



Tenprint Examination Demonstration Test No. 15-514

Summary Report

This test was sent to 15 participants. Each sample pack contained eleven single print pairs and seven tenprint card pairs. Participants were asked to compare the two prints within each pair to determine whether or not they originated from the same finger (single print pairs) or same individual (tenprint pairs). Data were returned from 11 participants (73% response rate) and are compiled into the following tables:

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This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each digital sample pack consisted of eighteen pairs of collected fingerprints for comparison. Items Q1-Q11 contained single print pairs, and Items Q12-Q18 contained tenprint card pairs. Participants were asked to compare the two prints or sets of prints within each pair to determine if both originated from a single source.

SAMPLE PREPARATION-

Utilizing several anonymized databases containing a limited number of fingerprints, both visual comparison and AFIX comparison software were used to find prints with similar first and second-level details. These prints were then paired together as a single questioned item and the process repeated for all test items. Different sets of prints from the same individual were paired together for the matching items. These items were then uploaded to the CTS Portal for download by test participants.

Single Print Pair	Same Source?	Tenprint Pair	Same Source?
Q1	No	Q12	No
Q2	No	Q13	No
Q3	Yes	Q14	No
Q4	No	Q15	No
Q5	No	Q16	No
Q6	No	Q17	Yes
Q7	No	Q18	No
Q8	No		
Q9	No		
Q10	Yes		
Q11	Yes		

Summary Comments

This demonstration test offering was designed to allow participants to evaluate the test design, digital samples, and data reporting format for a proposed Tenprint Examination proficiency test. Each digital sample pack contained eighteen pairs of collected fingerprints for comparison. Each pair contained either two single prints or two tenprint cards. Participants were asked to determine if the two collected prints within each pair originated from a single source. The participants provided the expected responses for all eleven single-print comparisons and seven tenprint comparisons.

It was noted by some participants that more print pairs could be included to make the test longer, and that the comparisons could be more challenging than those provided in the demonstration test. CTS plans to expand its limited fingerprint databases in order to provide more challenging comparisons in future tenprint tests. File size proved problematic for many participants, so future tests will be adjusted to allow for smaller file sizes and quicker download times. In order to offer the best file types for participants, questions regarding the file type used and analysis techniques will be added to the data sheet.

CTS acknowledges the contributions of those participants that completed this demonstration test, and we thank these participants for their time and feedback. The overall findings were positive, and the test was found to be practical, good quality, and similar to casework. Future Tenprint Examination tests will be structured in a very similar manner to this demonstration test.

Comparisons - Single Prints

Does each pair of the following collected fingerprints originate from the same source?

TABLE 1a - Item Q1

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				
Response Summary		Total Participants: 11			
	Match	Total			

Yes 0

No 11

Unable To Determine 0

TABLE 1a - Item Q2

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				

Response Summary

Total Participants: 11

Match	Total
Yes	0
No	11
Unable To Determine	0

TABLE 1a - Item Q3

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	Yes				
7WYC9L	Yes				
8ZUMJC	Yes				
F6ZQAC	Yes				
FHPNCA	Yes				
FPNA4A	Yes				
GBMX8B	Yes				
NHZH82	Yes				
QNF36X	Yes				
R4P64X	Yes				
W3EW6L	Yes				
Response Summary		Total Participants: 11			
	Match	Total			

Yes	11
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No	0
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Unable To Determine	0
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TABLE 1a - Item Q4

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				
Response Summary		Total Participants: 11			
	Match	Total			

Yes	0
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No	11
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Unable To Determine	0
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TABLE 1a - Item Q5

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				
Response Summary		Total Participants: 11			
	Match	Total			

Yes	0
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No	11
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Unable To Determine	0
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TABLE 1a - Item Q6

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				

Response Summary

Total Participants: 11

Match	Total
Yes	0
No	11
Unable To Determine	0

TABLE 1a - Item Q7

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				
Response Summary		Total Participants: 11			
	Match	Total			

Yes	0
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No	11
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Unable To Determine	0
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TABLE 1a - Item Q8

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				

Response Summary		Total Participants: 11
Match	Total	

Yes	0
No	11
Unable To Determine	0

TABLE 1a - Item Q9

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				
Response Summary		Total Participants: 11			
	Match	Total			

Yes 0

No 11

Unable To Determine 0

TABLE 1a - Item Q10

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	Yes				
7WYC9L	Yes				
8ZUMJC	Yes				
F6ZQAC	Yes				
FHPNCA	Yes				
FPNA4A	Yes				
GBMX8B	Yes				
NHZH82	Yes				
QNF36X	Yes				
R4P64X	Yes				
W3EW6L	Yes				
Response Summary		Total Participants: 11			
	Match	Total			

Yes 11

No 0

Unable To Determine 0

TABLE 1a - Item Q11

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	Yes				
7WYC9L	Yes				
8ZUMJC	Yes				
F6ZQAC	Yes				
FHPNCA	Yes				
FPNA4A	Yes				
GBMX8B	Yes				
NHZH82	Yes				
QNF36X	Yes				
R4P64X	Yes				
W3EW6L	Yes				
Response Summary		Total Participants: 11			
	Match	Total			

Yes 11

No 0

Unable To Determine 0

Comparisons - Tenprints

Does each pair of the following collected tenprint cards originate from the same source?

