AMERICAN MICROWAVE CORPORATION

DATA

ON

0.5 GHz TO 18.0 GHz
(10MHz to 18GHz optional)

AND

16 GHz TO 18.0 GHz

LOW LOSS

HIGH SPEED

HIGH ISOLATION

REFLECTIVE/ABSORPTIVE

SP10T

MINIATURE RECTANGULAR

MULTI-THROW SOLID-STATE SWITCH
(SURFACE MOUNTABLE)

AMC MODEL No:
MSN-0518-10DT-05-MP-IND (Absorptive)
(Serial Number: 10MS80303)

DESIGNED
BY
ASH GORWARA, RENE AFABLE, & WAYNE PURDHAM

REPORT PREPARED
BY
RENE AFABLE

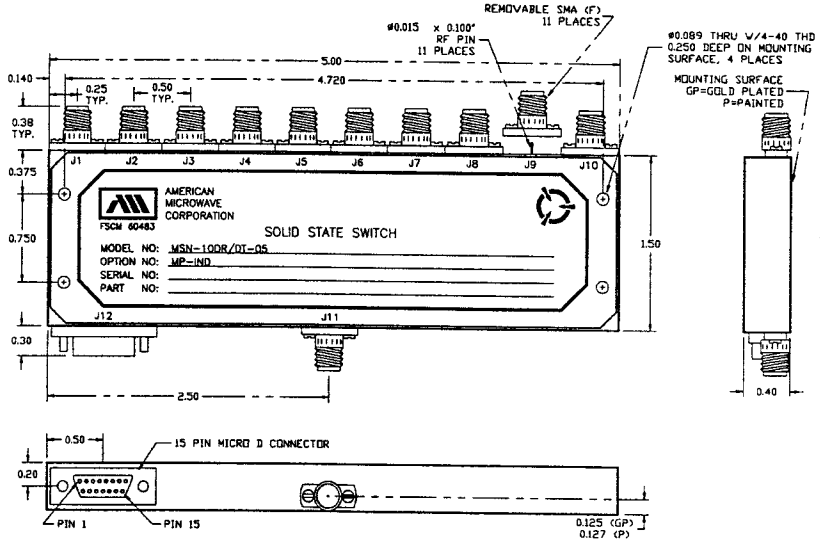
APRIL 9,1998

WEB PAGE: HTTP://WWW.AMWAVE.COM E-MAIL ADDRESS: AMCPMI@AOL.COM

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

AMERICAN MICROWAVE CORPORATION

SP10T REFLECTIVE/ABSORPTIVE PIN-DIODE SWITCH



KEY FEATURES

- 0.5 GHz TO 18 GHz (10MHz to 18GHz optional)
- HIGH SPEED
- HIGH ISOLATION
- MINIATURE
- TTL LOGIC COMPATIBLE
- SURFACE MOUNTABLE

AMC MODEL No: MSN-0518-10DT-05-MP-IND

SPECIFICATIONS: (ABSORPTIVE)

• FREQUENCY RANGE	:	0.5 GHz to 18.0 GHz (10MHz to 18GHz Optional)
• INSERTION LOSS	:	5.0 dB MAX.
	:	1.60 dB TYP. @ 0.5 Ghz
	:	2.50 dB TYP. @ 2.0 Ghz
	:	2.80 dB TYP. @ 8.0 GHz
	:	5.00 dB TYP. @ 18.0 GHz
• ISOLATION	:	≥ 65 dB MIN.
	:	≥ 90 dB TYP. @ 0.5 Ghz
	:	≥ 90 dB TYP. @ 2.0 Ghz
	:	≥ 80 dB TYP. @ 8.0 GHz
	:	≥ 65 dB TYP. @ 18.0 GHz
• VSWR	:	2.0:1
• SWITCHING SPEED	:	"RISE" 15nS MAX., 10nS TYP.
	:	"FALL" 15nS MAX., 10nS TYP.
	:	"ON" 100nS MAX., 75nS TYP.
	:	"OFF" 100nS MAX., 75nS TYP.
• CONTROL	:	TTL Compatible (Independent or with Decoder)
• VIDEO TRANSIENTS	:	≤1.5 V Peak to Peak, 300 MHZ Bandwidth
(Low video transients available)	:	≤0.36 V Peak to Peak, 20 MHZ Bandwidth
• RF INPUT POWER	:	+20dBm Operating, 1 Watt Survival (Other power Levels available)
• DC POWER SUPPLY	:	+5vdc @ +500mA MAX.
(Other supply voltages available)	:	- 5vdc @ -100mA MAX.
• SIZE	:	5.0" X 1.5" X 0.4"
• WEIGHT	:	≤ 6.0 oz.

APRIL 9, 1998

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

SPECIFICATIONS:

- FREQUENCY: ..... 0.5 GHz TO 18 GHz
- INSERTION LOSS: ..... REFLECTIVE: 4.5db
  ABSORPTIVE: 5.0db
- ISOLATION: ..... 0.5 GHz TO 2 GHz: 60db
  2 GHz TO 18 GHz: 70db
- VSWR: ..... REFLECTIVE IN/OUT: 2.0:1
  ABSORPTIVE IN/OUT: 2.0:1
  ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: ..... RISE: 10ns TYPICAL, 15ns MAX.
  FALL: 10ns TYPICAL, 15ns MAX.
  DELAY ON: 75ns TYPICAL, 100ns MAX.
  DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: ..... (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: ..... 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: ..... TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: ..... +5V @ 500 mA MAX.
  −5V @ 75mA MAX.(RELECTIVE)
  100mA MAX.(ABSORPTIVE/NON−REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

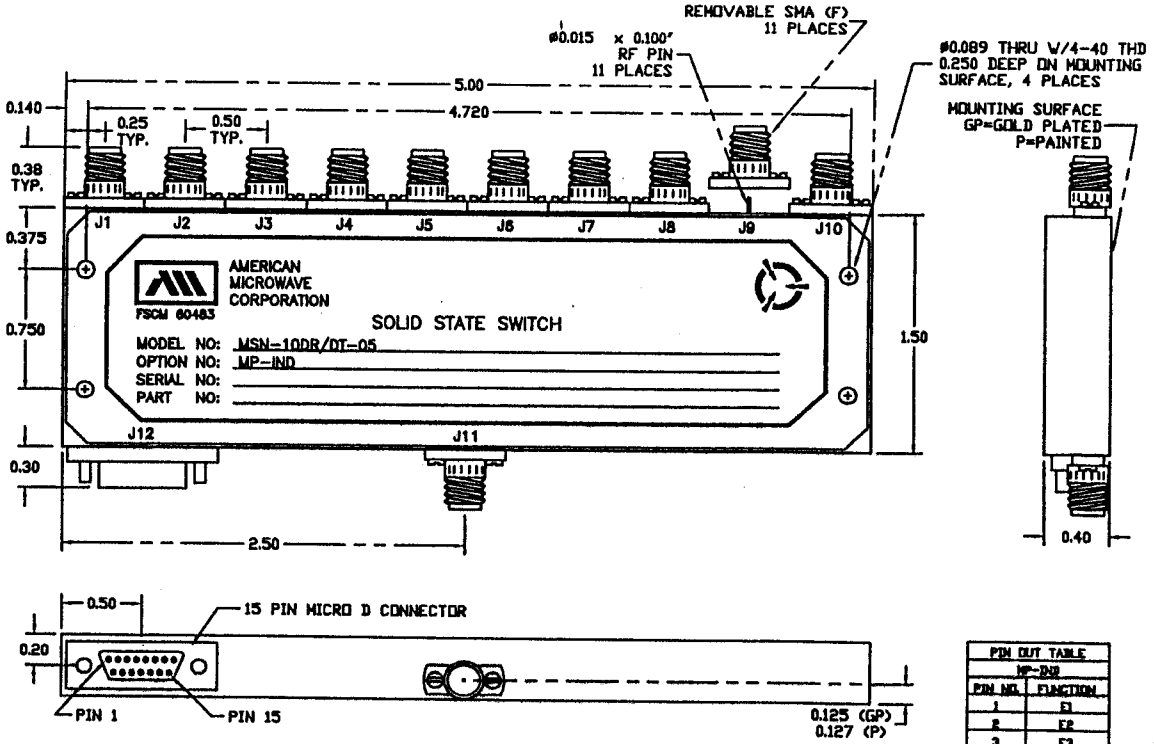
DEC−MP ..... 5 BIT DECODER WITH MULTIPIN
DEC−SP ..... 5 BIT DECODER WITH SOLDER PIN
MP−IND ..... INDEPENDENT CONTROL WITH MULTIPIN
10M18 ..... 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
100M18 ..... 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz 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 "1"=ON "0"=OFF
B04 ..... DRIVERLESS, CURRENT CONTROLLED
B05 ..... HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
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

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/8/97	



PIN OUT TABLE MP-IND	
PIN NO.	FUNCTION
1	F1
2	F2
3	F3
4	F4
5	F5
6	F6
7	F7
8	F8
9	F9
10	F10
11	N/C
12	GND
13	+V
14	−V
15	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON−REFLECTIVE/ABSORPTIVE

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

PART NO.		
APPROVALS		DATE
DRAWN	WSP	8/8/97
CHECKED	LK	8/14/97
ISSUED		

AMERICAN MICROWAVE CORPORATION
FREDERICK, MARYLAND

TITLE: OUTLINE DRAWING
MSN−10DR/DT−05−MP−IND
REFLECTIVE OR NON−REFLECTIVE/ABSORPTIVE
SOLID STATE SWITCH

SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100−4107−4	A

SCALE | SHEET 1 of 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/8/97	

SPECIFICATIONS:

- FREQUENCY: ..... 0.5 GHz TO 18 GHz
- INSERTION LOSS: ..... REFLECTIVE: 4.5db
  ABSORPTIVE: 5.0db
- ISOLATION: ..... 0.5 GHz TO 2 GHz: 60db
  2 GHz TO 18 GHz: 70db
- VSWR: ..... REFLECTIVE IN/OUT: 2.0:1
  ABSORPTIVE IN/OUT: 2.0:1
  ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: ..... RISE: 10ns TYPICAL, 15ns MAX.
  FALL: 10ns TYPICAL, 15ns MAX.
  DELAY ON: 75ns TYPICAL, 100ns MAX.
  DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: ..... (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: ..... 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: ..... TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: ..... +5V @ 500 mA MAX.
  −5V @ 75mA MAX.(RELECTIVE)
  100mA MAX.(ABSORPTIVE/NON−REFLECTIVE)

OPTIONS:

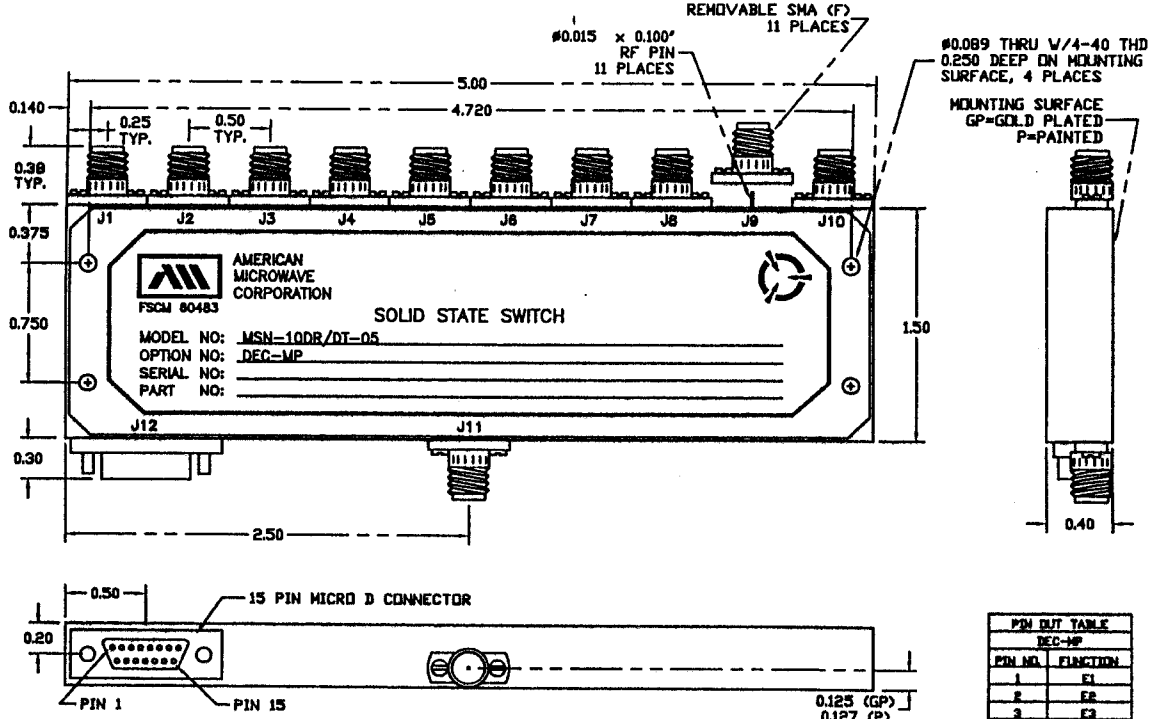
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

DEC−MP ..... 5 BIT DECODER WITH MULTIPIN
DEC−SP ..... 5 BIT DECODER WITH SOLDER PIN
MP−IND ..... INDEPENDENT CONTROL WITH MULTIPIN
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 "1"=ON "0"=OFF
B04 ..... DRIVERLESS, CURRENT CONTROLLED
B05 ..... HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
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



PIN OUT TABLE DEC-MP	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	N/C
7	N/C
8	N/C
9	N/C
10	N/C
11	N/C
12	GND
13	+V
14	−V
15	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON−REFLECTIVE/ABSORPTIVE

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

PART NO.		
APPROVALS	DATE	
DRAWN WSP	8/8/97	
CHECKED C. A.	8/12/97	
ISSUED		

AMERICAN MICROWAVE CORPORATION
FREDERICK, MARYLAND

TITLE
OUTLINE DRAWING
MSN−10DR/DT−05−DEC−MP
REFLECTIVE OR NON−REFLECTIVE/ABSORPTIVE
SOLID STATE SWITCH

SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100−4107−2	A

SCALE | SHEET 1 of 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/8/97	

SPECIFICATIONS:

- FREQUENCY: ..... 0.5 GHz TO 18 GHz
- INSERTION LOSS: ..... REFLECTIVE: 4.5db
  ABSORPTIVE: 5.0db
- ISOLATION: ..... 0.5 GHz TO 2 GHz: 60db
  2 GHz TO 18 GHz: 70db
- VSWR: ..... REFLECTIVE IN/OUT: 2.0:1
  ABSORPTIVE IN/OUT: 2.0:1
  ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: ..... RISE: 10ns TYPICAL, 15ns MAX.
  FALL: 10ns TYPICAL, 15ns MAX.
  DELAY ON: 75ns TYPICAL, 100ns MAX.
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- CONTROL: ..... TTL LOGIC "0"=ON "1"=OFF
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  100mA MAX.(ABSORPTIVE/NON−REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

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DEC−SP	5 BIT DECODER WITH SOLDER PIN
MP−IND	INDEPENDENT CONTROL WITH MULTIPIN
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 "1"=ON "0"=OFF
B04	DRIVERLESS, CURRENT CONTROLLED
B05	HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
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

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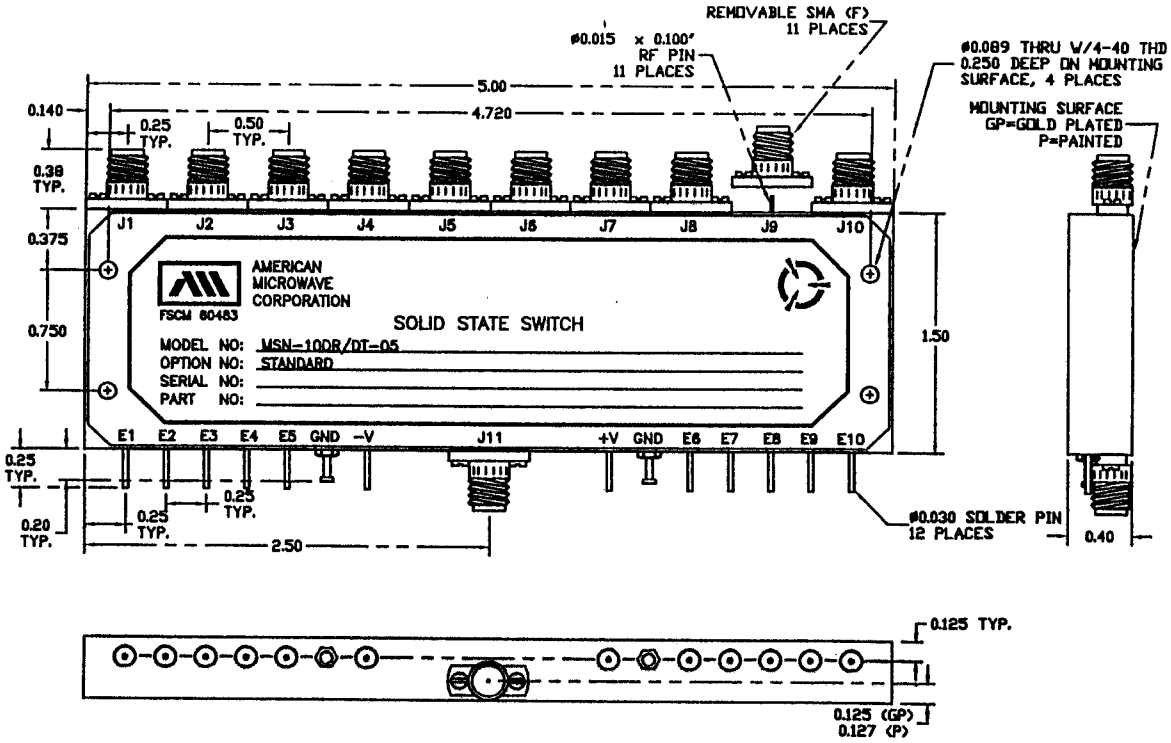

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON−REFLECTIVE/ABSORPTIVE

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

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE: OUTLINE DRAWING MSN−10DR/DT−05−STANDARD REFLECTIVE OR NON−REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
DRAWN WYP	8/8/97			
CHECKED CA.	8/12/97			
ISSUED		SIZE A	FSCM NO. 60483	DWG NO. 100−4107−1 REV. A
		SCALE		SHEET 1 of 1

SPECIFICATIONS:

- FREQUENCY: ..... 0.5 GHz TO 18 GHz
- INSERTION LOSS: ..... REFLECTIVE: 4.5db
  ABSORPTIVE: 5.0db
- ISOLATION: ..... 0.5 GHz TO 2 GHz: 60db
  2 GHz TO 18 GHz: 70db
- VSWR: ..... REFLECTIVE IN/OUT: 2.0:1
  ABSORPTIVE IN/OUT: 2.0:1
  ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: ..... RISE: 10ns TYPICAL, 15ns MAX.
  FALL: 10ns TYPICAL, 15ns MAX.
  DELAY ON: 75ns TYPICAL, 100ns MAX.
  DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: ..... (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: ..... 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: ..... TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: ..... +5V @ 500 mA MAX.
  −5V @ 75mA MAX.(RELECTIVE)
  100mA MAX.(ABSORPTIVE/NON−REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

