Taconic Solution for Antenna Manufacturers

CV1
Very Low Profile Copper Foils for Minimising Passive Intermodulation

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- **Statement**: Rolled Annealed copper yields results better passive intermodulation (IMD) properties than Electro Deposited copper foil

- Drawback of RA foil: More expensive than ED copper foil

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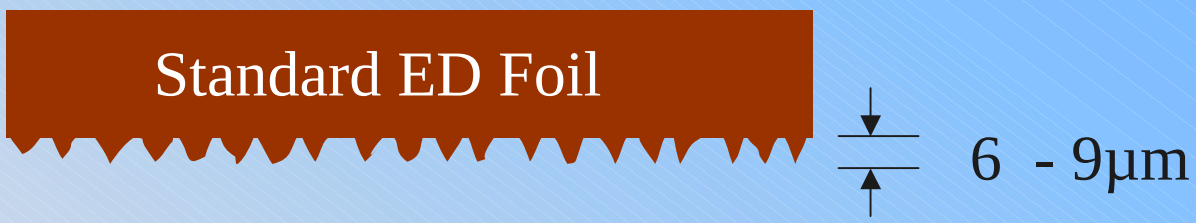
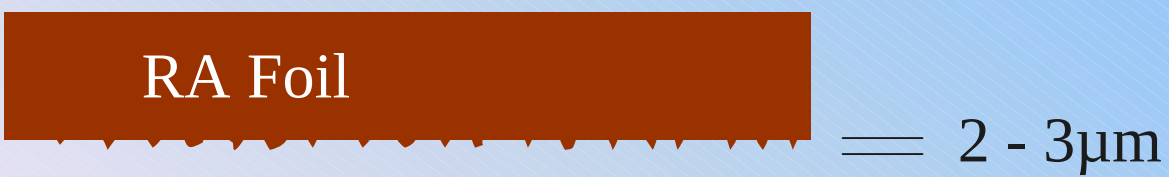
R_z Value





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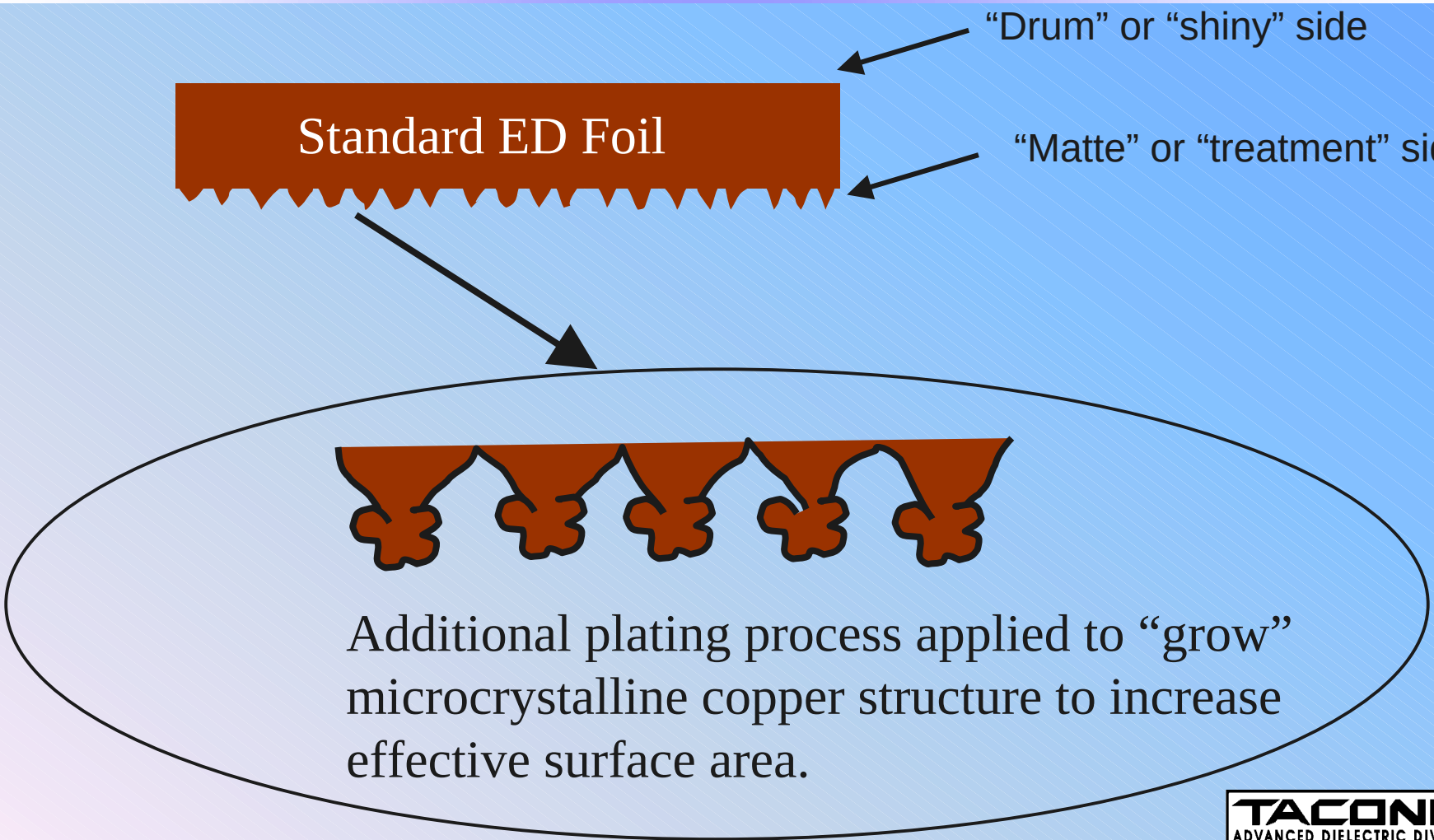

