RF Path: Common (J1) To	Maximum Measured Insertion Loss	Specified Insertion Loss	Pass Y/N
J2	-2.31 dB	3.0dB Max.	Y
J3	-2.67 dB	3.0db Max.	Y

PARA.
3.0 INSERTION LOSS @ -40°c:

Enabled RF Path: Common (J1) To	Maximum Measured Insertion Loss	Specified Insertion Loss	Pass Y/N
J2	-2.00 dB	3.0dB Max.	Y
J3	-2.30 dB	3.0db Max.	Y

PARA.
3.0 INSERTION LOSS @ +85°c:

Enabled RF Path: Common (J1) To	Maximum Measured Insertion Loss	Specified Insertion Loss	Pass Y/N
J2	-2.95 dB	3.0dB Max.	Y
J3	-2.57 dB	3.0db Max.	Y

Drawing No: 100-3587
Revision: B

Lockheed Sanders
Model No: 8202761
Test Data Sheet I

Serial Number: 2MS50339

Technician: R. Ashworth
Dated: 3/30/95

Approved: Approved
Dated: 4/3/95

6.1.3 SWITCHING TIME (Delay time)

RF Path Common To	Delay ON ns	Delay OFF ns	Specified Time ns	PASS Y/N
J2	50 nS	50 nS	60 Max.	Y
J3	50 nS	30 nS	60 Max.	Y

6.1.4 SWITCHING TIME (Rise/Fall)

RF Path Common To	Rise ns	Fall ns	Specified Spec		PASS Y/N
			Rise ns	Fall ns	
J2	6 nS	8 nS	10 Max.	15 Max.	Y
J3	6 nS	4 nS	10 Max.	15 Max.	Y

6.1.6 VIDEO TRANSIENTS (PEAK - PEAK VOLTAGE, 50 OHM SYSTEM)

Tested Port	Measured Peak - Peak Voltage (mV)	Specified Video Transient Voltage(mV)	PASS Y/N
J1	10 mV P-P	20 Max. P-P	Y
J2	6 mV P-P	20 Max. P-P	Y
J3	9 mV P-P	20 Max. P-P	Y

Drawing No: 100-3587
Revision: B

Lockheed Sanders
Model No: 8202761
Test Data Sheet II

Serial Number: 2MS50339

Technician: R. Hebb
Dated: 3/30/95

Approved: [signature]
Dated: 9/3/95

Frequency: Start: 8.0 GHz For VSWR and Isolation Tests
Stop : 18.0 GHz

PARA.
7.0 DC Power

DC Power	Measured Current	Specified Limit	Pass Y/N
+5 VDC	80 mA	250mA Max.	Y
-15 VDC	46 mA	100mA Max.	Y

PARA.
4.0 INPUT VSWR:

Enabled RF Path Common J1 To	Measured Input Maximum VSWR	Specified Input VSWR	PASS Y/N
J2	9.76 dBr	2.0:1 Max.	Y
J3	9.90 dBr	2.0:1 Max.	Y

PARA.
5.0 ISOLATION:

"OFF" RF Path Common J1 To	Measured Isolation Minimum	Specified Isolation	PASS Y/N
J2	> 60 dB	60 dB min	Y
J3	> 60 dB	60 dB min	Y

Drawing No: 100-3587
Revision: B

Lockheed Sanders
Model No: 8202761
Test Data Sheet III

Serial Number: 2MS50339

Technician: R. Hebb
Dated: 3/30/95

Approved: [signature]
Dated: 4/3/95

PARA.
8.0 Pulse Width Range/PRF Range Test

Path Common J1 To	Pulse Width Range Observed Y/N	PRF Range Observed Y/N	PASS Y/N
J2	Y	Y	Y
J3	Y	Y	Y

PARA.
9.0 Visual Inspection Checklist (per AMC Dwg #100-3588)

Parameter	Requirement	Visual Varification Y/N
Bias Connections	RFI Feedthru Solder Terminal	[signature] 4/3/95
RF Connectors	SMA Female(J1,J2, & J3)	[signature] 4/3/95
Control Connector	SMA Female(J4)	[signature] 4/3/95
Connector Locations	Per SCD No: 8202761	[signature] 4/3/95
Size	Per SCD No: 8202761	[signature] 4/3/95
Weight	4 Ounces Max.	Actual Weight: 1.65 oz

[signature] 4/3/95

Drawing No: 100-3587
Revision: B

Lockheed Sanders
Model No: 8202761
Test Data Sheet IV

Serial Number: 2MS50339

Technician: L. Abel
Dated: 3/30/95

Approved: [signature]
Dated: 4/3/95

Frequency: Start: 8.0 GHz For Insertion Loss Tests
Stop : 18.0 GHz

PARA.
3.0 INSERTION LOSS @ +25°c:

Enabled RF Path: Common (J1) To	Maximum Measured Insertion Loss	Specified Insertion Loss	Pass Y/N
J2	-2.70 dB	3.0dB Max.	Y
J3	-2.67 dB	3.0db Max.	Y

PARA.
3.0 INSERTION LOSS @ -40°c:

Enabled RF Path: Common (J1) To	Maximum Measured Insertion Loss	Specified Insertion Loss	Pass Y/N
J2	-2.35 dB	3.0dB Max.	Y
J3	-2.33 dB	3.0db Max.	Y

PARA.
3.0 INSERTION LOSS @ +85°c:

Enabled RF Path: Common (J1) To	Maximum Measured Insertion Loss	Specified Insertion Loss	Pass Y/N
J2	-2.89 dB	3.0dB Max.	Y
J3	-2.90 dB	3.0db Max.	Y