DEC−MP ..... 5 BIT DECODER WITH MULTIPIN
DEC−SP ..... 5 BIT DECODER WITH SOLDER PIN
MP−IND ..... INDEPENDENT CONTROL WITH MULTIPIN
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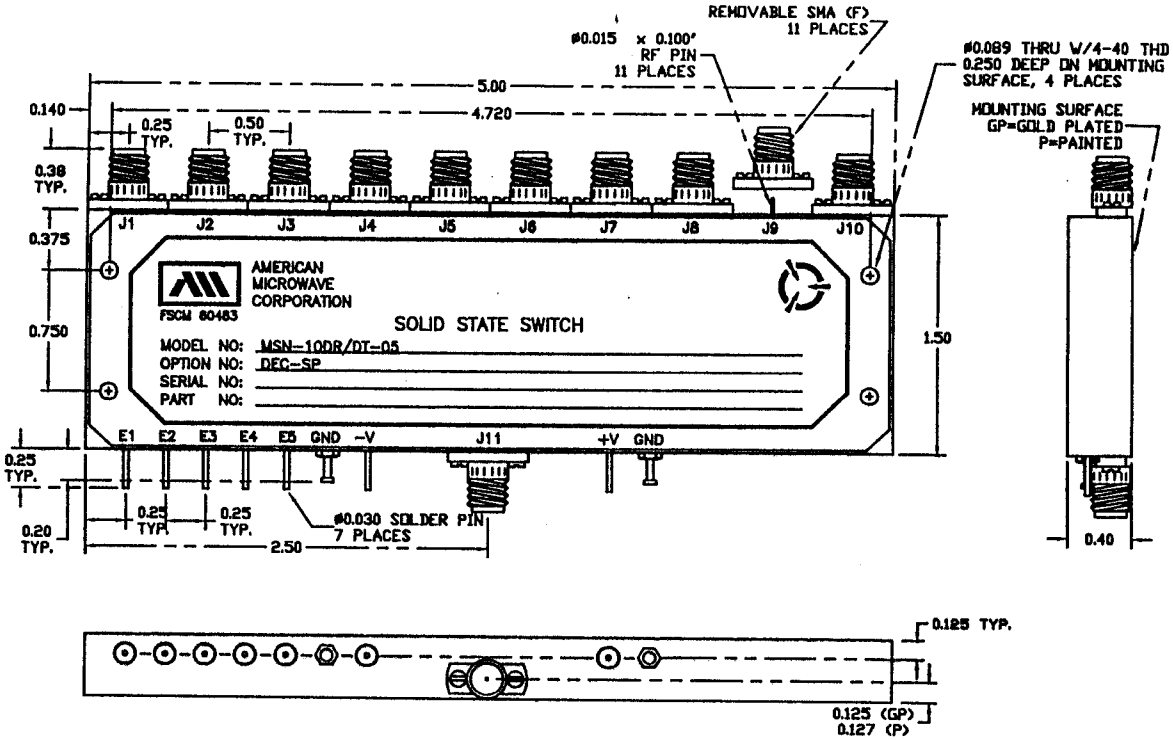
100M18 ..... 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
118 ..... 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
218 ..... 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
412 ..... 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
818 ..... 6 GHz TO 18 GHz (NO CHANGE 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 "1"=ON "0"=OFF
B04 ..... DRIVERLESS, CURRENT CONTROLLED
B05 ..... HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
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

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/8/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON−REFLECTIVE/ABSORPTIVE

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

PART NO.		
APPROVALS	DATE	
DRAWN WSP	8/8/97	
CHECKED CA	8/12/97	
ISSUED		

AMERICAN MICROWAVE CORPORATION
FREDERICK, MARYLAND

TITLE: OUTLINE DRAWING
MSN−10DR/DT−05−DEC−SP
REFLECTIVE OR NON−REFLECTIVE/ABSORPTIVE
SOLID STATE SWITCH

SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100−4107−3	A

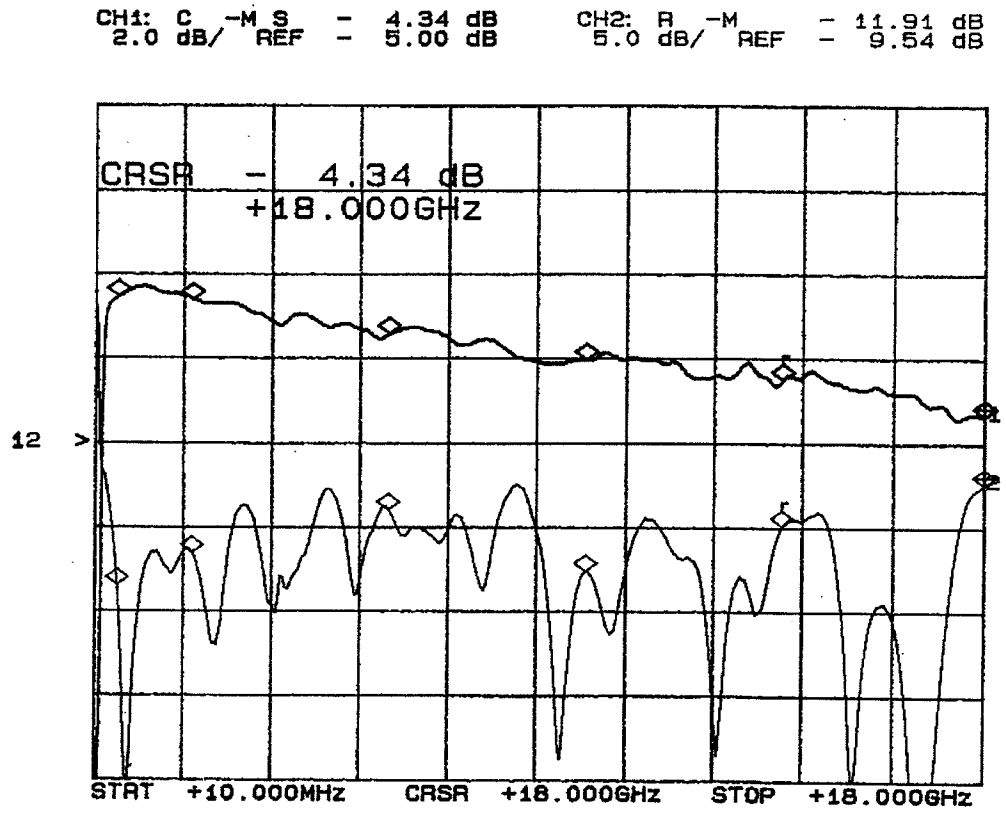
SCALE | SHEET 1 of 1

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J1



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.53 dB	-17.8 dB
2.0 GHz	-1.57 dB	-15.9 dB
6.0 GHz	-2.41 dB	-13.4 dB
10.0 GHz	-3.02 dB	-17.0 dB
14.0 GHz	-3.47 dB	-14.4 dB
18.0 GHz	-4.34 dB	-11.9 dB

*J11: COMMOM ARM

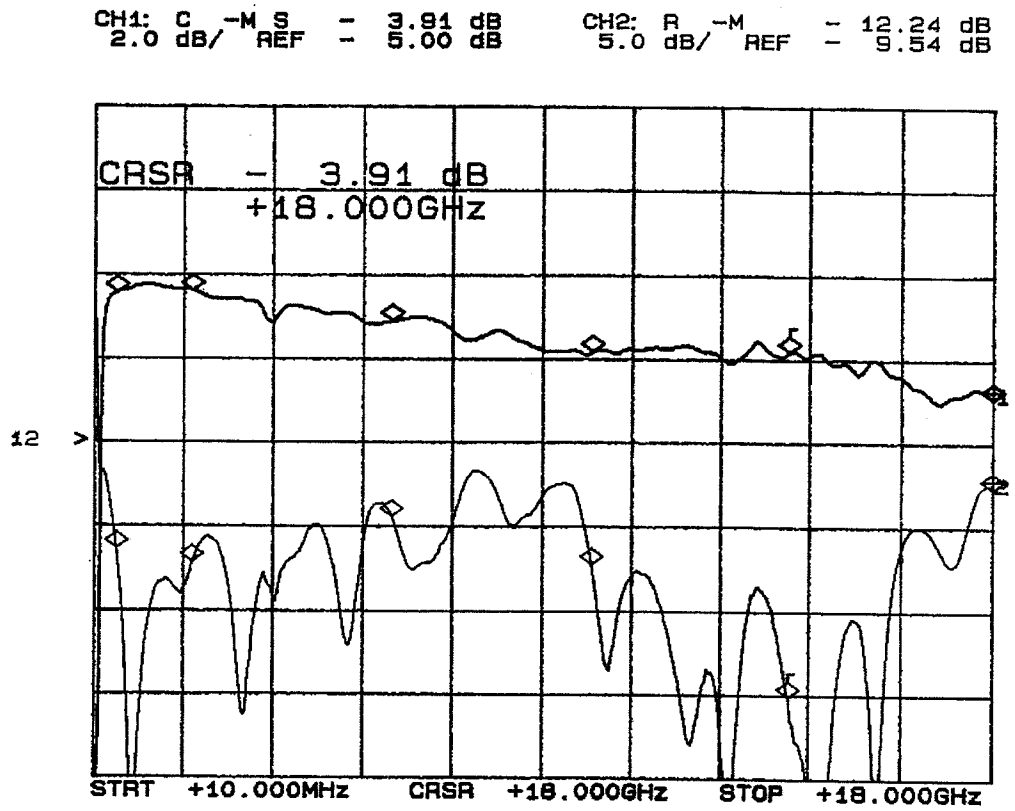
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J2



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.39 dB	-15.7 dB
2.0 GHz	-1.35 dB	-16.7 dB
6.0 GHz	-2.06 dB	-13.8 dB
10.0 GHz	-2.79 dB	-16.7 dB
14.0 GHz	-2.79 dB	-24.9 dB
18.0 GHz	-3.91 dB	-12.2 dB

*J11: COMMOM ARM

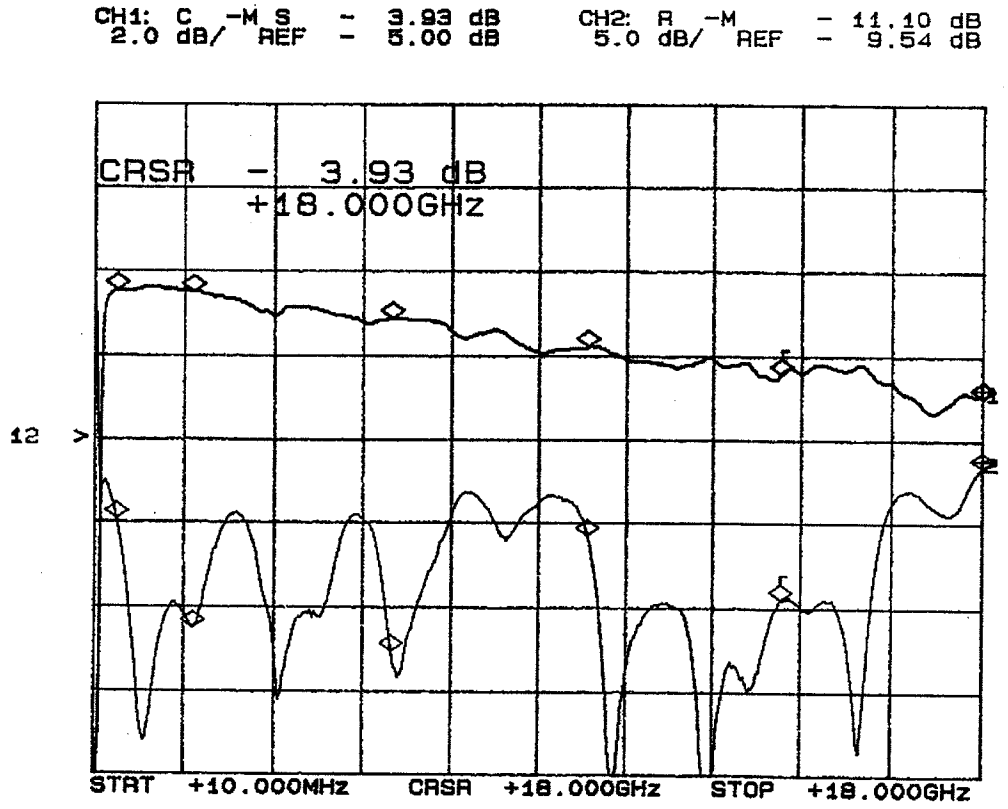
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J3



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.43 dB	-14.2 dB
2.0 GHz	-1.47 dB	-20.6 dB
6.0 GHz	-2.10 dB	-22.5 dB
10.0 GHz	-2.76 dB	-15.1 dB
14.0 GHz	-3.39 dB	-19.1 dB
18.0 GHz	-3.93 dB	-11.1 dB

*J11: COMMOM ARM

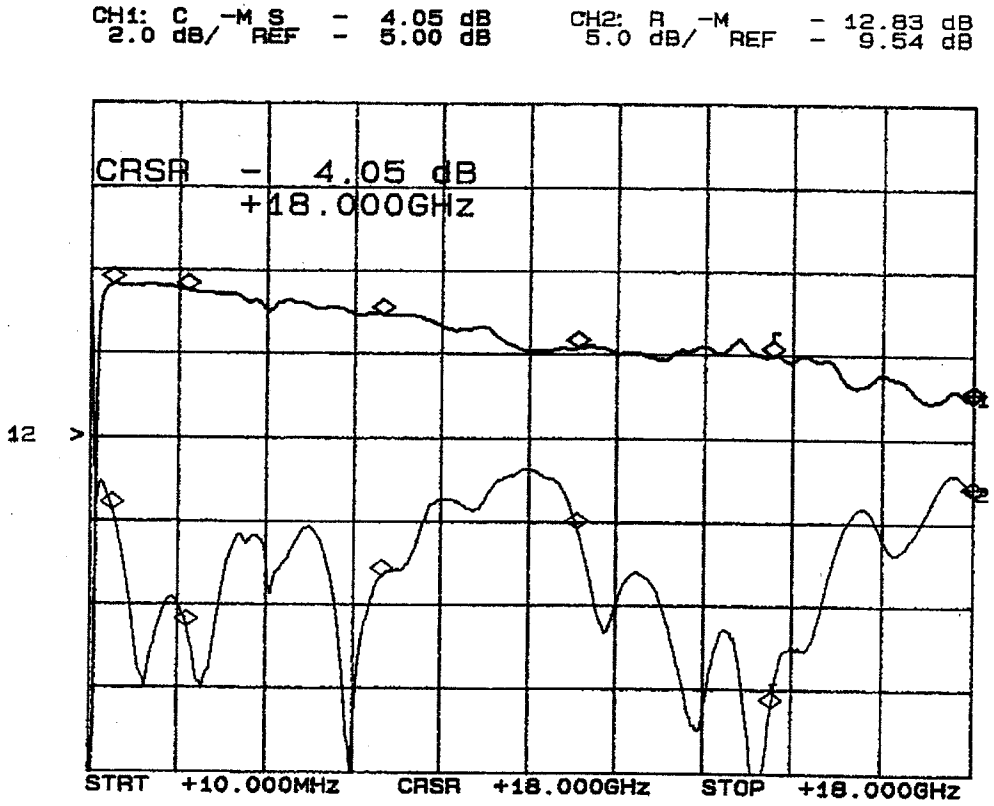
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J4



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.34 dB	-13.7 dB
2.0 GHz	-1.46 dB	-20.8 dB
6.0 GHz	-2.04 dB	-17.7 dB
10.0 GHz	-2.83 dB	-14.7 dB
14.0 GHz	-3.00 dB	-25.3 dB
18.0 GHz	-4.05 dB	-12.8 dB

*J11: COMMOM ARM

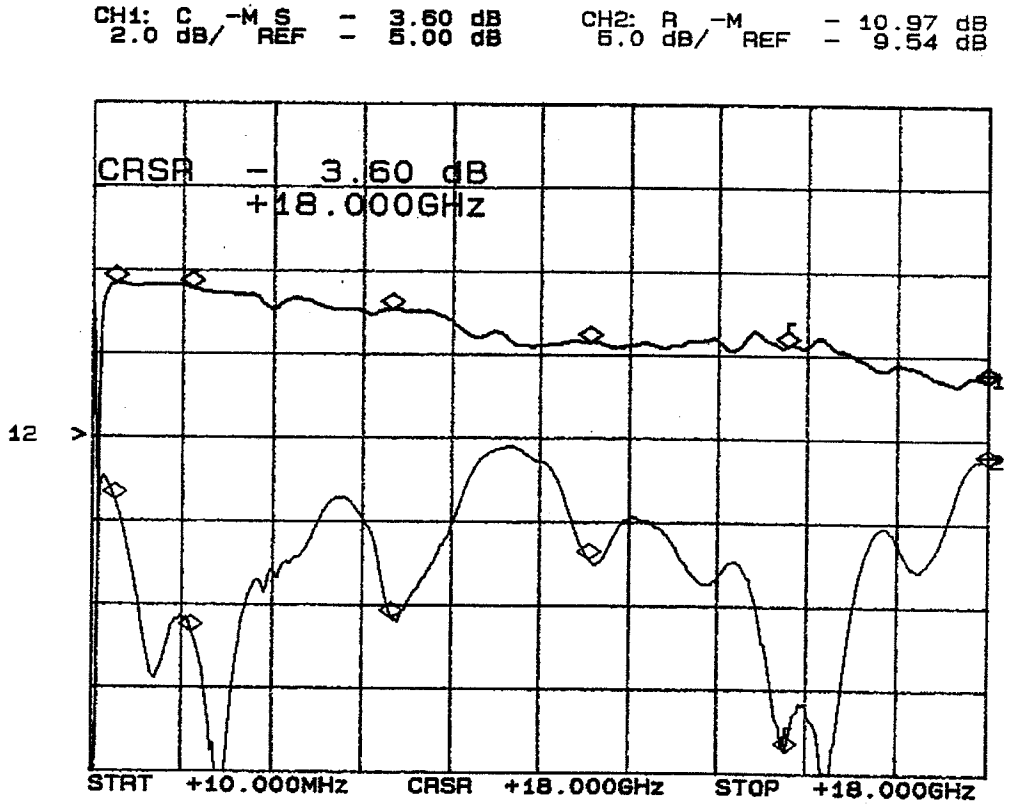
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J5



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.29 dB	-13.2 dB
2.0 GHz	-1.40 dB	-20.8 dB
6.0 GHz	-1.90 dB	-20.0 dB
10.0 GHz	-2.66 dB	-16.6 dB
14.0 GHz	-2.73 dB	-27.3 dB
18.0 GHz	-3.60 dB	-10.9 dB

