

# Participant Results

Proprietary Fingerprint Template Evaluation II (PFT-II)

Participant 4D — Tech 5 SA

Image Group

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# 1 1K Sample Evaluation

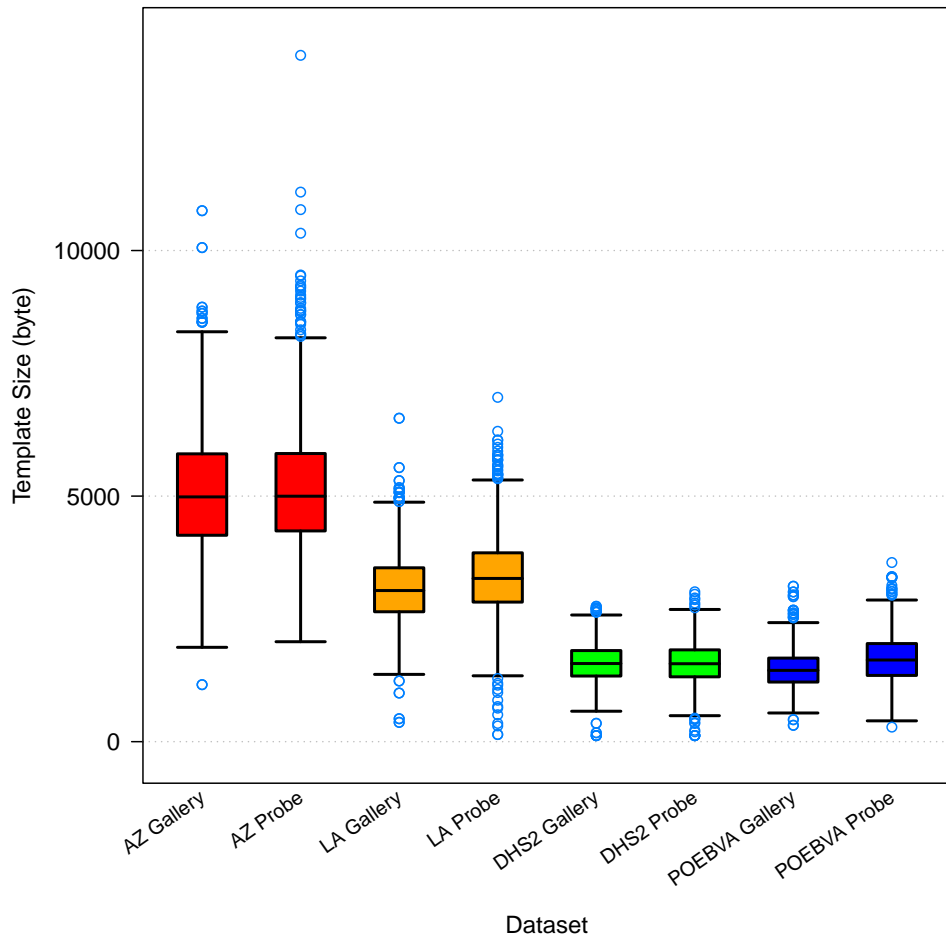


Figure 1: 1K Sample Evaluation – Template Size Distribution

	AZ		LA		DHS2		POEBVA	
	Gallery	Probe	Gallery	Probe	Gallery	Probe	Gallery	Probe
<i>Dimensions</i>	800x800	800x800	412x1000	400x776	368x368	368x368	500x500	368x368
<i>Maximum</i>	10811	13975	6586	7011	2756	3052	3165	3648
75%	5860.5	5867	3540	3845	1855	1869.5	1702	1997.5
<i>Median</i>	4983.5	4998	3077	3323.5	1591	1587	1452	1663
25%	4202.5	4291	2645	2842	1336.5	1320.5	1214	1349
<i>Minimum</i>	1161	2035	394	146	124	124	334	297

