End Reaction Mass Barrel gold coating specification

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AUTHOR: Peter Fritschel	**8 May 2009**		**E0900139**				
CHECKED: G. Billingsley	**11 May 2009**						
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A gold coating is to be deposited onto the barrel of the End Reaction Mass, with some areas masked off as specified below. The End Reaction Mass (ERM) is a cylindrical fused silica substrate, 340 mm diameter x 130 mm thick; see LIGO-D080116-B for the detailed drawing of the ERM.

Applicable Documents

LIGO-D080116-B Advanced LIGO COC CP Substrate Drawing
LIGO-D0900958-v1 Gold Coating Pattern, End Reaction Mass Barrel

Coating Specifications:

Side S3 (refer to D080116-B) is to be coated. Coating is to cover the full barrel (S3) of the optic (except on masked areas), extending up to the chamfer (no coating on the chamfer).

Underlayer: 500 Angstroms (nominal) of inconel or other suitable material to provide adhesion.

Gold coating: 1000 Angstroms (nominal) gold.

Uniformity: Coating thickness should be uniform to approximately 25%.

Masking: Two rectangular areas are to be masked off (not coated). The size and location of these areas are defined in LIGO-D0900958-v1.

Durability: The coating must be able to withstand soldering, using an Indium-Silver solder, at a temperature of 220-240 deg C.