End Reaction Mass Electro Static Drive gold coating specification

Author	DATE	REV	DCN NO.	Checked	DATE
GariLynn Billingsley	9-2-15	V3	E1500374-v1	Torrie	9-2-15

A gold coating is to be deposited onto the S1 and S3 surfaces of a Reaction Mass.

The End Reaction Mass (ERM) is a cylindrical fused silica substrate, 340 mm diameter x 130 mm thick; see LIGO-D080116-v2 for the detailed drawing of the ERM.

The Annular End Reaction Mass (AERM) is an annular heavy glass substrate, 340 mm diameter x 130 mm thick; see LIGO-D1500163-v3 for the detailed drawing of the AERM.

Applicable Documents

LIGO-D080116-v2 End Reaction Mass
OR
LIGO-D1500163-v3 Annular End Reaction Mass

LIGO-D0900949-v1 Reaction Mass ESD Pattern
LIGO-D0900958-v7 Gold Coating Pattern Reaction Mass Barrel

Coating Specifications:

Side S1 (refer to D080116 or D1500163) is to be coated with an Electro-Static Drive (ESD) pattern per D0900949.
Side S3 is to be coated with a barrel pattern per D0900958

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

Gold coating: 1000 Angstroms (nominal) gold.

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

Pattern registration: The pattern should be centered on the mass to within 0.5 mm. Note: The outer diameter of the pattern is 336 mm; the diameter of the mass is 340 mm, with a 2 mm chamfer around its perimeter. Therefore, given the tolerances specified, the pattern may overlap the chamfer by as much as 0.5 mm.

Durability: The coating must be able to withstand soldering, using an Indium-Silver solder, at a temperature of 195° C.