Table 1: Sample Dataset — Template Size Distribution

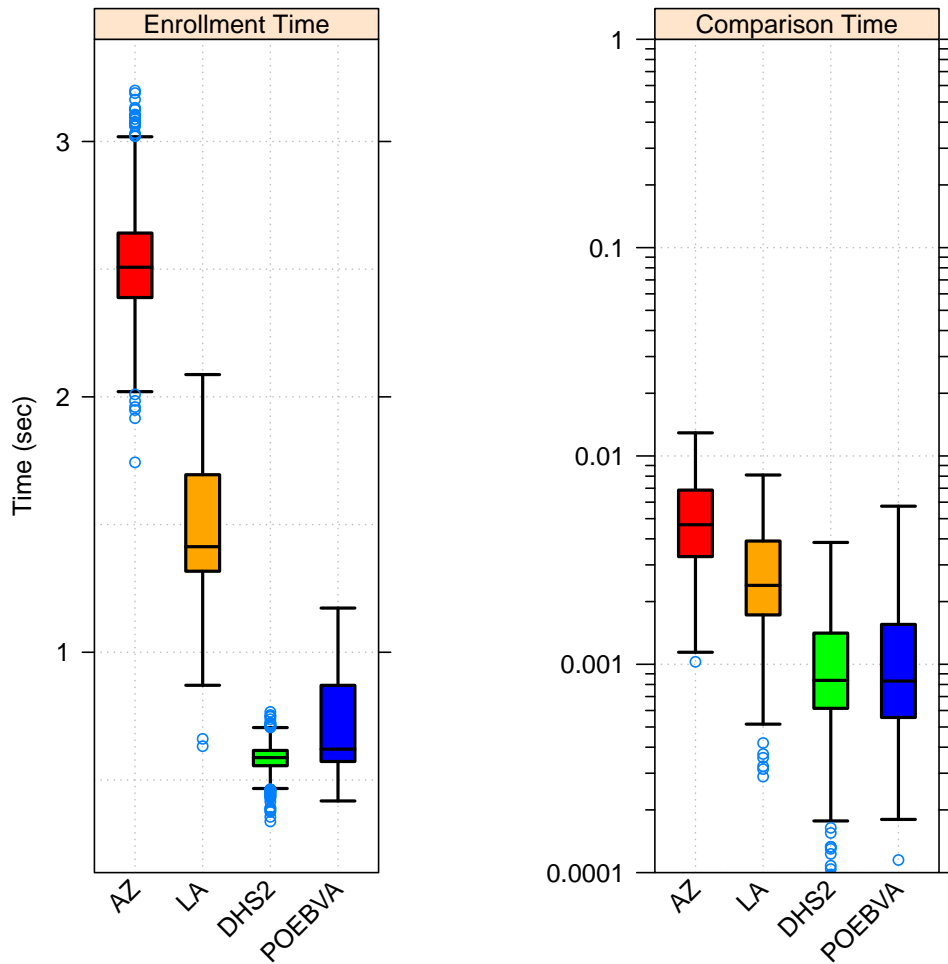


Figure 2: 1K Sample Evaluation – Enrollment and Comparison Timing

	AZ	LA	DHS2	POEBVA
<i>Maximum</i>	3.200	2.087	0.767	1.173
<i>75%</i>	2.641	1.695	0.616	0.871
<i>Median</i>	2.507	1.413	0.588	0.621
<i>25%</i>	2.389	1.317	0.556	0.572
<i>Minimum</i>	1.744	0.632	0.338	0.418

Table 2: Enrollment Times (sec)

	AZ	LA	DHS2	POEBVA
<i>Maximum</i>	0.013	0.008	0.004	0.006
<i>75%</i>	0.007	0.004	0.001	0.002
<i>Median</i>	0.005	0.002	0.001	0.001
<i>25%</i>	0.003	0.002	0.001	0.001
<i>Minimum</i>	0.001	0.000	0.000	0.000

Table 3: Comparison Times (sec)

