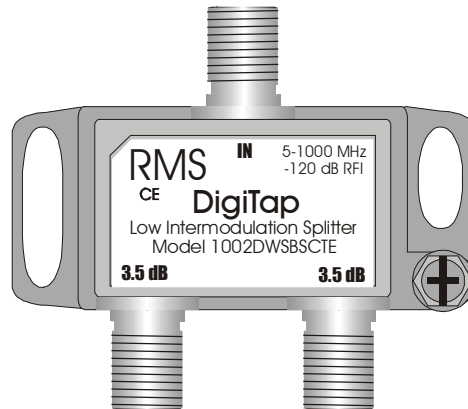


# RMS Communications Inc.,

## Temperature & Salt Spray Tests

### 1002/3/4DWSBSCTE

2, 3 & 4-Way Horizontal Splitter



2-Way (1002DWSBSCTE)

3-way Balanced (1003DWSBSCTE) & 4-way (1004DWSBSCTE)

➤ **Summary:**

➤ **Electrical Performance:**

a) Temperature test.

➤ **Environmental Performance:**

a) Salt Spray Exposure

**Summary:**

The tests conducted in this evaluation were carried out in accordance with SCTE standards for testing procedures of Passive devices. The passives tested were also compared with the most recent version of the SCTE IPS-SP-206 Drop Passives standards available on the date of this evaluation.

For the electrical testing (Insertion Loss, Return Loss and Isolation) the test equipment used was a HP 8714B (75Ω model) that was factory calibrated in August 2000. Also it was calibrated before each test using a HP85039F Calibration Kit.

For temperature testing it was done in a Tenney chamber cycling between -40C to room temperature up to +70C.

# RMS Communications Inc.,

## Temperature Test

### Introduction:

The splitters response is measured at room temperature and then at -40C and +70C. During this test all unused ports are terminated including when in test chamber.

### Test Procedure:

Place splitters in test chamber and increase temperature to +70C, allow units to stabilize at that temperature. Plot response. Repeat same procedure at -40C.

### Temperature Response IL Tests

**2-Way**

Model #	Test Info	5 MHz	16 MHz	70 MHz	450 MHz	550 MHz	750 MHz	870 MHz	1000 MHz
2-Way SCTE 1002DWSB Splitter	Mfgs. Spec	4.0	3.8	3.8	3.8	3.8	4.0	4.5	4.5
	-40 C	3.1	3.0	3.2	3.4	3.5	3.8	3.9	4.0
	Room	3.1	3.1	3.2	3.4	3.4	3.8	3.9	4.1
	+70 C	3.3	3.2	3.4	3.5	3.7	3.8	4.2	4.3
	Change -40 to +70	-0.2	-0.2	-0.2	-0.1	-0.2	0.0	-0.3	-0.3

### Temperature Response IL Tests

**3-Way**

Model #	Test Info	5 MHz	16 MHz	70 MHz	450 MHz	550 MHz	750 MHz	870 MHz	1000 MHz
3-Way SCTE 1003DWSB Splitter (balanced)	Mfgs. Spec	6.3	5.7	5.7	5.9	6.3	6.3	6.9	6.9
	-40 C	5.3	5.0	5.2	5.5	5.7	6.0	6.3	6.4
	Room	5.3	5.1	5.2	5.6	5.7	6.1	6.3	6.6
	+70 C	5.4	5.1	5.3	5.7	5.8	6.1	6.5	6.8
	Change -40 to +70	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.4

### Temperature Response IL Tests

**4-Way**

Model #	Test Info	5 MHz	16 MHz	70 MHz	450 MHz	550 MHz	750 MHz	870 MHz	1000 MHz
4-Way SCTE 1004DWSB Splitter	Mfgs. Spec	8.0	7.6	7.6	7.6	8.0	8.0	8.8	8.8
	-40 C	6.4	6.3	6.5	7.0	7.0	7.5	7.8	7.8
	Room	6.3	6.2	6.4	6.9	7.0	7.4	7.7	8.0
	+70 C	6.7	6.3	6.5	7.1	7.1	7.5	7.9	8.2
	Change -40 to +70	-0.3	0.0	0.0	-0.1	-0.1	0.0	-0.1	-0.4

## Salt Spray Test

### Introduction:

The salt spray tests were performed in our UK facility in a Q-Fog Model SSP600 chamber. And were exposed to 1000+/- 10 hours exposure. And was based on Method 1(IEC68-2-9 Procedure B) test method.

# RMS Communications Inc.,

## Salt Spray Test

### RMS 1002DWSBSCTE - 2-Way 1GHz Splitter

### Salt Spray Tests

Parameter	Test Info	5 MHz	16 MHz	70 MHz	450 MHz	550 MHz	750 MHz	870 MHz	1000 MHz
Insertion Loss Maximum dB	1002DWSBSCTE QC	4.0	3.8	3.8	3.8	3.8	4.0	4.5	4.5
	1002DWSBSCTE Typical	3.3	3.4	3.4	3.5	3.7	3.7	4.2	4.2
	Salt Test Before	3.2	3.2	3.3	3.3	3.4	3.6	3.87	4.15
	Salt Test After 1000hr	3.55	3.44	3.32	3.49	3.60	3.69	3.81	4.07
Return Loss Minimum dB	1002DWSBSCTE QC	16	20	20	20	20	20	18	18
	1002DWSBSCTE Typical	18	22	22	22	22	22	20	20
	Salt Test Before	24	28	29	26	26	24	22	20
	Salt Test After 1000hr	26.46	29.07	30.53	25.47	25.75	24.17	22.60	19.61
Isolation Minimum dB	1002DWSBSCTE QC	16	35	35	20	20	20	20	20
	1002DWSBSCTE Typical	22	36	36	28	28	28	22	22
	Salt Test Before	22	33	39	29	28	26	27	25
	Salt Test After 1000hr	19.70	37.00	42.78	29.02	27.15	25.51	26.04	26.66

