



Minsk, Belarus
www.regulaforensics.com

established in 1992

Today Regula is a group of companies located

Regula Ltd. – Minsk, Belarus

Regula Baltija – Daugavpils, Latvia

Regula Rus – Moscow, Russian Federation

Regula Forensics – Washington, USA

Regula Brazil – Rio de Janeiro, Brazil

AD – Kiev, Ukraine



Partners/Distributors – more than 40 countries and regions globally



Magnifiers



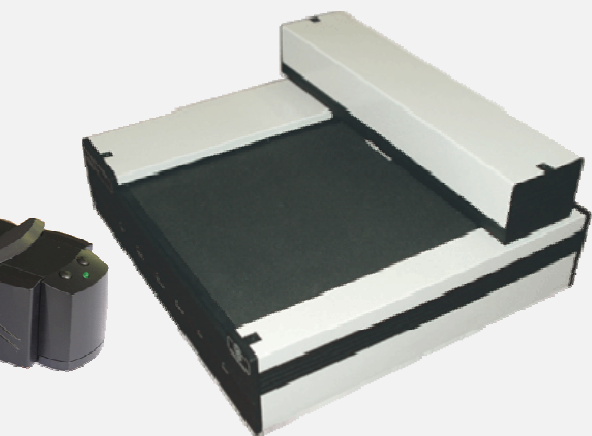
Compact
devices



Video spectral
magnifiers



Document
readers



Visualizer of
magnetic properties



Spectral
Luminescent
microscope



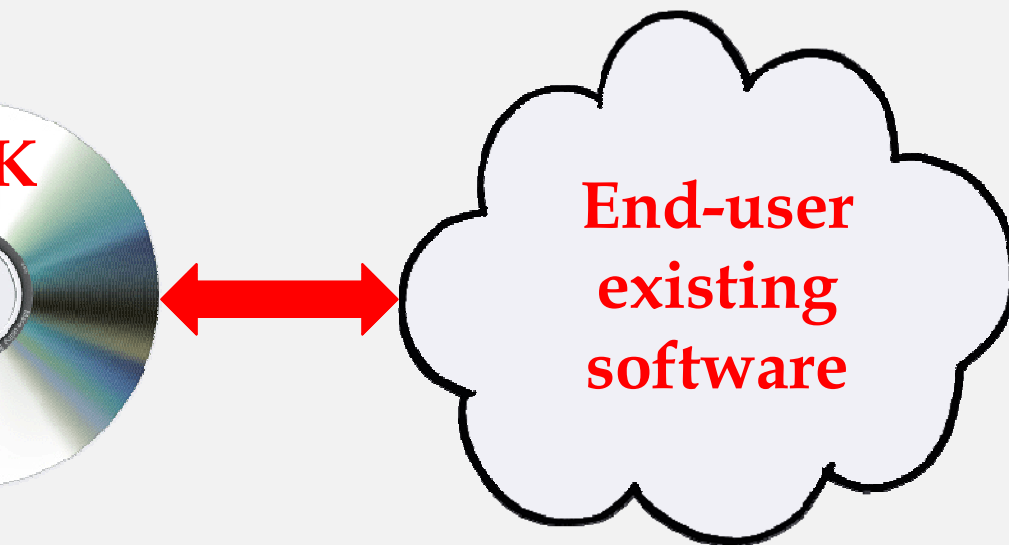
Video spectral
comparators





Databases:

Passports:	1655 documents
Drivers Licenses:	475 documents
Banknotes:	2109 documents



Document Readers
Software Development Kit
(SDK)