## 2 Full Evaluation

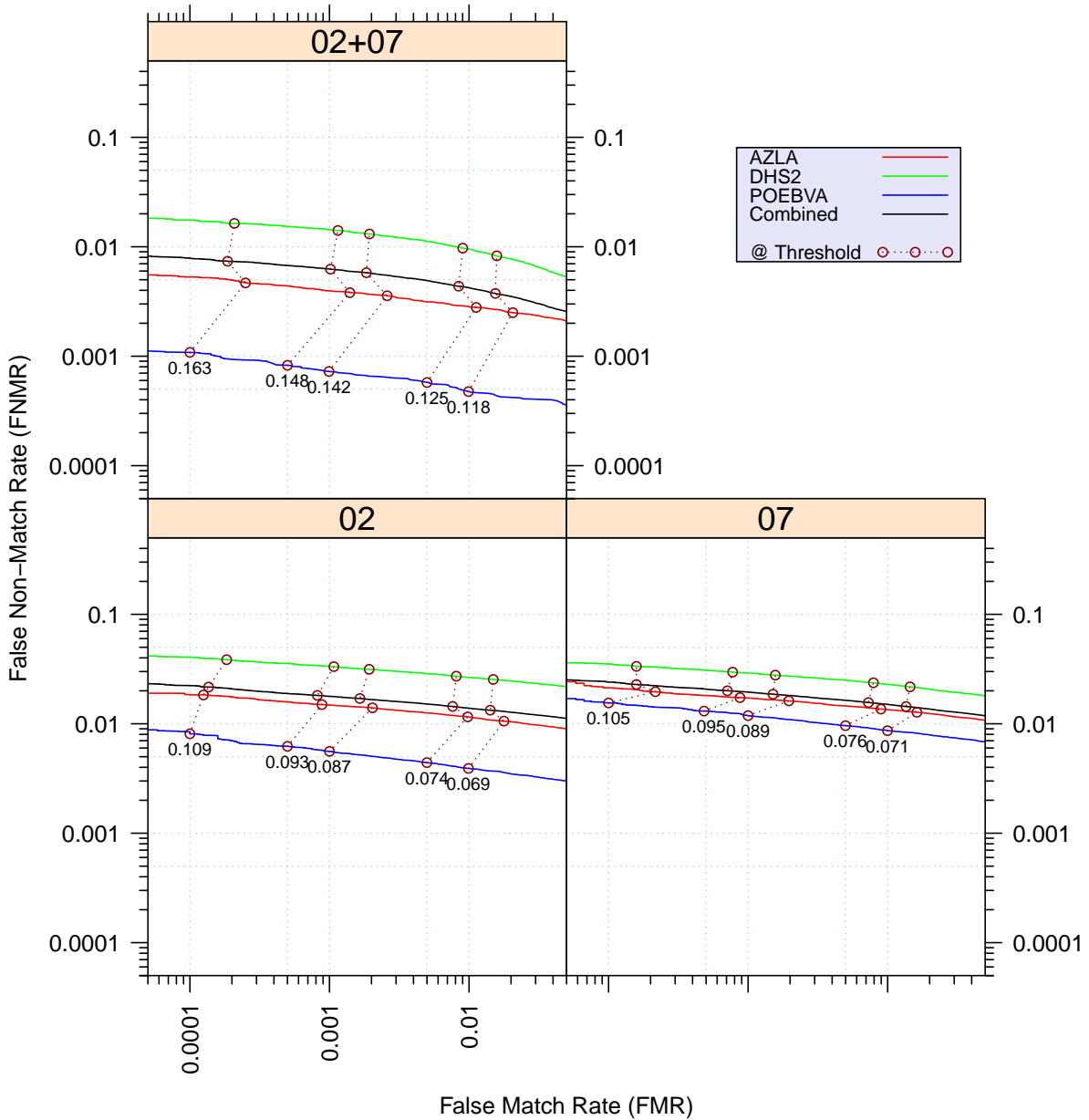


Figure 3: Full Evaluation – DET for POEBVA, DHS2, AZLA, and combined from R Index, L Index, and R/L Index