### RMS 1003DWSBSCTE - 3-Way (Balanced) 1GHz Splitter

### Salt Spray Tests

Parameter	Test Info	5 MHz	16 MHz	70 MHz	450 MHz	550 MHz	750 MHz	870 MHz	1000 MHz
Insertion Loss Maximum dB	1003DWSBSCTE QC	6.3	5.7	5.7	5.9	6.3	6.9	6.9	6.9
	1003DWSBSCTE Typical	5.5	5.4	5.4	5.4	5.8	6.5	6.6	6.7
	Salt Test Before	5.4	5.2	5.3	5.5	5.6	5.75	6.4	6.6
	Salt Test After 1000hr	5.34	5.23	5.22	5.17	5.59	5.88	6.17	6.67
Return Loss Minimum dB	1003DWSBSCTE QC	16	20	20	20	20	20	18	18
	1003DWSBSCTE Typical	18	22	22	22	22	22	20	20
	Salt Test Before	21	22	24	25	26	27	24	25
	Salt Test After 1000hr	22.63	23.48	23.62	24.96	35.23	28.94	27.94	23.15
Isolation Minimum dB	1003DWSBSCTE QC	16	35	35	20	20	20	20	20
	1003DWSBSCTE Typical	22	36	36	26	28	22	22	22
	Salt Test Before	21	38	39	26	27	24	21	21
	Salt Test After 1000hr	21.46	35.31	43.64	24.79	23.84	21.79	24.60	26.39

### RMS 1004DWSBSCTE - 4-Way 1GHz Splitter

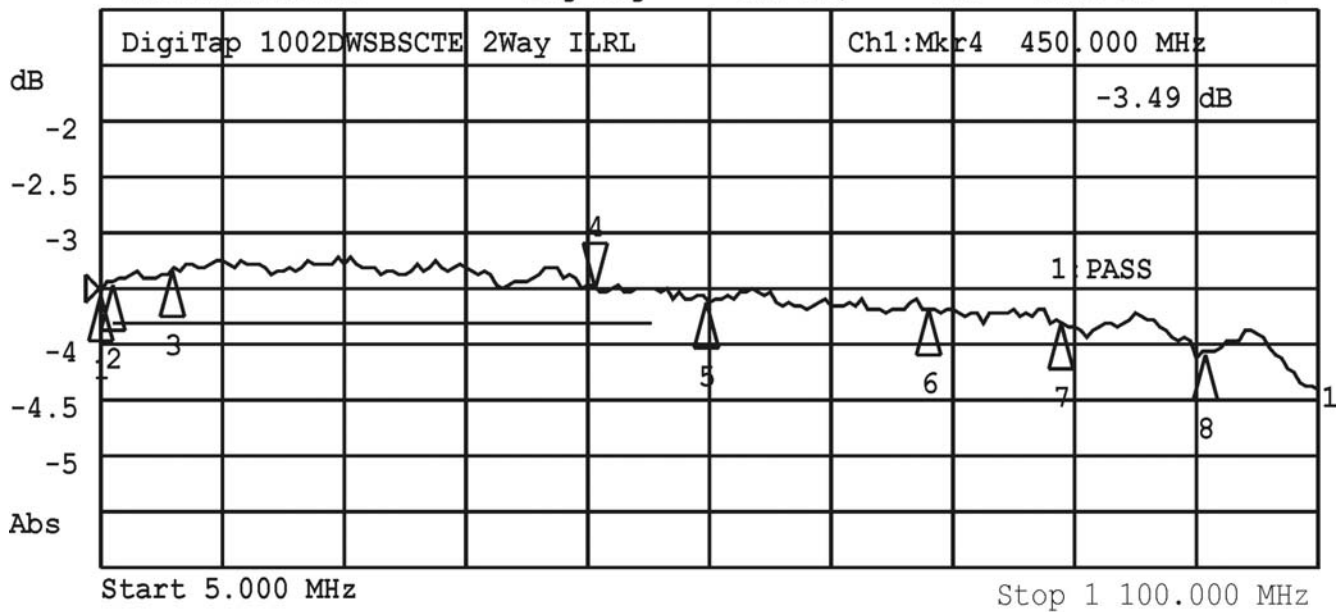
### Salt Spray Tests

Parameter	Test Info	5 MHz	16 MHz	70 MHz	450 MHz	550 MHz	750 MHz	870 MHz	1000 MHz
Insertion Loss Maximum dB	1004DWSBSCTE QC	8.0	7.6	7.6	7.6	8.0	8.0	8.8	8.8
	1004DWSBSCTE Typical	6.5	6.8	6.9	6.9	7.2	7.3	8.0	8.1
	Salt Test Before	6.4	6.3	6.2	6.4	6.9	7.45	7.7	8.1
	Salt Test After 1000hr	6.98	6.76	6.76	6.55	7.16	7.49	7.89	8.28
Return Loss Minimum dB	1004DWSBSCTE QC	16	20	20	20	20	20	18	18
	1004DWSBSCTE Typical	18	22	22	22	22	22	20	20
	Salt Test Before	18	21	22	22	24	29	25	22
	Salt Test After 1000hr	22.35	21.55	21.62	23.76	28.79	38.85	33.25	29.87
Isolation Minimum dB	1004DWSBSCTE QC	16	35	35	20	20	20	20	20
	1004DWSBSCTE Typical	24	36	36	28	28	28	22	22
	Salt Test Before	30	38	38	27	29	28	25	22
	Salt Test After 1000hr	32.78	41.91	45.44	40.01	37.24	28.60	26.57	26.09

