DEFECT DETECTION BY WAY OF DUAL TUNED RESONANT SENSOR (M-WAVE)
Quick Overview

- Swiveling Sensor Head
- Touch Screen Controller
- 6 Hour Battery Life
- Auto Calibrate
- USB Charge and Communication
- 7.8” x 3.2” x 5.27”
- 30 oz
What is Dual Resonance

\[ f = \frac{1}{2 \pi \sqrt{L C}} \]

\[ X_L = X_C \]
Resonance in Proximity

M-Wave Tuning

- TC 60, RC 519
- TC 108, RC 519
- TC 237, RC 519
- TC 519, RC 519

Output (Volts)

Frequency (KHz)

RC 519 pfd
Imaging Plastic (Delrin, LDPE, Air)
Magnetic Susceptibility

The **degree of magnetization** of a material in response to an **applied magnetic field** *(dimensionless)*

*Filled holes in Delrin block with the 4 fluids listed*

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Output (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMG 911</td>
<td>0.5</td>
</tr>
<tr>
<td>EFH1</td>
<td>2.64</td>
</tr>
<tr>
<td>EFH3</td>
<td>3.52</td>
</tr>
<tr>
<td>EMG 900</td>
<td>18.6</td>
</tr>
</tbody>
</table>
Detecting FOD in Uncured Laminates

Foreign object defects are detectable in uncured prepreg laminates

Laminate Dimensions:
11 x 5.5 x 0.08 inches

Defect Dimensions:
1x1 in. // 1 in. spacing
• Masking Tape – 0.012 in.
• Backing Paper – 0.005 in.
• Thick, Plastic Bag – 0.0065 in.
• Grid Tape – 0.0085 in.
• Glove – 0.004 in.
Sensor Head

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Signal Processing
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