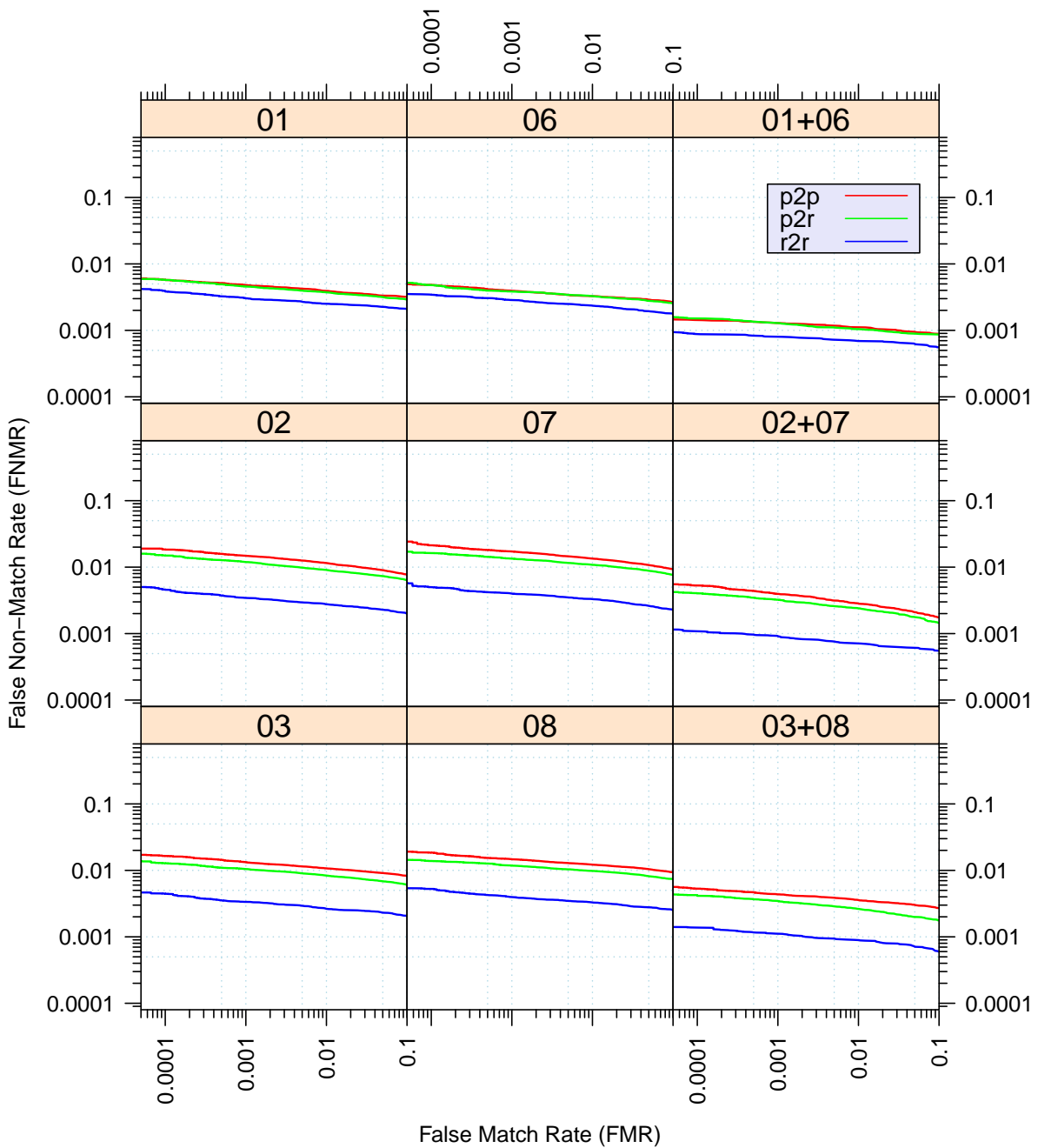


Figure 4: Full Evaluation – DET for all finger positions from AZLA

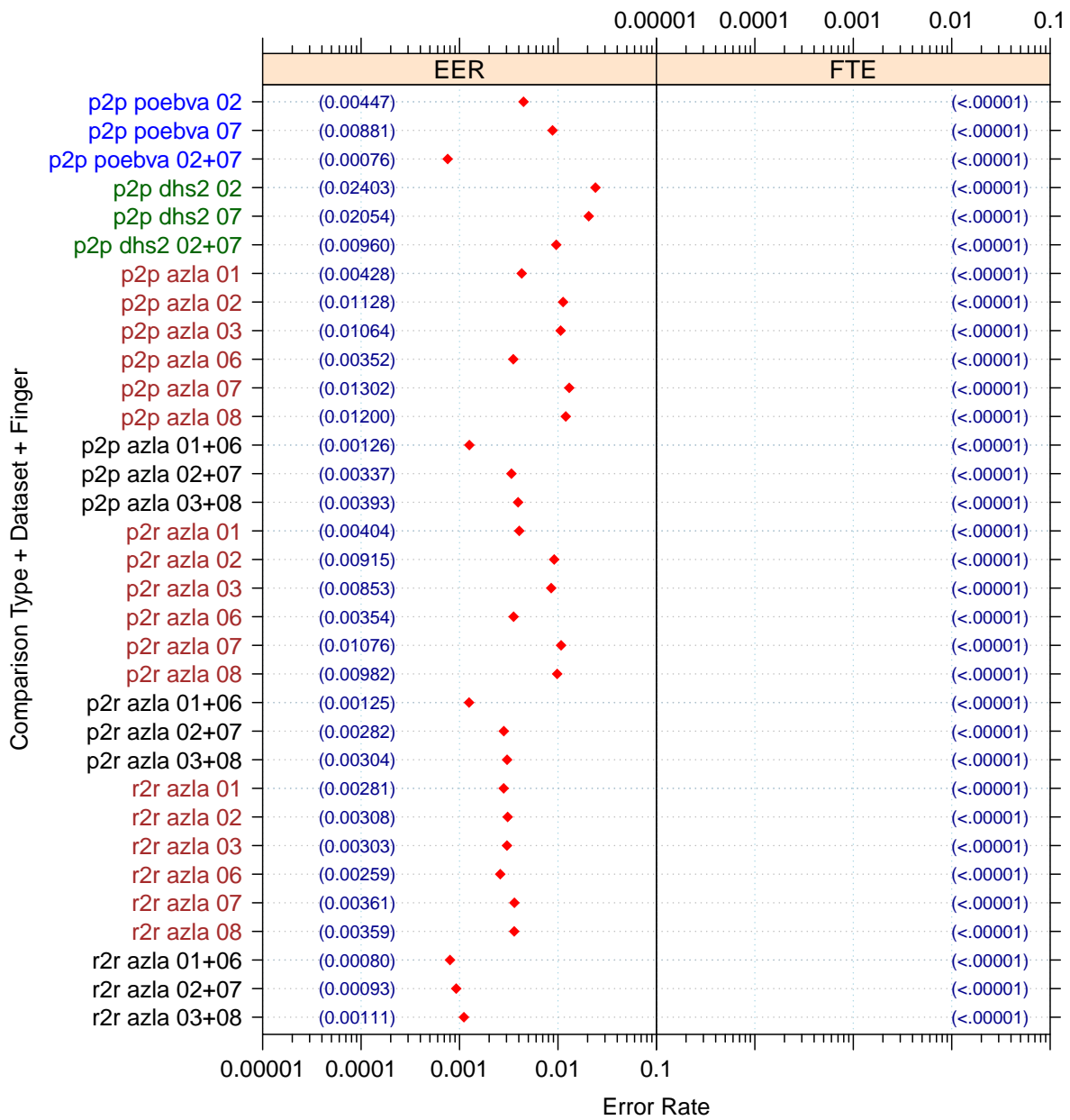


