



## **Proposed C Band FRP Panel Specification**

The polymer laminate shall be composed of fabric reinforcements and thermosetting resins using an infusion mold process. Oven curing is optional.

### **Reinforcement Fabrics**

The structural fabric shall be S Glass, type 6781, from JPS Composite Materials or equivalent. The 6781 uses a 8H satin weave pattern.

The outer veil shall be composed of an E Glass Continuous Filament Mat (CFM) or similar, .008: thick used on the outer surfaces (top and bottom). See proposed laminate schedule below.

### **Infusion Epoxy Resin**

The thermosetting infusion epoxy resin shall be a 2 part type, composed of the resin and hardener (catalyst). The mixing proportions per the manufacturer.

Manufacturer: Composite Envisions or equal

Properties are as follows:

TENSILE STRENGTH, psi	10,300	ASTM D 638
TENSILE MODULUS, psi	294,000	ASTM D 638
ELONGATION @ BREAK, %	3.16	ASTM D 638
COMPRESSIVE STRENGTH, psi	13,700	ASTM D 695
COMPRESSIVE MODULUS, psi	263,000	ASTM D 695
FLEXURAL STRENGTH, psi	17,300	ASTM D 790
FLEXURAL MODULUS, psi	1,063,000	ASTM D 790
HARDNESS, Shore D	88D	ASTM D 2240

### **Laminate Manufacturer**

The laminate manufacturer shall have a minimum of 10 years experience in the production of thermosetting laminates associated with radome and/or telecom concealment structures. The manufacturer shall be Rock West Composites, San Diego, CA or equal.

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## Laminate Schedule

6781_3/16"	6781_1/4"
CFM 0008 - infused	CFM 0008 - infused
6781 S-glass 8H Satin	6781 S-glass 8H Satin
6781 S-glass 8H Satin	6781 S-glass 8H Satin
6781 S-glass 8H Satin	6781 S-glass 8H Satin
6781 S-glass 8H Satin	6781 S-glass 8H Satin
6781 S-glass 8H Satin	6781 S-glass 8H Satin
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6781 S-glass 8H Satin	6781 S-glass 8H Satin
6781 S-glass 8H Satin	6781 S-glass 8H Satin
CFM 0008 - infused	6781 S-glass 8H Satin
	6781 S-glass 8H Satin
	6781 S-glass 8H Satin
	6781 S-glass 8H Satin
	6781 S-glass 8H Satin
	CFM 0008 - infused

## Typical (minimum) Laminate Properties

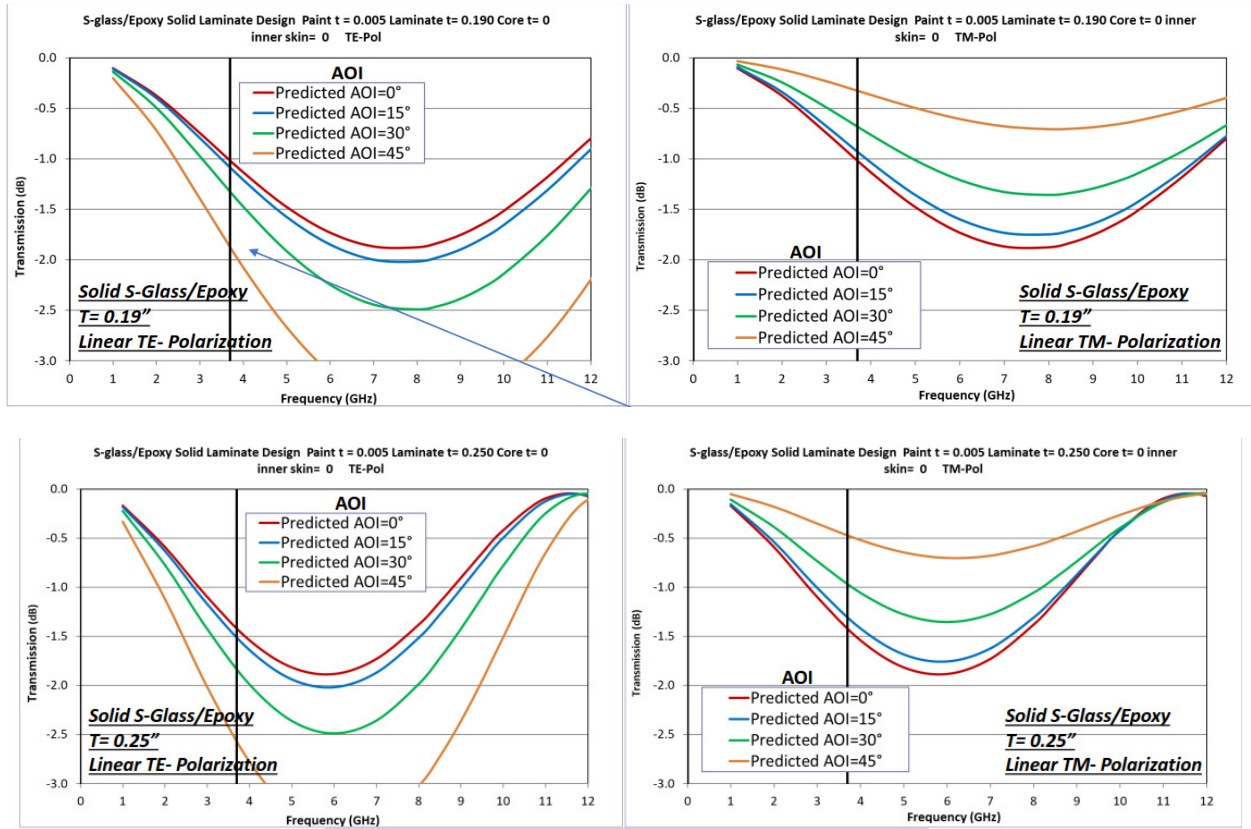
<b>Total Wt.</b>	<b>lb/ft<sup>2</sup></b>	1.61	2.16
<b>Thickness</b>	<b>in</b>	0.190	0.252
<b>0° Modulus, Ex</b>	<b>Msi</b>	2.779	2.894
<b>90° Modulus, Ey</b>	<b>Msi</b>	2.699	2.809
<b>Shear Modulus, Gxy</b>	<b>Msi</b>	0.560	0.571
<b>0° Flex. Stiffness</b>	<b>lb-in<sup>2</sup>/in</b>	1,175.00	3,036.14
<b>90° Flex. Stiffness</b>	<b>lb-in<sup>2</sup>/in</b>	1,148.00	2,959.10
<b>0° Ten. Ult. Stress</b>	<b>ksi</b>	45.554	47.457
<b>90° Ten. Ult. Stress</b>	<b>ksi</b>	44.245	46.057
<b>0° Comp. Ult. Stress</b>	<b>ksi</b>	55.327	57.635
<b>90° Comp. Ult Stress</b>	<b>ksi</b>	53.736	55.934
<b>Shear Ult. Stress</b>	<b>ksi</b>	18.364	18.733