Desk-top
D-1 size reader



Desk-top
ID-3 size reader



Mobile
ID-3 size reader



Mobile
MRZ reader

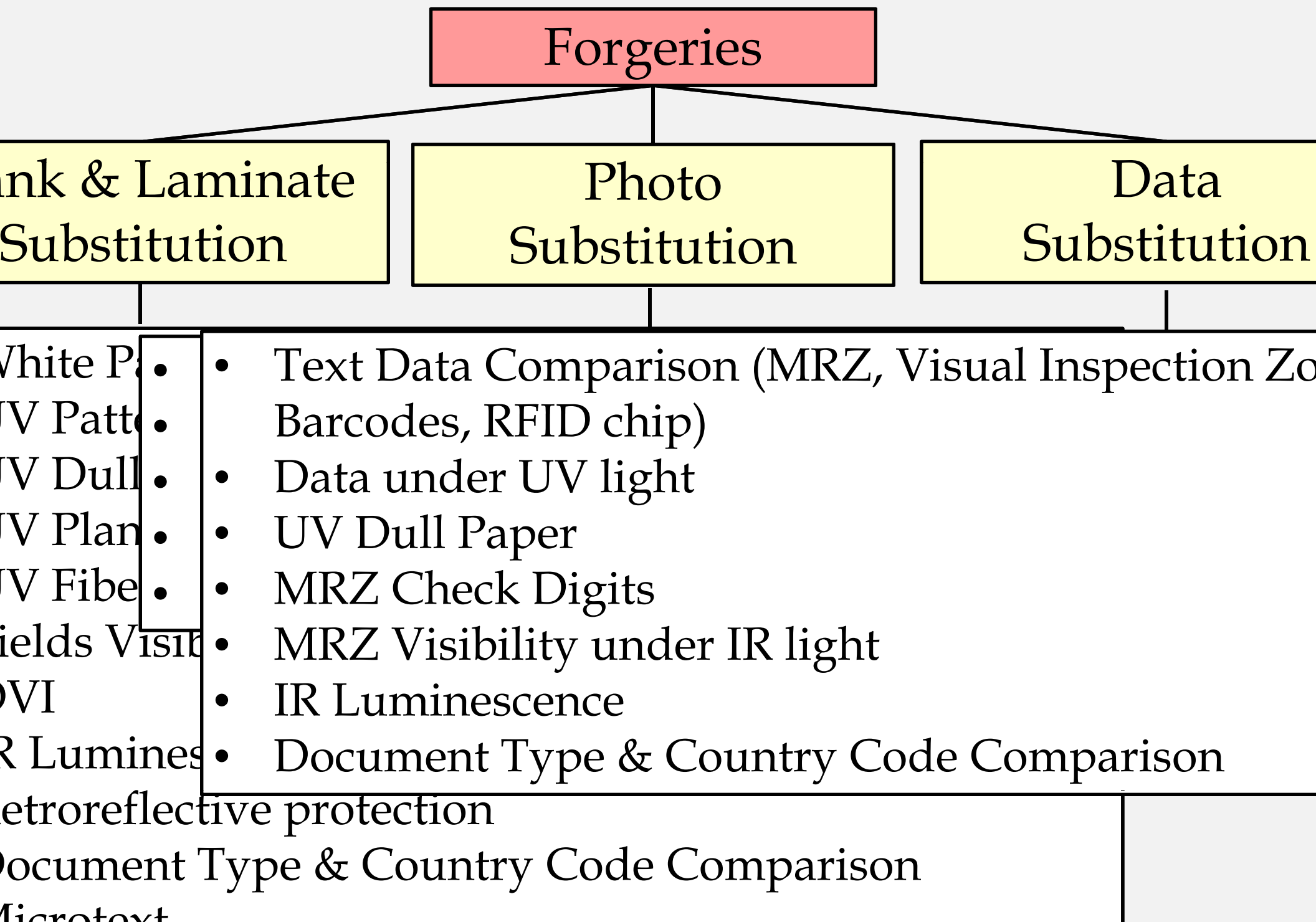


Mobile
laboratory



Mobile
high-resolution reader

Automatic Authentication & Forgeries



Forgeries

```
graph TD; Forgeries --> InkLaminate[Ink & Laminate Substitution]; Forgeries --> PhotoSubstitution[Photo Substitution]; Forgeries --> DataSubstitution[Data Substitution]; InkLaminate --> UVPatterns[UV Patterns]; InkLaminate --> UVPaper[UV Dull Paper]; InkLaminate --> UVPlanchettes[UV Planchettes]; InkLaminate --> UVFibers[UV Fibers]; InkLaminate --> IRVis[IR Visibility under IR light]; InkLaminate --> OVI[OVI]; InkLaminate --> IRLum[IR Luminescence Patterns]; InkLaminate --> Retro[retroreflective protection]; InkLaminate --> DocType[Document Type & Country Code Comparison]; InkLaminate --> Microtext[Microtext];
```

Ink & Laminate Substitution

Photo Substitution

Data Substitution

UV Patterns

UV Dull Paper

UV Planchettes

UV Fibers

IR Visibility under IR light

OVI

IR Luminescence Patterns

retroreflective protection

Document Type & Country Code Comparison

Microtext

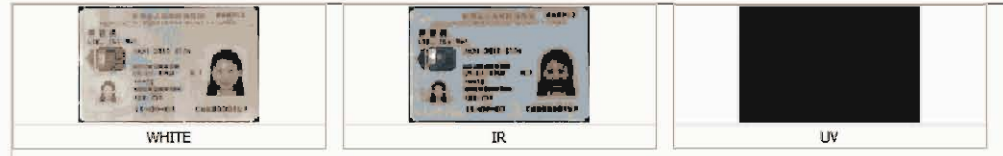
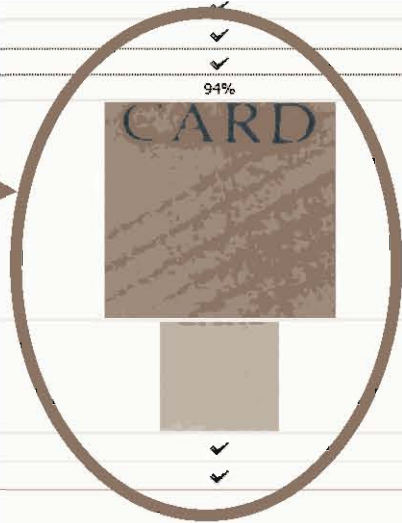
Results

