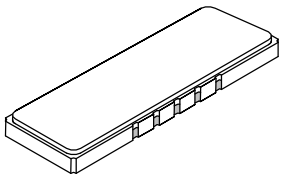
# SF1194A

# 167 MHz SAW Filter

- ***Low Insertion Loss***
- ***Excellent Size-to-Performance Ratio***
- ***Hermetic SMP-75 Surface-Mount Case***
- ***Single-Ended or Differential Input and Output***
- ***Complies with Directive 2002/95/EC (RoHS)***



**SMP-75**

### Absolute Maximum Ratings

| Rating | Value | Units |
|---|---|---|
| Maximum Incident Power in Passband | +10 | dBm |
| Max. DC voltage between any 2 terminals | 30 | VDC |
| Temperature Range | -5 to +85 | °C |
| Suitable for lead-free soldering - Max. Soldering Profile | 260°C for 30 s | |

### Electrical Characteristics

| Characteristic | | Sym | Notes | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|---|
| Center Frequency | | $f_O$ | 1 | | 167 | | MHz |
| Maximum Insertion Loss 167 ± .075 MHz | | IL | | | | 7.0 | dB |
| | 2.0 dB Bandedges | | | | | ± .200 | MHz |
| | 17 dB Bandedges | | | | | ± .400 | MHz |
| | 36 dB Bandedges | | | | | ± .600 | MHz |
| | 41 dB Bandedges | | | | | ± .800 | MHz |
| Ultimate Rejection | 30 to 147 MHz | | | 70 | | | dB |
| | 147 to 165.4 MHz | | | 41 | | | dB |
| | 168.6 to 187 MHz | | | 41 | | | dB |
| | 187 to 276 MHz | | | 70 | | | dB |
| | 276 to 278 MHz | | | 50 | | | dB |
| | 278 to 2000 MHz | | | 70 | | | dB |
| Amplitude Variation | 167 ± 0.75 MHz | | | | | 1.5 | dB p-p |
| Amplitude Ripple | 167 ± 0.75 MHz | | | | | 1 | dB p-p |
| Absolute Group Delay | 167 ± 0.75 MHz | | | | 2.3 | 2.6 | µsec |
| Group Delay Variation | 167 ± 0.75 MHz | | | | | 400 | nsec |
| Maximum RF Input Power | | | | | | 22 | dBm |
| Input IMR | For two -20dBm input signals<br>At 167 + .800 MHz<br>And 167 + 1.600 MHz<br>Or at 167 -.800 MHz<br>And 167 -1.600 MHz | | | 100 | | | dB |
| Input Return Loss | 167 ± .075 MHz | | | 15 | | | dB |
| Output Return Loss | 167 ± .075 MHz | | | 10 | | | dB |
| Source/Load Impedance | | Single-Ended or Differential Input / Output | | | | | Ohm |
| Matching Components | | Fixed value, external Q 40-50 | | | | | |
| Case Style | | | 4 | SMP-75 19 x 6.5 mm Nominal Footprint | | | |
| Lid Symbolization (YY = year, WW = week) | | | | RFM SF1194A YYWW | | | |

**Notes:**
1. Unless noted otherwise, all specifications apply over the operating temperature range with filter soldered to the specified demonstration board with impedance matching to 50 Ω and measured with 50 Ω network analyzer.
2. Unless noted otherwise, all frequency specifications are referenced to the nominal center frequency, fc.
3. The design, manufacturing process, and specifications of this filter are subject to change.
4. Tape and Reel Standard ANSI / EIA 481.
5. US and international patents may apply.
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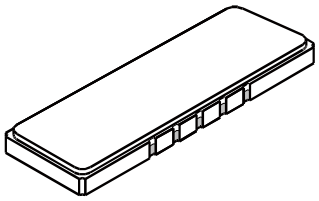
7. ©Copyright 1999, RF Monolithics Inc.
8. Electrostatic Sensitive Device. Observe precautions for handling.

# SMP-75 Case

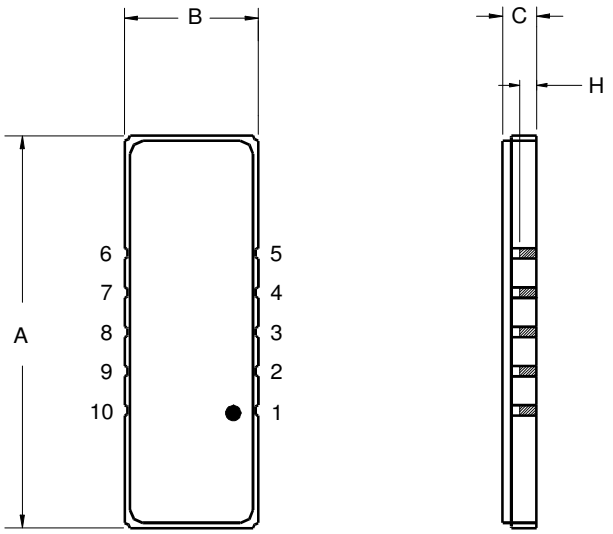
## 10-Terminal Ceramic Surface-Mount Case
## 19 x 6.5 mm Nominal Footprint