Additional plating process applied to “grow” microcrystalline copper structure to increase effective surface area.

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ED Foils history:

- Treatment topography to provide good adhesion to epoxy resin
- Zinc applied to prevent copper migration

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Perceived drawbacks of “standard” ED Foils:

- Zinc has lower electrical conductivity
- Coupling effect of dissimilar metals (Cu/Zn)
- Opportunity for incomplete etching……..

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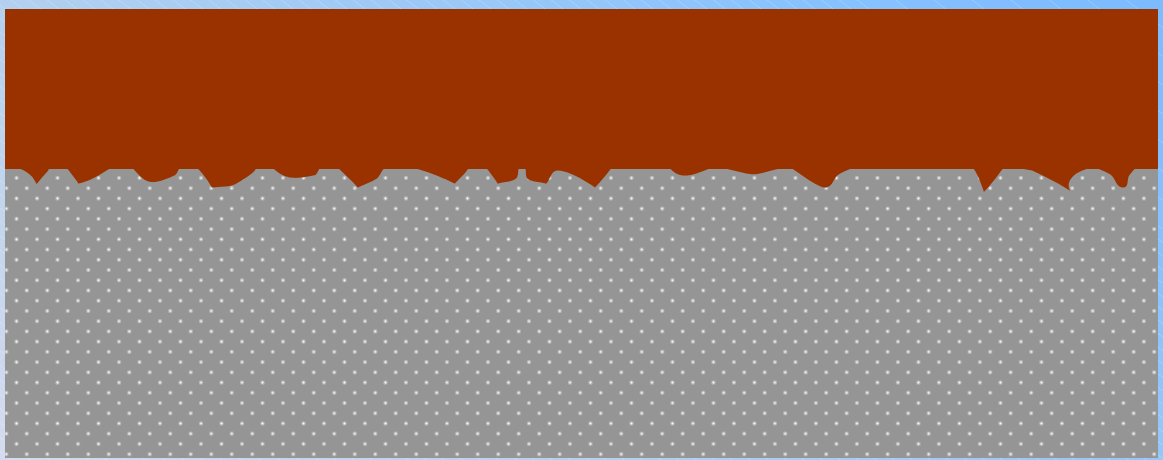
Cross-section of laminate