TABLE 1b - Item Q12

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				
Response Summary		Total Participants: 11			
	Match	Total			

Yes 0

No 11

Unable To Determine 0

TABLE 1b - Item Q13

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				

Response Summary		Total Participants: 11
Match	Total	

Yes	0
No	11
Unable To Determine	0

TABLE 1b - Item Q14

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				

Response Summary		Total Participants: 11
Match	Total	

Yes	0
No	11
Unable To Determine	0

TABLE 1b - Item Q15

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				
Response Summary		Total Participants: 11			
	Match	Total			

Yes	0
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No	11
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Unable To Determine	0
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TABLE 1b - Item Q16

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				

Response Summary		Total Participants: 11
Match	Total	

Yes	0
No	11
Unable To Determine	0

TABLE 1b - Item Q17

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	Yes				
7WYC9L	Yes				
8ZUMJC	Yes				
F6ZQAC	Yes				
FHPNCA	Yes				
FPNA4A	Yes				
GBMX8B	Yes				
NHZH82	Yes				
QNF36X	Yes				
R4P64X	Yes				
W3EW6L	Yes				

Response Summary		Total Participants: 11
Match	Total	

Yes	11
No	0
Unable To Determine	0

TABLE 1b - Item Q18

Report Code	Match	Report Code	Match	Report Code	Match
6MHBDL	No				
7WYC9L	No				
8ZUMJC	No				
F6ZQAC	No				
FHPNCA	No				
FPNA4A	No				
GBMX8B	No				
NHZH82	No				
QNF36X	No				
R4P64X	No				
W3EW6L	No				

Response Summary		Total Participants: 11
Match	Total	

Yes	0
No	11
Unable To Determine	0

Additional Comments

TABLE 2

Report Code	Additional Comments
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No Additional Comments were received in this test.

Research Question - Test Practicality

TABLE 3

Report Code	Would this test be a practical proficiency test (including test design)?
6MHBDL	Yes
7WYC9L	Seems a little easy for seasoned ten print examiners. Good for someone just finishing training to determine if able to work independently.
8ZUMJC	Yes.
F6ZQAC	Yes. Ten print portion can be abit more difficult.
FHPNCA	Too Easy
FPNA4A	Yes
GBMX8B	Yes. Would like to see full sets of prints, including plain impressions. And, be able to mark the fingerprint impressions.
NHZH82	Yes.
QNF36X	It is hard to know if this is a practical test as we do not know what the test objectives are. As for the test design, it is clear and simple which is always a good thing.
R4P64X	Yes. None.
W3EW6L	Yes, no changes.

Research Question - Instructions

TABLE 4

Report Code	Are the instructions on the data sheet clear and sufficient for testing purposes?
6MHBDL	Yes
7WYC9L	Yes
8ZUMJC	Yes.
F6ZQAC	yes
FHPNCA	OK
FPNA4A	Yes
GBMX8B	Yes
NHZH82	Yes
QNF36X	The instructions are clear enough, perhaps the "Scenario" is not really necessary.
R4P64X	Yes
W3EW6L	Yes

Research Question - Sample Quality

TABLE 5

Report Code	Does the quality of the images meet your lab's requirements?
6MHBDL	Yes
7WYC9L	Quality is sufficient
8ZUMJC	The prints were blurry. They were not similar to the Livescan prints I work with on a daily basis.
F6ZQAC	yes, some were abit dark/distorted
FHPNCA	Excellent quality. 3rd level detail clearly visible.
FPNA4A	Yes
GBMX8B	Yes
NHZH82	Yes
QNF36X	There was no real problem with the quality of the prints provided in this test.
R4P64X	Yes
W3EW6L	Yes