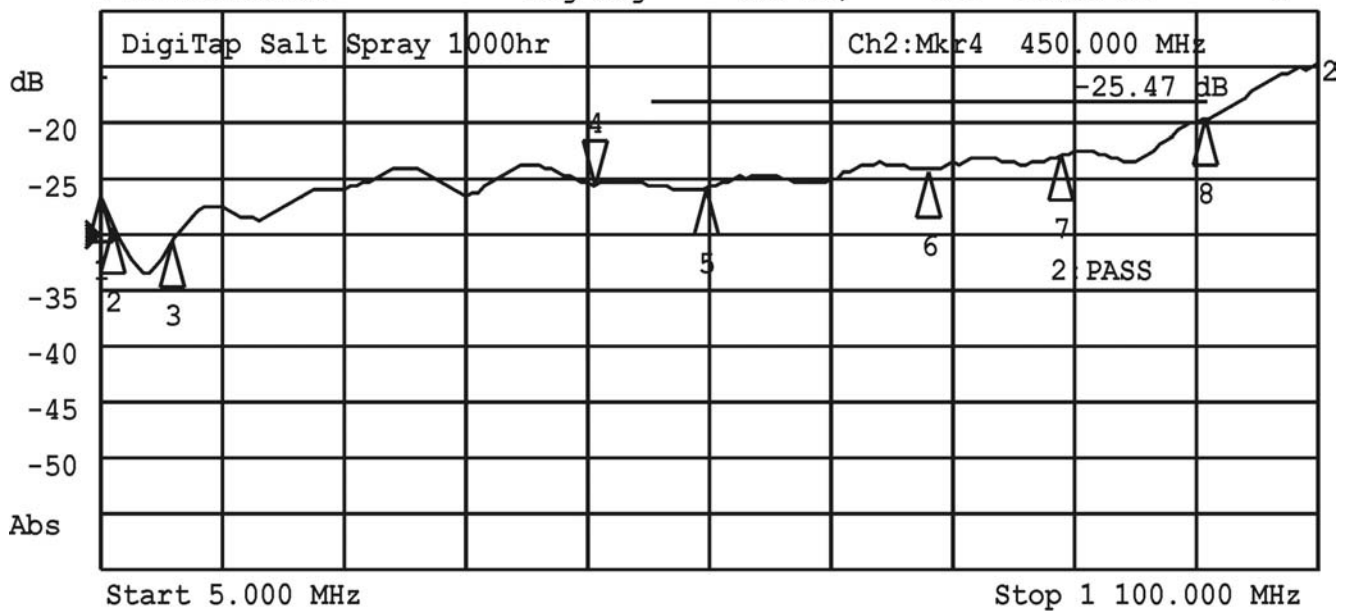
# RMS Communications Inc.,

## Typical Insertion Loss/Return Loss After Salt Spray Test 1002DWSBSCTE

►1:Transmission Log Mag 0.5 dB/ Ref -3.50 dB C



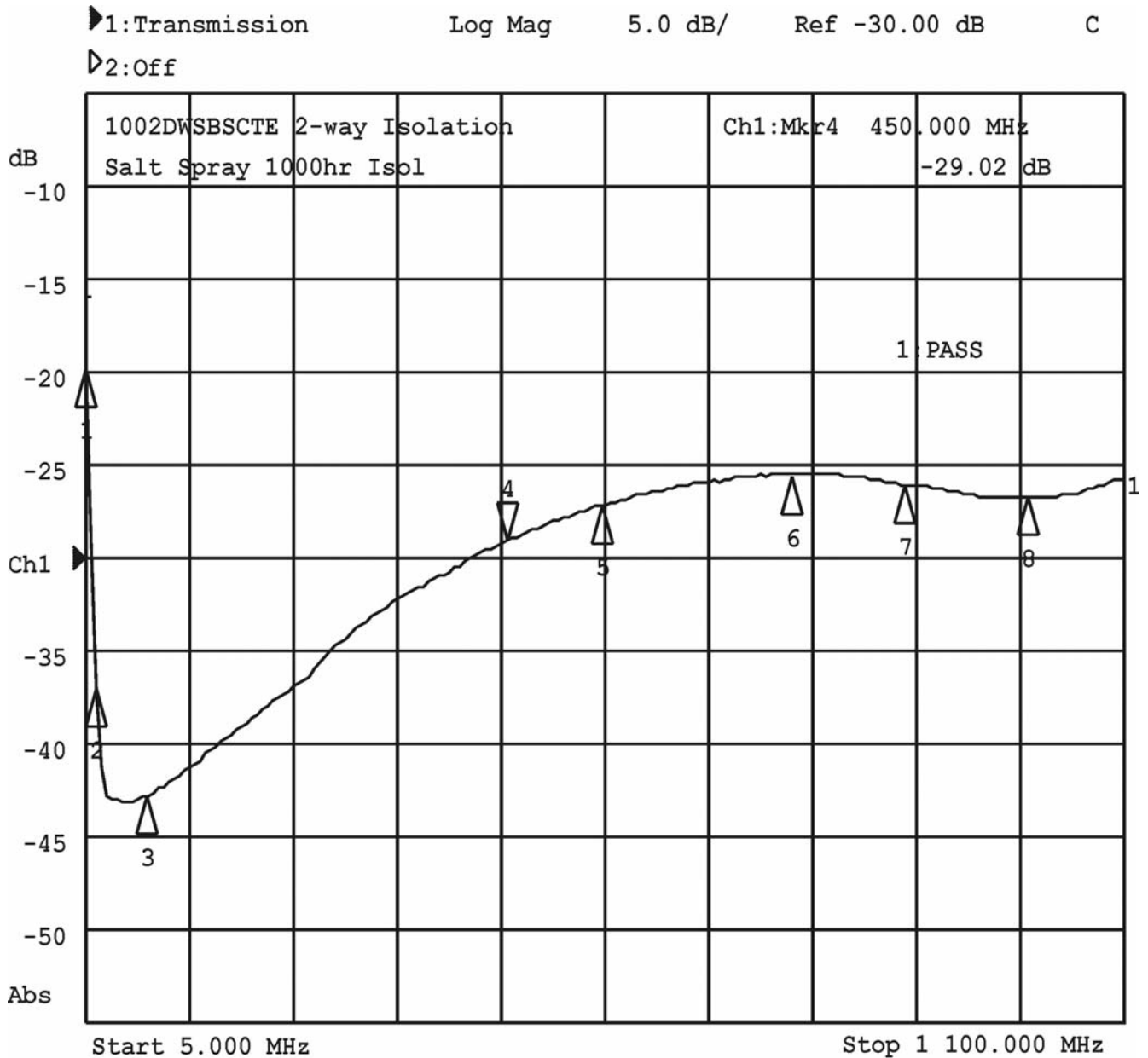
►2:Reflection Log Mag 5.0 dB/ Ref -30.00 dB C



Marker	Freq (MHz)	Ch 1 (dB)	Ch 2 (dB)
1	5.000	-3.55	-26.46
2	16.000	-3.44	-29.07
3	70.000	-3.32	-30.53
4	450.000	-3.49	-25.47
5	550.000	-3.60	-25.75
6	750.000	-3.69	-24.17
7	870.000	-3.81	-22.60
8	1000.000	-4.07	-19.61