% 108 Rotate images



Details

Details		
Visual zone	Text data comparison	Graphical data comparison
Security Features		
Messages log		
UV dull paper check		
Blank element		✓
IR Visibility		
Field #1 (Fill element): Visible		✓
Field #2 (Fill element): Visible		✓
Field #3 (Blank element): Visible		✓
Field #4 (Blank element): Visible		✓
Image patterns		
Element #1		94%
Similarity		
Etalon image		
Image		
Element #2		✓
Element #3		✓

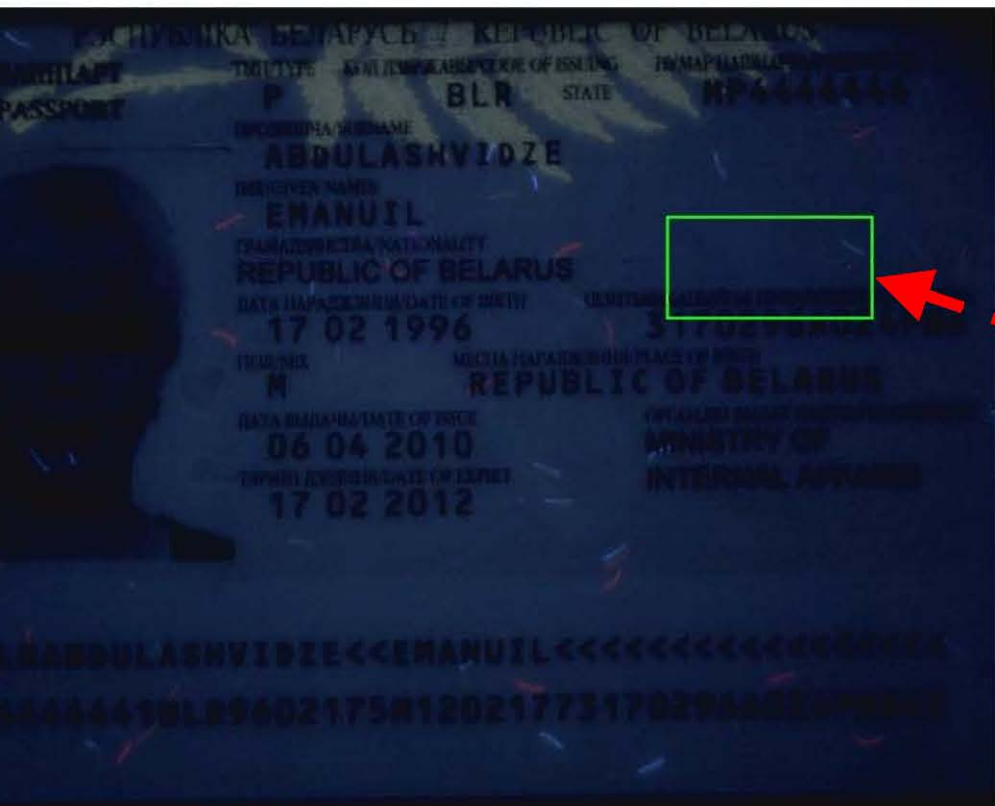


Identified document type Hong Kong Special Administrative Region of China - Id Card #1

Document # C668668E

Sex F Date of birth 01.01.1968

I<<ABDULRAUF<ABDULLAH<HAMOOD<<<<<<<
<50MN7505216M18070662627987<<<<<<<70



Identified document type: Belarus - Passport #2

Document Class: P Issuing State: BLR Document #: MP4444444

Surname: ABDULASHVIDZE Given names: EMANUIL

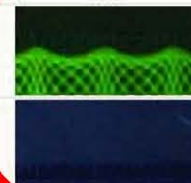
Sex: M Date of birth: 17.02.1996 Date of expiry: 17.02.2012