*J11: COMMOM ARM

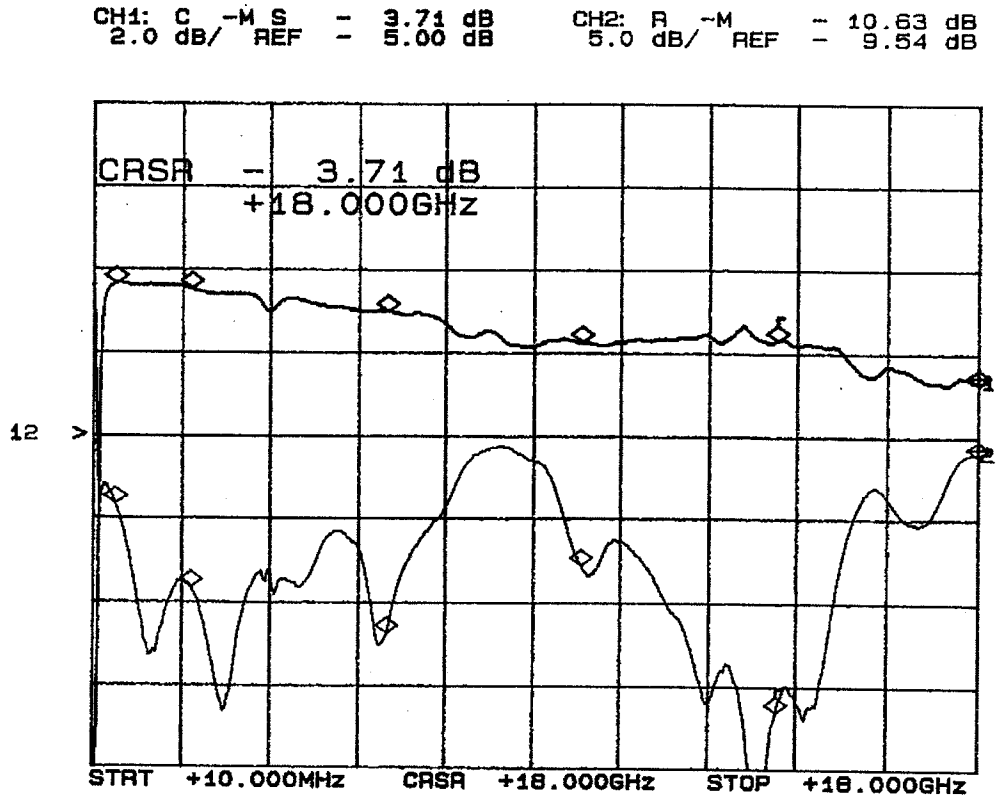
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J6



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.31 dB	-13.6 dB
2.0 GHz	-1.44 dB	-18.6 dB
6.0 GHz	-1.98 dB	-21.2 dB
10.0 GHz	-2.71 dB	-17.3 dB
14.0 GHz	-2.65 dB	-26.1 dB
18.0 GHz	-3.71 dB	-10.6 dB

*J11: COMMOM ARM

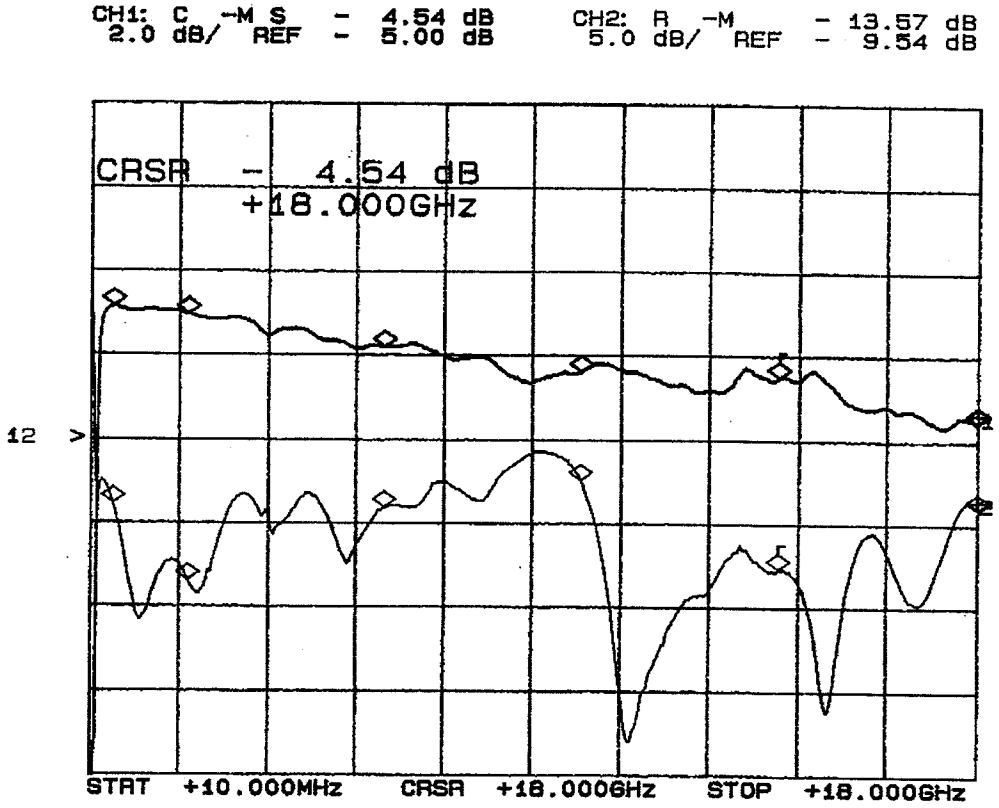
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J7



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.84 dB	-13.3 dB
2.0 GHz	-2.01 dB	-17.8 dB
6.0 GHz	-2.79 dB	-13.5 dB
10.0 GHz	-3.35 dB	-11.9 dB
14.0 GHz	-3.49 dB	-17.2 dB
18.0 GHz	-4.54 dB	-13.5 dB

*J11: COMMOM ARM

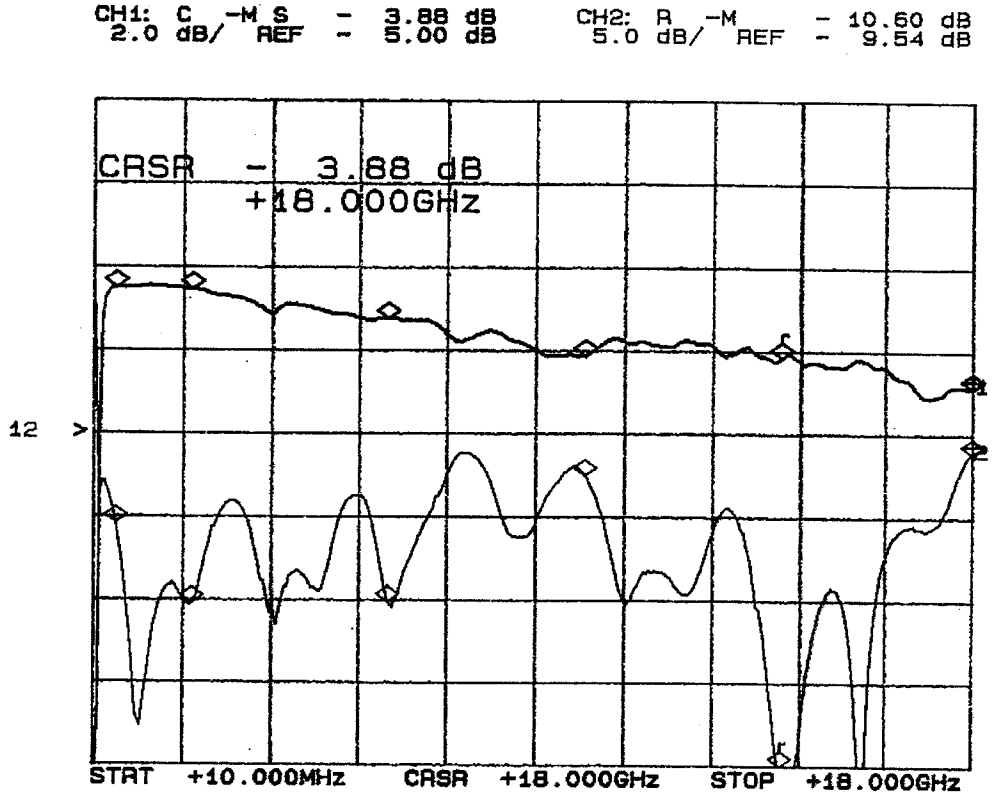
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	**: MSN-0518-10DT-05-MP-IND**
SERIAL NUMBER	**: 10MS80303**
TECHNICIAN	**: RENE AFABLE**
VOLTAGE & CURRENT DRAW	**: ±5vdc: +490mA, -48mA**

INSERTION LOSS & RETURN LOSS*

J11-J8



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.48 dB	-14.8 dB
2.0 GHz	-1.52 dB	-19.5 dB
6.0 GHz	-2.19 dB	-19.4 dB
10.0 GHz	-3.08 dB	-11.9 dB
14.0 GHz	-3.12 dB	-30.8 dB
18.0 GHz	-3.88 dB	-10.6 dB

*J11: COMMOM ARM

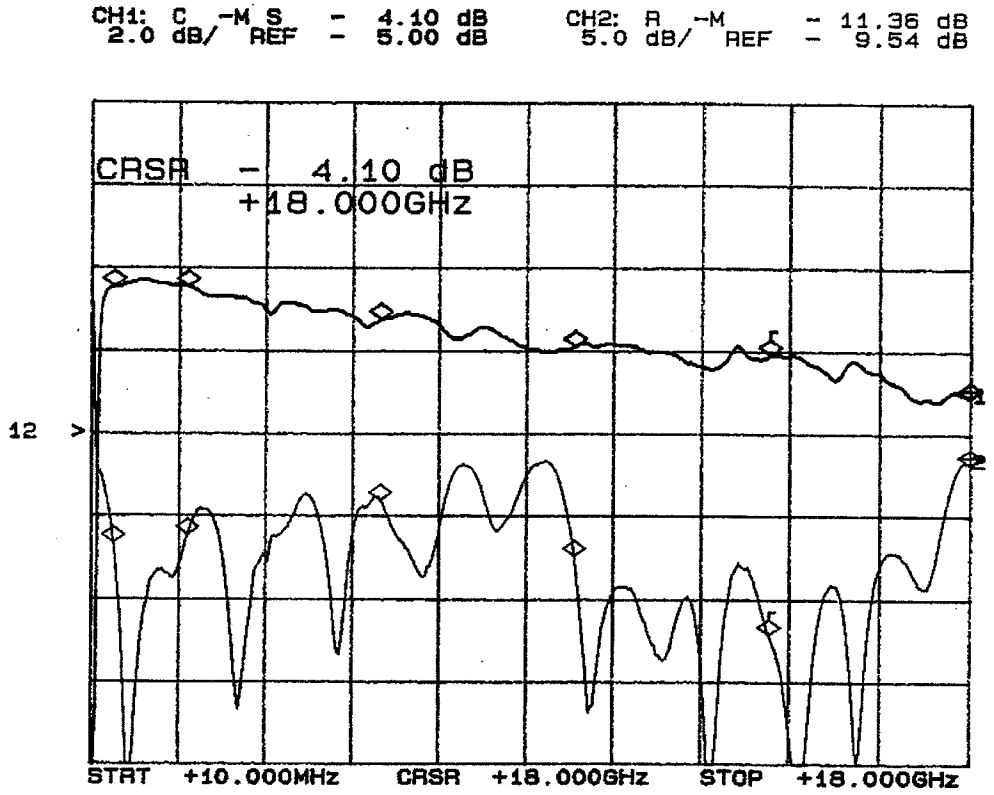
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J9



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-1.44 dB	-16.1 dB
2.0 GHz	-1.42 dB	-15.6 dB
6.0 GHz	-2.22 dB	-13.5 dB
10.0 GHz	-2.84 dB	-16.9 dB
14.0 GHz	-3.07 dB	-21.4 dB
18.0 GHz	-4.10 dB	-11.3 dB

*J11: COMMOM ARM

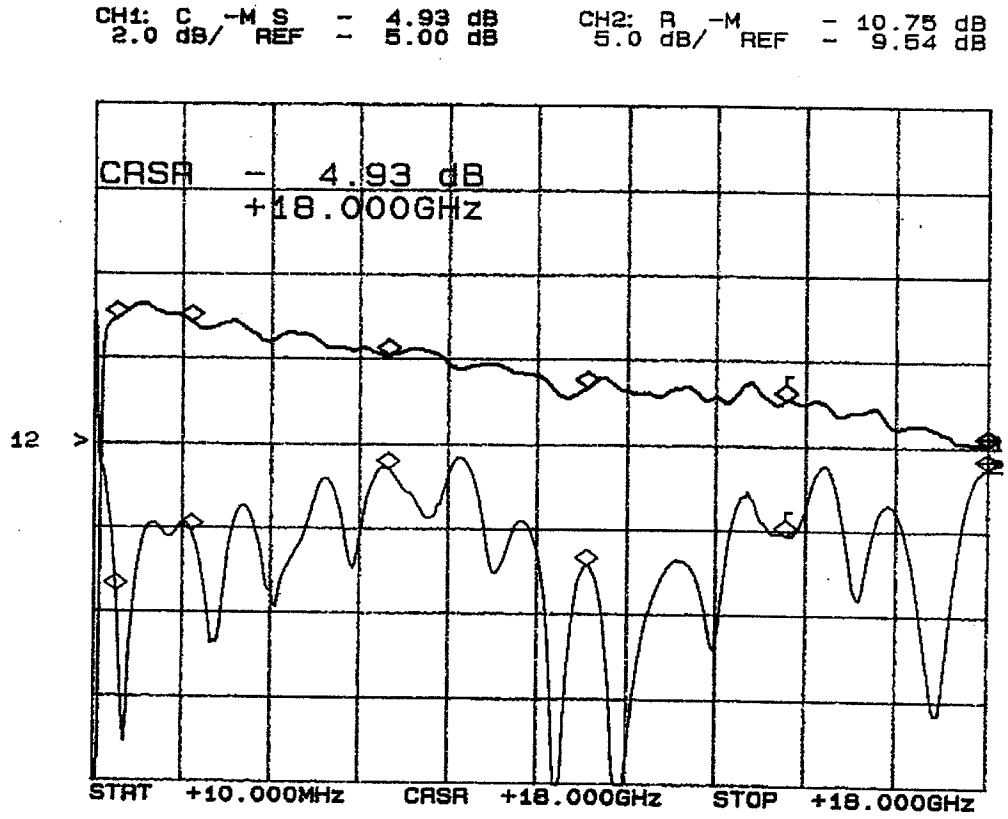
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

INSERTION LOSS & RETURN LOSS*

J11-J10



FREQUENCY	INSERTION LOSS	RETURN LOSS
0.5 GHz	-2.04 dB	-18.2 dB
2.0 GHz	-2.14 dB	-14.6 dB
6.0 GHz	-2.89 dB	-10.8 dB
10.0 GHz	-3.62 dB	-16.5 dB
14.0 GHz	-3.88 dB	-14.7 dB
18.0 GHz	-4.93 dB	-10.7 dB

*J11: COMMOM ARM

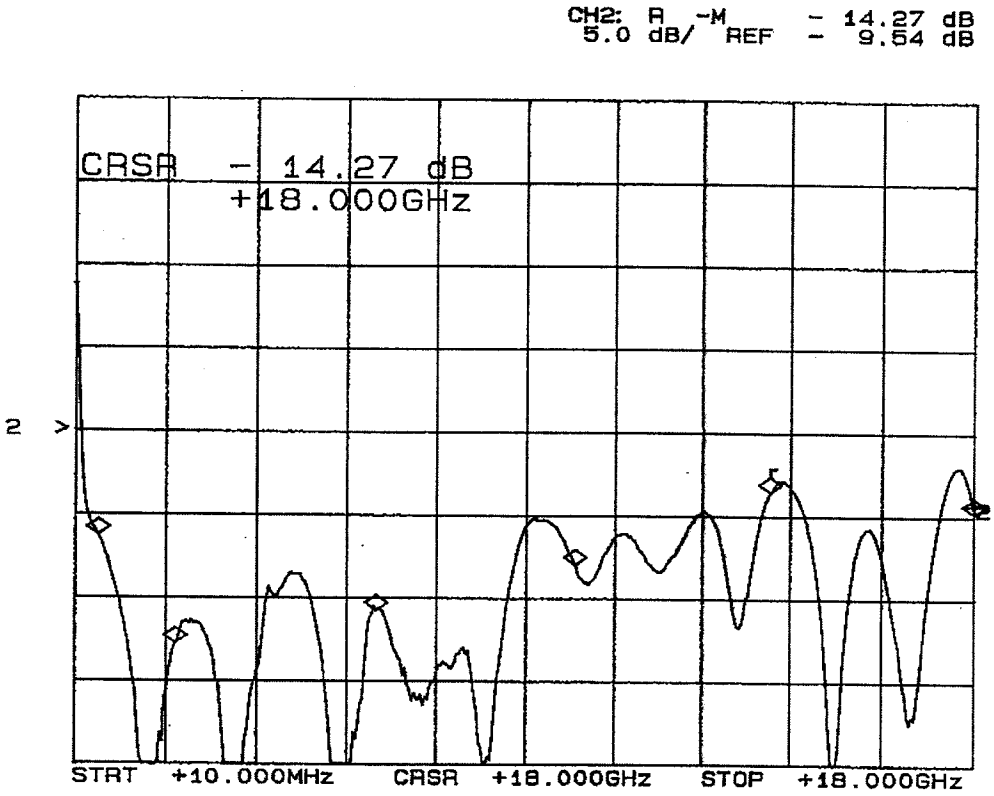
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J1-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-15.7 dB
2.0 GHz	-22.3 dB
6.0 GHz	-20.0 dB
10.0 GHz	-17.5 dB
14.0 GHz	-13.0 dB
18.0 GHz	-14.2 dB

*J11: COMMON ARM

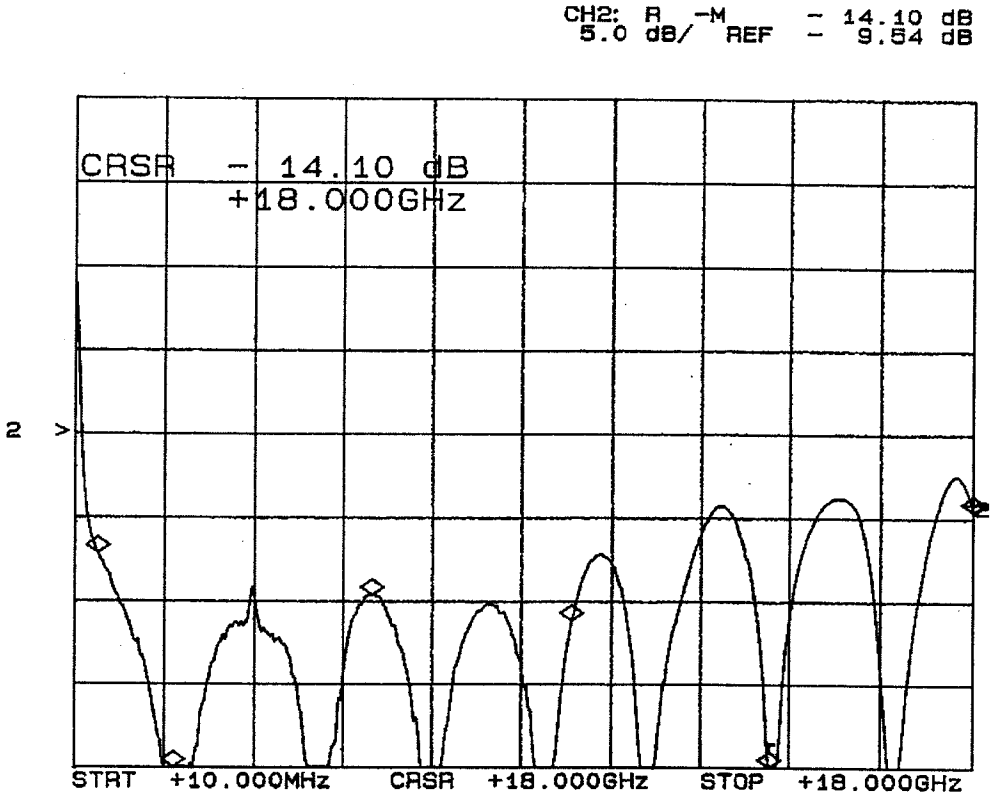
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J2-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-10.5 dB
2.0 GHz	-33.0 dB
6.0 GHz	-10.0 dB
10.0 GHz	-20.7 dB
14.0 GHz	-33.0 dB
18.0 GHz	-14.1 dB