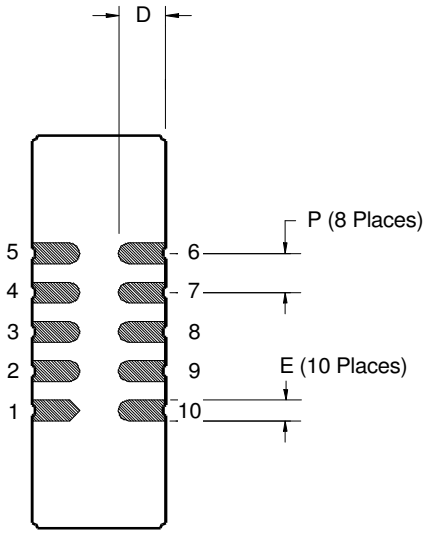
| Case Dimensions | | | | | | |
|---|---|---|---|---|---|---|
| Dimension | mm | | | Inches | | |
| | Min | Nom | Max | Min | Nom | Max |
| A | 18.80 | 19.00 | 19.30 | 0.740 | 0.748 | 0.760 |
| B | 6.30 | 6.50 | 6.80 | 0.248 | 0.256 | 0.268 |
| C | | 1.75 | 2.00 | | 0.069 | 0.079 |
| D | | 2.29 | | | 0.090 | |
| E | | 1.02 | | | 0.040 | |
| H | | 1.0 | | | 0.039 | |
| P | | 1.905 | | | 0.075 | |

| Materials | |
|---|---|
| Solder Pad Termination | Au plating 30 - 60 µinches (76.2-152 µm) over 80-200 µinches (203-508 µm) Ni. |
| Lid | Fe-Ni-Co Alloy Electroless Nickel Plate (8-11% Phosphorus) 100-200 µinches Thick |
| Body | $Al_2O_3$ Ceramic |
| Pb Free | |

| Electrical Connections | | |
|---|---|---|
| Connection | | Terminals |
| Port 1 | Input or Return | 10 |
| | Return or Input | 1 |
| Port 2 | Output or Return | 5 |
| | Return or Output | 6 |
| Ground | | All others |
| **Single Ended Operation** | | **Return is ground** |
| **Differential Operation** | | **Return is hot** |

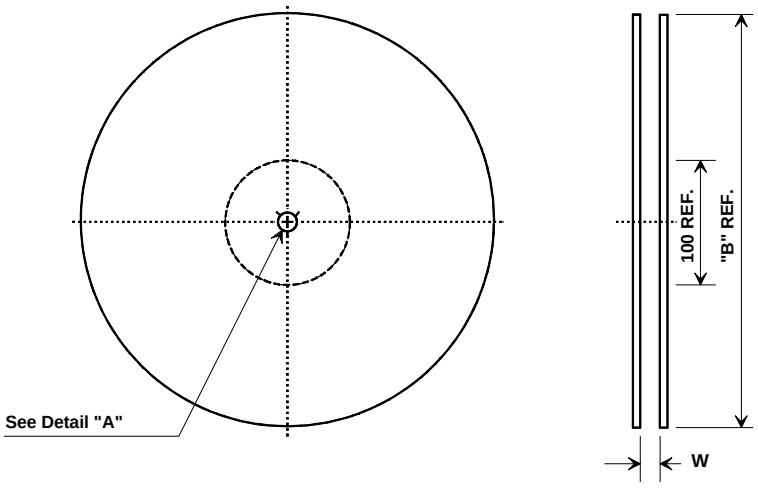



**TOP VIEW**




**BOTTOM VIEW**

**Tape and Reel Specifications**

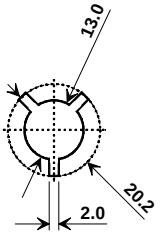



## Tape and Reel Packaging with the following conditions:

Tape Width: 32 mm

Tape Pitch (part to part): 12 mm

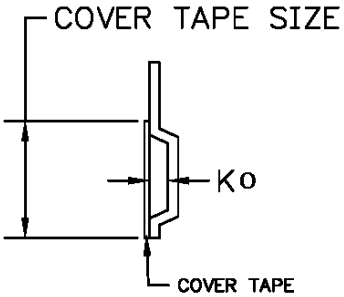
Component Orientation: Parts shall be oriented with the narrow side closest to the tape's round sprocket holes on the tape's trailing edge.