Research Question - Image Types

TABLE 6

Report Code	Are the types of images similar to what you would see in casework?
6MHB DL	Yes
7WYC9L	Yes, similar. For testing purposes, it would be good to also have closer non matches on 10 print comparisons (twins?) Single fingers could have some that are the same, but look different due to distortion, scars, etc. Also, the 10 print cards should include the plain impressions. You could include a comparison where the fingers are rolled out of sequence, but correct on the plain impressions.
8ZUMJC	They were similar. I would suggest sending the prints at 500 ppi in grayscale. They were way too large for some of our programs and printers to handle, and thus had to be made much smaller.
F6ZQAC	yes
FHPNCA	Yes
FPNA4A	Yes
GBMX8B	Yes. Would like the comparisons to be more similar to each other, same pattern types and ridge flow.
NHZH82	Yes
QNF36X	The onscreen nature of this test was fine, digital imaging has been used in this lab for several years now. However, the download time of the TIF format images was very slow and affected the amount of time needed for this test. The EFT format was unfamiliar to me.
R4P64X	Would expect a few more distorted or "smudged" prints - all were very distinct. But sufficient to test for the majority of records received.
W3EW6L	Yes

Research Question - Number of Samples

TABLE 7

Report Code	Are the number of print pairs adequate?
6MHBDL	Yes
7WYC9L	Adequate
8ZUMJC	Yes.
F6ZQAC	yes
FHPNCA	This is an easy test. Could increase the number of comparisons to 100
FPNA4A	Yes
GBMX8B	I believe 15 of each would be more adequate.
NHZH82	The 10-to-10 test section could have more than what was provided.
QNF36X	As with my answer to question one, without knowing what the objective is, it is difficult to know how much would be enough.
R4P64X	Adequate
W3EW6L	Adequate number of samples

Research Question - Time to Complete

TABLE 8

Report Code	How much time did it take to complete this examination (in hours)?
6MHBDL	2 hours
7WYC9L	About one and a half hours, not counting these questions, or difficulties with files.
8ZUMJC	It was about an hour for the comparisons, but an extra 3 just to get the prints downloaded and reformatted.
F6ZQAC	1 hour
FHPNCA	0.2
FPNA4A	45 minutes (due to uploading images)
GBMX8B	The examination it's self didn't take more than an hour. The issues we had with our systems, took a few hours to be able to view and take the test.
NHZH82	2 hrs
QNF36X	Due to the very slow download times the comparison part of this test took me around an hour to complete.
R4P64X	5 hours - mostly documentation issues - pure comparison was 30 minutes maximum
W3EW6L	1 hour

Research Question - File Type

TABLE 9

Report Code	Which file type did you utilize? What is your preferred file type?
6MHBDL	TIF / TIF
7WYC9L	I could only open the TIF, and my printer would not allow me to print - not enough storage. Our equipment is old. Can the images be JPEGs?
8ZUMJC	TIF
F6ZQAC	tif
FHPNCA	TIFF, do not have an EFT viewer
FPNA4A	TIF
GBMX8B	For my operating system, I had to use TIF.
NHZH82	The TIF file was utilized. TIF was preferred for this style of examination because it made it easier to open.
R4P64X	TIFs were used and preferred. Would have preferred the option to select the files to download instead of having to download all the files.
W3EW6L	TIF; TIF

Research Question - Image Compression

TABLE 10

Report Code	Did the image compression affect your download/analysis process?
6MHBDL	No
7WYC9L	We had a lot of trouble with the files. Our operating system could not handle. Windows XP. Government jobs don't usually have the newest software.
8ZUMJC	Yes. I would prefer print outs or a CD.
F6ZQAC	longer to download
FHPNCA	Not a problem. Initially fuzzy then cleared up in a few seconds as download completed. Would prefer compressed files.
FPNA4A	Opening images for comparison was slow possibly due to large image files.
GBMX8B	We had a lot of issues bringing the impressions up. I had to open each file as a photo, then adjust size to make my comparison.
NHZH82	The compression was helpful. No, I would not prefer an uncompressed format.
QNF36X	The image compression and format only affected the amount of time necessary to perform the test. As stated earlier the EFT format was unfamiliar.
R4P64X	No. Not necessary
W3EW6L	Took about 9 minutes to download test file, but wasn't excessively problematic.

Additional Comments on Overall Test Design

TABLE 11

Report Code	Additional Comments on overall test design
7WYC9L	The person administering the test had to copy the files from a newer computer to a thumb drive and download to our computers. It still took some work to get the files to open. Test should be designed to be used by people with new or old operating systems, since every agency has different computer capabilities. These questions should have more space for answers without having to scroll over. I would like to see my entire answers.
8ZUMJC	I believe that print outs or a CD would make this test much more user friendly.
FPNA4A	Ten print to ten print images were overly easy.
GBMX8B	Need to be able to view test using any operating system.
NHZH82	I need to print the images out for the examination and it was not easy to do so because the files were so large. It took some know how from our Information Technologist to get the images printed. Is there a way to not have the images in a large file so that printing can be easier? Thank you!
QNF36X	The test images could perhaps be a little more challenging.
R4P64X	Worked fine for the concept