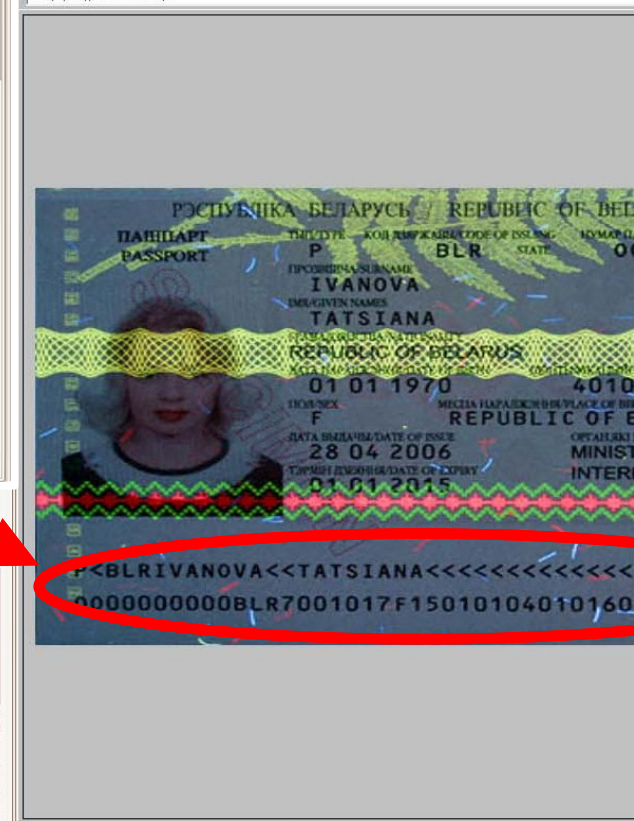
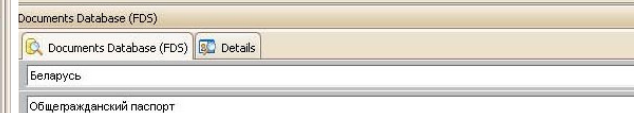
Details

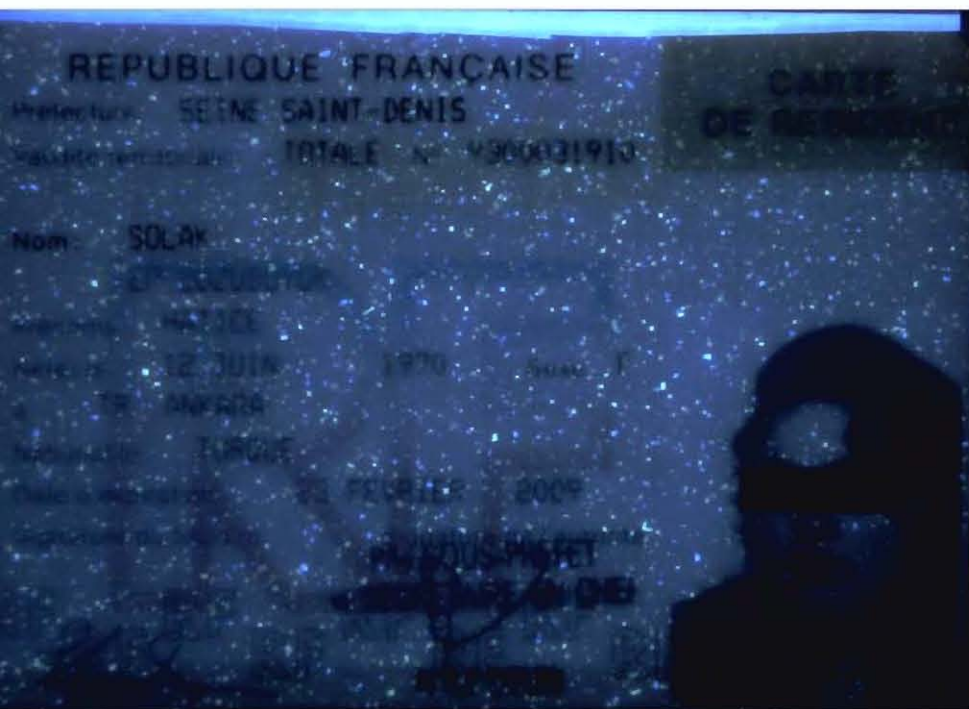
Details

MRZ Visual zone Text data comparison Graphical data comparison Security Features Messages log

IR B900 ink		✓
UV dull paper check		✓
MRZ		✓
Photo element		✓
Blank element		✓
UV protection fibers		✓
Color		✓
Color		✓
IR Visibility		✓
Field #0 (Blank element): Visible		✓
Field #1 (Blank element): Not visible		✓
Field #2 (Blank element): Visible		✓
Field #3 (Fill element): Visible		✓
Image patterns		✗
Element #1		✗
Verified		✗
Similarity		59%
Eталон image		
Image		







WHITE



IR



UV



Identified document type France - Id Card #2 (Carte de Resident)