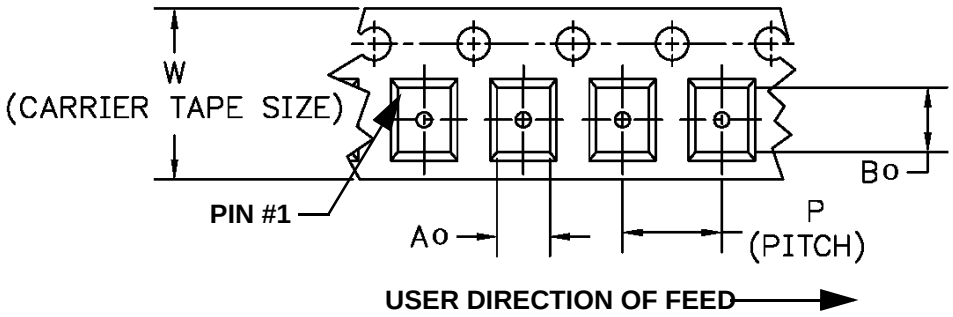



| "B " Nominal Size | | Quantity Per Reel |
|---|---|---|
| Inches | millimeters | |
| 7 | 178 | 500 |
| 13 | 330 | 1000 |

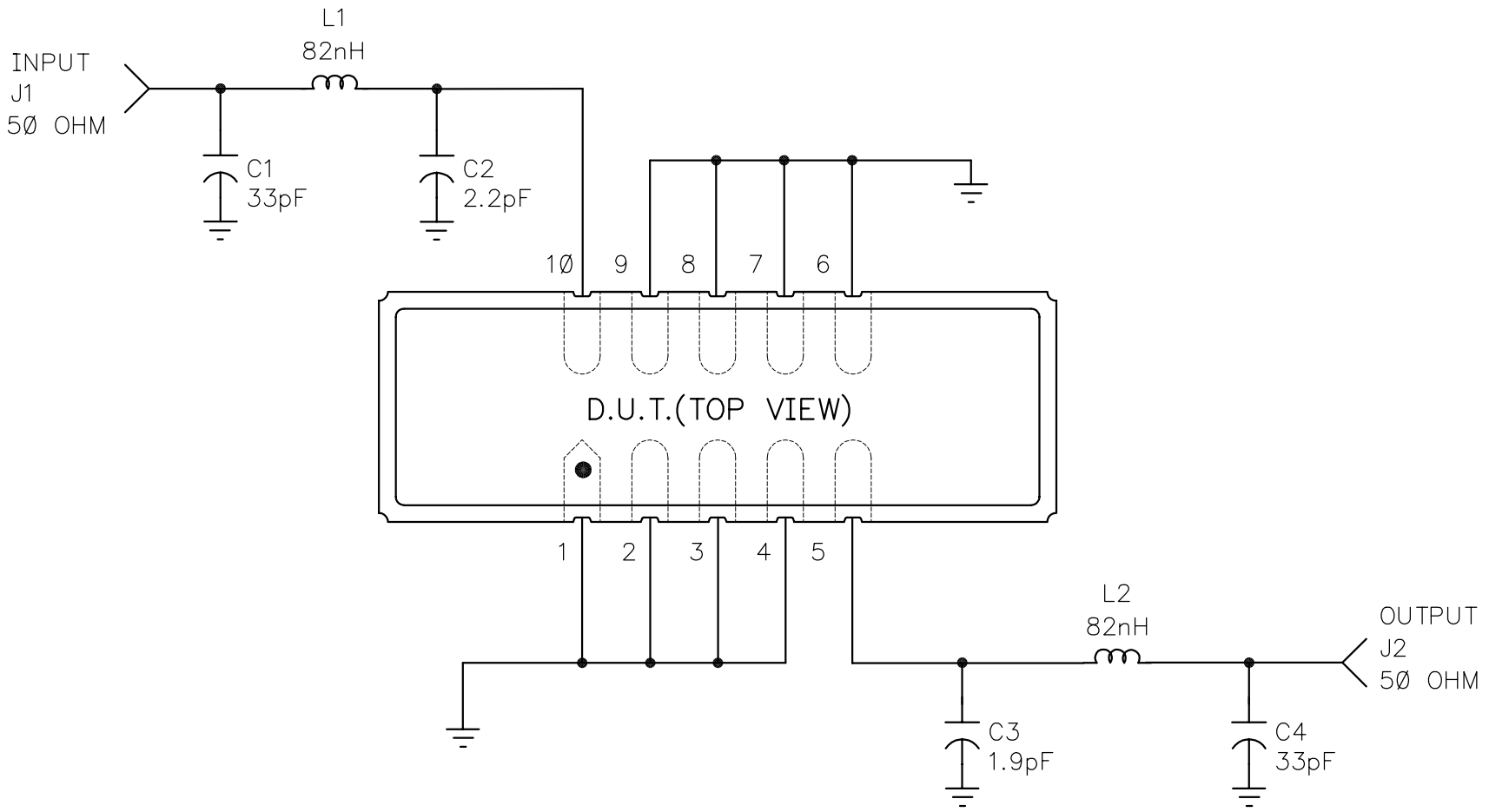
**COMPONENT ORIENTATION and DIMENSIONS**

| Carrier Tape Dimensions | | Cover Tape |
|---|---|---|
| **Ao** | .276 ± .004 (7.01) | 25.5 mm |
| **Bo** | .768 ± .004 (19.51) | |
| **Ko** | .088 ± .004 (2.24) | |
| **Pitch** | 12mm | |
| **W** | 32mm | |