Figure 5: Full Evaluation – EERs and FTEs

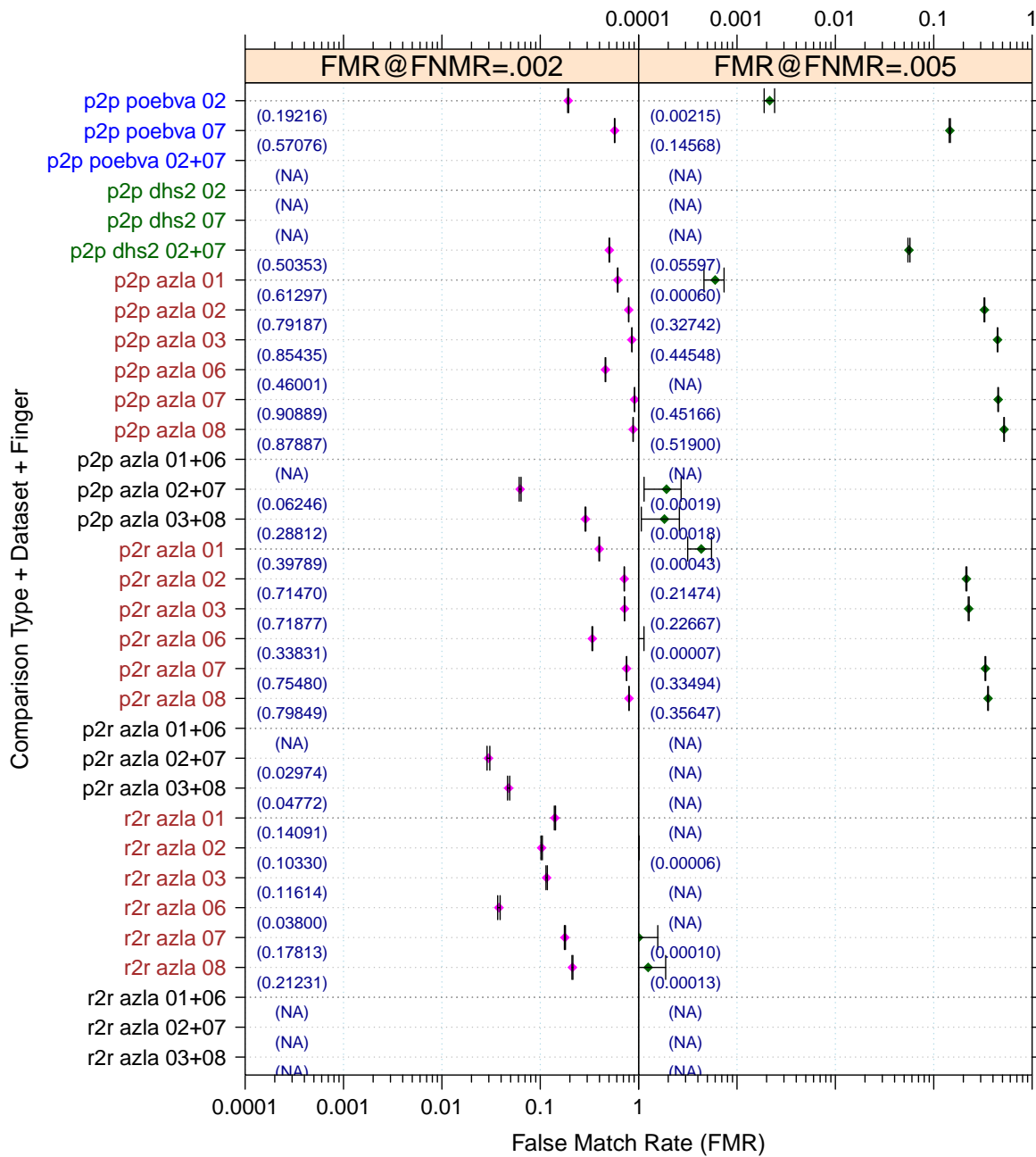


Figure 6: Full Evaluation – FMR@FNMR = (0.002, 0.005) and 95% Confidence Intervals