# RMS Communications Inc.,

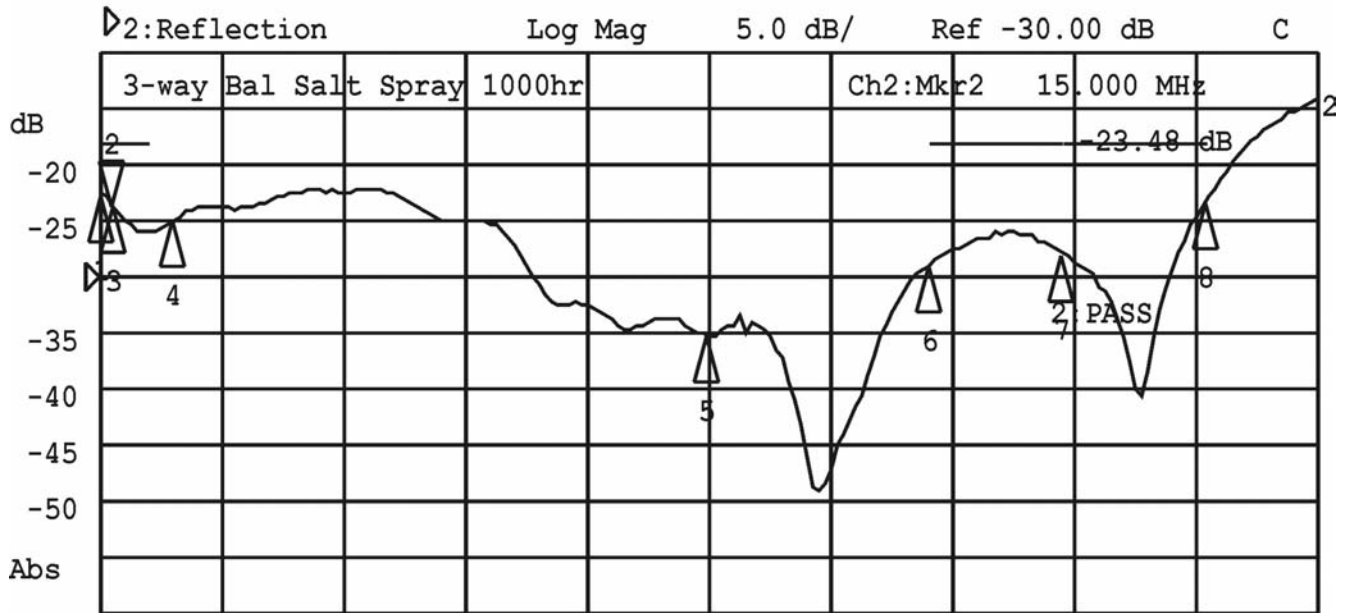
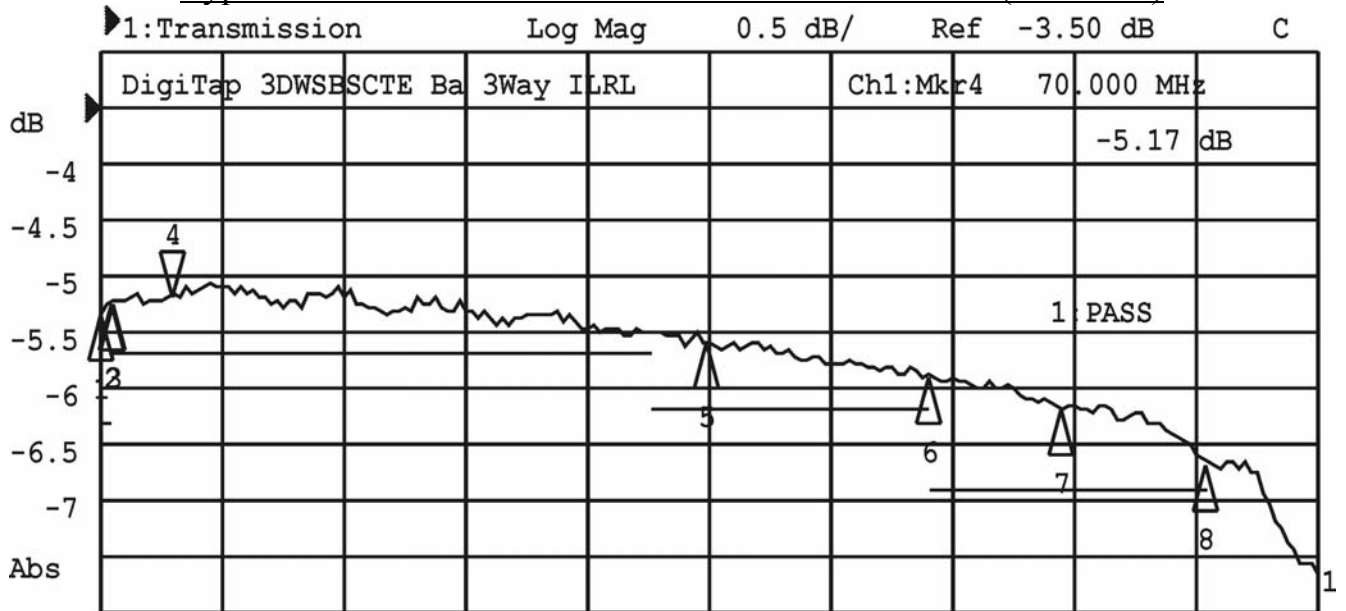
## Typical Isolation After Salt Spray Test 1002DWSBSCTE



Marker	Freq (MHz)	Ch 1 (dB)	Ch 2 (dB)
1	5.000	-19.70	
2	16.000	-37.00	
3	70.000	-42.78	
4	450.000	-29.02	
5	550.000	-27.15	
6	750.000	-25.51	
7	870.000	-26.04	
8	1000.000	-26.66	

