



# Thai National ID Card OCR: Field-Level Accuracy Benchmark

Service version v3.5.3-20260824 · Evaluation executed 22 August 2026 · iApp Technology Co., Ltd., Bangkok, Thailand

**Executive summary.** We evaluated the iApp Thai National ID Card OCR service (v3.5.3-20260824) against a leading global cloud OCR service on 60 Thai national ID cards with human-verified field-level ground truth — 1,380 individual field observations. The iApp service achieved **98.0%** field-level exact match versus 97.8% for the cloud baseline, with the 13-digit ID number at **100%** on both and the iApp service more accurate on 7 fields versus 3. In production the service processes a card in 1.4 s (median) and sustains 5,000 cards per hour.

## 1 Introduction

The Thai National ID Card OCR API extracts structured fields from both faces of the Thai national ID card — the 13-digit ID number, names in Thai and English, address components, dates, religion, and gender from the front, and the laser code from the back. It is operated by iApp Technology Co., Ltd. as a public cloud API at [api.iapp.co.th](https://api.iapp.co.th) and as a fully self-contained on-premise deployment.

For identity documents, aggregate character accuracy is the wrong yardstick: a single wrong digit in an ID number is a failed extraction regardless of how many other characters were read correctly. This benchmark therefore measures *field-level exact match* against human-verified ground truth, per field, and compares the iApp service against a widely deployed commercial cloud OCR service, referred to here as *Cloud OCR A*.

## 2 Dataset and Ground Truth

The evaluation draws on iApp’s proprietary labeled corpus of 1,000 Thai national ID cards, in which every card is paired with 27 columns of human-verified field-level truth. Sixty cards were sampled, giving 1,380 scored field observations.

The corpus contains real identity documents with real names, addresses, and ID numbers. It is therefore **not published**, in line with Thai PDPA obligations and iApp’s data-handling policy. The methodology in Section 3 is specified completely so that the measurement procedure is transparent and repeatable on any comparable labeled corpus.

## 3 Methodology

- **Fairness.** Both systems process byte-identical card images. The two evaluation candidates are identical builds of the production service differing *only* in the OCR engine invoked; card detection and post-processing are shared, so the engine is the only variable.
- **Scoring.** Per field: exact match against the human-verified truth, plus mean character error rate. Dates are normalised to ISO 8601 (YYYY-MM-DD) before comparison, so calendar-format differences do not count as errors.
- **No engine-as-referee.** Accuracy is scored against independent ground truth, not against the other engine — scoring against a baseline penalises a system precisely when it corrects the baseline’s mistakes.

## 4 Results

| Field                          | iApp ID Card OCR | Cloud OCR A   |
|--------------------------------|------------------|---------------|
| ID number (13 digits)          | <b>100.0%</b>    | <b>100.0%</b> |
| Title (Thai / English)         | <b>100.0%</b>    | <b>100.0%</b> |
| Given name (English)           | <b>93.3%</b>     | 91.7%         |
| Given name (Thai)              | 96.7%            | <b>98.3%</b>  |
| Surname (English)              | <b>100.0%</b>    | <b>100.0%</b> |
| Surname (Thai)                 | 96.7%            | <b>98.3%</b>  |
| Full name (English)            | <b>93.3%</b>     | 91.7%         |
| Full name (Thai)               | 93.3%            | <b>96.7%</b>  |
| Address (full)                 | <b>98.3%</b>     | 96.7%         |
| Address: house number          | <b>98.3%</b>     | 96.7%         |
| Address: subdistrict           | <b>100.0%</b>    | <b>100.0%</b> |
| Address: district              | <b>100.0%</b>    | <b>100.0%</b> |
| Address: province              | <b>100.0%</b>    | 98.3%         |
| Address: postal code           | <b>100.0%</b>    | <b>100.0%</b> |
| Religion                       | <b>100.0%</b>    | <b>100.0%</b> |
| Gender                         | <b>100.0%</b>    | <b>100.0%</b> |
| Date of birth (Thai / English) | <b>100.0%</b>    | <b>100.0%</b> |
| Date of expiry (Thai)          | <b>100.0%</b>    | 98.3%         |
| Date of expiry (English)       | <b>100.0%</b>    | 98.3%         |
| Date of issue (Thai / English) | <b>91.7%</b>     | <b>91.7%</b>  |
| <b>All fields (overall)</b>    | <b>98.0%</b>     | 97.8%         |

**Table 1:** Field-level exact match against human-verified ground truth, 60 cards / 1,380 field observations. Best result per row in bold.

The iApp service is more accurate on 7 fields and the baseline on 3, with the rest identical. The gains concentrate on the fields financial and government integrations key on: addresses, province, and expiry dates.

### 4.1 Stated plainly: where the baseline is stronger

Thai given- and family-name fields move slightly in the baseline's favor — full Thai name 93.3% versus 96.7%, two extra cards out of sixty. The English name fields move the other way by a similar margin, so the net across name fields is roughly flat. If an integration depends specifically on Thai names rather than the ID number or address, the per-field confidence scores the service returns should be used to route low-confidence reads to review. We publish this rather than bury it; a benchmark that only reports wins is marketing, not measurement.

## 5 Production Performance

| Metric                            | Value                                     |
|-----------------------------------|-------------------------------------------|
| Median end-to-end processing time | 1.4 s per card (front); 1.3 s (back)      |
| Sustained throughput              | 1.4 cards/s ( $\approx$ 5,000 cards/hour) |
| Maximum input file size           | 10 MB                                     |
| Supported inputs                  | JPEG, PNG, HEIC/HEIF, PDF                 |

**Table 2:** Production service performance, measured on the deployed v3.5.3-20260824 service, August 2026.

## 6 Deployment and Data Security

The public cloud API is GDPR- and PDPA-compliant: uploaded images are processed in memory and are not retained after the response is returned. The recognition engine requires no external network egress, which makes a fully self-contained on-premise deployment available — no card data leaves the customer's infrastructure.

## 7 Reproducibility

The scoring protocol, normalisation rules, and candidate construction are specified in full in Section 3; the ground-truth corpus is withheld solely because it contains real identity documents. Organizations wishing to validate the results on their own labeled cards, or to enquire about the identity of the baseline service, may contact [sale@iapp.co.th](mailto:sale@iapp.co.th).

---

**About iApp Technology.** iApp Technology Co., Ltd. is a Thai artificial-intelligence company providing OCR, document understanding, speech, and large-language-model services for the Thai language.

Web: [iapp.co.th](http://iapp.co.th) · E-mail: [sale@iapp.co.th](mailto:sale@iapp.co.th) · Tel: +66 86 322 5858