*J11: COMMON ARM

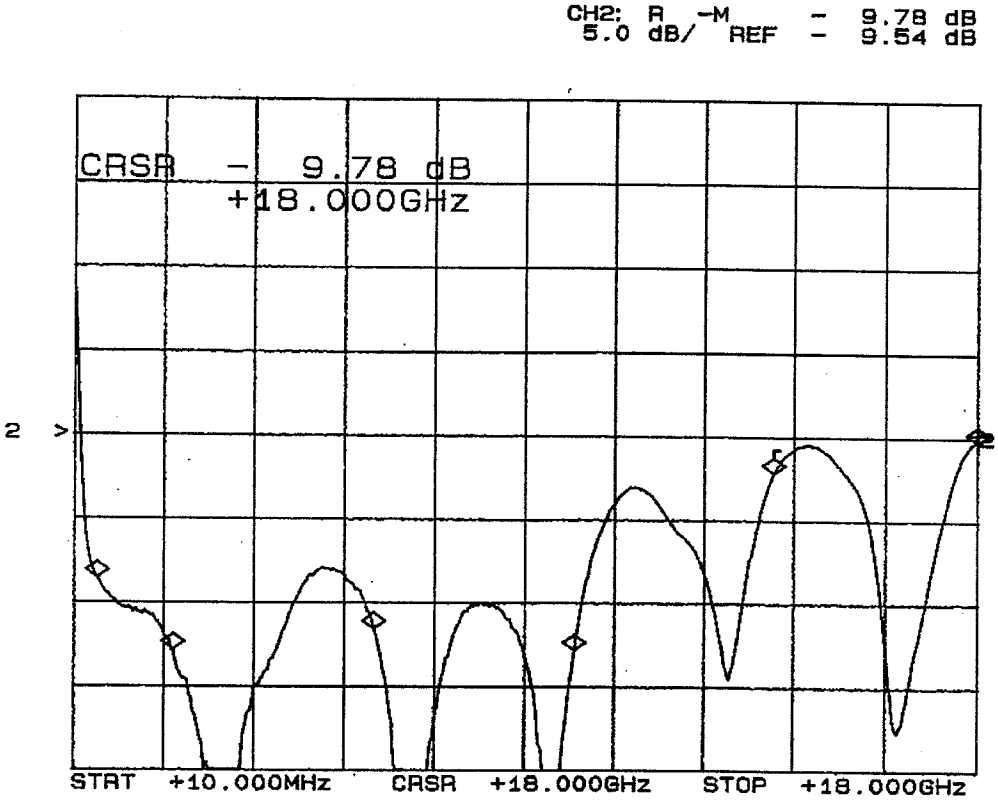
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J3-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-10.1 dB
2.0 GHz	-22.3 dB
6.0 GHz	-21.1 dB
10.0 GHz	-22.2 dB
14.0 GHz	-11.7 dB
18.0 GHz	-9.78 dB

*J11: COMMON ARM

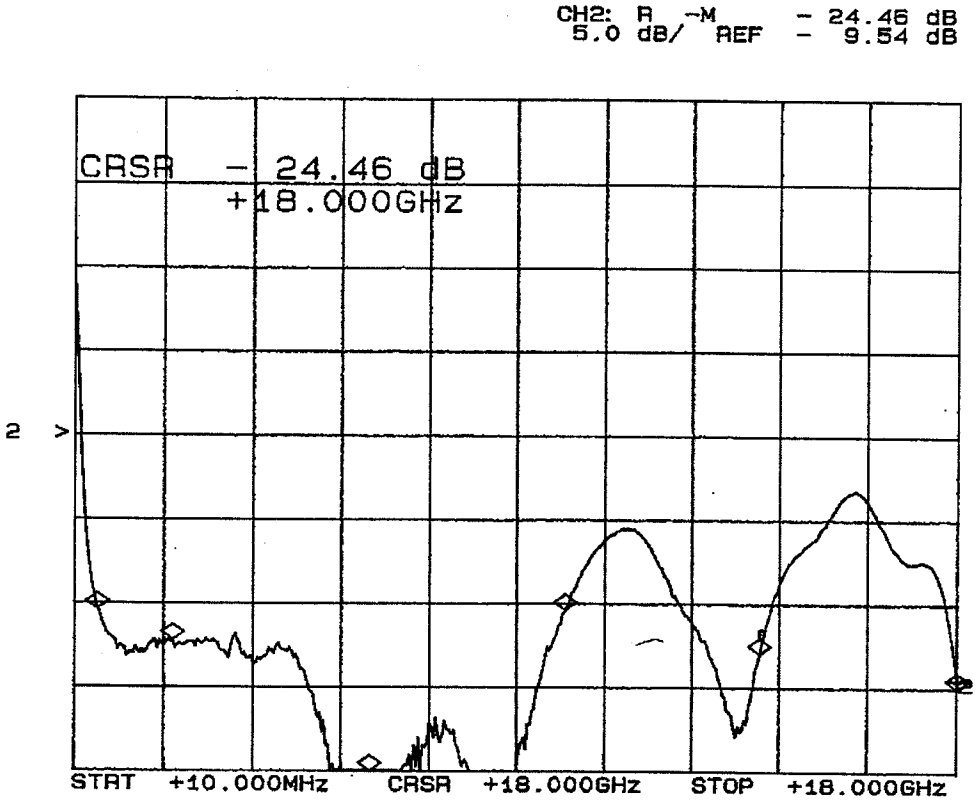
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J4-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-19.5 dB
2.0 GHz	-22.0 dB
6.0 GHz	-35.0 dB
10.0 GHz	-19.0 dB
14.0 GHz	-22.4 dB
18.0 GHz	-24.4 dB

*J11: COMMON ARM

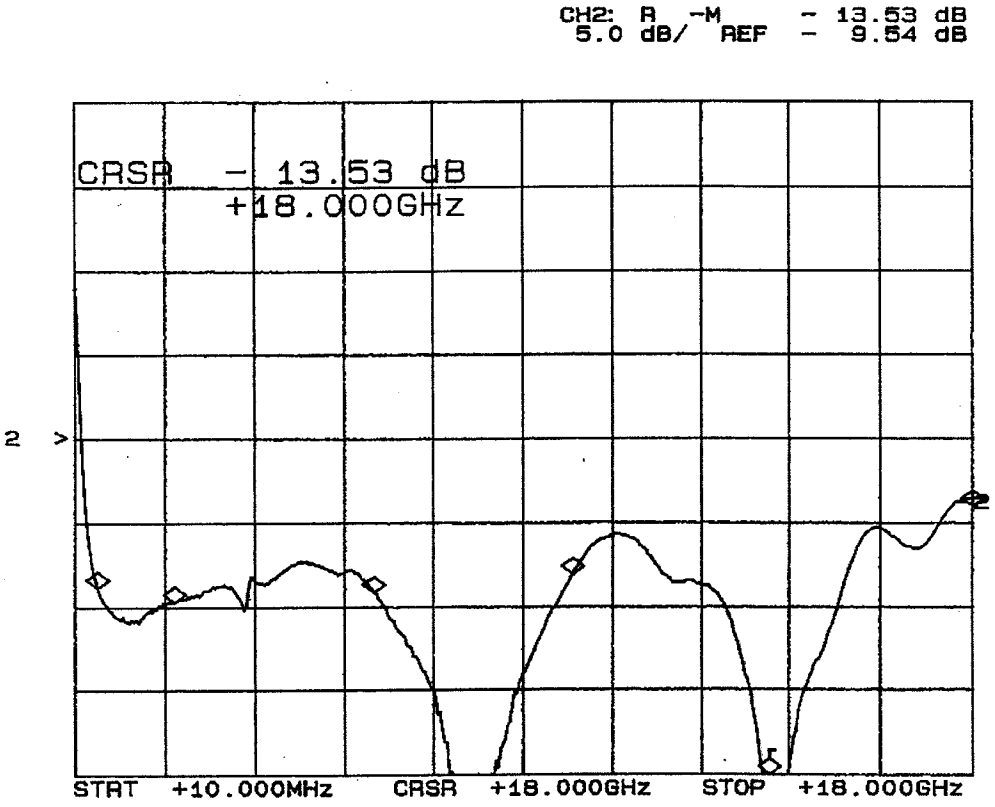
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J5-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-19.3 dB
2.0 GHz	-19.0 dB
6.0 GHz	-19.4 dB
10.0 GHz	-17.4 dB
14.0 GHz	-34.4 dB
18.0 GHz	-13.5 dB

*J11: COMMON ARM

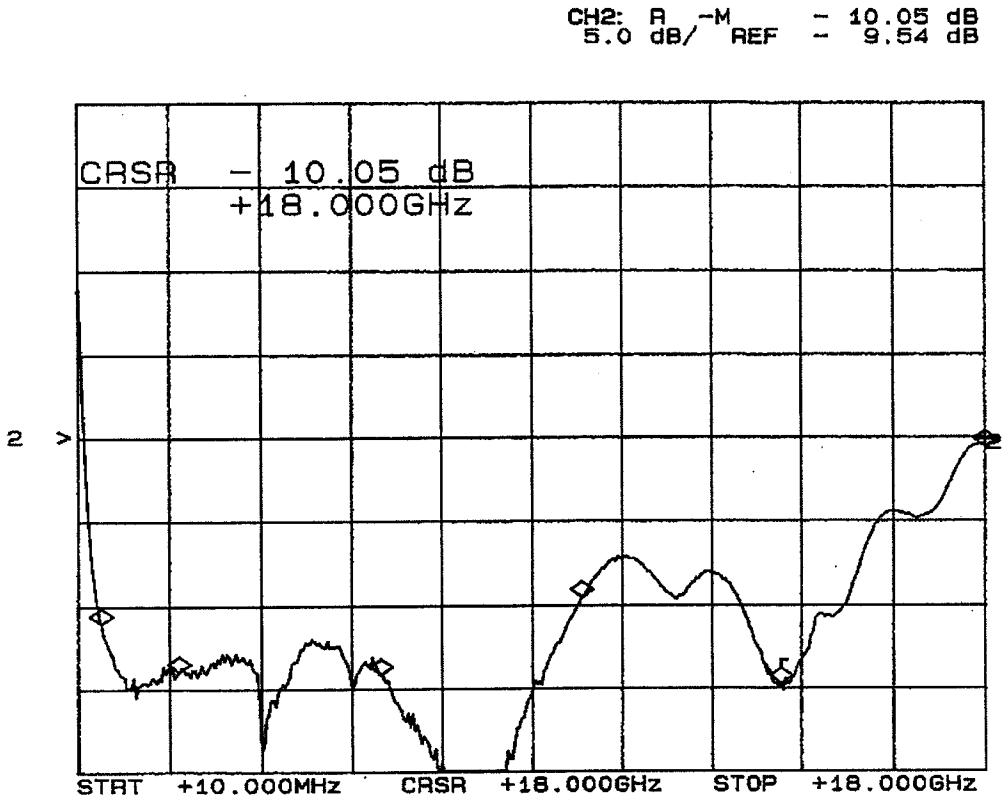
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J6-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-20.9 dB
2.0 GHz	-23.4 dB
6.0 GHz	-23.3 dB
10.0 GHz	-19.1 dB
14.0 GHz	-24.1 dB
18.0 GHz	-10.0 dB

*J11: COMMON ARM

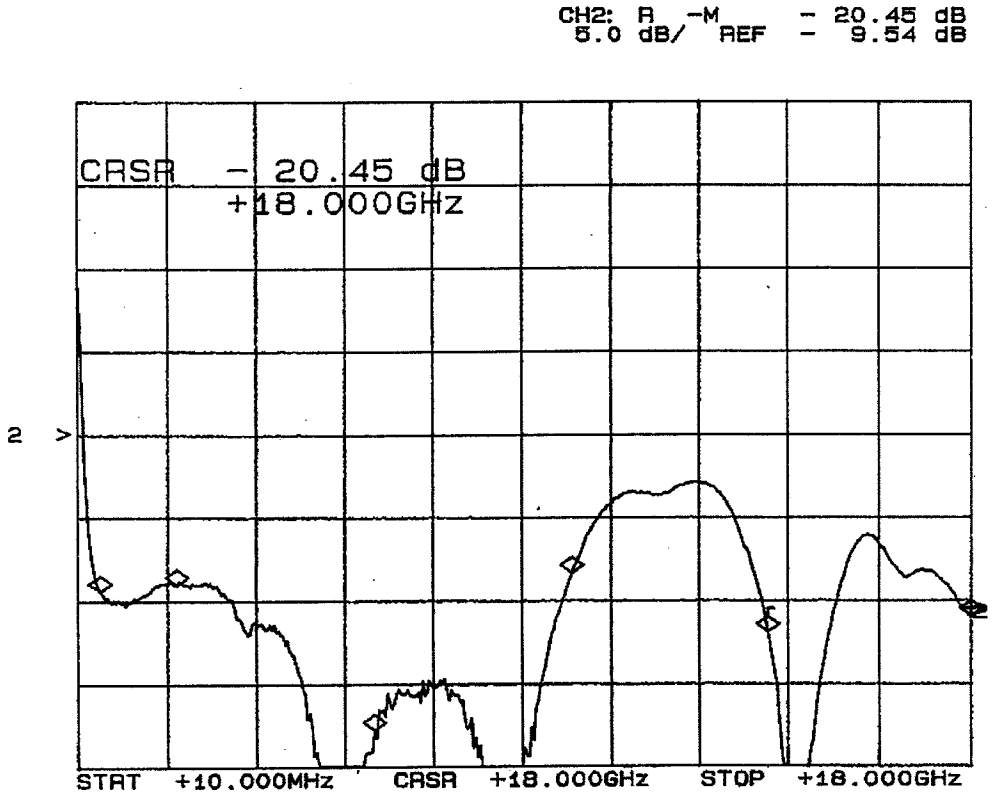
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J7-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-19.9 dB
2.0 GHz	-19.3 dB
6.0 GHz	-27.0 dB
10.0 GHz	-17.0 dB
14.0 GHz	-21.4 dB
18.0 GHz	-20.4 dB

*J11: COMMON ARM

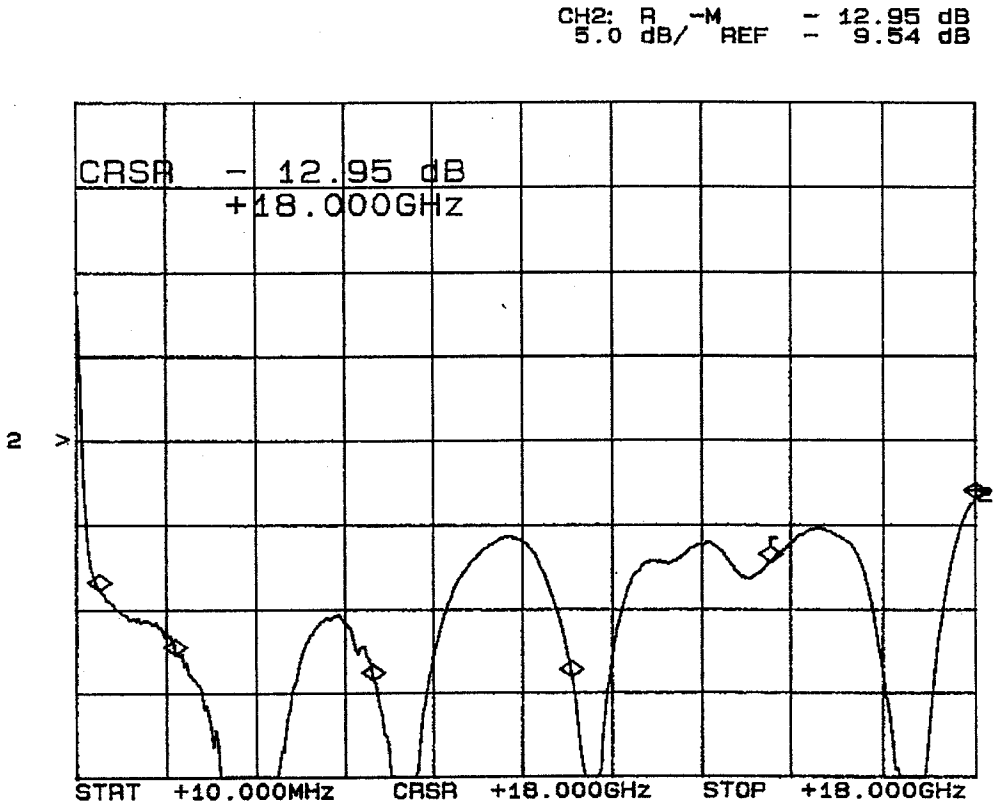
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	**: MSN-0518-10DT-05-MP-IND**
SERIAL NUMBER	**: 10MS80303**
TECHNICIAN	**: RENE AFABLE**
VOLTAGE & CURRENT DRAW	**: ±5vdc: +490mA, -48mA**

OFF ARM TERMINATION*

J8-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-19.2 dB
2.0 GHz	-21.9 dB
6.0 GHz	-23.1 dB
10.0 GHz	-23.3 dB
14.0 GHz	-18.8 dB
18.0 GHz	-12.9 dB