**Note:** “n/a” indicates that the value could not be reliably measured with the available sample size.



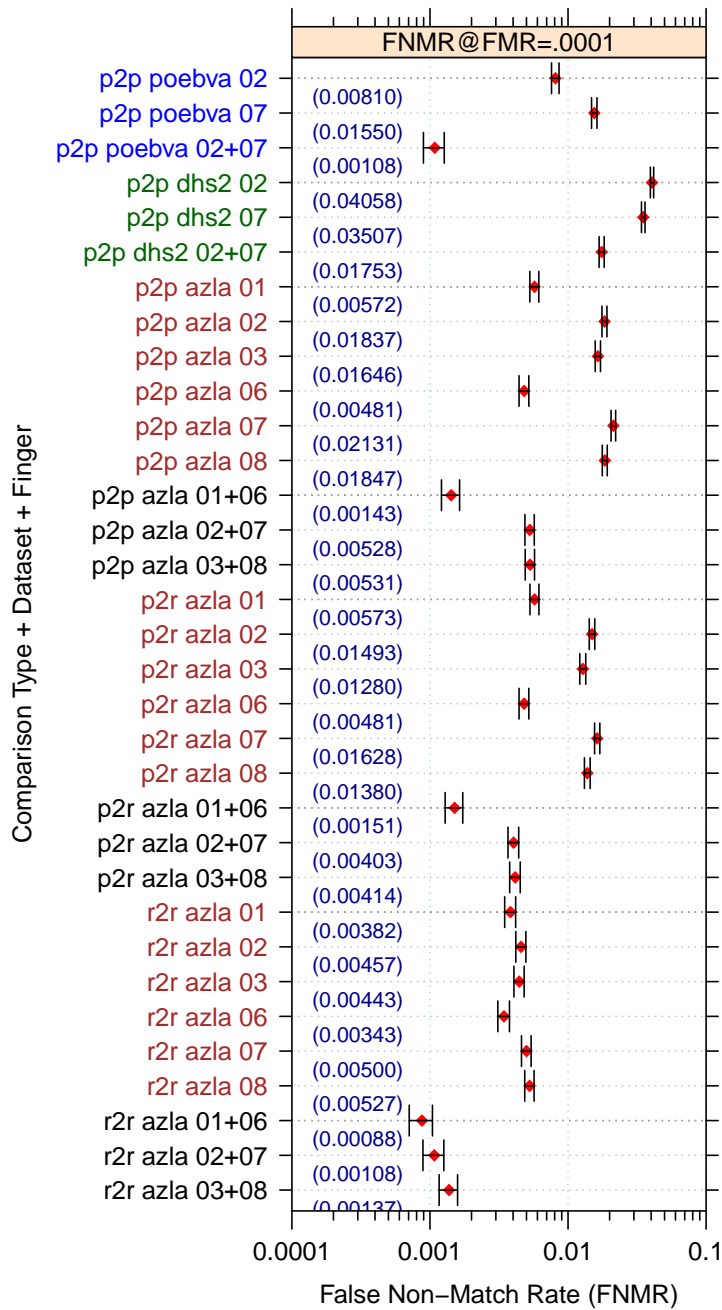


Figure 7: Full Evaluation – FNMR@FMR = 0.0001 and 95% Confidence Intervals

**Note:** “n/a” indicates that the value could not be reliably measured with the available sample size.

		<b>EER</b>	<b>FTE Rate</b>
<b>Plain to Plain</b>	<i>R Thumb</i>	0.0043	0.0000
	<i>R Index</i>	0.0113	0.0000
	<i>R Middle</i>	0.0106	0.0000
	<i>L Thumb</i>	0.0035	0.0000
	<i>L Index</i>	0.0130	0.0000
	<i>L Middle</i>	0.0120	0.0000
	<i>R/L Thumb</i>	0.0013	0.0000
	<i>R/L Index</i>	0.0034	0.0000
	<i>R/L Middle</i>	0.0039	0.0000
<b>Plain to Rolled</b>	<i>R Thumb</i>	0.0040	0.0000
	<i>R Index</i>	0.0092	0.0000
	<i>R Middle</i>	0.0085	0.0000
	<i>L Thumb</i>	0.0035	0.0000
	<i>L Index</i>	0.0108	0.0000
	<i>L Middle</i>	0.0098	0.0000
	<i>R/L Thumb</i>	0.0013	0.0000
	<i>R/L Index</i>	0.0028	0.0000
	<i>R/L Middle</i>	0.0030	0.0000
<b>Rolled to Rolled</b>	<i>R Thumb</i>	0.0028	0.0000
	<i>R Index</i>	0.0031	0.0000
	<i>R Middle</i>	0.0030	0.0000
	<i>L Thumb</i>	0.0026	0.0000
	<i>L Index</i>	0.0036	0.0000
	<i>L Middle</i>	0.0036	0.0000
	<i>R/L Thumb</i>	0.0008	0.0000
	<i>R/L Index</i>	0.0009	0.0000
	<i>R/L Middle</i>	0.0011	0.0000

Table 4: EER and FTE — Dataset AZLA

		<b>EER</b>	<b>FTE Rate</b>
<i>R Index</i>	0.0240	0.0000	
<i>L Index</i>	0.0205	0.0000	
<i>R/L Index</i>	0.0096	0.0000	

Table 5: EER and FTE — Dataset DHS2

		<b>EER</b>	<b>FTE Rate</b>
<i>R Index</i>	0.0045	0.0000	
<i>L Index</i>	0.0088	0.0000	
<i>R/L Index</i>	0.0008	0.0000	

Table 6: EER and FTE — Dataset POEBVA