Document # 1060431910

Sex F



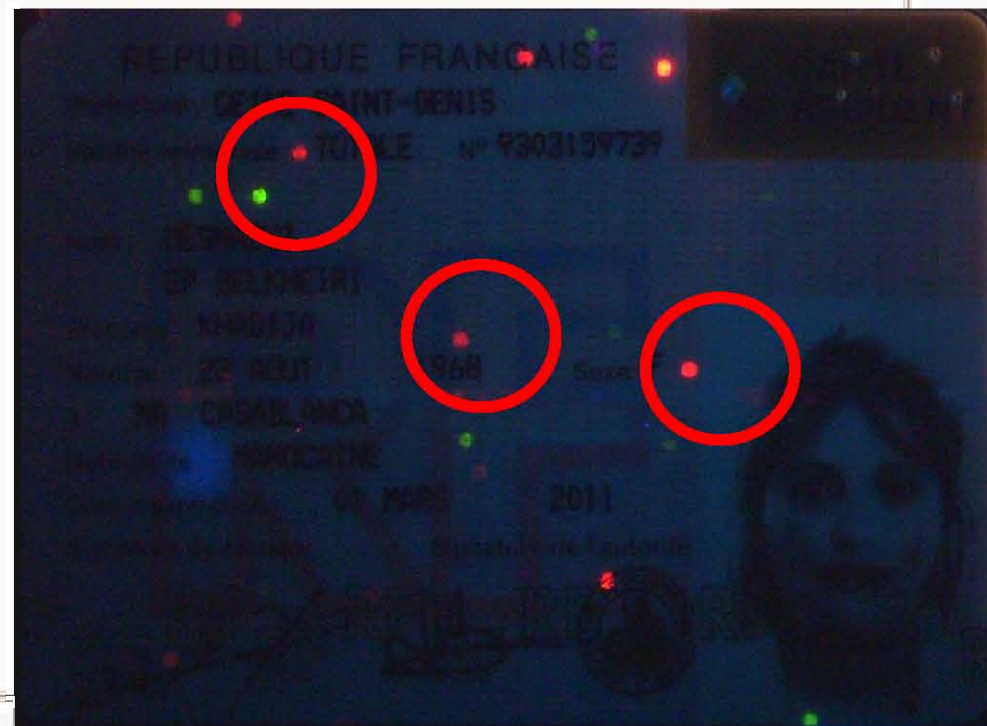
Security Features

Details

Details

Visual zone Text data comparison Graphical data comparison Security Features Messages log

IR B900 ink		
☒ UV dull paper check		✓
MRZ		✓
Photo element		✓
Blank element		✓
☒ UV protection fibers		✗
Color		✗
☒ IR Visibility		✓
Field #0 (Blank element): Visible		✓
Field #1 (Blank element): Visible		✓
Field #2 (Blank element): Not visible		✓
Field #3 (Fill element): Visible		✓