*J11: COMMON ARM

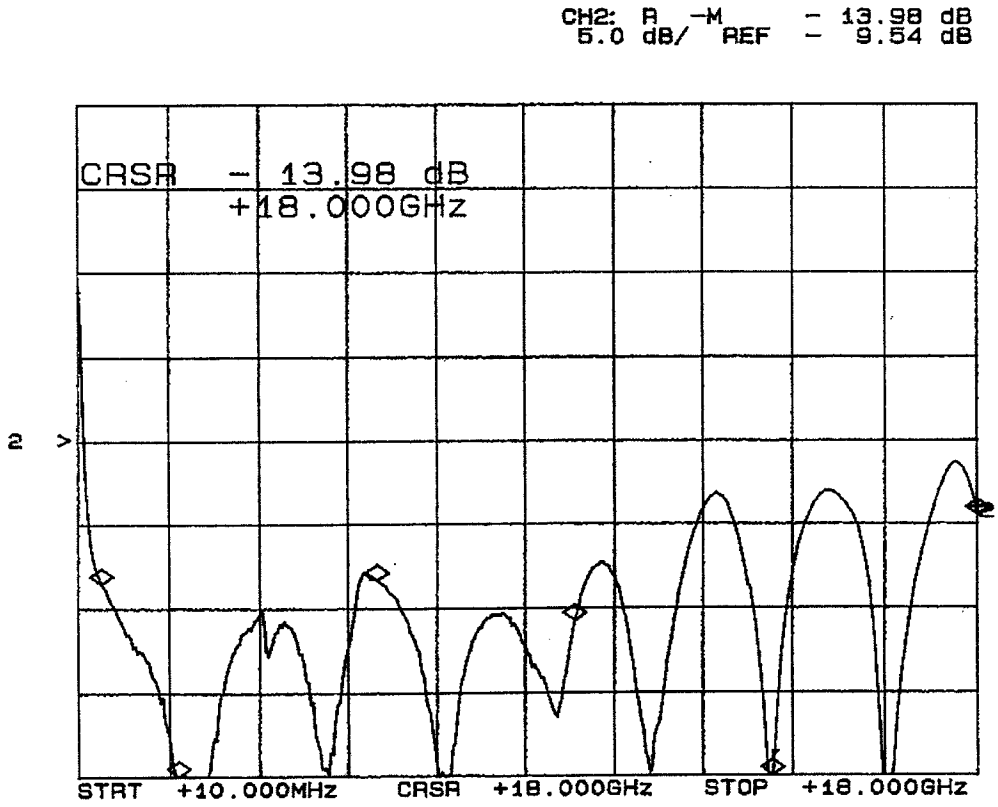
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J9-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-17.0 dB
2.0 GHz	-30.3 dB
6.0 GHz	-17.9 dB
10.0 GHz	-20.2 dB
14.0 GHz	-20.4 dB
18.0 GHz	-13.9 dB

*J11: COMMON ARM

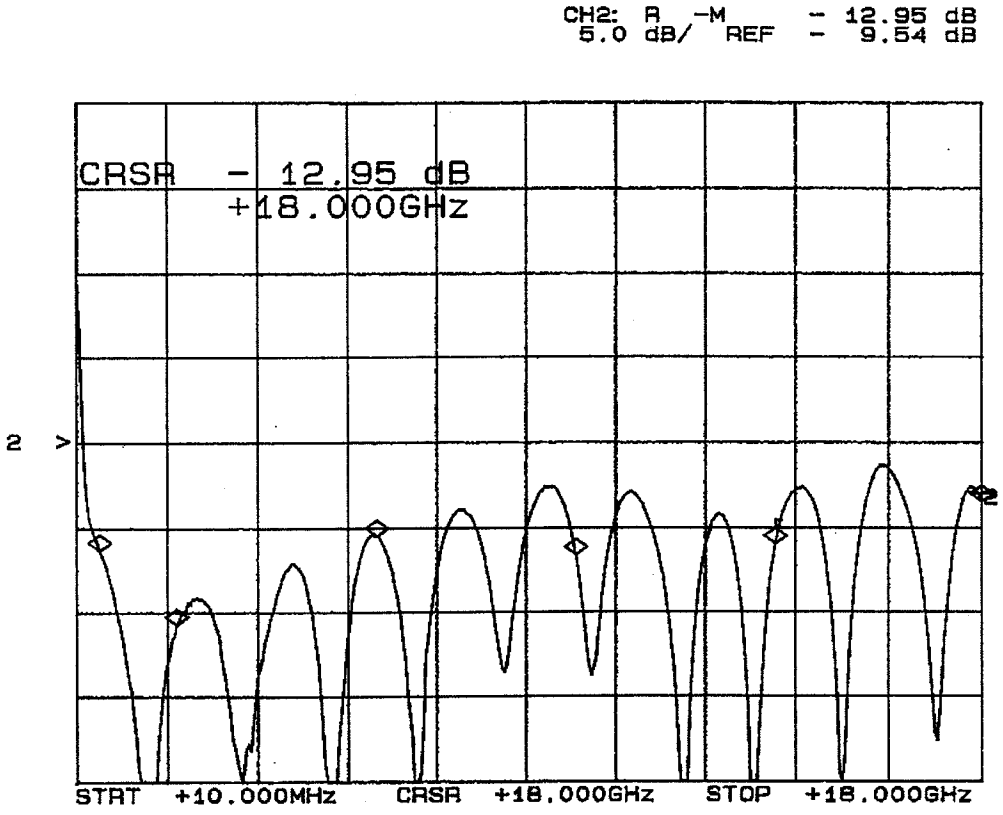
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

OFF ARM TERMINATION*

J10-J11



FREQUENCY	RETURN LOSS
0.5 GHz	-15.7 dB
2.0 GHz	-20.3 dB
6.0 GHz	-15.0 dB
10.0 GHz	-18.1 dB
14.0 GHz	-15.3 dB
18.0 GHz	-12.9 dB

*J11: COMMON ARM

APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

FREQUENCY	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10
200 MHZ	-94 dB	-94 dB	-96 dB	-94 dB	-96 dB	-95 dB	-95 dB	-96 dB	-95 dB	-94 dB
500 MHZ	-97 dB	-100 dB	-100 dB	-100 dB	-100 dB	-100 dB	-98 dB	-100 dB	-100 dB	-98 dB
1 GHz	-95 dB	-101 dB	-102 dB	-101 dB	-101 dB	-101 dB	-100 dB	-102 dB	-102 dB	-95 dB
2 GHz	-95 dB	-101 dB	-102 dB	-102 dB	-102 dB	-102 dB	-101 dB	-102 dB	-100 dB	-94 dB
4 GHz	-90 dB	-94 dB	-96 dB	-96 dB	-96 dB	-94 dB	-93 dB	-97 dB	-96 dB	-88 dB
6 GHz	-90 dB	-91 dB	-94 dB	-94 dB	-92 dB	-94 dB	-92 dB	-92 dB	-94 dB	-88 dB
8 GHz	-83 dB	-88 dB	-88 dB	-90 dB	-87 dB	-89 dB	-86 dB	-85 dB	-88 dB	-84 dB
10 GHz	-81 dB	-84 dB	-84 dB	-82 dB	-82 dB	-83 dB	-80 dB	-79 dB	-84 dB	-80 dB
12 GHz	-78 dB	-79 dB	-79 dB	-80 dB	-80 dB	-79 dB	-74 dB	-72 dB	-80 dB	-76 dB
14 GHz	-75 dB	-74 dB	-74 dB	-74 dB	-74 dB	-74 dB	-74 dB	-78 dB	-75 dB	-75 dB
16 GHz	-76 dB	-74 dB	-73 dB	-74 dB	-73 dB	-74 dB	-72 dB	-76 dB	-75 dB	-76 dB
18 GHz	-76 dB	-68 dB	-66 dB	-66 dB	-65 dB	-66 dB	-68 dB	-70 dB	-69 dB	-76 dB

* J11: COMMON ARM

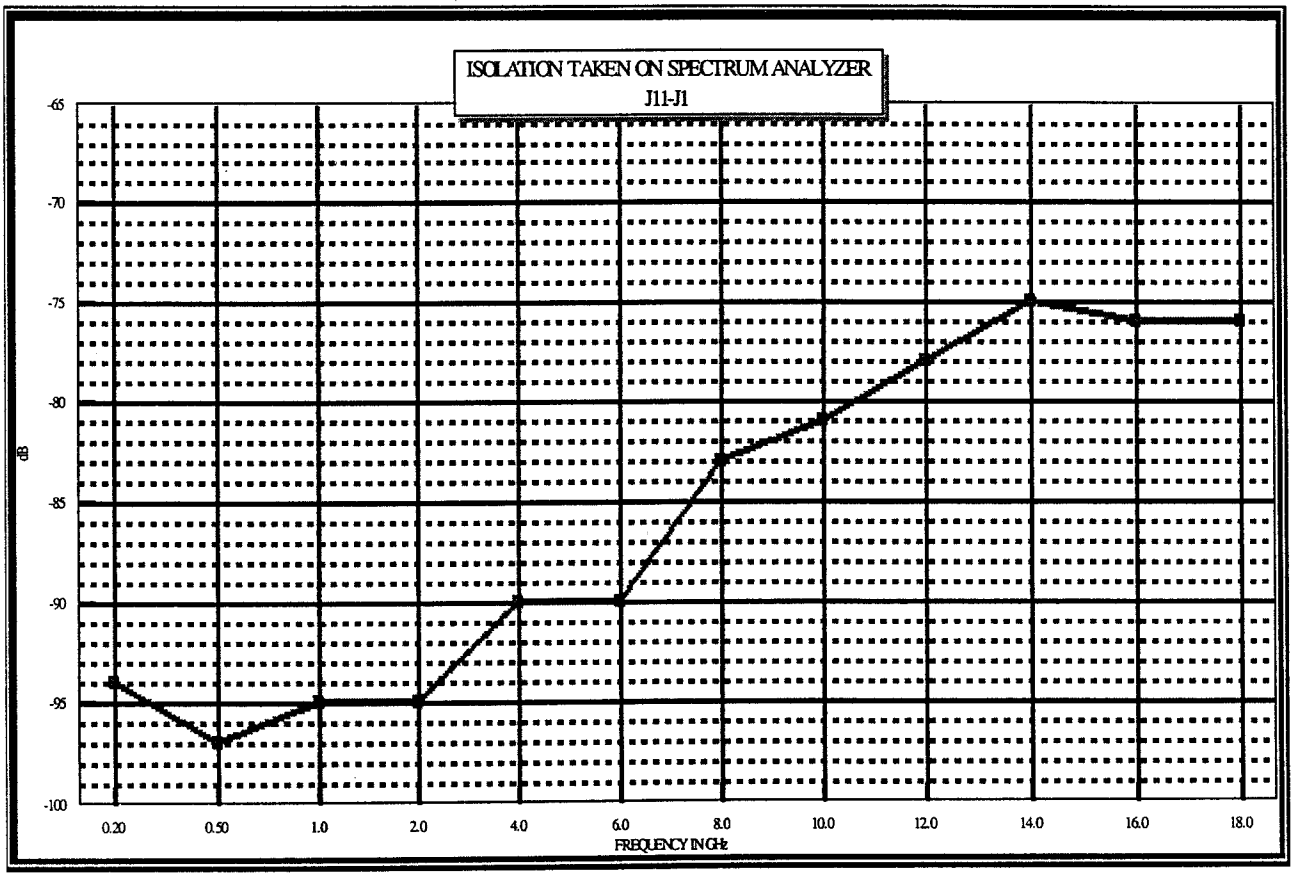
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

J11-J1



*J11: COMMON ARM

APRIL 9, 1998

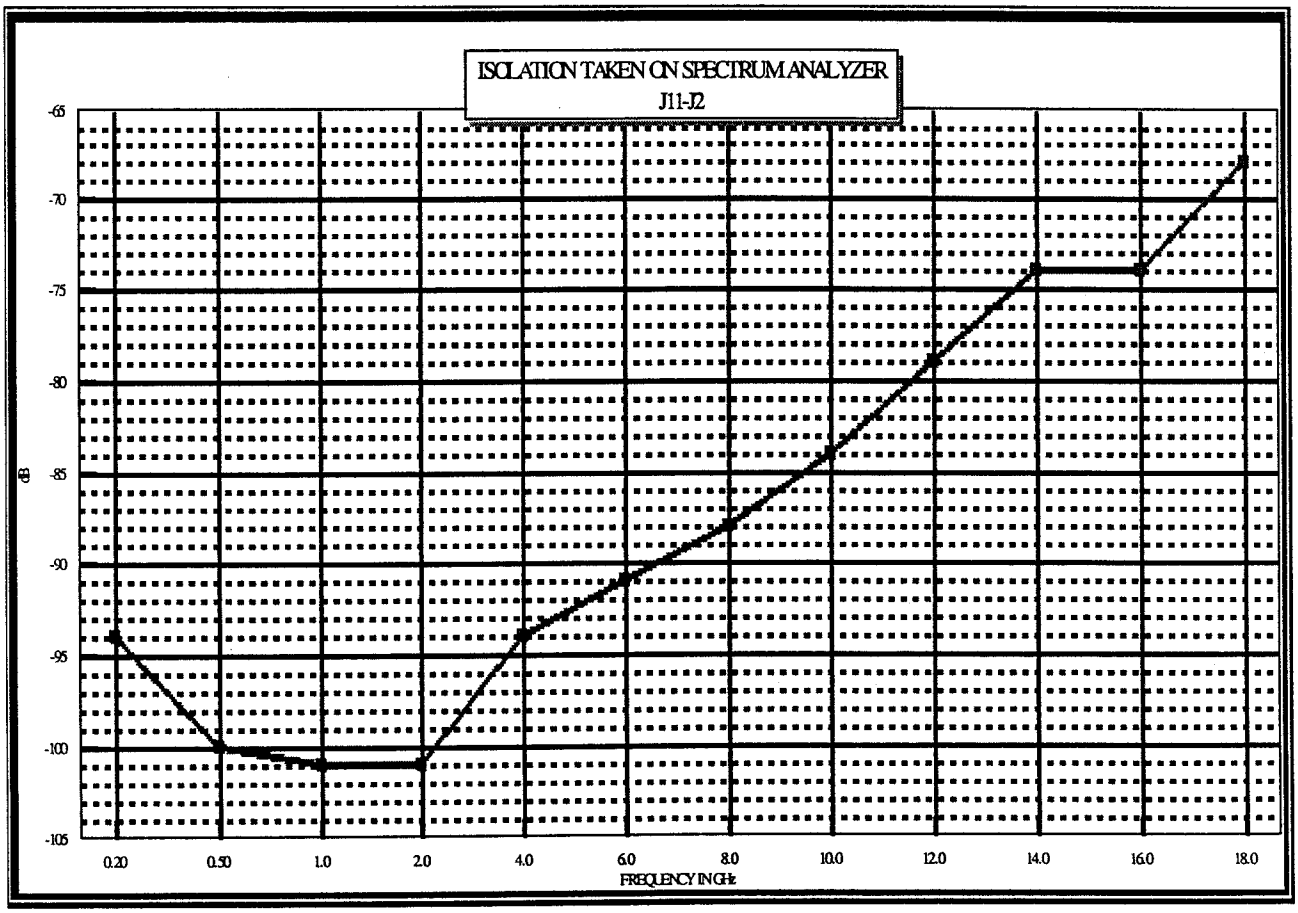
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

J11-J2



*J11: COMMON ARM

APRIL 9, 1998

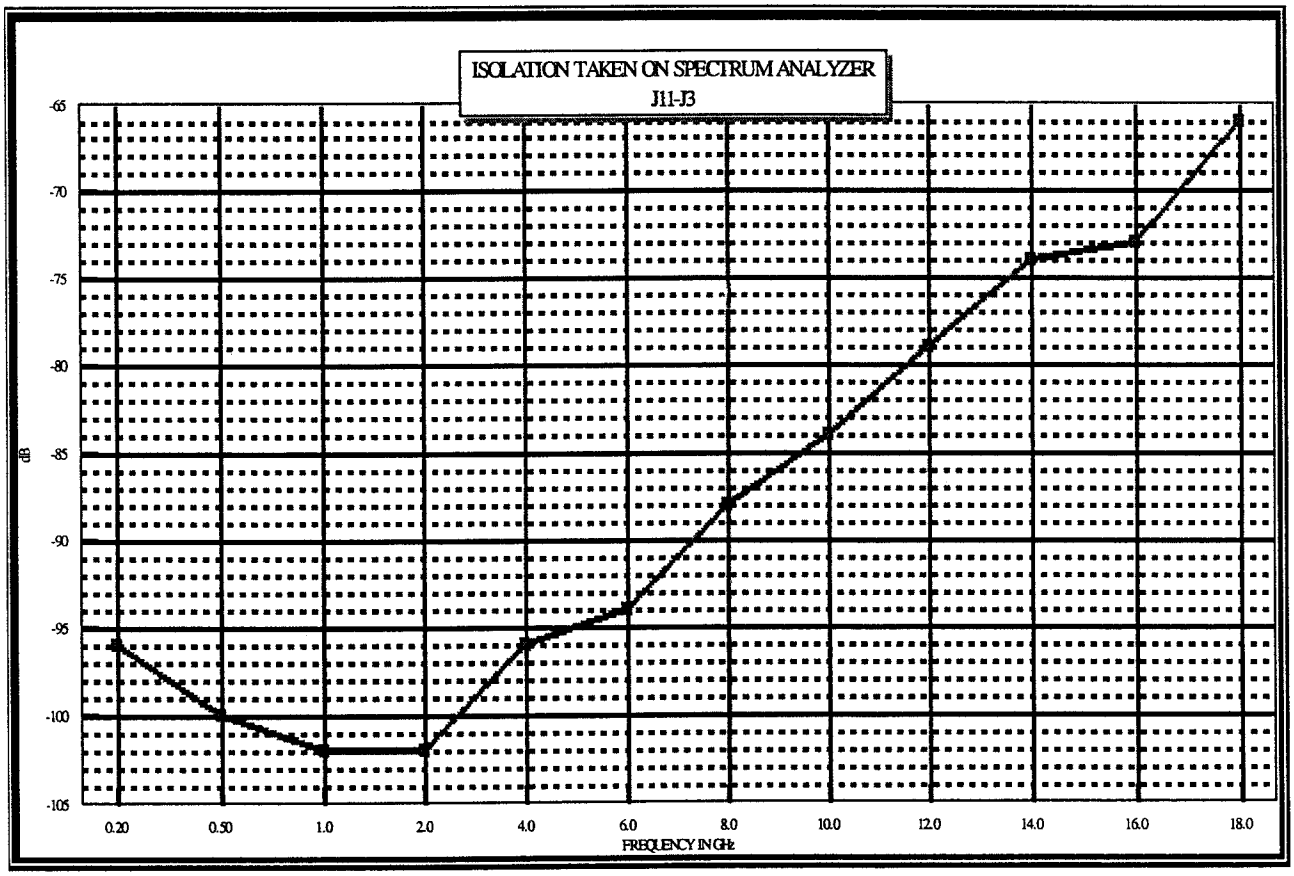
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

