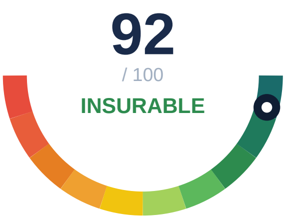
MIRAS Passport™

Composition in Blue, No. 3 — Marco Albertini · MRS-2026-A7F3B2K9

Artwork	**Composition in Blue, No. 3**
Artist	**Marco Albertini (b. 1985, Milan)**
Medium	**Oil on canvas · 120 × 80 cm**
Year	**2026**
MIRAS ID	**MRS-2026-A7F3B2K9**
PoP Level	**Level 2 — Curator Verified**
Curator	**Galleria dell'Arte Moderna · IC-00142**
Report Date	**25 May 2026**
Valid Until	**25 November 2026**
Insurance Value	**€102,000**

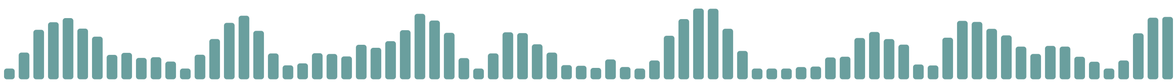


1 Authentication

Visual DNA fingerprint captured from 6 macro zones using MIRAS patented multi-algorithm pipeline (pHash perceptual hashing + DINOv2 vision transformer + Gabor texture analysis). NFC tag (NXP NTAG 424 DNA) bound with AES-128 encryption and Secure Dynamic Messaging. Blockchain anchor confirmed on Ethereum L2 (Optimism).

VISUAL DNA™ FINGERPRINT

pHash + DINOv2 + Gabor · 6-zone capture · Match: 99.97%



Check	Result	Detail
Visual DNA match	PASS (99.97%)	6-zone composite fingerprint, AI similarity > 99.9%
NFC tag integrity	PASS	NTAG 424 DNA, CMAC valid, 42 scans, no anomalies
Blockchain anchor	PASS	Hash confirmed on-chain · Tx #0x7A3F…B2K9 · Block #148,207
Tamper detection	PASS	No anomalies in scan pattern, tag wire intact
Cross-layer integrity	PASS	Visual DNA ↔ NFC ↔ Blockchain consistency verified

AUTHENTICATION CONCLUSION

The artwork is authenticated with **99.97% confidence** across all verification layers. Visual DNA, NFC, and blockchain records are mutually consistent with zero anomalies detected across 42 NFC scans.

Patent 1: UIBM #102026000009442 (18 claims) · Patent 2: UIBM #102026000010327 (17 claims) · MARGIN International LLC, Delaware

2 Provenance Chain

Full provenance chain from creation to present. No gaps, no disputed ownership periods, no Art Loss Register matches. Provenance Completeness Index (PCI): **100%**.

2026	**Registered on MIRAS — Visual DNA + NFC binding**	Digital passport created
2024	**Private Collection, Milan**	Acquisition receipt on file
2024	**Art Basel satellite exhibition, San Gimignano**	Exhibition catalogue + loan agreement
2024	**Galleria Continua, San Gimignano**	Exhibition documentation
2024	**Created by Marco Albertini, Milan studio**	Artist declaration, studio receipt

DATABASE CHECKS

Art Loss Register (ALR): **No match** · Interpol Stolen Works of Art: **No match** · ICOM Red Lists: **No match** · Carabinieri TPC: **No match**. Search date: 25 May 2026.

3 Independent Valuation

Fair market value assessed using comparable sales methodology and artist trajectory analysis. Three recent auction comparables identified from major international houses.

Estimated Fair Market Value	**€85,000**
Valuation Method	**Comparable sales + artist trajectory**
Comparable 1	**Albertini "Composition I" (2023) — €72,000 (Christie's, Nov 2025)**
Comparable 2	**Albertini "Blue Study" (2024) — €68,000 (Sotheby's, Feb 2026)**
Insurance Replacement Value	**€102,000**
Confidence	**High (3+ market comparables)**

4 AML Compliance (Patent 2)

Three-engine risk assessment across 26 variables with 10 contextual modifiers. Combined MIRAS AML Risk Score: **12/100** — **GREEN (Low Risk)**. Full compliance with AMLR 2024/1624, 6AMLD, and Basel AML Principles.