Results

% 37 Rotate images



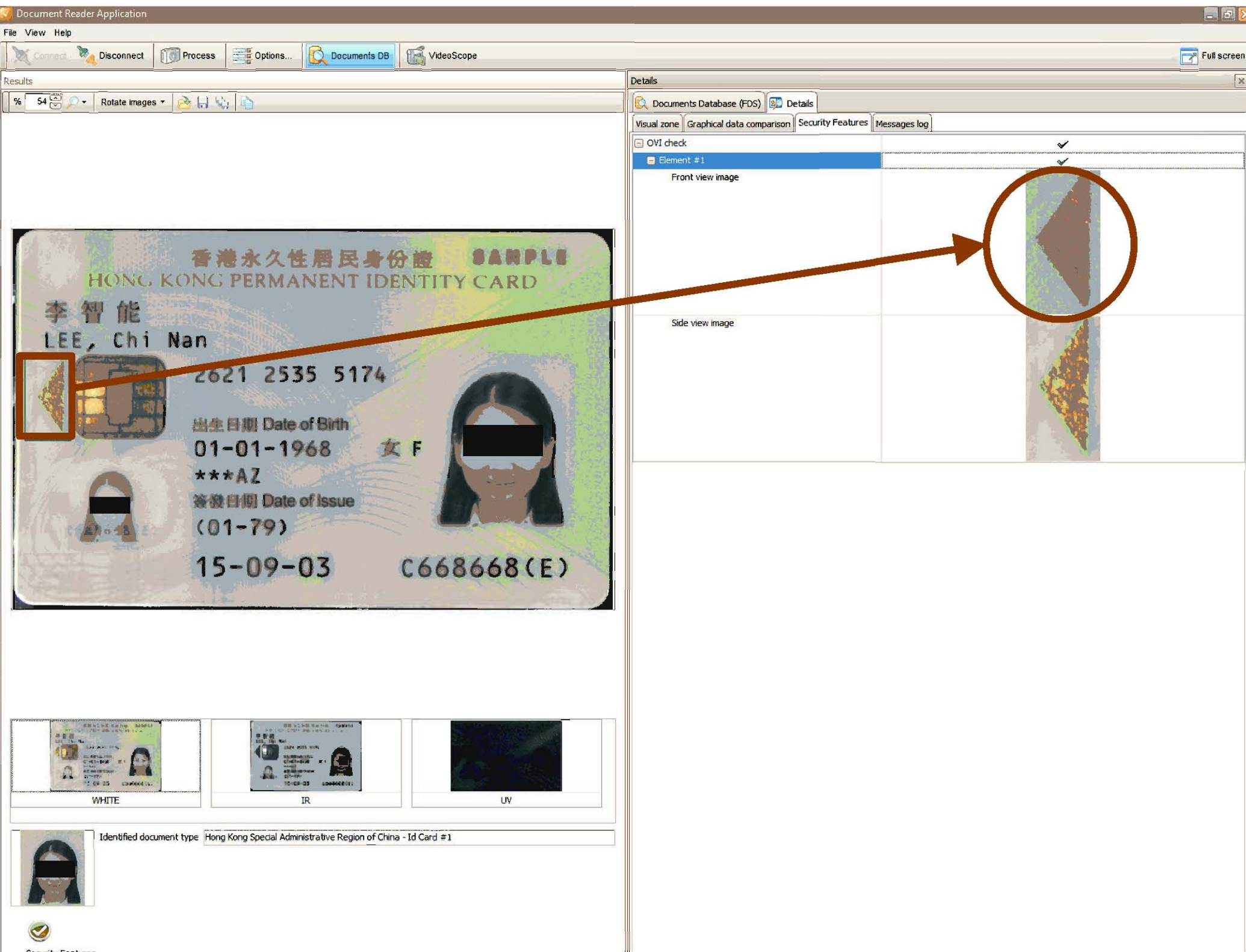
WHITE

IR

UV

Identified document type	Belarus - Passport #2
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Comparison

[illegible]

Forgeries

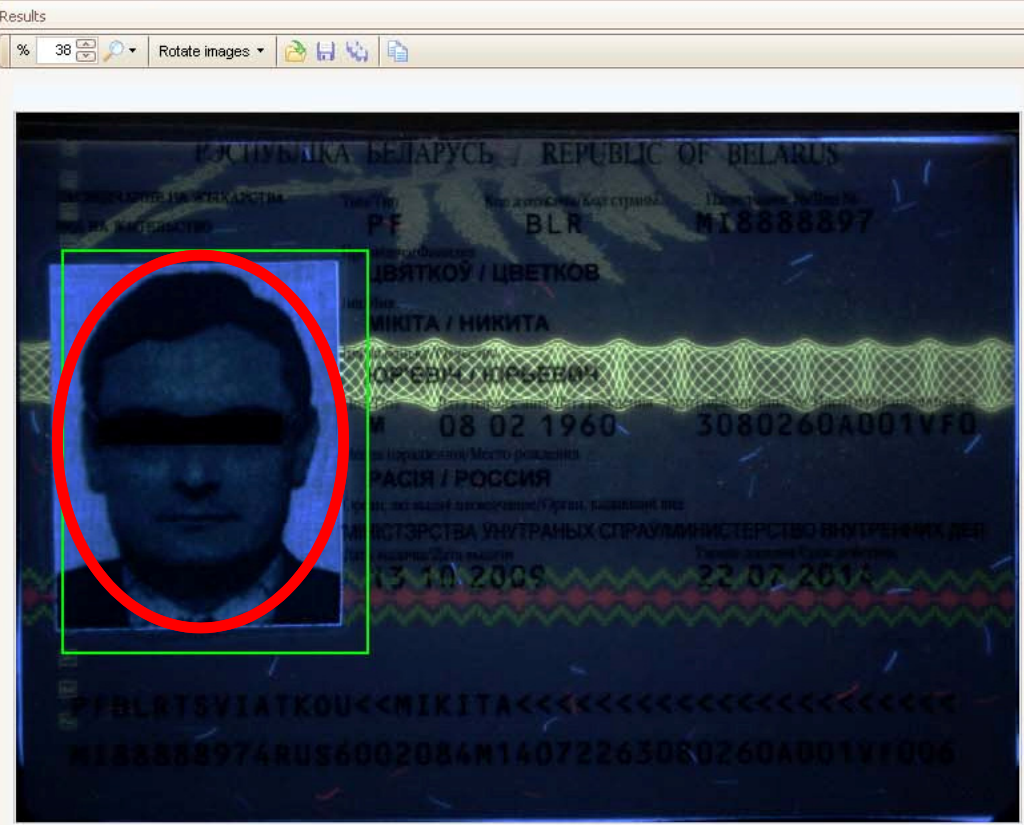
```
graph TD; Forgeries[Forgeries] --> Ink[Ink & Laminate Substitution]; Forgeries --> Photo[Photo Substitution]; Forgeries --> Data[Data Substitution]; Photo --> UV[• UV Dull Paper]; Photo --> IR1[• Photo Visibility under IR light]; Photo --> IR2[• Ghost Photo Visibility under IR light]; Photo --> Hidden[• Hidden Image]; Photo --> Type[• Photo Type];
```

Ink & Laminate
Substitution

**Photo
Substitution**

Data
Substitution

- UV Dull Paper
- Photo Visibility under IR light
- Ghost Photo Visibility under IR light
- Hidden Image
- Photo Type