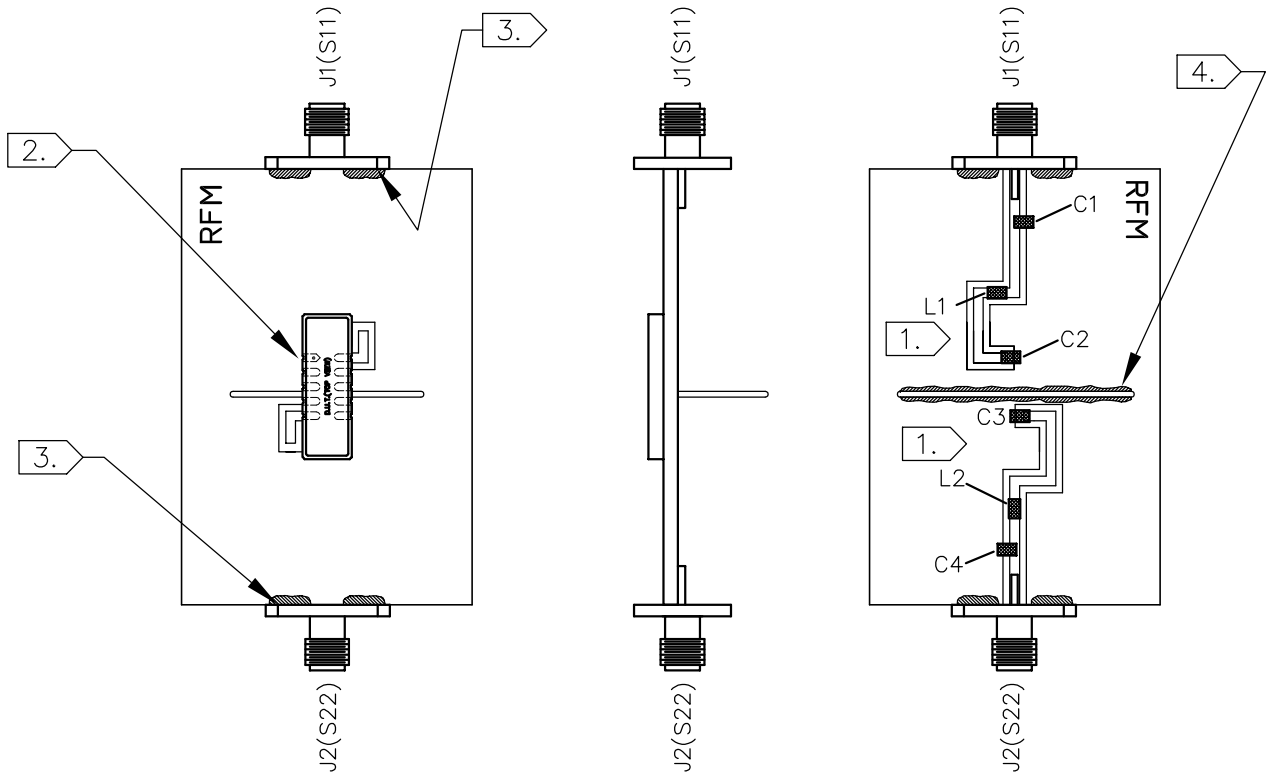
| REV | ECN NO. | DESCRIPTION | DATE |
|---|---|---|---|
| A | 11Ø81 | RELEASE | Ø8novØ2 |
| B | 11383 | CHANGED VALUES | Ø2mayØ3 |




| | | | | | | |
|---|---|---|---|---|---|---|
| DRAWN BY/DATE: J.F.Christopherson Ø8novØ2 | | TITLE: ASSEMBLY DIAGRAM, SF1194A(DEMO) | | | | |
| **RF Monolithics, Inc.** DALLAS, TEXAS 75244 |  | SIZE **A** | CODE IDENT **2U874** | DWG. NO. SF1194A-ØØØ | REV B | SHEET 1/2 |

NOTES:

1. NOTE PROPER ORIENTATION OF INDUCTOR PAIRS L1 & L2. THEY ARE TO BE POSITIONED 90° TO EACH OTHER.
2. SOLDER SURFACE MOUNT PACKAGE TO TEST SIDE OF PCB. SOLDER 10 PLACES AS SHOWN. NOTE PIN 1 INDICATOR.
3. SOLDER CONNECTOR FLANGES ON BOTH SIDES OF PCB.
4. SOLDER SHIELD AS SHOWN.