J11-J3



*J11: COMMON ARM

APRIL 9, 1998

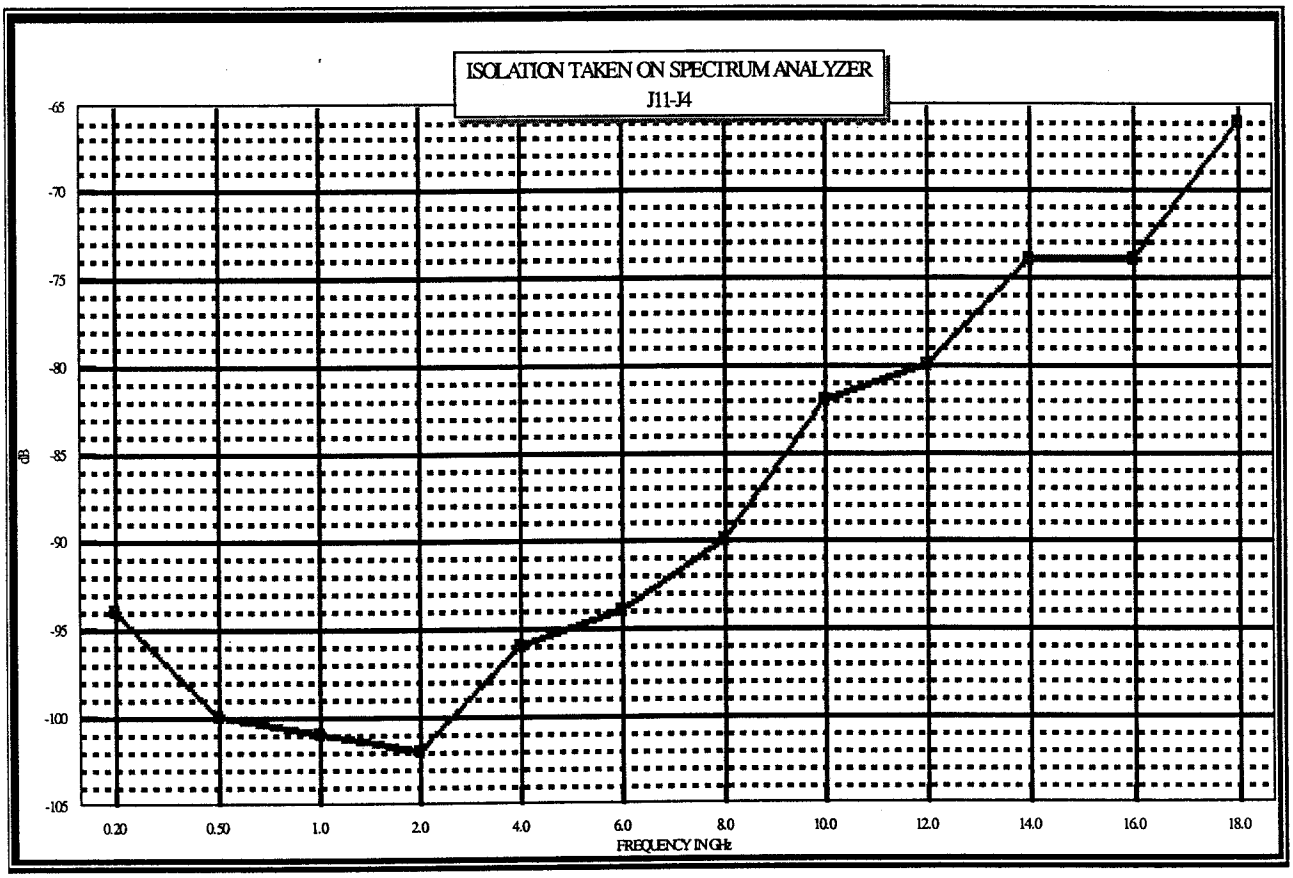
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

J11-J4



*J11: COMMON ARM

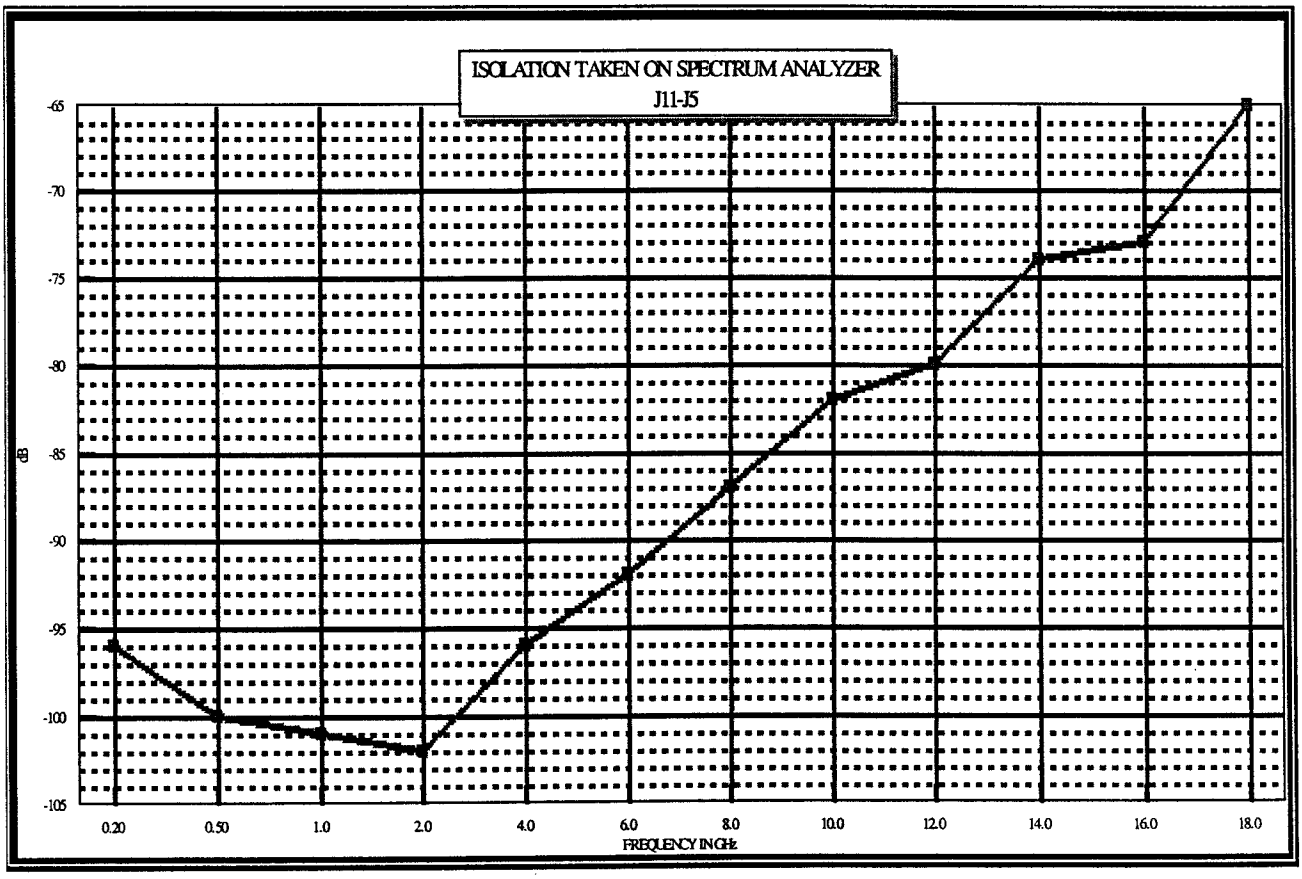
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)
J11-J5



*J11: COMMON ARM

APRIL 9, 1998

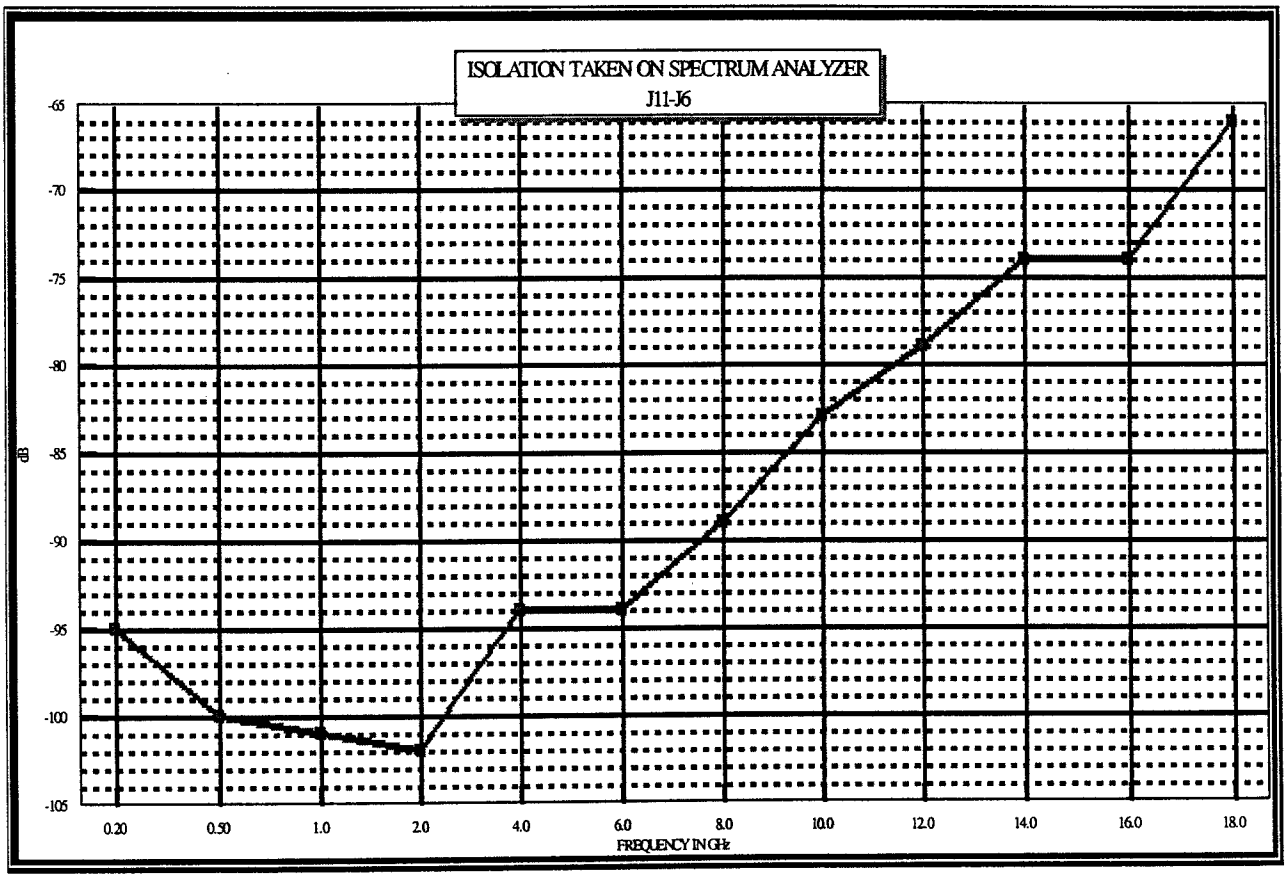
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

J11-J6



*J11: COMMON ARM

APRIL 9, 1998

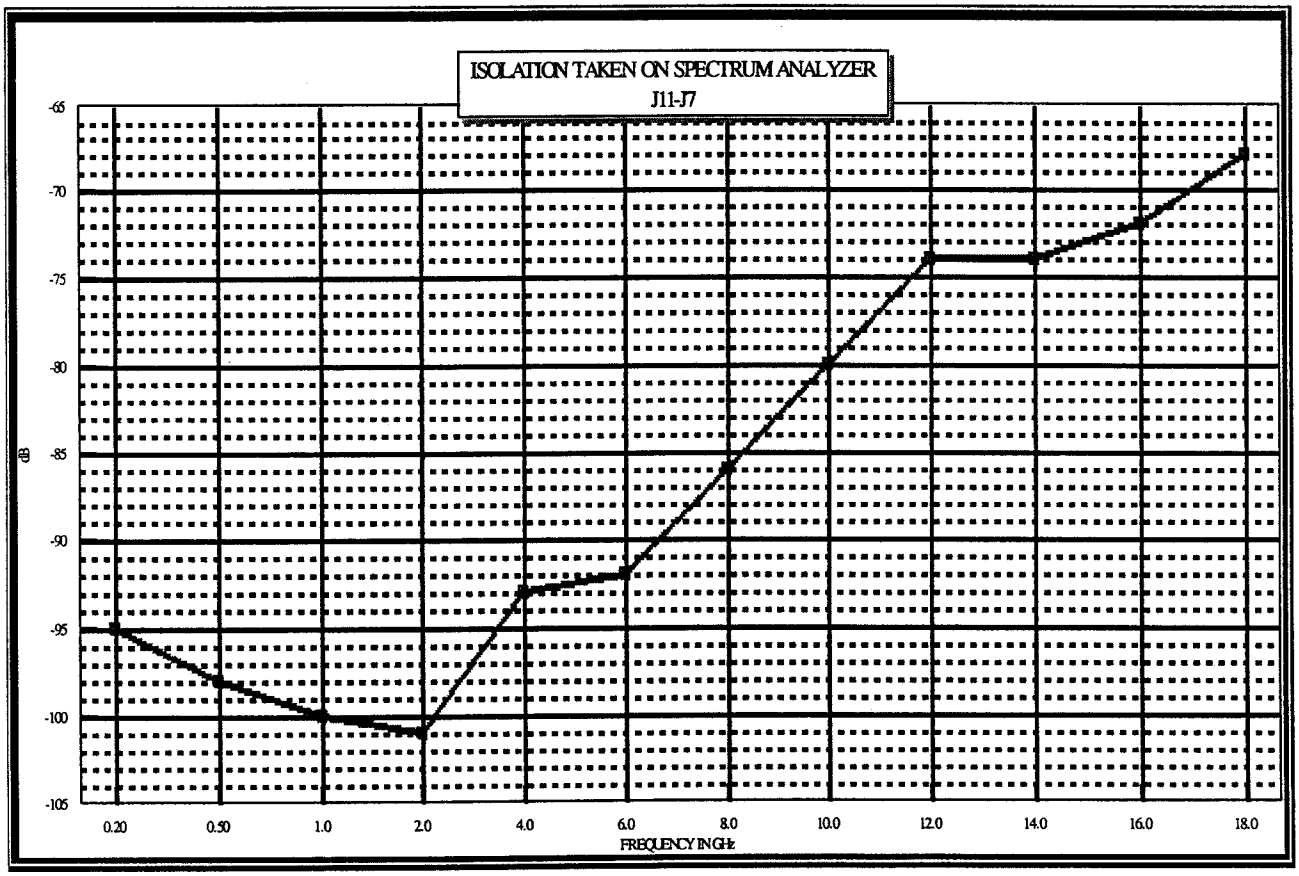
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

J11-J7



*J11: COMMON ARM

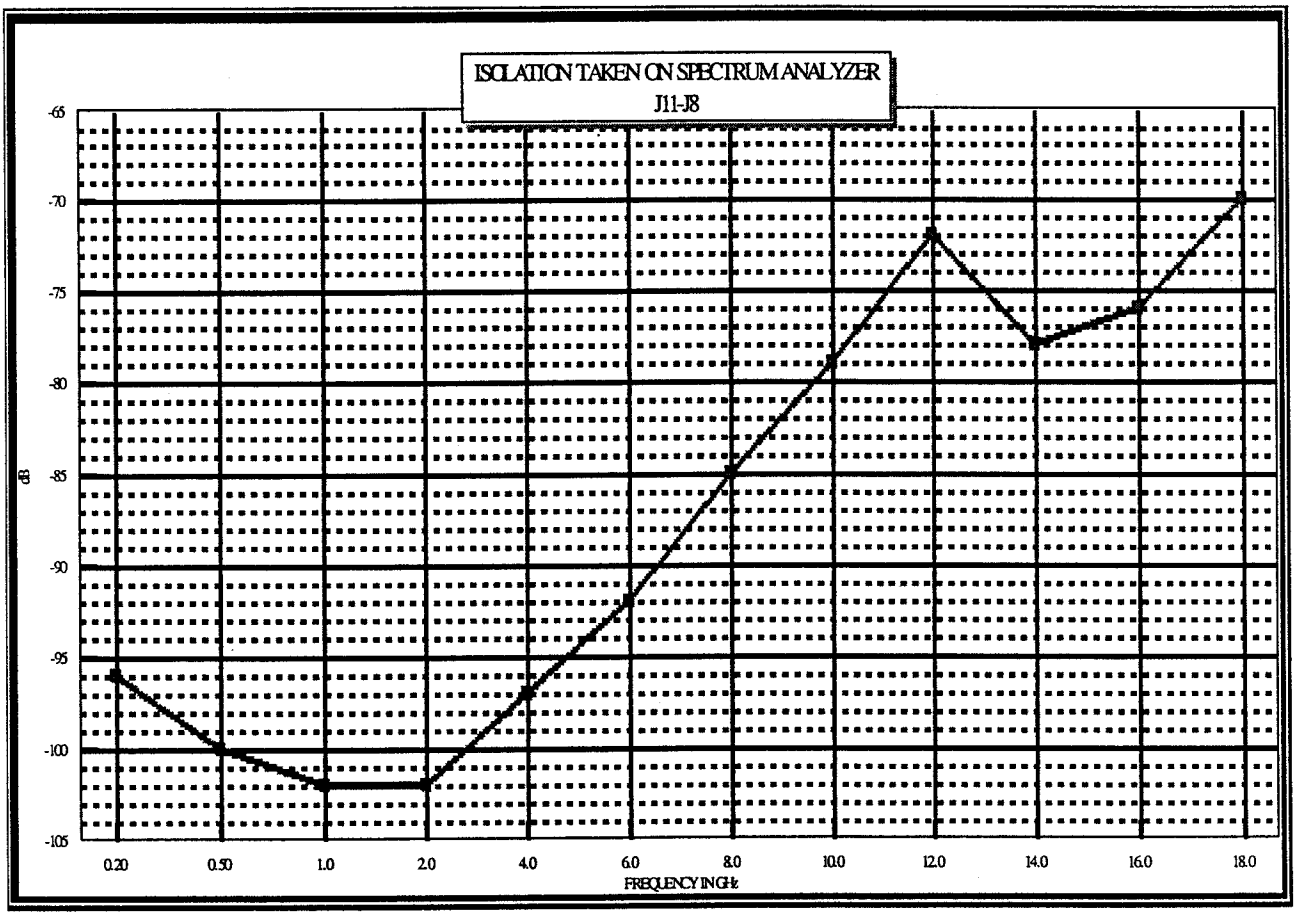
APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)
J11-J8