Identified document type Belarus - Identity Card for Residence #2 (Testing)

Document Class PF Issuing State BLR Document # M18888897

Surname TSVIATKOU Given names MIKITA

Sex M Date of birth 08.02.1960 Date of expiry 22.07.2014

✓

MRZ

✗

Text data comparison

✗

Security Features

Details

Details

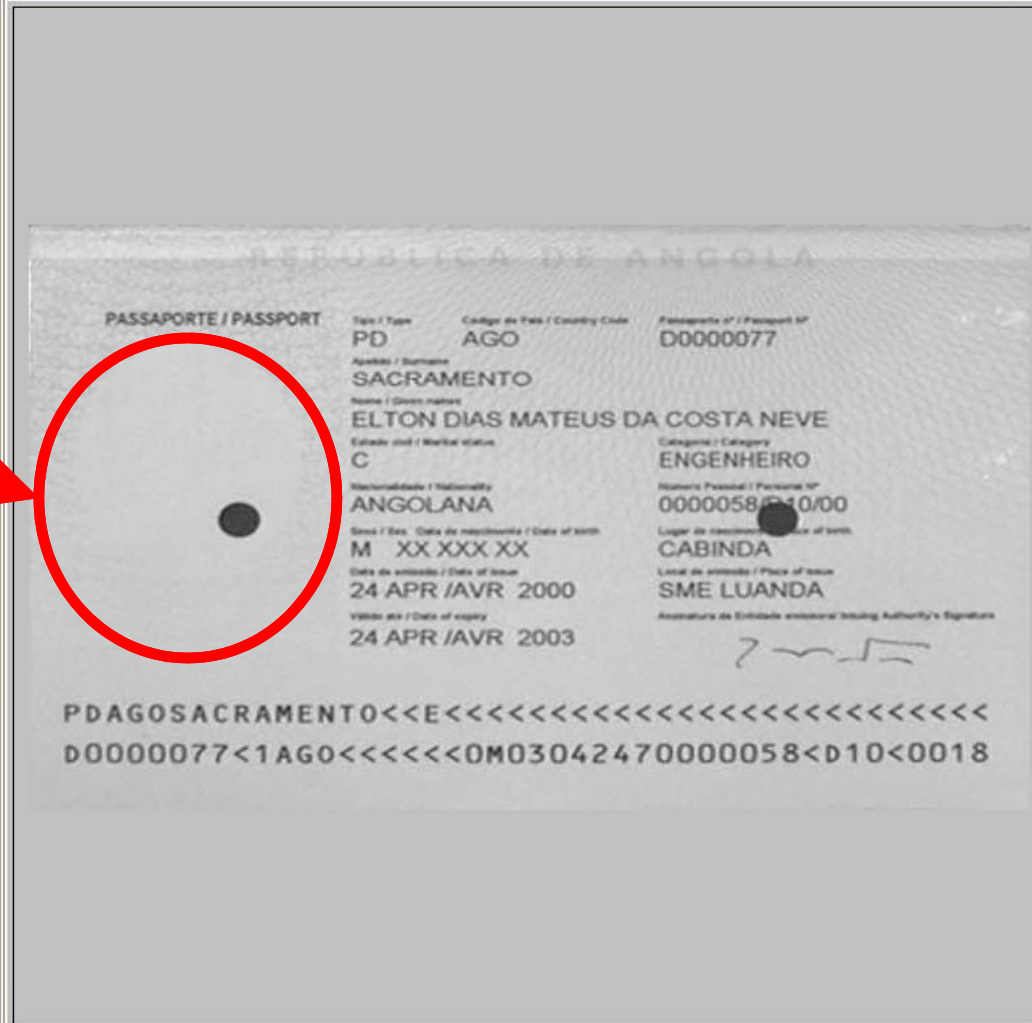
MRZ	Visual zone	Text data comparison	Graphical data comparison	Security Features	Messages log
IR B900 ink					✓
☐ UV dull paper check					✗
MRZ					✓
Photo element					✗
Blank element					✓
☐ IR Visibility					✓
Field #0 (Fill element): Visible					✓
Field #1 (Blank element): Visible					✓

% 39 Rotate images



Documents Database (FDS) Details

Дипломатический паспорт



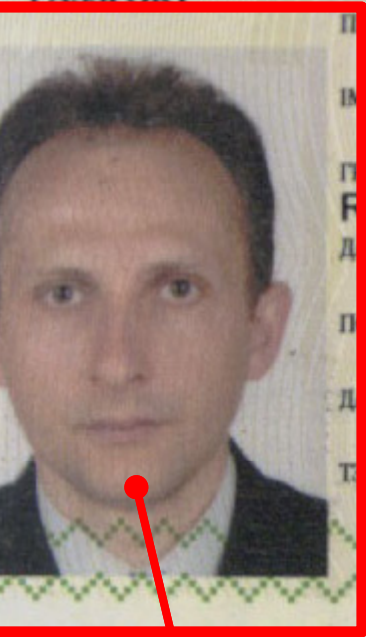
	365nm		254nm		IR			

% 38 Rotate images



Documents Database (FDS) Details

IR 8900 ink			✓
☐ UV dull paper check			✓
MRZ			✓
Blank element			✓
☐ UV protection fibers			✓
Color			✓
☐ IR Visibility			✗
Field #0 (Blank element): Visible			✓
Field #1 (Fill element): Visible			✓
Field #2 (Photo element): Not visible			✗



