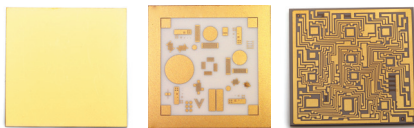


INDIA'S LARGEST MANUFACTURER OF HYBRID MICRO CIRCUITS (HMC)

HHV Advanced Technologies (HHVAT) specializes in the design and manufacture of Hybrid Micro Circuits (HMC) using advanced thin film metallization processes. Our HMCs are engineered to meet the stringent requirements of space and defense sectors.

Thin Film Metallized Ceramics

Powered by Magnetron Sputtering Technology



Key Features:

Substrate Materials: Alumina, Zirconia, Aluminium Nitride, Quartz

Dimensions: Up to 2 x 2 inches

Metallization Process: Magnetron sputtering for superior adhesion and electrical properties

Layer Deposition: Multiple metal layers deposited in a single vacuum cycle

Photolithography: In-house facility achieving 1 μm resolution on photomasks and 10 μm line widths for single layer thin films.

Cleanroom Standards: ISO 7
cleanroom with ISO 5 laminar flow
stations

Substrate Dicing: upto 6 Inch

Applications:

- RF/Microwave Integrated Circuits
- Hybrid Micro Circuits
- Surface Acoustic Wave (SAW) Devices
- RADAR Systems
- Reticles

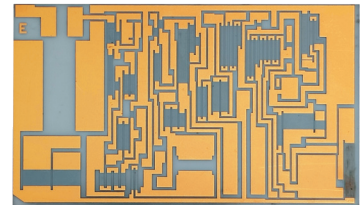
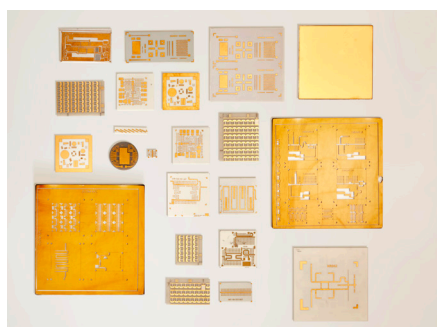
State-of-the-Art 6000 Sq. Ft

Metallization Cleanroom for Scalable Innovation



Metallization Schemes

TiW/Au or TaN/TiW/Au	TiW: 200 - 500 Å Au: 5 - 7 µm TaN: 10 - 250 Ω/□ if resistor layer is required
TiW/Au/NiV/Au	TiW: 200 - 500 Å Au: 3 - 3.5 µm NiV: 0.5 - 1 µm Au: 2 - 2.5 µm
Cr/Cu/Au	Cr: 200 - 800 Å Cu: 4 - 5 µm Au: 1.8 - 2 µm
Cr/Cu/Ni/Au	Cr: 200 - 800 Å Cu: 4 - 5 µm Ni: 0.1 - 0.5 µm Au: 1.8 - 2 µm
NiCr/Cu	NiCr: 200 Ω/□ Cu: 5 - 7 µm
NiCr/Ni/Au	NiCr: 200 Ω/□ Ni: 0.1 - 0.5 µm Au: 3 µm
TiW/Au or Cr/Au	Au: 0.5 - 7 µm TiW: 200 - 500 Å Cr: 200 - 800 Å



Thinfilm Resistors

ISRO Space Qualification
for metallized, patterning,
scribing and dicing of alumina
substrates

ISRO Certified:

संविधान, वायव्य एवं समुदायन प्रक्रिया गुणवत्ता आभारन प्रणाली FABRICATION, WIRING AND ASSEMBLY PROCESS QUALITY ASSURANCE DIVISION
इलेक्ट्रॉनिकी निर्माण गुणवत्ता आभारन समूह ELECTRONICS MANUFACTURING QUALITY ASSURANCE GROUP
विश्वसनीयता तंत्र और प्रणाली SYSTEMS RELIABILITY AND SAFETY AREA
अंतरिक्ष उपयोग केंद्र SPACE APPLICATIONS CENTRE
अहमदाबाद - 380 015 AHMEDABAD - 380 015

Ref.: FAQD/EMQG/SRSA/2026/02

Date: 14/01/2026

To: **Shri Naveen C S**
Manager, HMC-TFOD, HHV-Bengaluru

From: Ishwarlal Prajapati
Sci./Engr, FAQD/EMQG/SRSA

Sub: Extension of Qualification Validity for 2 & 3-layer Metallization, Lithography and Dicing Process on Alumina Substrate at M/s HHV, Bengaluru.

This is with reference to the VoQ request from M/s. HHV, re-validation of metallization, lithography & dicing processes are completed. Facility maintenance and qualification testing are meeting the ISRO-PAX-305 requirements and the same has been reviewed and summarised as under.

1. Metallization, Lithography & Dicing facility found meeting the QA requirements vide vendor's internal audit as well as audit conducted by SAC-QA on 1st December, 2025.
2. VoQ samples for MIC metallization & Lithography (2 & 3-layer metallization) were witnessed by SAC QA and found acceptable. VoQ testing was carried out by M6 HHV and submitted the test report *HATTFO/DHMC/RQ-01/2025* which is reviewed by SAC QA.
3. Qualification of dicing process is completed successfully & results are summarized in test report *FAQD/EMQ/SRSA/2026/01*.
4. These samples were prepared by Shri Vinod Kumar MS, Shri Mansur Ali MH and inspected by Shri Kishan C.S.

Based on the above, Qualification Validity for 2-layer (Cr-Au) & 3-layer (Cr-Cu-Au) Metallization, Lithography & Dicing processes on Alumina Substrate at M/s. HHV is **extended up to January, 2028** subject to consistency in the quality is maintained & assured.

Recommendation: Stud pull tester is required for quantitative measurement of metallization adhesion at M/c HHV

Ishwarlal Prajapati
Sci./Engr. FAOD/EMOG/SRSA

Gurvinder Singh,
Group Director, EMQG/SRSA

शिल्पा अग्रवाल
Shilpa Pandya,
Deputy Director, SPSA/SAC

* in comparison to non vacuum techniques

REACH US



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Bengaluru Rural District – 562111, Karnataka, India.



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