

FIELD TECHNICIAN QUICK-REFERENCE CHECKLIST

Flexible Composite Material (FCM) Dielectric Sensor Checklist

DOCUMENT ID:	CHK-FCM-FLEX-001	EFFECTIVE DATE:	September 2026
TITLE:	FCM Sensor Field Inspection Checklist	REVISION:	1.0
LEAD SPECIALIST:	Kadeem Manning	APPROVED BY:	Kadeem Manning

Step / Activity	Verification Procedure	Target Criteria	Status
1. Matrix Visual Integrity	Inspect polymer matrix for tears or delamination.	Zero physical flaws	☐ Pass ☐ Fail
2. Track Resistance Test	Measure 4-wire Kelvin resistance along conductive tracks.	$R < 2.5 \Omega/\text{cm}$	☐ Pass ☐ Fail
3. Unstrained Baseline C_0	Measure capacitance at 10 kHz on Teflon jig at 0% strain.	$C_0 = 12.5 \pm 0.5 \text{ pF}$	☐ Pass ☐ Fail
4. Strain Sensitivity Check	Apply 10% elongation and record $\Delta C/C_0$.	$GF \approx 1.8 \pm 0.1$	☐ Pass ☐ Fail
5. Interconnect Strain Relief	Inspect snap/crimped electrical leads under 180° bend.	$\Delta R < 0.1 \Omega$ on flex	☐ Pass ☐ Fail
6. Environmental Encapsulation	Verify hydrophobic silicone/PU top coat encapsulation.	Water contact angle $>100^\circ$	☐ Pass ☐ Fail
7. Moisture Response Test	Expose to 80% RH ambient condition.	Response time $<2.0 \text{ sec}$	☐ Pass ☐ Fail
8. Hysteresis Audit	Cycle strain 0% $\rightarrow$ 20% $\rightarrow$ 0% and measure baseline recovery.	Hysteresis $<1.5\%$	☐ Pass ☐ Fail
9. Signal Conditioning Sync	Connect to CDC (Capacitance-to-Digital Converter) board.	24-bit resolution output	☐ Pass ☐ Fail
10. Conformal Mounting Audit	Verify conformal adhesive contact on target curved substrate.	Zero air pocket bubbles	☐ Pass ☐ Fail

FIELD REMARKS & SITE OBSERVATIONS:

Application / Substrate: _____ FCM Sensor S/N: _____
Base Resistance R_0 : _____ Ω Unstrained Capacitance C_0 : _____ pF
Applied Strain (ϵ): _____ % Measured $C(\epsilon)$: _____ pF Calculated Strain / Moisture: _____

PREPARED & VERIFIED BY LEAD FIELD TECHNICIAN	FIELD APPROVAL SIGN-OFF
Specialist Name: Kadeem Manning Title: Lead Field Specialist & Instrument Calibration Engineer Affiliation: Environmental & Dielectric Sensing Operations	Signature: _____ Date: _____ Status: ☐ PASS ☐ FAIL