Original:
Printed Photo



Forgery: Glued Photo

Forgeries

```
graph TD; A[Forgeries] --> B[Ink & Laminate Substitution]; A --> C[Photo Substitution]; A --> D[Data Substitution]; D --> E[Text Data Comparison (MRZ, Visual Inspection Zone, Barcodes, RFID chip)]; D --> F[Data under UV light]; D --> G[UV Dull Paper]; D --> H[MRZ Check Digits]; D --> I[MRZ Visibility under IR light]; D --> J[IR Luminescence]; D --> K[Document Type & Country Code Comparison];
```

Ink & Laminate
Substitution

Photo
Substitution

**Data
Substitution**

- Text Data Comparison (MRZ, Visual Inspection Zone, Barcodes, RFID chip)
- Data under UV light
- UV Dull Paper
- MRZ Check Digits
- MRZ Visibility under IR light
- IR Luminescence
- Document Type & Country Code Comparison

[illegible]

File View Help

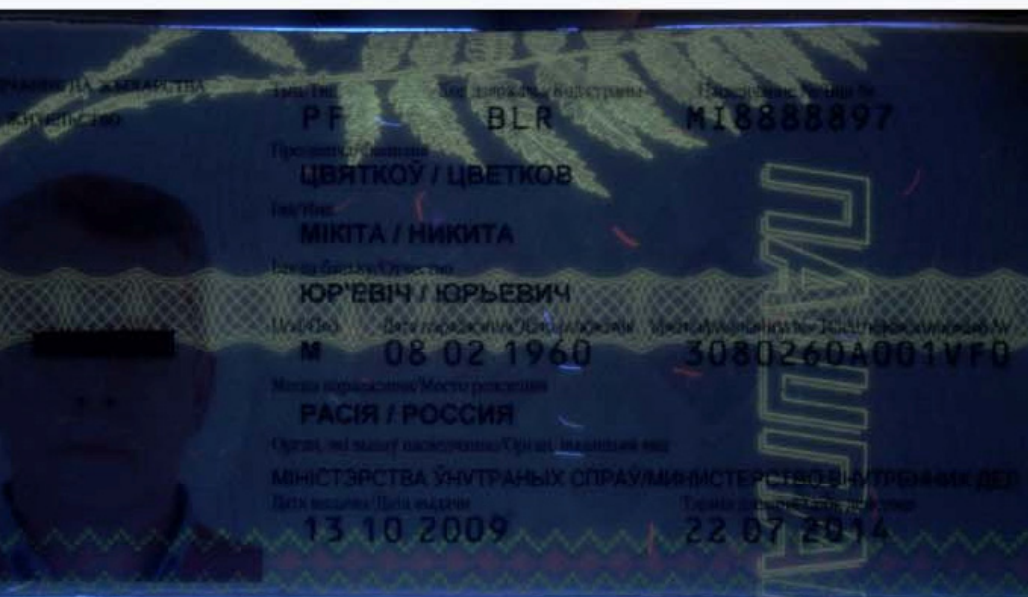
Connect Disconnect Process Options... Documents DB

Results

% 39 Rotate images

	Identified document type				Oman - Passport #2			
	Document Class	P	Issuing State	BLR	Document #	O00000000		
	Surname	IVANOVA			Given names	TATSIANA		
	Sex	F	Date of birth	01.01.1970	Date of expiry	01.01.2015		

[illegible]

[illegible]

WHITE



IR



UV

Identified document type	Belarus - Identity Card for Residence #2 (Testing)
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Document Class	PF	Issuing State	BLR	Document #	MI8888897
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Surname	ЦВЕТКОВ	Given names	НИКИТА
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Sex	M	Date of birth	08.02.1960	Date of expiry	22.07.2014
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 Details [Details](#)

MRZ	Visual zone	Text data comparison	Graphical data comparison	Security Features	Messages log
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IR B900 ink

☐ UV dull paper check

MRZ

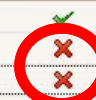
Photo element

Blank element

IR Visibility

Field #0 (Fill element): Visible

Field #1 (Blank element): Visible





Conclusions

Cooperation between document developers/printers and passport readers vendors is very important

Due to constantly increased number of travellers accuracy, efficiency and speed of document processing is vital

**Universal travel documents database creation is
MUST**



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