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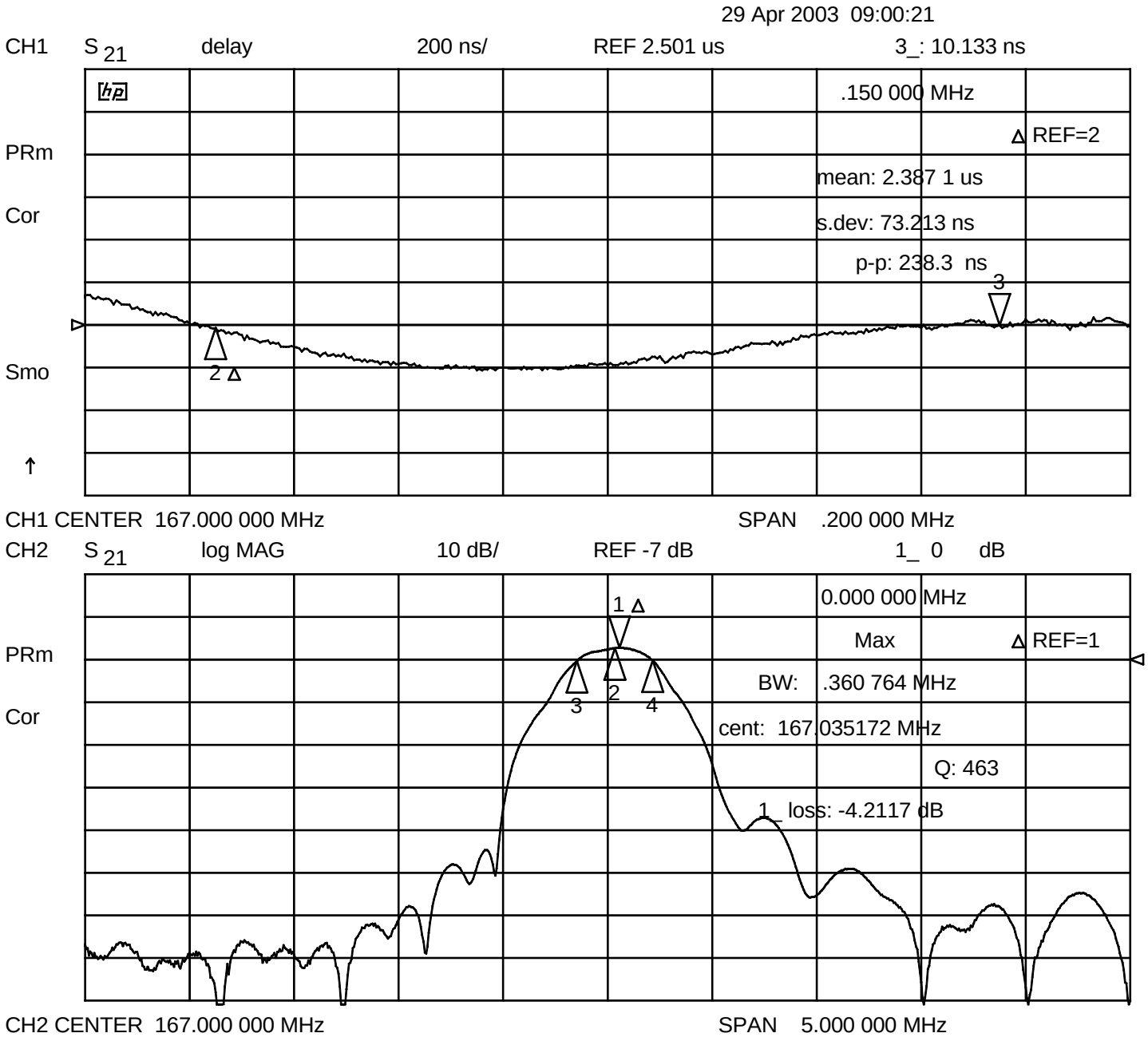
|---|---|---|---|---|---|---|




| | | | | | |
|---|---|---|---|---|---|
| RFMI® | | SIZE A | FSCM NO. 2U874 | DWG NO. SF1194A-013 | REV B |
| | | SCALE NONE | ECN NO. 11383 | SHEET 2 | OF 6 |