*J11: COMMON ARM

APRIL 9, 1998

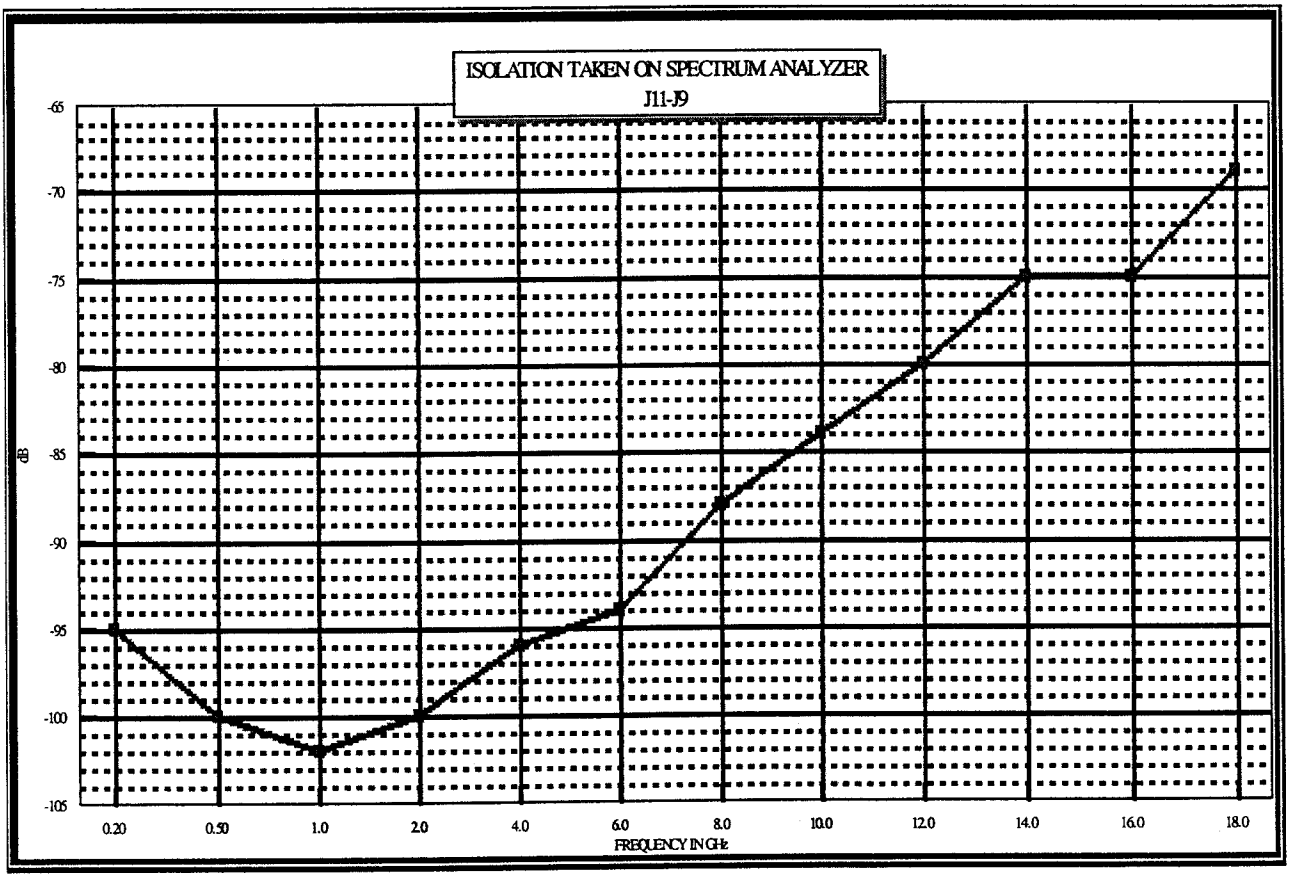
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

J11-J9



*J11: COMMON ARM

APRIL 9, 1998

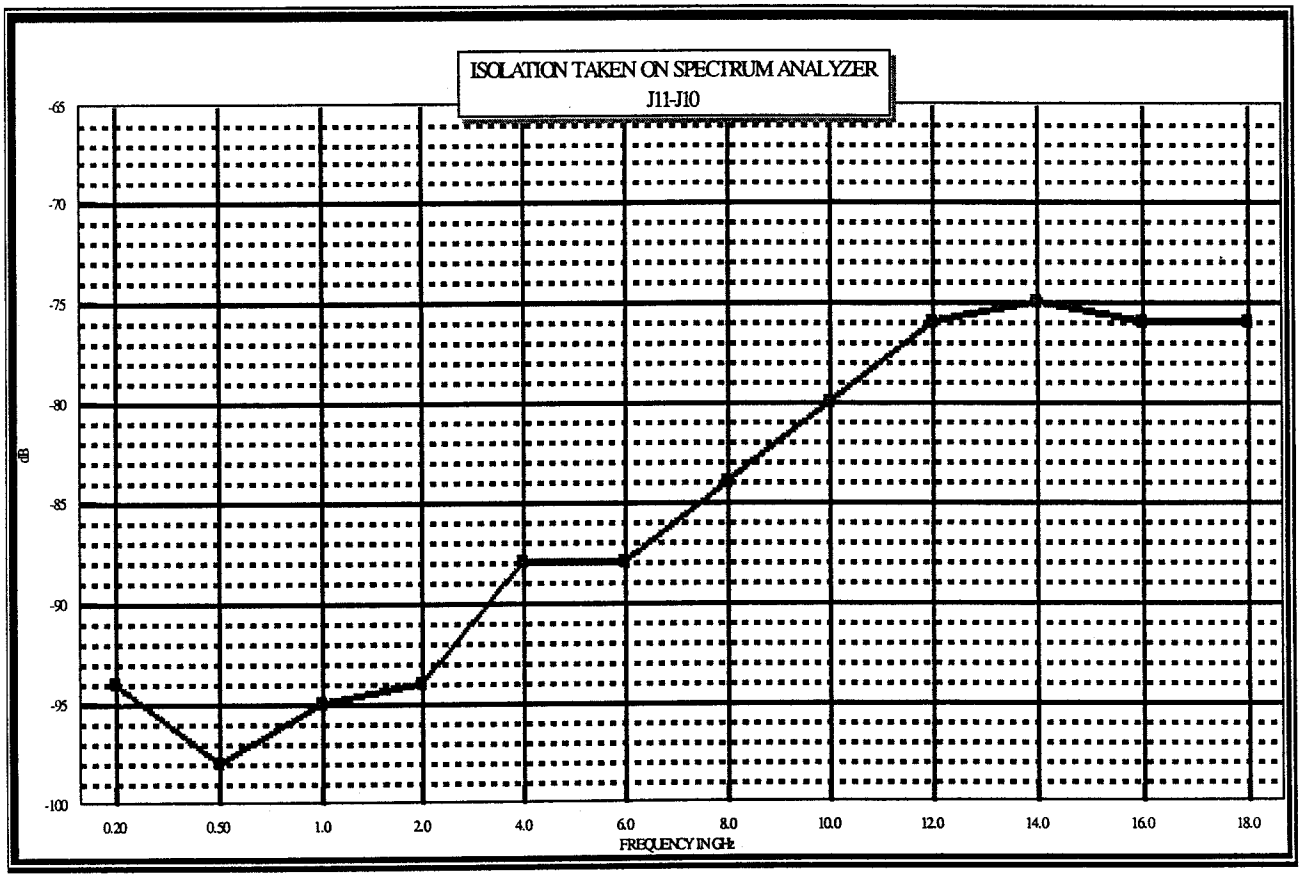
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

J11-J10



*J11: COMMON ARM

APRIL 9, 1998

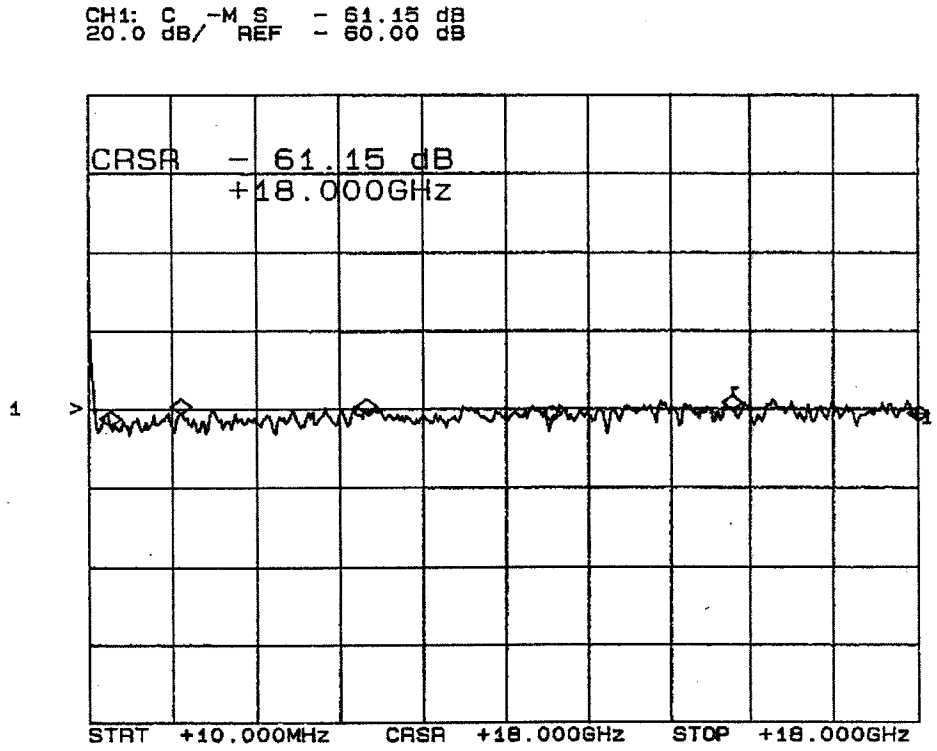
SUMMARY TEST DATA

MODEL NUMBER	**: MSN-0518-10DT-05-MP-IND**
SERIAL NUMBER	**: 10MS80303**
TECHNICIAN	**: RENE AFABLE**
VOLTAGE & CURRENT DRAW	**: ±5vdc: +490mA, -48mA**

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J1



FREQUENCY	ISOLATION
0.5 GHz	<-61.3 dB
2.0 GHz	<-62.3 dB
6.0 GHz	<-66.2 dB
10.0 GHz	<-60.7 dB
14.0 GHz	<-61.7 dB
18.0 GHz	<-61.1 dB

*J11: COMMON ARM

APRIL 9, 1998

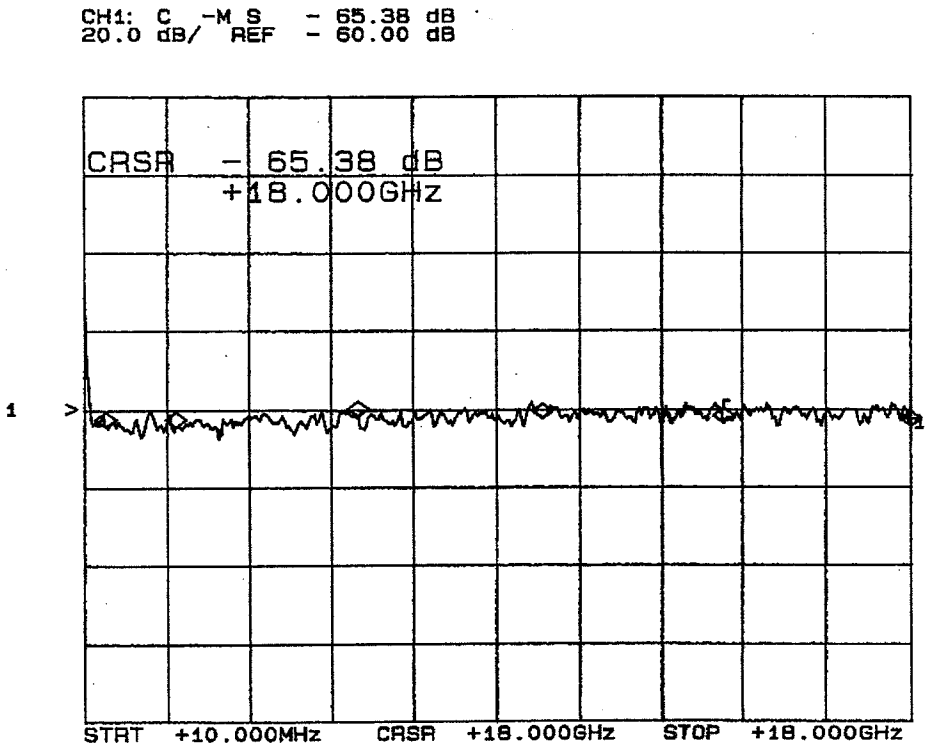
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J2



FREQUENCY	ISOLATION
0.5 GHz	<-63.7dB
2.0 GHz	<-63.0 dB
6.0 GHz	<-61.9 dB
10.0 GHz	<-62.0 dB
14.0 GHz	<-62.6 dB
18.0 GHz	<-65.3 dB

*J11: COMMON ARM

APRIL 9, 1998

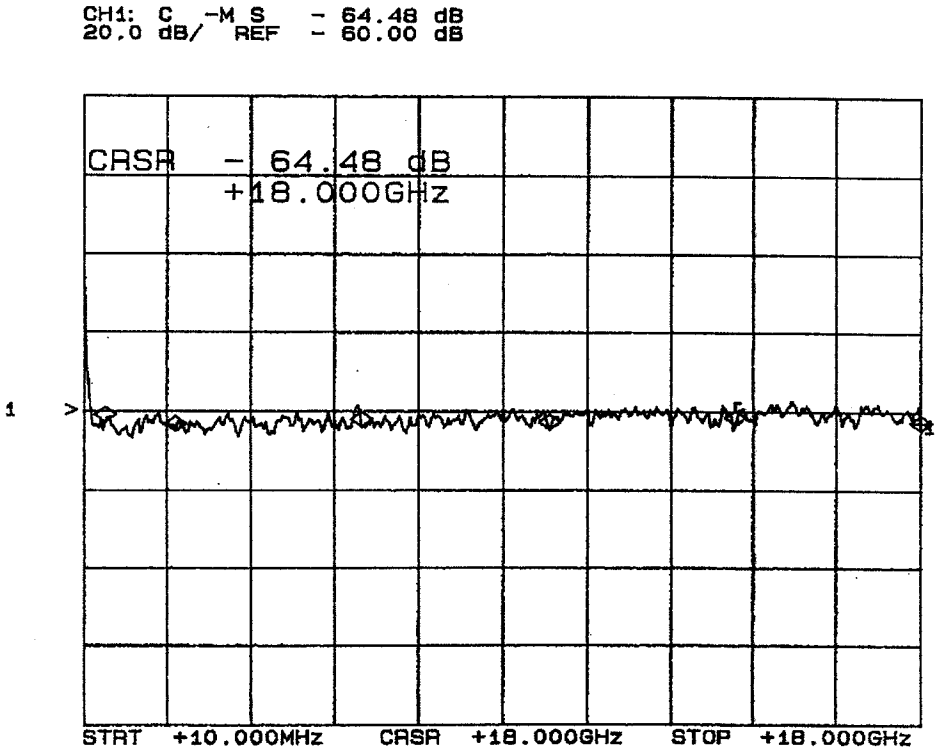
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J3



FREQUENCY	ISOLATION
0.5 GHz	<-65.4 dB
2.0 GHz	<-63.2 dB
6.0 GHz	<-62.9 dB
10.0 GHz	<-61.6 dB
14.0 GHz	<-63.1 dB
18.0 GHz	<-64.4 dB

*J11: COMMON ARM

APRIL 9, 1998

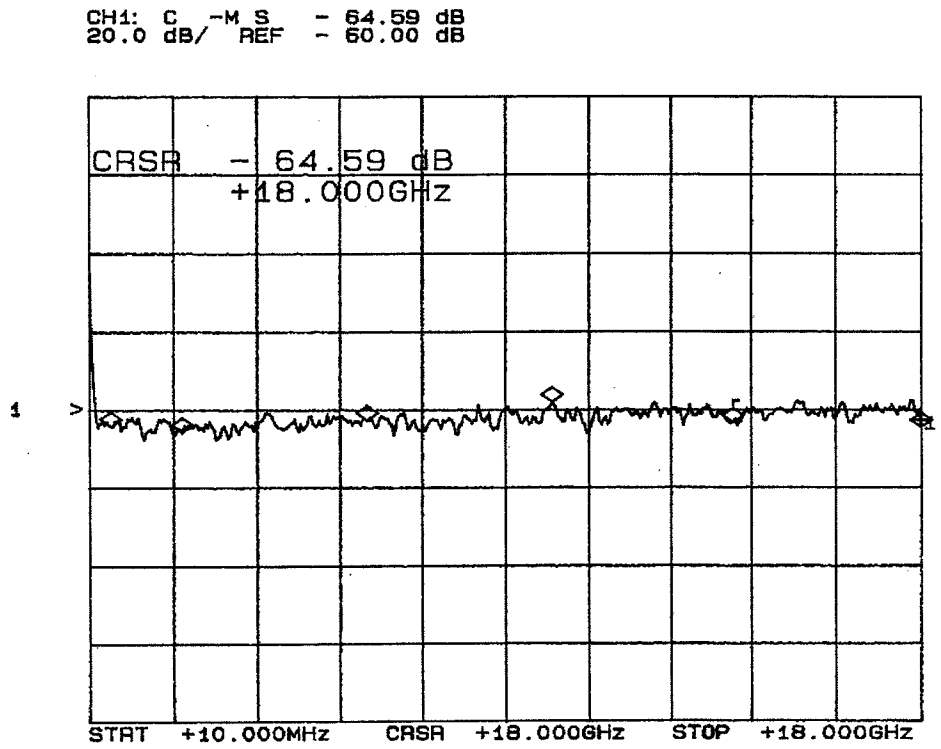
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J4



FREQUENCY	ISOLATION
0.5 GHz	<-63.0 dB
2.0 GHz	<-65.6 dB
6.0 GHz	<-61.9 dB
10.0 GHz	<-61.1 dB
14.0 GHz	<-60.5 dB
18.0 GHz	<-64.5 dB

*J11: COMMON ARM

APRIL 9, 1998

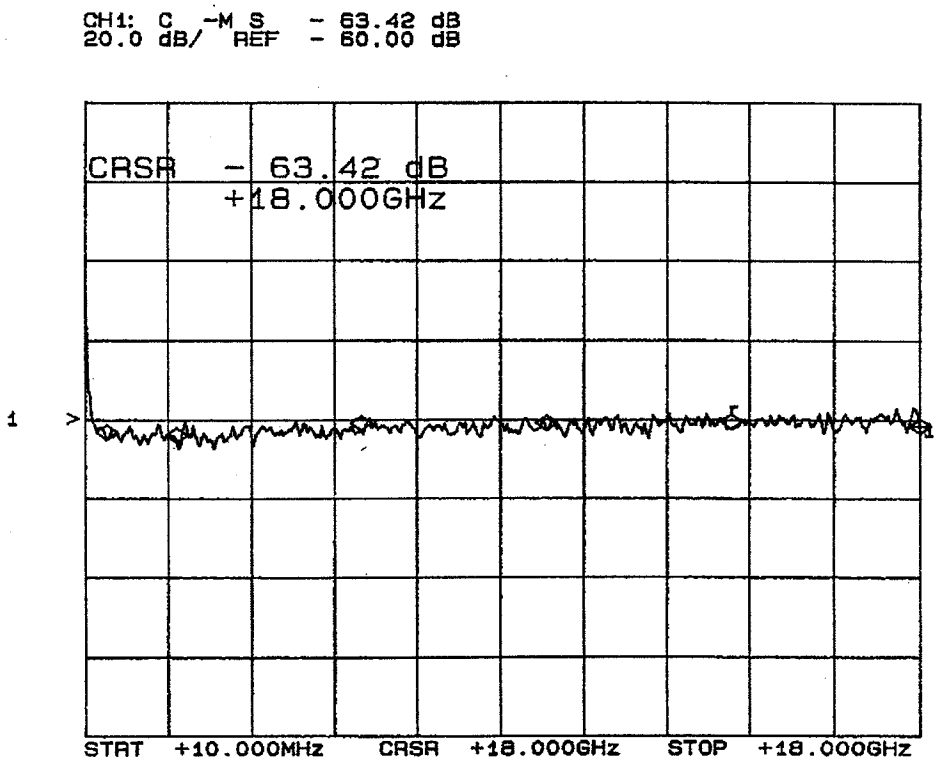
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J5



FREQUENCY	ISOLATION
0.5 GHz	<-66.2 dB
2.0 GHz	<-63.0 dB
6.0 GHz	<-60.4 dB
10.0 GHz	<-61.5 dB
14.0 GHz	<-60.9 dB
18.0 GHz	<-63.4 dB

