RF Characterization Report

RF174 Series Cable Assemblies

- RF174-01SP1-01SP1-0306
- RF174-01RP1-01RP1-0308
- RF174-01BJ1-01BJ1-0306
- RF174-01BR1-01BR1-0306
- RF174-02SJ1-02SJ1-0307
- RF174-02RP1-02RP1-0307
- RF174-02SP1-02SP1-0307
- RF174-03SP1-03SP1-0310
- RF174-07RP1-07RP1-0310
- RF174-07BJ1-07BJ1-0303
- RF174-01SB1-01SB1-0306
- RF174-01SR1-01SR1-0306

Description:
RF Cable Assembly, RG174 Cable
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RF Characterization Report

Series: RF174
Description: RF Cable Assembly, RG174 Cable

Test Setup Information

Scope:

To perform characterization tests, Insertion Loss, Return Loss and Voltage Standing Wave Ratio.

Product Description:

The table below presents a description of the different RF174 series cable assemblies that were tested

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Length</th>
<th>Termination – End 1</th>
<th>Termination – End 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF174-01SP1-01SP1-0306</td>
<td>306mm</td>
<td>SMA, Straight Plug</td>
<td>SMA, Straight Plug</td>
</tr>
<tr>
<td>RF174-01RP1-01RP1-0308</td>
<td>308MM</td>
<td>SMA, RA Plug</td>
<td>SMA, RA Plug</td>
</tr>
<tr>
<td>RF174-01BJ1-01BJ1-0306</td>
<td>306mm</td>
<td>SMA, Straight Jack</td>
<td>SMA, Straight Jack</td>
</tr>
<tr>
<td>RF174-01BR1-01BR1-0306</td>
<td>306mm</td>
<td>SMA, Straight Jack, Reverse Polarity</td>
<td>SMA, Straight Jack, Reverse Polarity</td>
</tr>
<tr>
<td>RF174-02SJ1-02SJ1-0307</td>
<td>307 mm</td>
<td>MCX, Straight, Jack</td>
<td>MCX, Straight, Jack</td>
</tr>
<tr>
<td>RF174-02RP1-02RP1-0307</td>
<td>307 mm</td>
<td>MCX, Right Angle, Plug</td>
<td>MCX, Right Angle, Plug</td>
</tr>
<tr>
<td>RF174-02SP1-02SP1-0307</td>
<td>307 mm</td>
<td>MCX, Straight, Plug</td>
<td>MCX, Straight, Plug</td>
</tr>
<tr>
<td>RF174-03SP1-03SP1-0310</td>
<td>310 mm</td>
<td>MMCX, Straight, Plug</td>
<td>MMCX, Straight, Plug</td>
</tr>
<tr>
<td>RF174-07RP1-07RP1-0310</td>
<td>310 mm</td>
<td>SMB5, Right Angle, Plug</td>
<td>SMB5, Right Angle, Plug</td>
</tr>
<tr>
<td>RF174-07BJ1-07BJ1-0303</td>
<td>303 mm</td>
<td>SMB5, Straight, Jack</td>
<td>SMB5, Straight, Jack</td>
</tr>
<tr>
<td>RF174-01SB1-01SB1-0306</td>
<td>306mm</td>
<td>SMA, Straight Jack, Sealed</td>
<td>SMA, Straight Jack, Sealed</td>
</tr>
<tr>
<td>RF174-01SR1-01SR1-0306</td>
<td>306mm</td>
<td>SMA, Straight Jack, Sealed, Reverse Polarity</td>
<td>SMA, Straight Jack, Sealed, Reverse Polarity</td>
</tr>
</tbody>
</table>
Test Calibration:

Calibration is performed using Agilent electronic calibration module, PN 85092-60010 to the calibration point below. Any adapters beyond this point are included in the measurements.

(Sample setup of adapters, actual setup not depicted.)

Adapter Use:

Each port uses at least one precision adapter capable of mating to the assembly under test. Any supplementary adapter will contribute additional electrical characteristics to the measured data. Any use of additional adapters is noted.

Definition of Assembly Under Test:

The performance characteristics include the interface with adapters.