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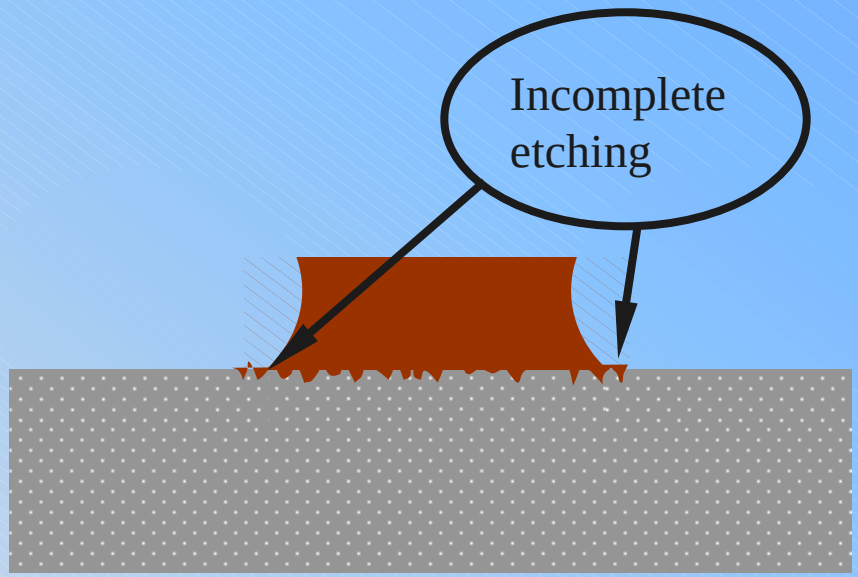

- **Lower-profile copper increases opportunity for complete copper dendrite removal**
- **Etching process is isotropic**
- **“Cleaner/straighter” conductor side-walls**

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Taconic approach:

Working with foil supplier to bring RA-type attributes at ED costs:

	R_z Value
Zn-free, Very Low Profile CV1	5 - 6µm

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Sample feedback, Customer A:

"The best result was with rolled annealed copper foils. Then, we had:

C1/C1: (standard ED foil)	IM3= -140 dBc and IM5= -152 dBc
CS1/CS1: (experimental ED foil)	IM3= -141 dBc and IM5= -173 dBc
CV1/CV1: (zinc-free very low profile ED foil)	IM3= -152 dBc and IM5= -173 dBc
R1/R1: (rolled annealed copper foil)	IM3= -155 dBc and IM5= -174 dBc

IMi = ith intermodulation order.
-infinity is the ideal.

So, the CV1 and the R1 could be used for our applications.
It proves perfectly that the profile of the copper in contact with the PTFE has a big influence on the measurement results."