# RMS Communications Inc.,

## Typical Insertion Loss/Return Loss 1003DWSBSCTE (Balanced)

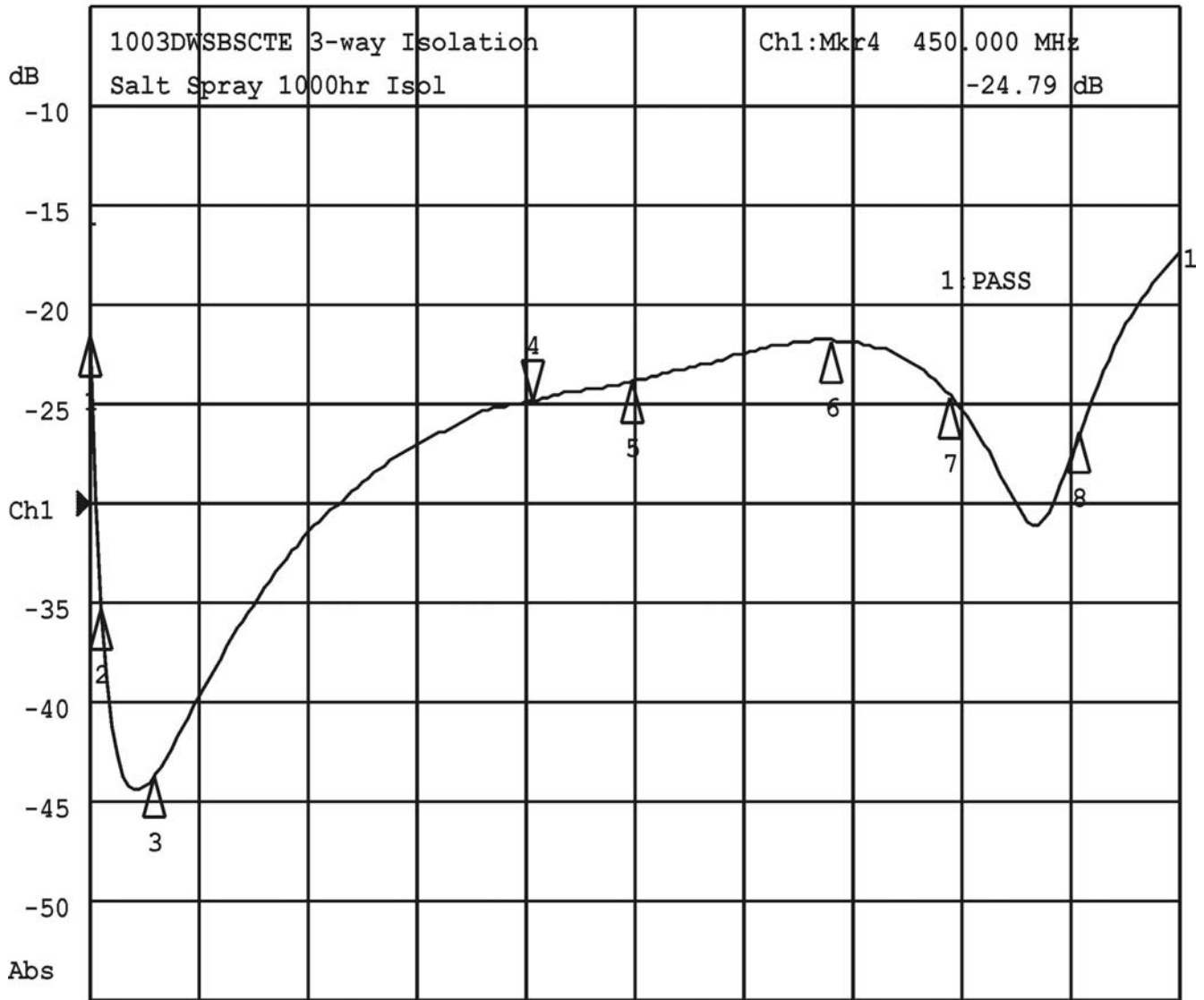


Marker	Freq (MHz)	Ch 1 (dB)	Ch 2 (dB)
1	5.000	-5.34	-22.63
2	15.000	-5.23	-23.48
3	16.000	-5.22	-23.62
4	70.000	-5.17	-24.96
5	550.000	-5.59	-35.23
6	750.000	-5.88	-28.94
7	870.000	-6.17	-27.94
8	1000.000	-6.67	-23.15