*J11: COMMON ARM

APRIL 9, 1998

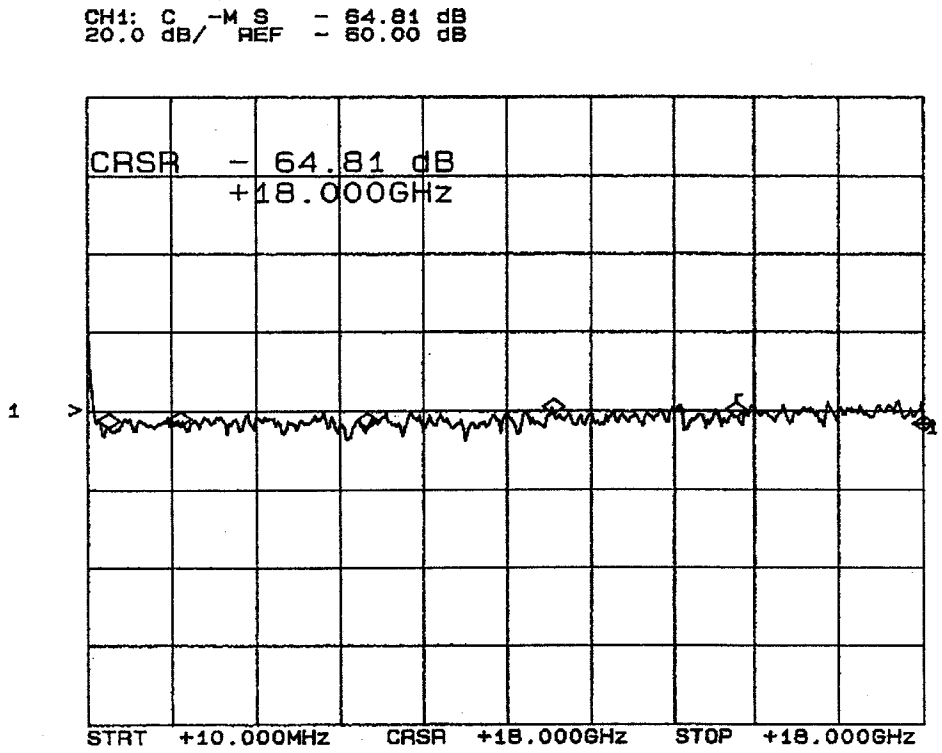
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J6



FREQUENCY	ISOLATION
0.5 GHz	<-65.6 dB
2.0 GHz	<-64.0 dB
6.0 GHz	<-60.7 dB
10.0 GHz	<-60.2 dB
14.0 GHz	<-63.1 dB
18.0 GHz	<-64.8 dB

*J11: COMMON ARM

APRIL 9, 1998

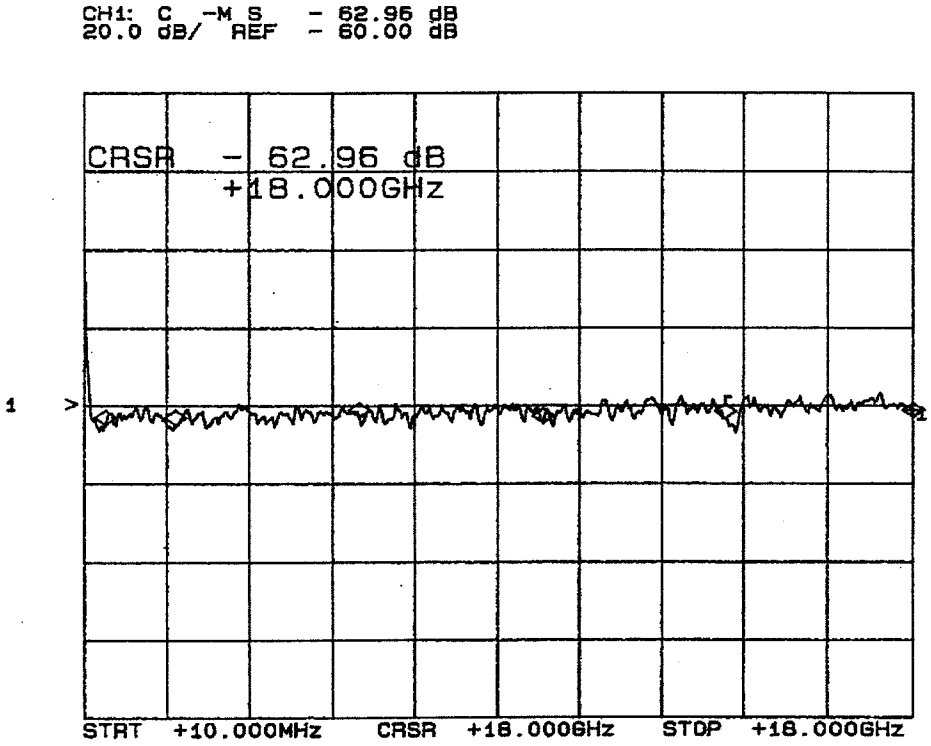
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J7



FREQUENCY	ISOLATION
0.5 GHz	<-64.0 dB
2.0 GHz	<-63.1 dB
6.0 GHz	<-65.6 dB
10.0 GHz	<-61.3 dB
14.0 GHz	<-61.2 dB
18.0 GHz	<-62.9 dB

*J11: COMMON ARM

APRIL 9, 1998

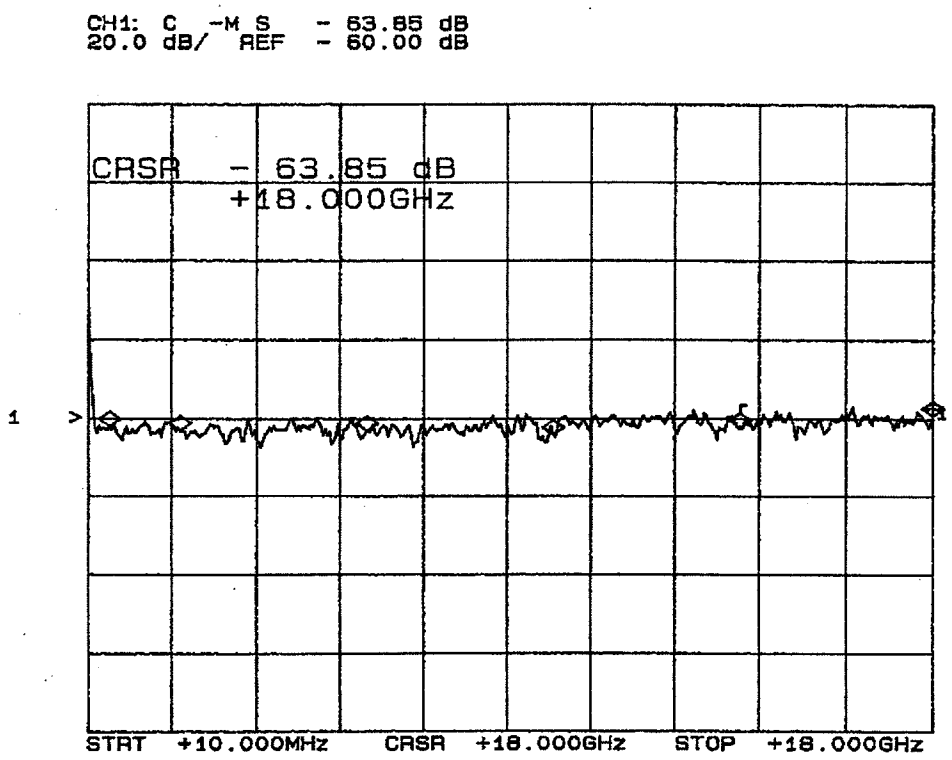
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J8



FREQUENCY	ISOLATION
0.5 GHz	<-63.0 dB
2.0 GHz	<-66.6 dB
6.0 GHz	<-63.5 dB
10.0 GHz	<-61.5 dB
14.0 GHz	<-63.0 dB
18.0 GHz	<-63.8 dB

*J11: COMMON ARM

APRIL 9, 1998

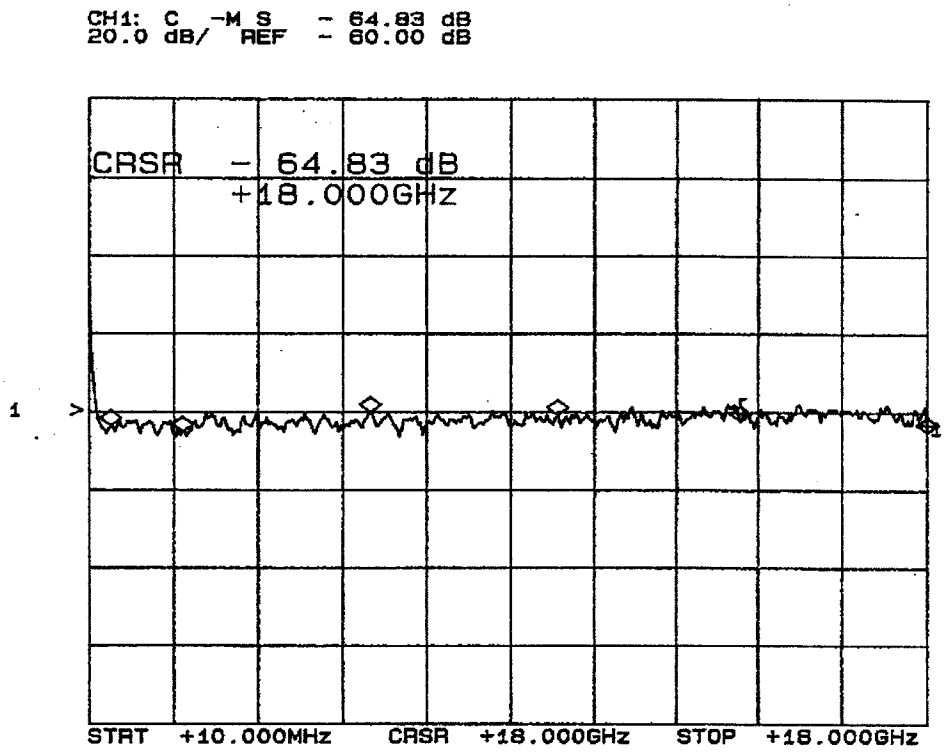
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J9



FREQUENCY	ISOLATION
0.5 GHz	<-62.4 dB
2.0 GHz	<-65.0 dB
6.0 GHz	<-60.2 dB
10.0 GHz	<-59.3 dB
14.0 GHz	<-64.6 dB
18.0 GHz	<-64.8 dB

*J11: COMMON ARM

APRIL 9, 1998

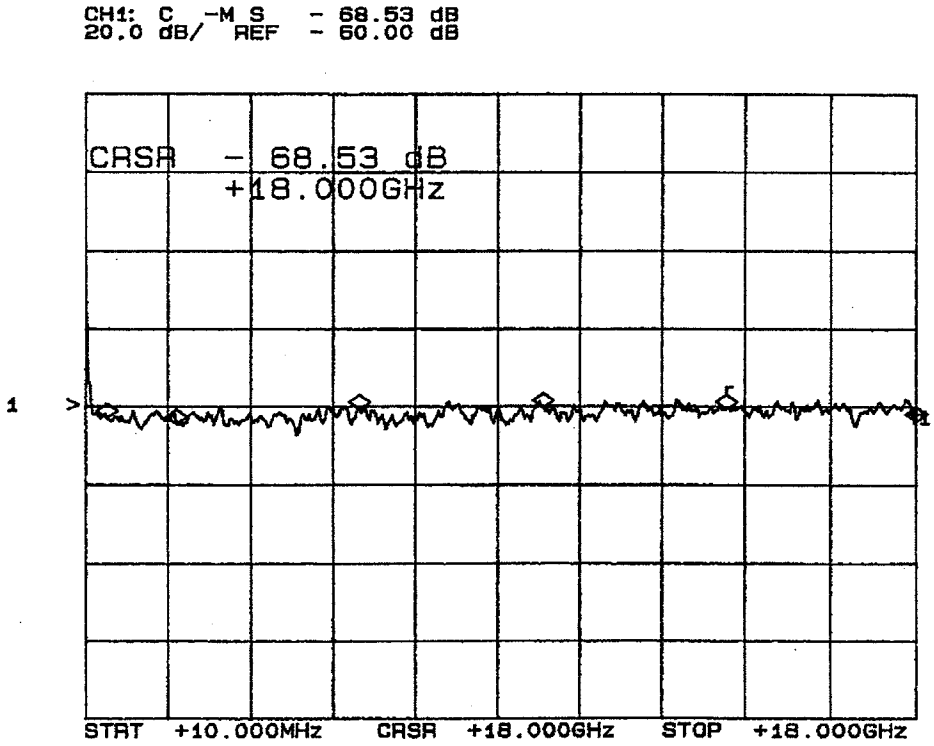
SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J11-J10



FREQUENCY	ISOLATION
0.5 GHz	<-63.5 dB
2.0 GHz	<-64.5 dB
6.0 GHz	<-60.7 dB
10.0 GHz	<-62.2 dB
14.0 GHz	<-61.6 dB
18.0 GHz	<-68.5 dB

*J11: COMMON ARM

APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

SWITCHING SPEED

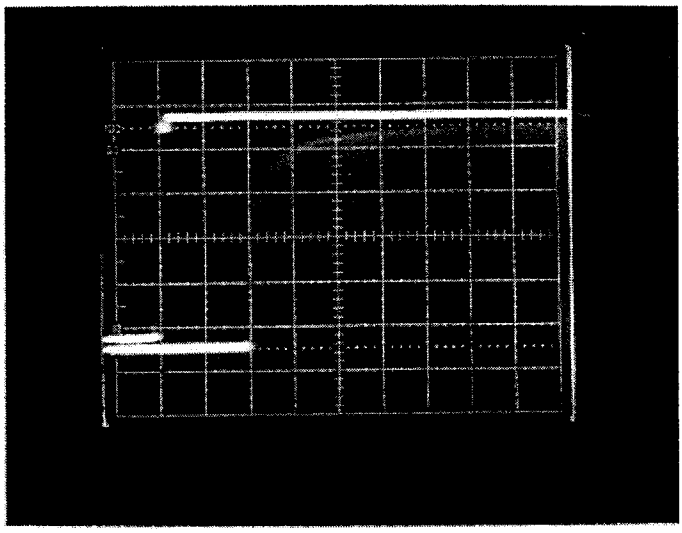
"Rise/Fall" Time: 10% RF to 90% RF & 90% RF to 10% RF
"On/Off" Time: 50% TTL to 90% RF or 10% RF

TYPICAL OF ALL ARMS

"DELAY ON": 60nS
"RISE TIME": 20nS

HORIZONTAL SCALE:
20nS PER DIVISION

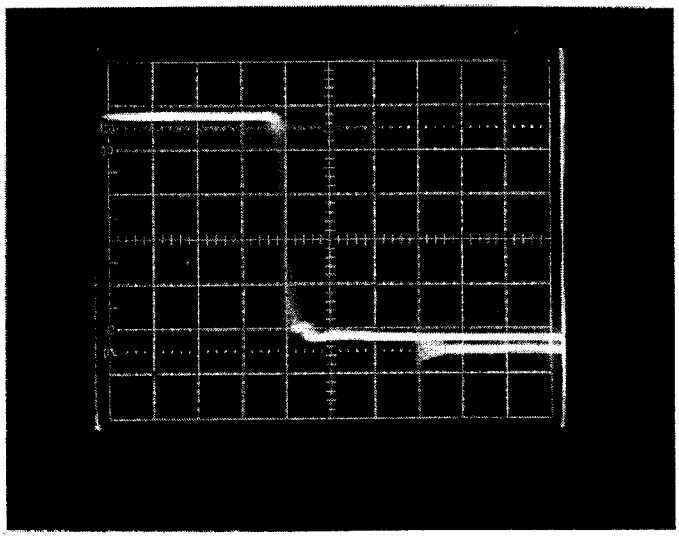
VERTICAL SCALE:
5mV PER DIVISION



"DELAY OFF": 30nS
"FALL TIME": 4nS

HORIZONTAL SCALE:
10nS PER DIVISION

VERTICAL SCALE:
5mV PER DIVISION



APRIL 9, 1998

SUMMARY TEST DATA

MODEL NUMBER	: MSN-0518-10DT-05-MP-IND
SERIAL NUMBER	: 10MS80303
TECHNICIAN	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: ±5vdc: +490mA, -48mA

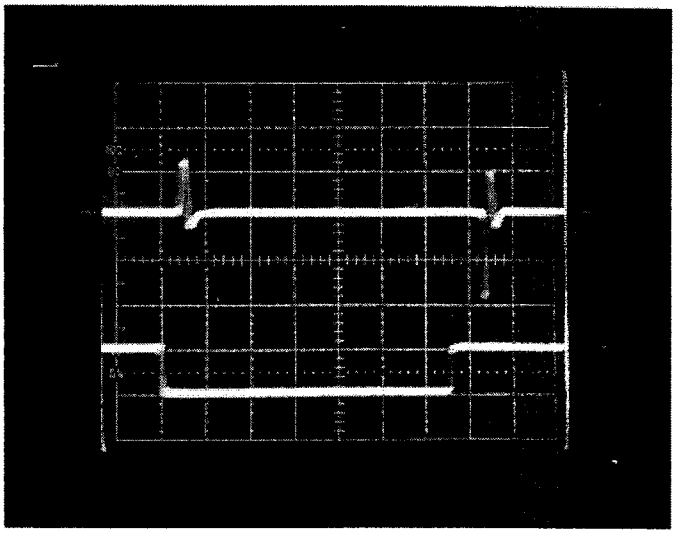
VIDEO TRANSIENTS

TYPICAL OF ALL ARMS

≤1.5 V P-P
MEASURED IN A
300 MHZ BANDWIDTH

VERTICAL SCALE:
0.5V PER DIVISION

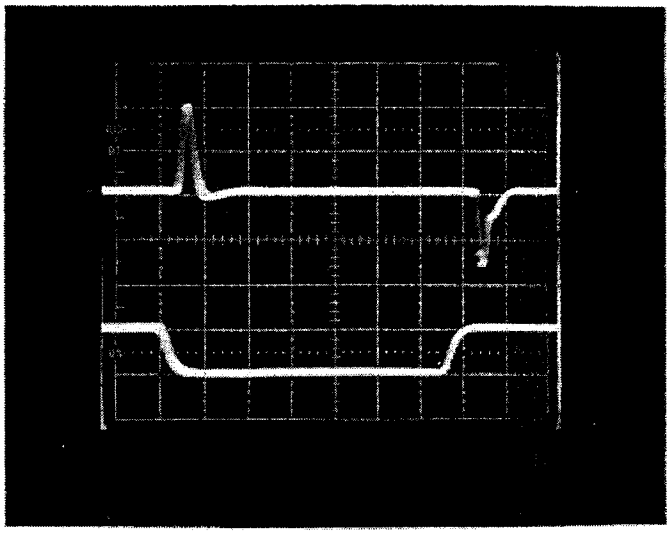
HORIZONTAL SCALE:
50nS PER DIVISION



≤0.36 V P-P
MEASURED IN A
20 MHZ BANDWIDTH

VERTICAL SCALE:
0.1V PER DIVISION

HORIZONTAL SCALE:
50nS PER DIVISION



APRIL 9, 1998