		<b>FNMR@FMR = 0.0001</b>	<b>FMR@FNMR = 0.002</b>	<b>FMR@FNMR = 0.005</b>
<b>Plain to Plain</b>	<i>R Thumb</i>	0.0057 ±0.00043	0.6130 ±0.00276	0.0006 ±0.00014
	<i>R Index</i>	0.0184 ±0.00076	0.7919 ±0.00230	0.3274 ±0.00265
	<i>R Middle</i>	0.0165 ±0.00072	0.8544 ±0.00200	0.4455 ±0.00281
	<i>L Thumb</i>	0.0048 ±0.00039	0.4600 ±0.00282	n/a
	<i>L Index</i>	0.0213 ±0.00082	0.9089 ±0.00163	0.4517 ±0.00282
	<i>L Middle</i>	0.0185 ±0.00076	0.8789 ±0.00185	0.5190 ±0.00283
	<i>R/L Thumb</i>	0.0014 ±0.00021	n/a	n/a
	<i>R/L Index</i>	0.0053 ±0.00041	0.0625 ±0.00137	0.0002 ±0.00008
	<i>R/L Middle</i>	0.0053 ±0.00041	0.2881 ±0.00256	0.0002 ±0.00008
<b>Plain to Rolled</b>	<i>R Thumb</i>	0.0057 ±0.00043	0.3979 ±0.00277	0.0004 ±0.00012
	<i>R Index</i>	0.0149 ±0.00069	0.7147 ±0.00255	0.2147 ±0.00232
	<i>R Middle</i>	0.0128 ±0.00064	0.7188 ±0.00254	0.2267 ±0.00237
	<i>L Thumb</i>	0.0048 ±0.00039	0.3383 ±0.00268	n/a
	<i>L Index</i>	0.0163 ±0.00072	0.7548 ±0.00243	0.3349 ±0.00267
	<i>L Middle</i>	0.0138 ±0.00066	0.7985 ±0.00227	0.3565 ±0.00271
	<i>R/L Thumb</i>	0.0015 ±0.00022	n/a	n/a
	<i>R/L Index</i>	0.0040 ±0.00036	0.0297 ±0.00096	n/a
	<i>R/L Middle</i>	0.0041 ±0.00036	0.0477 ±0.00121	n/a
<b>Rolled to Rolled</b>	<i>R Thumb</i>	0.0038 ±0.00035	0.1409 ±0.00197	n/a
	<i>R Index</i>	0.0046 ±0.00038	0.1033 ±0.00172	n/a
	<i>R Middle</i>	0.0044 ±0.00038	0.1161 ±0.00181	n/a
	<i>L Thumb</i>	0.0034 ±0.00033	0.0380 ±0.00108	n/a
	<i>L Index</i>	0.0050 ±0.00040	0.1781 ±0.00216	0.0001 ±0.00006
	<i>L Middle</i>	0.0053 ±0.00041	0.2123 ±0.00231	0.0001 ±0.00006
	<i>R/L Thumb</i>	0.0009 ±0.00017	n/a	n/a
	<i>R/L Index</i>	0.0011 ±0.00018	n/a	n/a
	<i>R/L Middle</i>	0.0014 ±0.00021	n/a	n/a