# RMS Communications Inc.,

## Typical Isolation After Salt Spray Test 1003DWSBSCTE (Balanced)

▶1:Transmission      Log Mag      5.0 dB/      Ref -30.00 dB      C  
 ▶2:Off



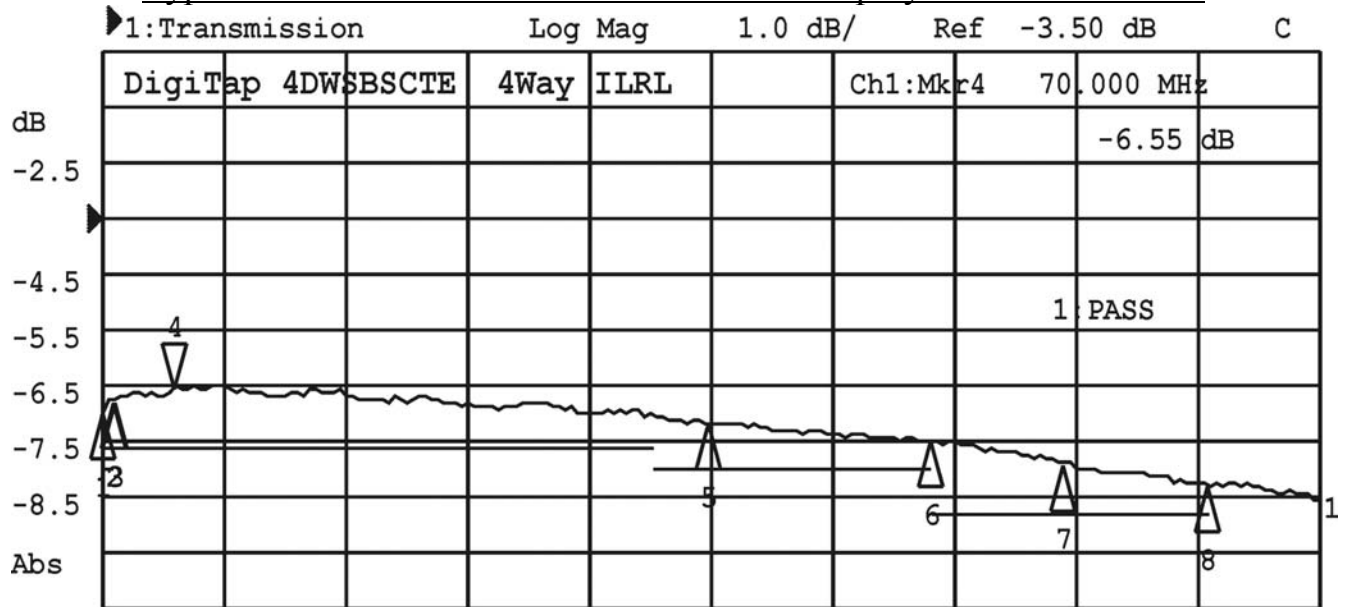
Start 5.000 MHz

Stop 1 100.000 MHz

Marker	Freq (MHz)	Ch 1 (dB)	Ch 2 (dB)
1	5.000	-21.46	
2	16.000	-35.31	
3	70.000	-43.64	
4	450.000	-24.79	
5	550.000	-23.84	
6	750.000	-21.79	
7	870.000	-24.60	
8	1000.000	-26.39	