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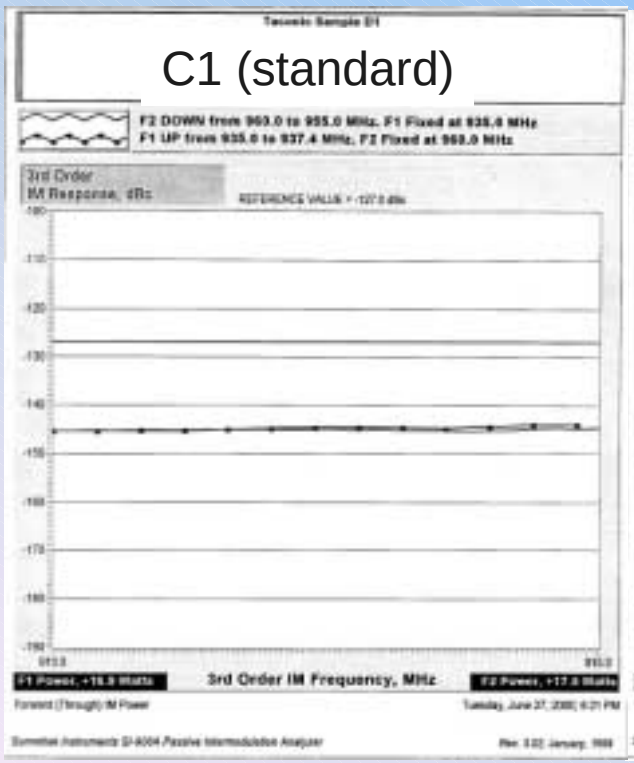
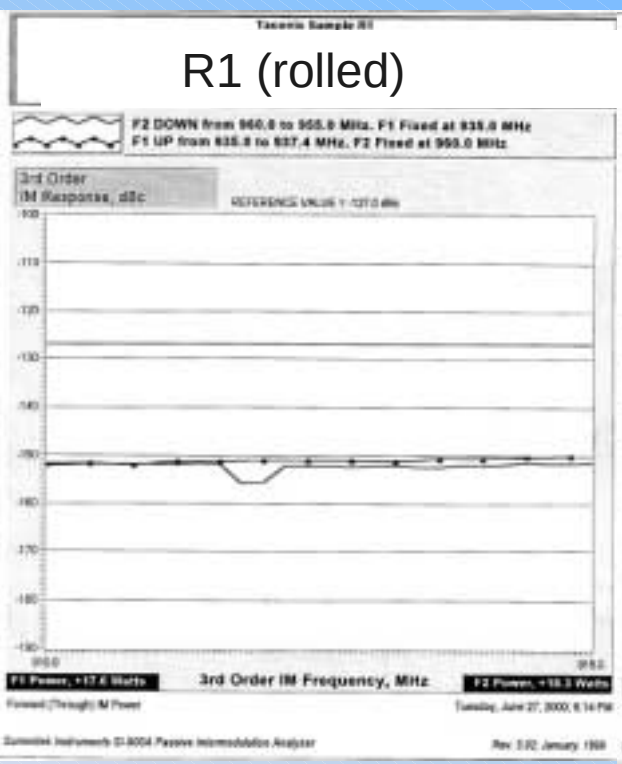
Sample feedback, Customer B:

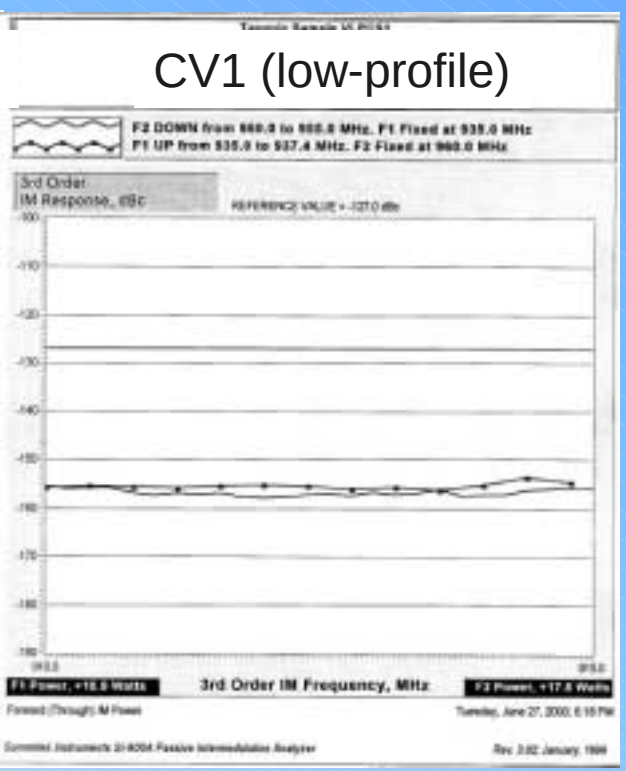
C1 (standard)



R1 (rolled)



CV1 (low-profile)



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Summary

- Taconic CV1 copper yields 3rd order IM -155 dBc
- ED copper pricing
- CV1 copper an be applied to all Taconic Grades

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