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## Predicted RF Performance for S Band Laminates

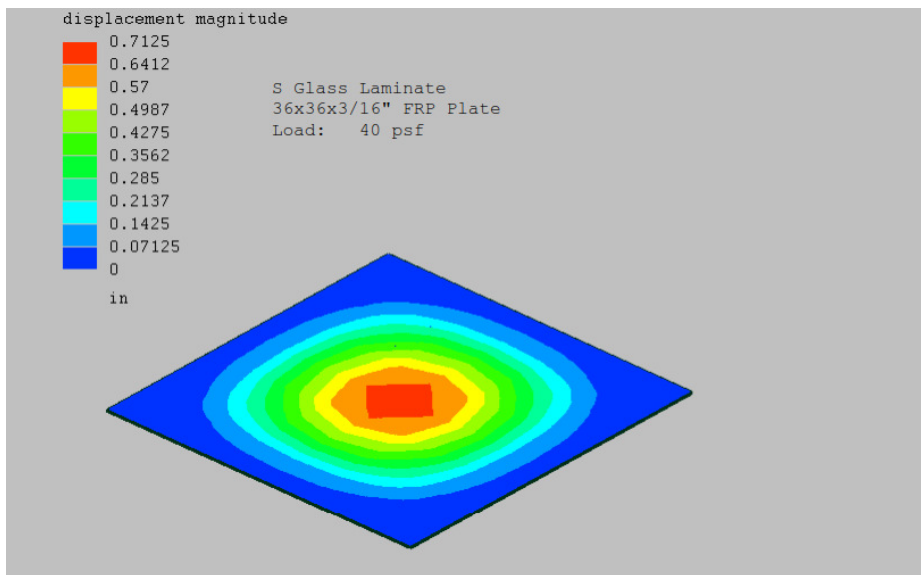
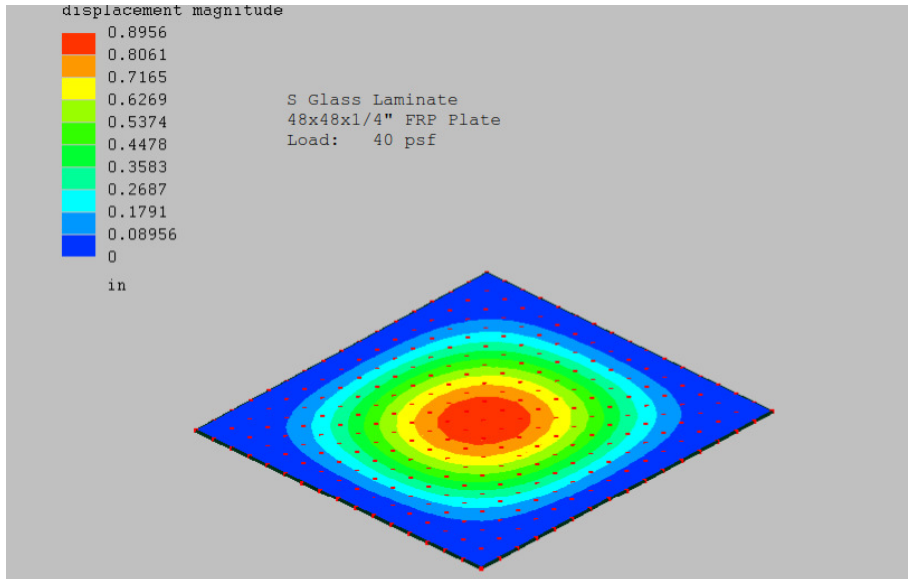


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## FEA Plots



The 3/16" laminate should have a maximum framing span of 3ft and the 1/4" laminate should have a framing span of 4ft maximum. High wind load locations of greater than 40 PSF may require a reduction in the spans.

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