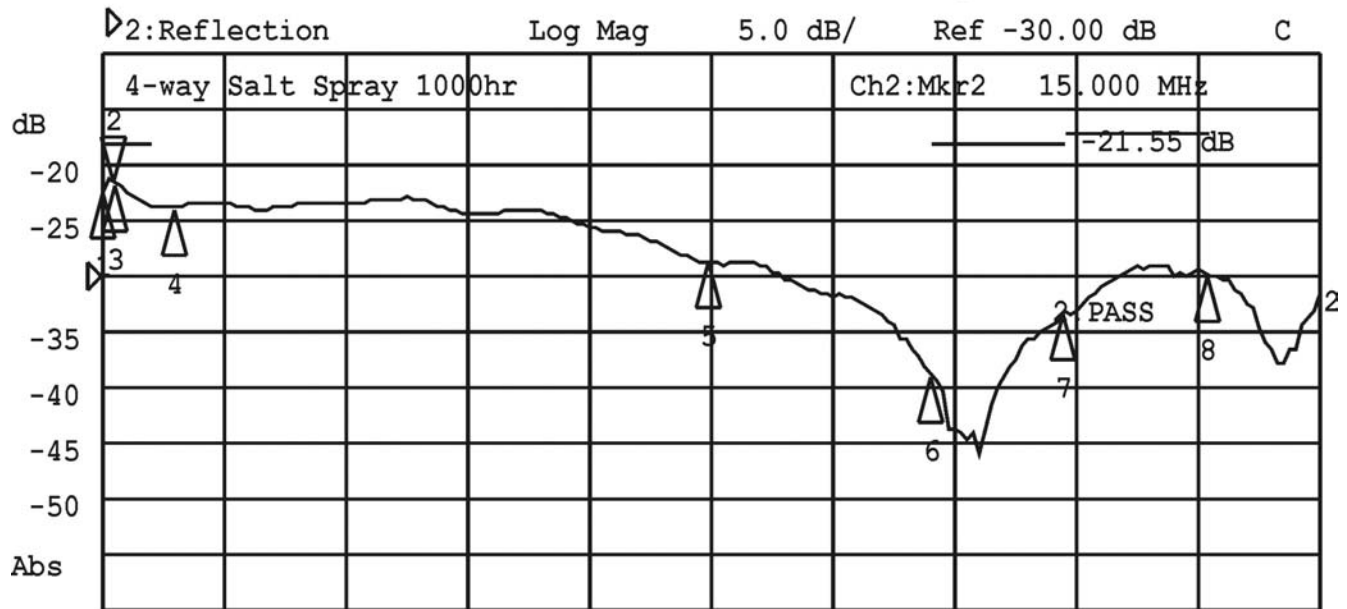
# RMS Communications Inc.,

## Typical Insertion Loss/Return Loss After Salt Spray 1004DWSBSCTE



Start 5.000 MHz

Stop 1 100.000 MHz



Start 5.000 MHz

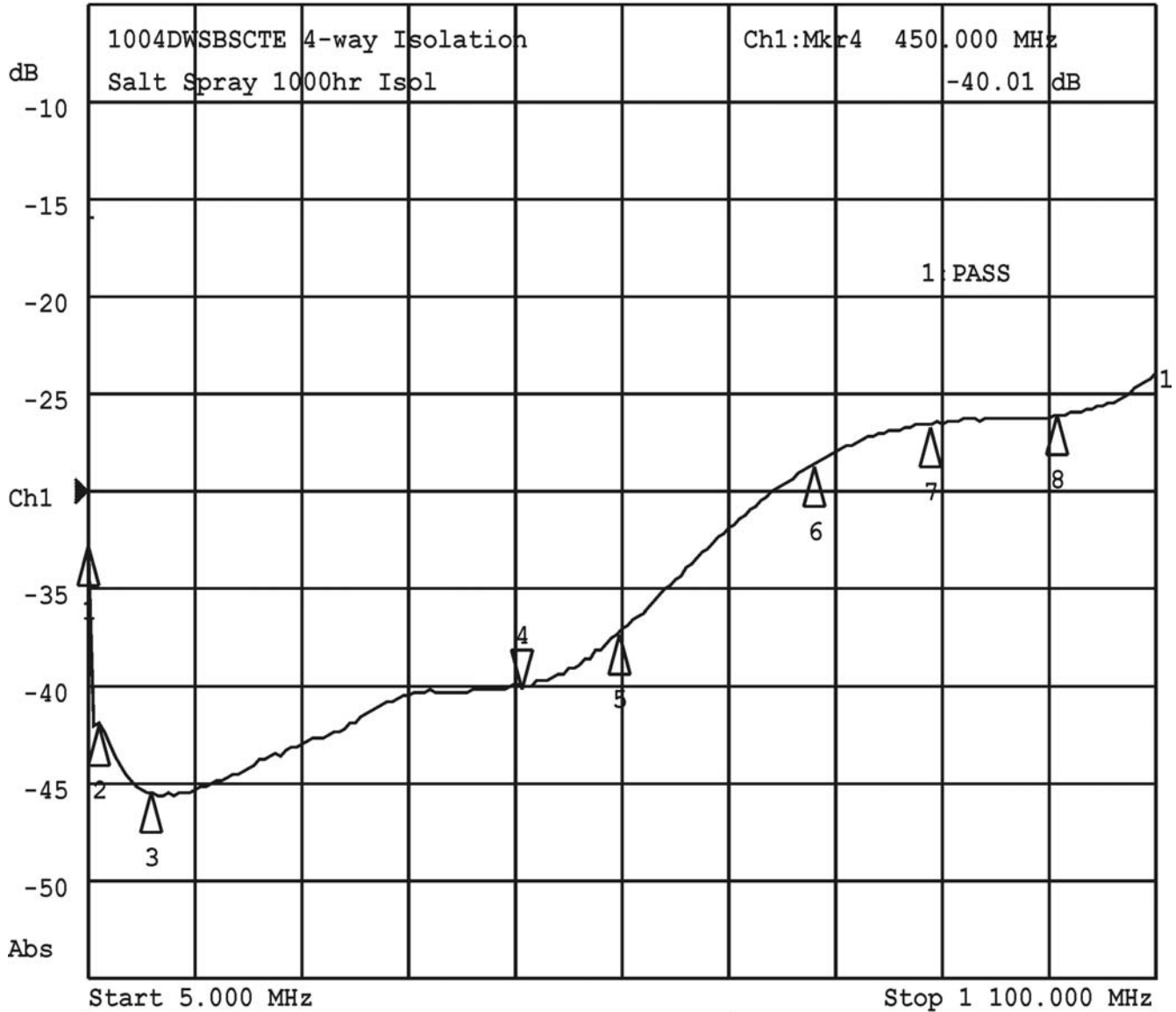
Stop 1 100.000 MHz

Marker	Freq (MHz)	Ch 1 (dB)	Ch 2 (dB)
1	5.000	-6.98	-22.35
2	15.000	-6.76	-21.55
3	16.000	-6.76	-21.62
4	70.000	-6.55	-23.76
5	550.000	-7.16	-28.69
6	750.000	-7.49	-38.85
7	870.000	-7.89	-33.25
8	1000.000	-8.28	-29.87

# RMS Communications Inc.,

## Typical Isolation After Salt Spray 1004DWSBSCTE

▶1:Transmission      Log Mag      5.0 dB/      Ref -30.00 dB      C  
 ▶2:Off

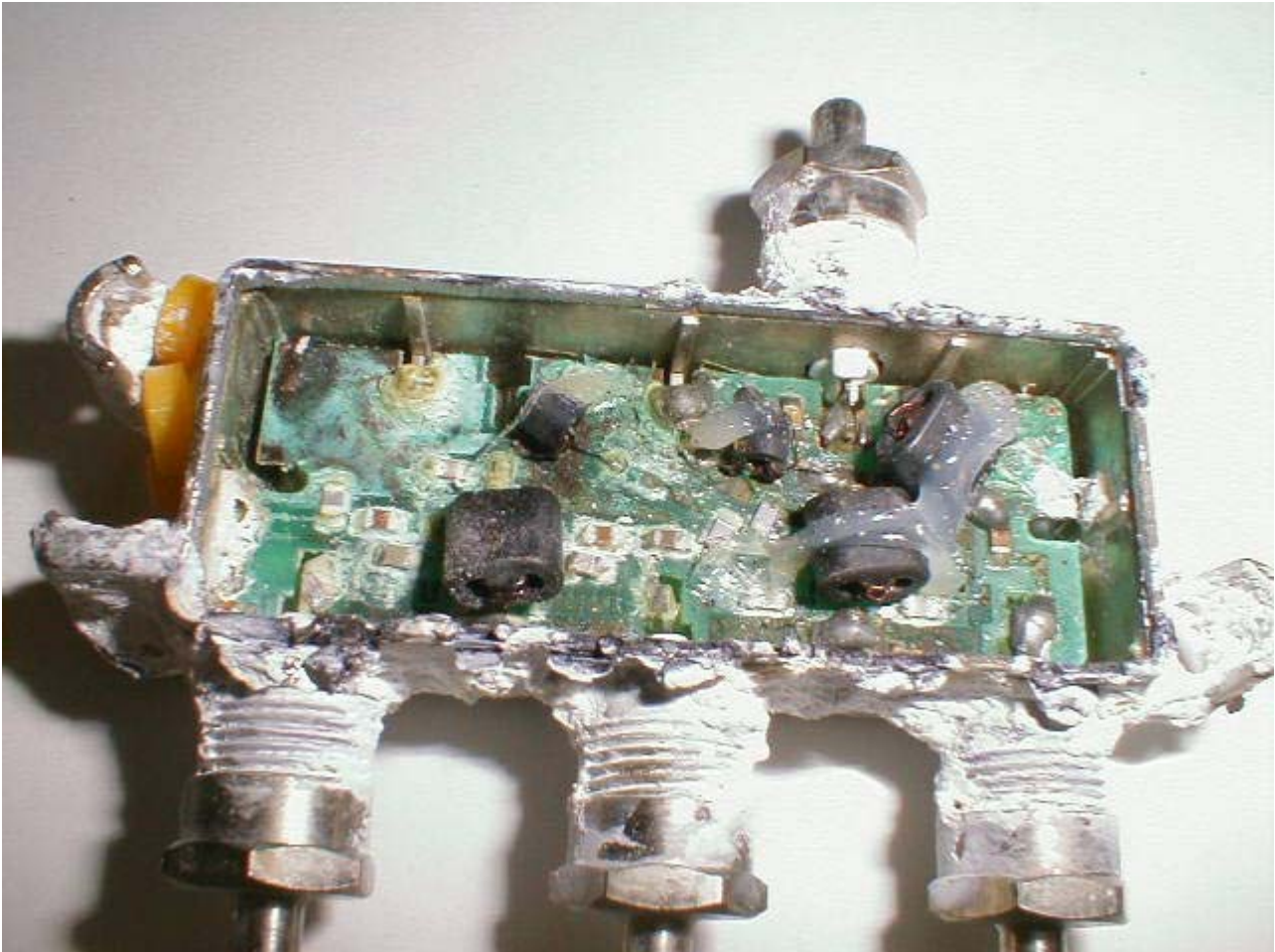


Marker	Freq (MHz)	Ch 1 (dB)	Ch 2 (dB)
1	5.000	-32.78	
2	16.000	-41.91	
3	70.000	-45.44	
4	450.000	-40.01	
5	550.000	-37.24	
6	750.000	-28.60	
7	870.000	-26.57	
8	1000.000	-26.09	