Port Designations:

The connector attached to port 1 of the VNA is “End 1” from the part number callout. Insertion Loss is measured using S21 and Return Loss / VSWR is measured using S11.

Legend for Plots:

5 samples were tested. Only the min/max plots are shown for clarity in this report.
Results Summary

RF174-01SP1-01SP1-0306

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In this report, we present the RF characterization results for the RF cable assembly, specifically the RG174 cable, manufactured in Series RF174. The results are summarized in the following graphs:

1. **Insertion Loss**
   - Frequency range: 0.001 to 2.50 GHz
   - Measurement points: 201

2. **Return Loss**
   - Frequency range: 0.001 to 2.50 GHz
   - Measurement points: 201

3. **Voltage Standing Wave Ratio (VSWR)**
   - Frequency range: 0.001 to 2.50 GHz
   - Measurement points: 201

These graphs illustrate the performance metrics of the RF cable assembly across the specified frequency range, essential for understanding its suitability for various applications in the RF domain.
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-01RP1-01RP1-0308
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-01BJ1-01BJ1-0306

Inception Loss

Return Loss

Voltage Standing Wave Ratio
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-02SJ1-02SJ1-0307
RF Characterization Report

Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-02RP1-02RP1-0307

Insertion Loss

Return Loss

Voltage Standing Wave Ratio

SIG@samtec.com
Page:8
Series: RF174  
Description: RF Cable Assembly, RG174 Cable

RF174-03SP1-03SP1-0310  
(Included in measurements is a SMA to MMCX precision adapter on both ports)
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-03RP1-03RP1-XXXX

*Test not performed, please contact RF@samtec.com for more information.*
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-04SP2-04SP2-XXXX

Test not performed, please contact RF@samtec.com for more information.
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-04BJ2-04BJ2-XXXX

Test not performed, please contact RF@samtec.com for more information.
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-05SP2-05SP2-XXXX

Test not performed, please contact RF@samtec.com for more information.
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-05BJ2-05BJ2-XXXX

Test not performed, please contact RF@samtec.com for more information.
Series: RF174  
Description: RF Cable Assembly, RG174 Cable

RF174-06BJ2-06BJ2-XXXX

Test not performed, please contact RF@samtec.com for more information.
RF174-07SP1-07SP1-XXXX

Test not performed, please contact RF@samtec.com for more information.
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-07RP1-07RP1-0310

Inception Loss

Return Loss

Voltage Standing Wave Ratio
RF174-07BJ1-07BJ1-0303

![Insertion Loss Graph](image1)

![Return Loss Graph](image2)

![Voltage Standing Wave Ratio Graph](image3)
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-13GP1-13GP1-XXXX

Test not performed, please contact RF@samtec.com for more information.
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-13GJ1-13GJ1-XXXX

Test not performed, please contact RF@samtec.com for more information.
Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-01SB1-01SB1-0306

- Insertion Loss
- Return Loss
- Voltage Standing Wave Ratio

Frequency (0.005 - 8.50 GHz, 801 points)
RF Characterization Report

Series: RF174
Description: RF Cable Assembly, RG174 Cable

RF174-01SR1-01SR1-0306

**Insertion Loss**

**Return Loss**

**Voltage Standing Wave Ratio**
Series: RF174  
Description: RF Cable Assembly, RG174 Cable

Instrument Setup:

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Analyzer</td>
<td>Agilent E5071C ENA Series (9 KHz - 8.5 GHz Range)</td>
</tr>
<tr>
<td>Mechanical Calibration Kit</td>
<td>85032F</td>
</tr>
<tr>
<td>Electronic Calibration Kit</td>
<td>85092-60010</td>
</tr>
<tr>
<td>Averaging Factor</td>
<td>4</td>
</tr>
<tr>
<td>Smoothing</td>
<td>Off</td>
</tr>
<tr>
<td>IF Bandwidth</td>
<td>300 Hz</td>
</tr>
<tr>
<td>Sweep Start</td>
<td>5 MHz</td>
</tr>
<tr>
<td>Sweep End</td>
<td>8.5 GHz</td>
</tr>
<tr>
<td>Points</td>
<td>601</td>
</tr>
</tbody>
</table>

Test Fixture:

(Typical set-up, actual part not depicted.)