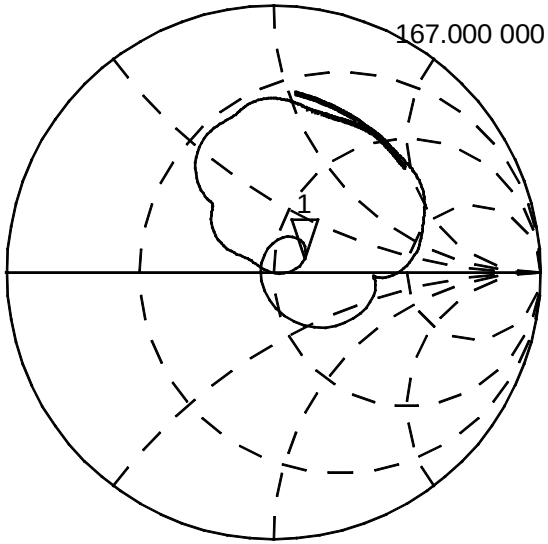
29 Apr 2003 09:07:21

CH1 $S_{11}$ 1 U FS 1_ 62.74 Ω 6.4785 Ω 6.1742 nH

167.000 000 MHz

PRm

Cor

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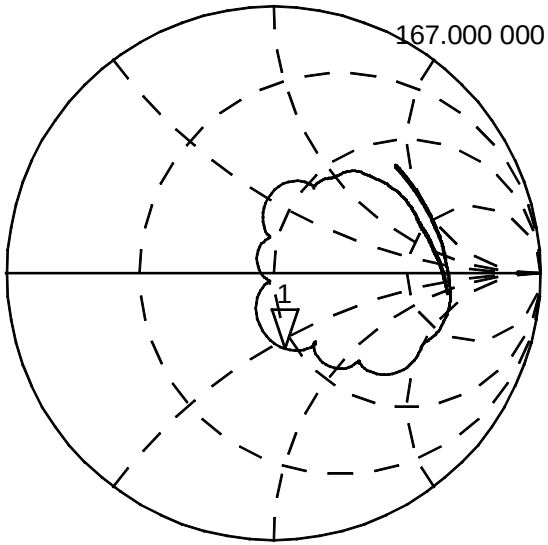
CH2 $S_{22}$ 1 U FS 1_: 46.176 Ω -28.381 Ω 33.58 pF

167.000 000 MHz

PRm

Cor

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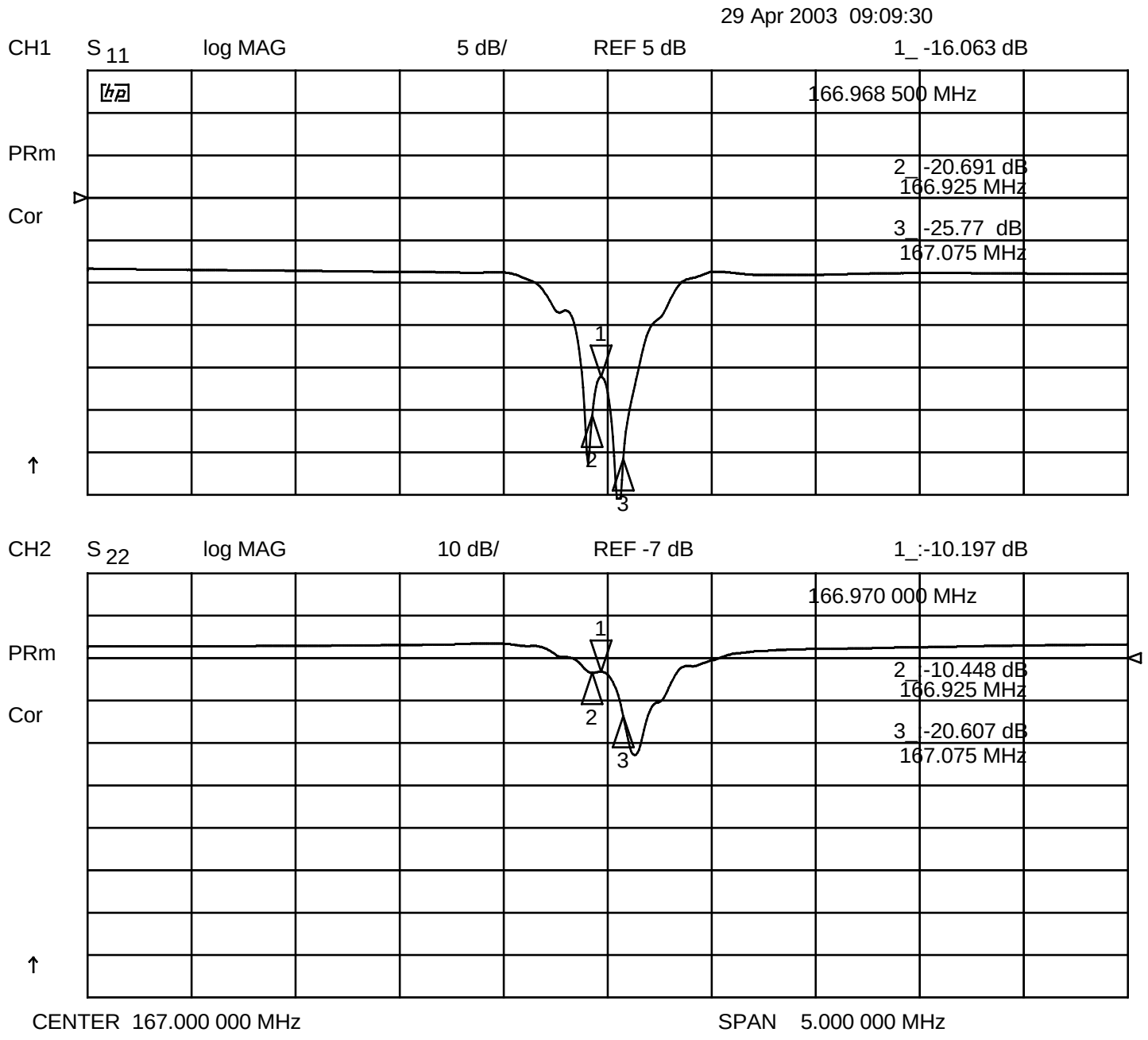
CENTER 167.000 000 MHz SPAN 5.000 000 MHz

