TRF3765 REF_IN Impedance Application Note

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ABSTRACT
The REF_IN pin of the TRF3765 is designed to accept a wide range of clock frequency inputs. As with all high frequency inputs, the REF_IN input impedance is frequency dependent. This document provides measurement data for the REF_IN input impedance.

1 Measurement Conditions
Measurements were gathered using a TRF3765EVM board in default configuration with power applied. An Agilent E5071B was configured to measure S11 parameters. A port extension using an unassembled board set the reference plane at the REF_IN terminal. All measurements are referenced to a 50 Ω characteristic impedance.

2 Measurement Results
Table 1 shows equivalent parallel R and C from impedance measurements at selected frequencies. Graphs showing resistance and capacitance over frequency are included as Figure 1 and Figure 2.

Table 1. Impedance Measurements at Selected Frequencies.

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Shunt Resistance (Ω)</th>
<th>Shunt Capacitance (pF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15k</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>2.5k</td>
<td>2</td>
</tr>
<tr>
<td>31</td>
<td>320</td>
<td>1.7</td>
</tr>
<tr>
<td>61</td>
<td>123</td>
<td>1.7</td>
</tr>
<tr>
<td>156</td>
<td>71</td>
<td>1.7</td>
</tr>
<tr>
<td>350</td>
<td>44</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Figure 1. REF_IN Shunt Resistance vs. Frequency
Figure 2. REF_IN Shunt Capacitance vs. Frequency
Figure 3. Smith Chart Showing Complex Reflection Coefficient
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