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Engine	Score	Result	Key Findings
CSE (Client)	0.08	CLEAR	No sanctions, no PEP, clean adverse media, verified identity
ASE (Artwork)	0.10	CLEAR	No ALR match, provenance complete (PCI 100%), no forgery flags
TSE (Transaction)	0.15	CLEAR	Value consistent with profile, no structuring, bank transfer

5 NFC Verification Log

Last 5 of 42 NFC scans. All validations passed with zero anomalies. Tag: NXP NTAG 424 DNA · AES-128 · SUN/CMAC dynamic authentication.

Timestamp	Location	MAC Hash	Status	Tap #
25 May 2026 09:14	Artist Studio, Milan	0xA3F7…E2	VALID	42
23 May 2026 14:22	Galleria dell'Arte	0xB1C4…9F	VALID	41
20 May 2026 11:05	MIRAS Registration	0x7A3F…1D	VALID	40
18 Mar 2026 16:30	Art Basel Satellite	0xD2E5…7B	VALID	39
02 Mar 2026 10:12	Initial Binding	0xF1A2…3C	VALID	1

6 Blockchain Anchoring

Network	**Ethereum Layer 2 (Optimism)**
Transaction Hash	**0x7A3F…8E9F (64 hex chars)**
Block Number	**#148,207**
Timestamp	**02 March 2026, 10:12:44 UTC**
Token Standard	**ERC-721 (non-fungible)**
Merkle Root	**Verified — leaf hash matches on-chain root**

RECOMMENDATION — INSURABLE · LOW RISK

Artwork authenticated (99.97% Visual DNA match), provenance verified (no gaps, PCI 100%), AML clear (combined score 12/100). Recommended for insurance coverage at replacement value of EUR 102,000. Suitable as collateral for art-backed lending at conservative LTV (40-50%). Report valid for 6 months from issue date.

Methodology Note

Visual DNA™ (Patent 1)

Every artwork has a unique physical surface — micro-variations in brushstrokes, canvas weave, pigment texture, and craquelure that are as distinctive as a human fingerprint. MIRAS captures this surface identity through a standardised 6-zone photographic protocol using a standard smartphone. The images are processed through three independent algorithms: **pHash** (perceptual hashing for fast approximate matching), **DINOv2** (a Meta vision transformer that generates dense semantic embeddings), and **Gabor filters** (multi-orientation texture analysis). The three outputs are combined into a single

SHA-256 cryptographic digest — the Visual DNA — which is non-reversible, non-forgeable, and can be re-verified at any time by re-photographing the artwork. A high-quality print or reproduction fails verification because it cannot replicate the physical micro-texture of the original surface.

NFC Physical Binding (Patent 1)

An NXP NTAG 424 DNA chip with AES-128 encryption is physically bound to the artwork. Each tap generates a unique, non-replayable cryptographic message (SUN/CMAC protocol) with a monotonically increasing counter. The tag stores the SHA-256 digest of the Visual DNA, creating a bidirectional cryptographic link: the tag proves it belongs to this artwork, and the artwork proves it belongs to this tag. Tamper-evident adhesive and a TagTamper wire loop detect any removal attempt. If the tag is compromised, the Visual DNA remains the source of truth — the artwork is always identifiable without the tag.

AML Risk Scoring (Patent 2)

The MIRAS AML engine evaluates every transaction through three independent scoring engines: the **Client Scoring Engine (CSE)** assesses the counterparty across 9 variables (PEP status, jurisdiction, UBO structure, source of funds); the **Artwork Scoring Engine (ASE)** assesses the artwork across 9 variables (provenance completeness, stolen art databases, value anomalies, and — uniquely — the Visual DNA and NFC authentication status from Patent 1); and the **Transaction Scoring Engine (TSE)** assesses the transaction across 8 variables (payment method, pricing anomaly, cross-border complexity). The three sub-scores are combined with dynamic weights adjusted by 10 contextual modifiers, normalised via softmax, to produce a single composite score (0–100) mapped to four risk levels: Green (proceed), Yellow (standard DD), Orange (enhanced DD required), Red (block + generate STR in goAML format).

Proof of Provenance (PoP) Levels

MIRAS assigns a PoP Level reflecting the depth of verification applied to an artwork. **Level 1 (Artist Verified)**: the artist self-registers the work with Visual DNA and basic metadata. **Level 2 (Curator Verified)**: a credentialed gallery or institution verifies provenance, adds NFC binding, and co-signs the passport. **Level 3 (Fully Certified)**: includes independent valuation, full AML assessment, and blockchain-anchored audit trail suitable for institutional use (insurance, lending, securitisation). This passport is issued at PoP Level 2.

Legal Disclaimers & Limitations