| | | | | |
|---|---|---|---|---|
| RFIM® | | SIZE A | FSCM NO. 2U874 | DWG NO. SF1194A-013 | REV B |
| | | SCALE NONE | ECN NO. 11383 | SHEET 3 OF 6 | |

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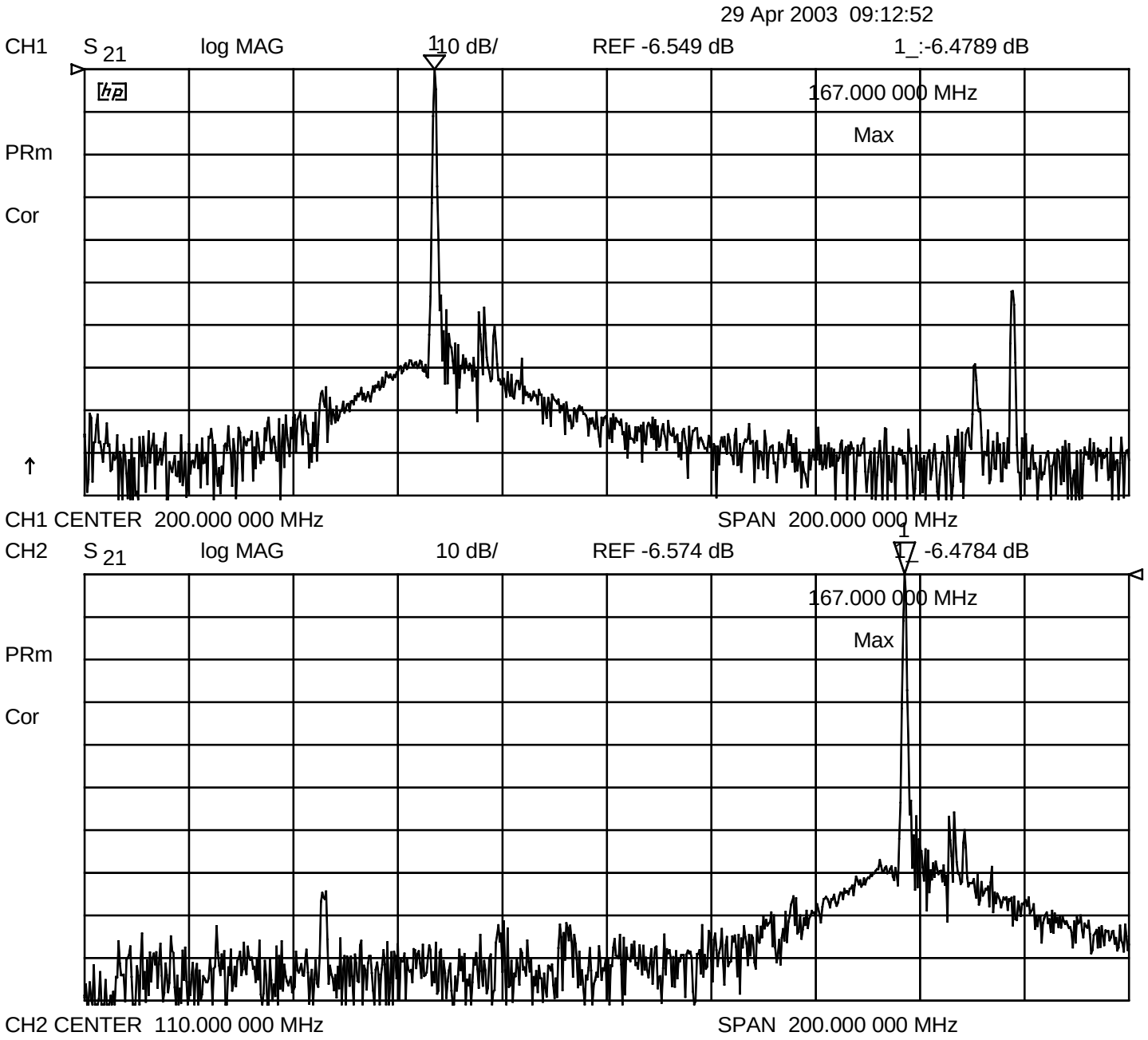
| | | SCALE NONE | ECN NO. 11383 | SHEET 4 | OF 6 |