Table 7: Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset AZLA

**Note:** “n/a” indicates that the value could not be reliably measured with the available sample size.

	<b>FNMR@FMR = 0.0001</b>	<b>FMR@FNMR = 0.002</b>	<b>FMR@FNMR = 0.005</b>
<i>R Index</i>	0.0406 ±0.00112	n/a	n/a
<i>L Index</i>	0.0351 ±0.00104	n/a	n/a
<i>R/L Index</i>	0.0175 ±0.00074	0.5035 ±0.00283	0.0560 ±0.00130

Table 8: Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset DHS2

**Note:** “n/a” indicates that the value could not be reliably measured with the available sample size.

	<b>FNMR@FMR = 0.0001</b>	<b>FMR@FNMR = 0.002</b>	<b>FMR@FNMR = 0.005</b>
<i>R Index</i>	0.0081 ±0.00051	0.1922 ±0.00223	0.0022 ±0.00026
<i>L Index</i>	0.0155 ±0.00070	0.5708 ±0.00280	0.1457 ±0.00200
<i>R/L Index</i>	0.0011 ±0.00019	n/a	n/a

Table 9: Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset POEBVA

**Note:** “n/a” indicates that the value could not be reliably measured with the available sample size.

### 3 Original PFT Dataset

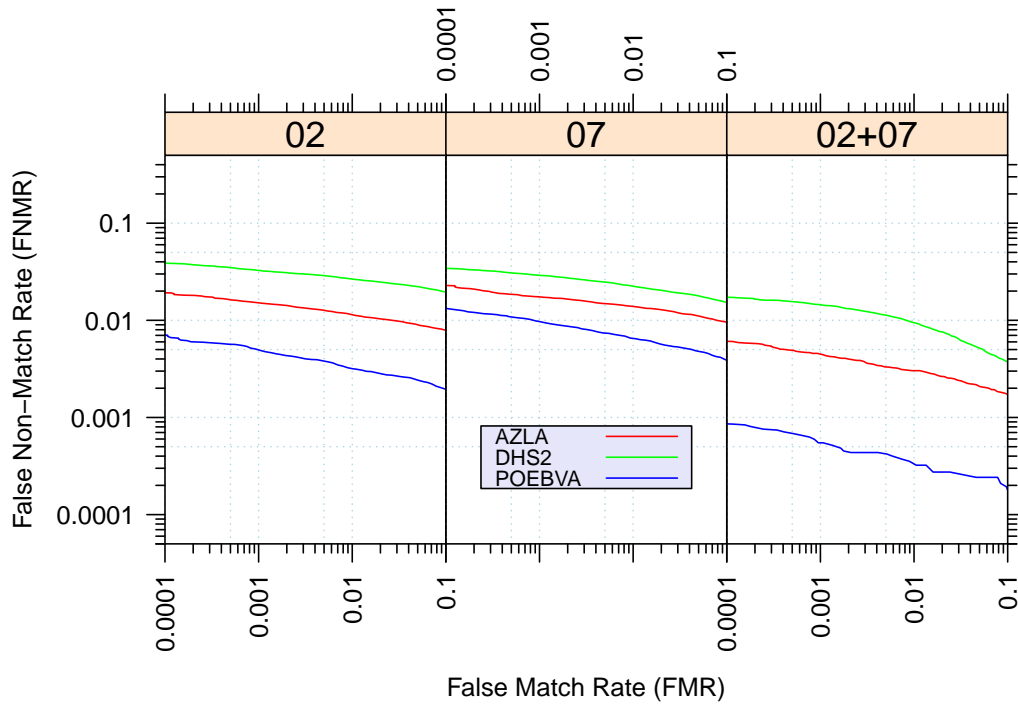


Figure 8: Original PFT Dataset – DET

		EER	FNMR@FMR = 0.0001	FMR@FNMR = 0.005
<b>AZLA</b>	<i>R Index</i>	0.0110	0.0192	0.3556
	<i>L Index</i>	0.0133	0.0228	0.4762
	<i>R/L Index</i>	0.0035	0.0061	0.0004
<b>DHS2</b>	<i>R Index</i>	0.0239	0.0389	0.9802
	<i>L Index</i>	0.0200	0.0342	0.9851
	<i>R/L Index</i>	0.0096	0.0173	0.0543
<b>POEBVA</b>	<i>R Index</i>	0.0039	0.0071	0.0009
	<i>L Index</i>	0.0070	0.0132	0.0424
	<i>R/L Index</i>	0.0006	0.0009	n/a

Table 10: Details for EER, FNMR@FMR = 0.0001, and FMR@FNMR = 0.005 — Original PFT Dataset

**Note:** “n/a” indicates that the value could not be reliably measured with the available sample size.