

Visit Report

To : YUHO
Cc : FNM, CAAG, GUOS, WNGJ, LINR, ZHDA, XUEA, LIAW, FUJT, LAIC, GUOC, ZHAI
From : ZHVI

Date of visit: 05 May 2023
Date of report: 15 May 2023

YiHong

Participants	:	YiHong	:	Mr. He (<i>Project Engineer</i>)
	:	Harman	:	Mr. Chen (<i>Mechanical Engineer</i>)
	:	EMS	:	H. Yu, V. Zhu
OEM	:	Harman		
Sales responsible	:	YUHO		
Distributor	:	No		
Location	:	Dongguan, Guangdong		
Application	:	Projector, Passive Audio Chassis		
Segment Code	:	831		
Project number	:	Not yet, feasibility ongoing		
Material	:	Grilamid LV-3H, Grivory GVV-35H		
USP	:	Balanced mechanical and damping to reduce audio frequency resonance		
Potential	:	20 t/a		
SOP	:	Q4.2023		



Grilamid LV-3H



Assembly



Projector

1. Target of visit

- Sampling with good surface finish for sympathetic vibration test.

2. Summary

- Grilamid LV-3H and Grivory GVV-35H were promoted for projector audio chassis. Higher tensile modulus (>6000MPa) than existing PC+ABS (2500MPa) to achieve higher sympathetic vibration performance and lower noise for 16W audio speakers.
- Sampling of 15 parts finished for assembly and sympathetic vibration test.
- Obtain test result by 30th May.

3. Details

Customer & Project information

- Harman/Kardon developed series of passive audio for projector customers such as XGIMI, Lenovo and ASUS. The projector was integrated with audio function.



- The chassis is critical structural part to support audio components and resist the sympathetic vibration from audio speaker. The speaker power reaches 16W and sound frequency range from 20 Hz to 20 kHz.
- Existing material is ChiMei PC-540, PC/ABS V0. Tensile modulus 2500MPa. Average 3mm part thickness is required to achieve >100Hz sympathetic vibration point.
- Material modulus and part thickness determined sympathetic vibration point. Grilamid LV-3H and GVX-35H were promoted for limited design space scenario, with higher modulus (>6000MPa, thinner part design possible), good damping and warpage performance.

Damping property @30°C (loss factor, tan delta) = Loss modulus(G'') / Storage modulus(G')				
Material	G'' in MPa	G' in MPa	tan delta	Remarks
LV-3H	64.6	1060	0.061	Best damping
GVX-35H	12.7	2320	0.0055	Use data of GV-4H
PC	5.93	852	0.0069	Use data of PC-2805
PC+ABS V0	19.4	882	0.0220	Use data of PC+ABS FR3010

- One running project of XGIMI was selected for material validation.
- Sampling of 15 parts finished. Customer will assembly and test the sympathetic vibration point.



Part & Test Requirement

- Low warpage and ultrasonic welding/gluing properties
- UL94 V-1 for Europe market
- Drop test, 1m height, no crack
- Thermal shock, -40°C to 70°C, 96 hours
- Aging, 60°C@95% humidity, 48 hours.
- Storage test, 70°C, 7 days.

4. Actions

No.	Action	Resp.	Due date
1	Obtain test result	YUHO	30 May 2023

Best Regards
Vincent Zhu