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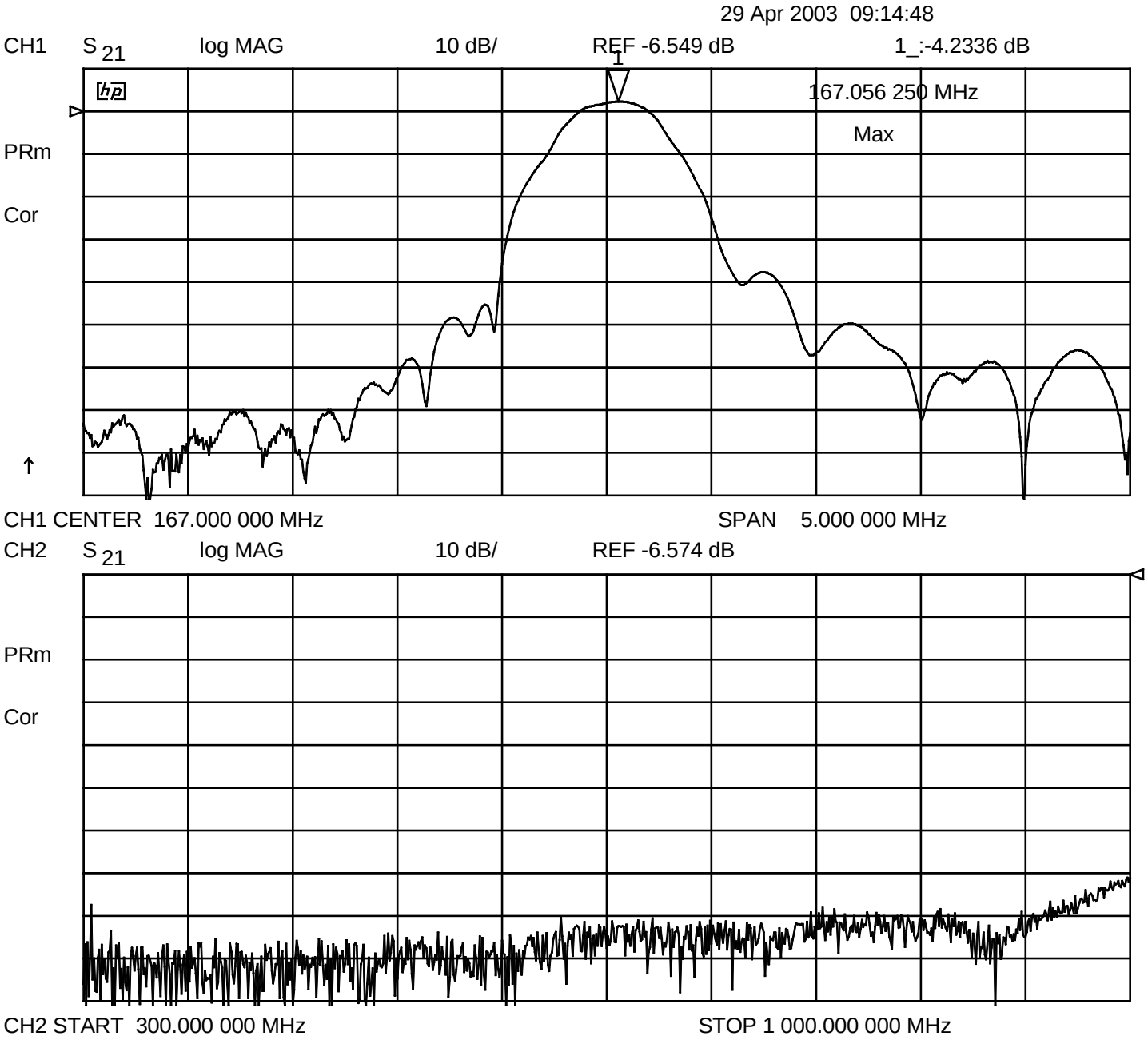


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| RFMI® | | SIZE A | FSCM NO. 2U874 | DWG NO. SF1194A-013 | REV B |
| | | SCALE NONE | ECN NO. 11383 | SHEET 6 OF 6 | |