# RMS Communications Inc.,

## 3-Way With Ports That Have Not Been Sealed.

- *This unit did not have any silicone at the F ports to prevent moisture from getting into it.*
- *Note that the salt around the surface mounted components.*
- *Also at the solder points there is a large build up of salt.*
- *The black areas may be due to the heat.*
- *When tested this unit was totally out of spec!*



# RMS Communications Inc.,

## 3-Way With Ports That Have Been Sealed.

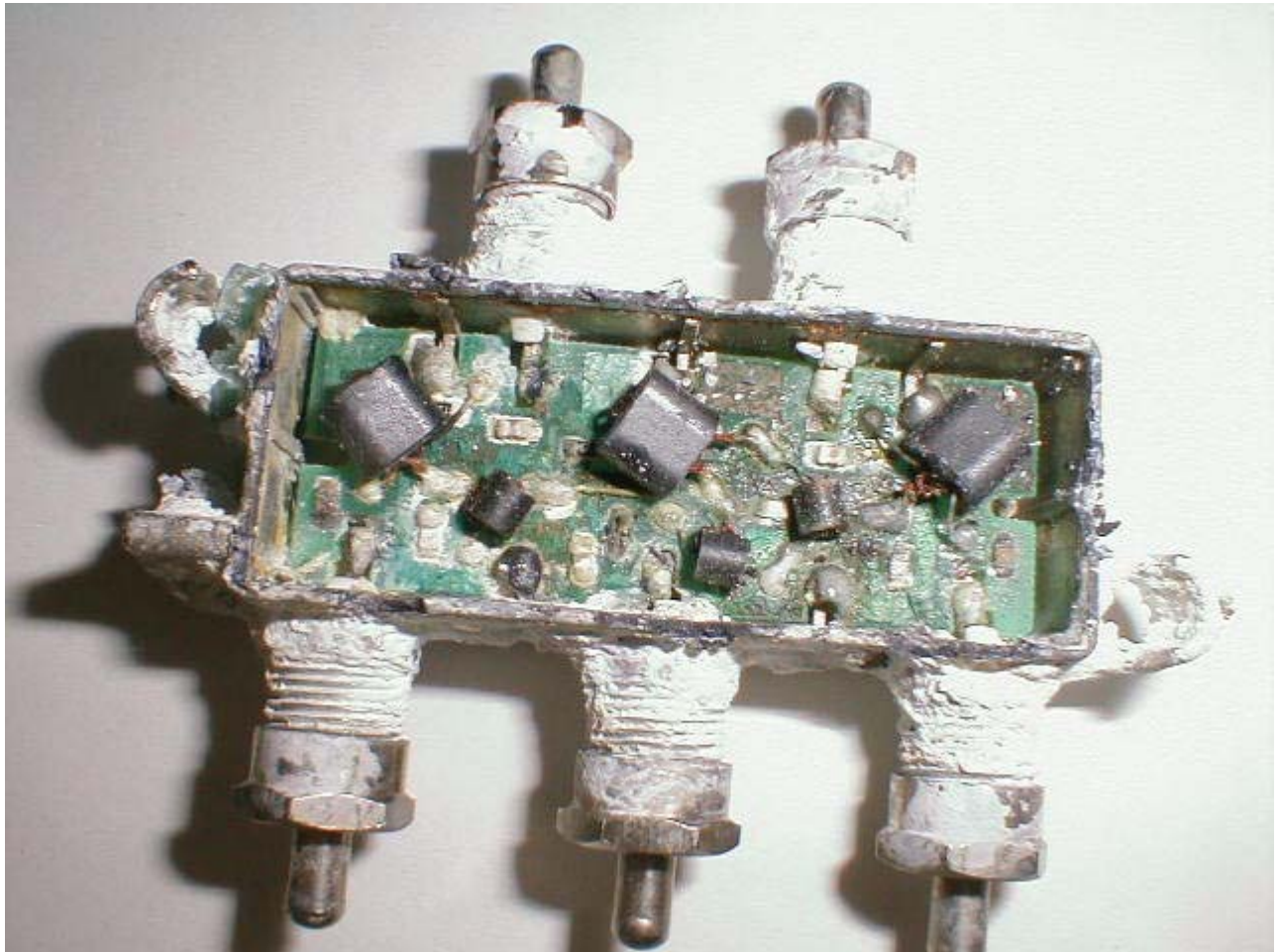
- *This unit has silicone (red) on all ports and you will note that there is no salt anywhere in the housing.*
- *The green is the solder mask that is on all of our boards and the brown area is the copper trace that was scraped away to see if there was any discoloration.*
- *The inside of the housing is still bright and you can even see the reflection of the components in it!*
- *When tested it was found still to meet spec!*



# RMS Communications Inc.,

## 4-Way With Ports That Have Not Been Sealed.

- *This unit did not have any silicone at the F ports to prevent moisture from getting into it.*
- *Note that the salt around the surface mounted components.*
- *Also at the solder points there is a large build up of salt.*
- *The black areas may be due to the heat.*
- *When tested this unit was totally out of spec!*



# RMS Communications Inc.,

## 4-Way With Ports That Have Been Sealed.

- *This unit has silicone (red) on all ports and you will note that there is no salt anywhere in the housing.*
- *The green is the solder mask that is on all of our boards and the brown area is the copper trace that was scraped away to see if it had any discoloration..*
- *The inside of the housing is still bright and you can even see the reflection of the components in it!*
- *When tested it was found still to meet spec!*

