

ISO/IEC 24734 Printing Productivity Report: Office Category

Full Detailed Test Report - LETTER
HP LaserJet Pro MFP M428fdn

| Printing device and settings | |
|------------------------------|-----------------------------|
| Test Start Date and Time | 12/23/2019 17:41 |
| Tester | Tom |
| Machine name/model | HP LaserJet Pro MFP M428fdn |
| Colour or B&W | B&W |
| PW Version | 002.1948A |
| Temperature and Humidity | 79 degF / 26 degC 68.0 %rH |
| Voltage | 220V |
| Test End Date and Time | 1/15/2020 17:30 |

| Mode and Setting | Item | Value |
|------------------|-------------------------|---|
| | Driver Version | 48.4.4578 |
| Mode and Setting | Media/Quality Setting | Default / Default |
| | Simplex B&W Settings | default |
| | Duplex B&W Settings | default |
| | Setting N set count | Application |
| | Collating function | Activated (application) |
| Paper Path | Paper Sending Direction | Default |
| | Paper Size Setting | Default |
| | Paper Feeding Tray | Tray 2 |
| | Paper Exit | Standard Exit Tray |
| | Output Orientation | Default (face down) |
| Paper | Duplexing Unit (Yes/No) | Yes |
| | Paper Manufacturer | HP / Xerox |
| | Paper Weight | 20lb / 75 g/m2 |
| | Paper Size | Letter / A4 |
| | Paper type/name | HP Multipurpose Ultra White / HP Office |

| Summary Report: Letter | | | |
|-------------------------------------|---------|----------------|------------|
| Office Category Test for B&W Device | | FSOT (seconds) | ESAT (ipm) |
| B&W | Simplex | 10.80 | 40.41 |
| | Duplex | 14.50 | 36.08 |

Notes:
1) All printing device and driver settings were default mode.
2) For the B/W results, the print driver was set to "print in B/W".
3) For more information see <http://www.hp.com/go/printerclaims>.
4) Port monitor not configured to follow device if the IP address changes.

| Detailed Report: LETTER | | | | | | |
|---|------------------------|--------------------|--------------------|---------------------------|--------------------------|---------------|
| | Office Category Test | FSOT (secs) | EFTP (ipm) | | ESAT (ipm) | |
| | | 1 set only (1 set) | 1 set only (1 set) | 1 set + 30sec (# of sets) | 1 set + 4min (# of sets) | 1 set + 30sec |
| Color Mode | Simplex - Adobe Reader | | (1 set) | | | |
| | Simplex - Word | | (1 set) | | | |
| | Simplex - Excel | | (1 set) | | | |
| | Simplex - Average | | | | | |
| | Duplex - Adobe Reader | N/A | N/A | N/A | | N/A |
| | Duplex - Word | N/A | N/A | N/A | | N/A |
| | Duplex - Excel | N/A | N/A | N/A | | N/A |
| | Duplex - Average | N/A | N/A | N/A | | N/A |
| B&W mode (optional for color device) | Simplex - Adobe Reader | 10.27 | 23.36 (1 set) | 36.48 (7 sets) | 39.65 (42 sets) | 40.40 |
| | Simplex - Word | 11.21 | 21.40 (1 set) | 35.82 (7 sets) | | 40.40 |
| | Simplex - Excel | 10.90 | 22.01 (1 set) | 36.13 (7 sets) | | 40.43 |
| | Simplex - Average | 10.80 | 22.25 | 36.14 | 39.7 | 40.41 |
| | Duplex - Adobe Reader | 13.98 | 17.16 (1 set) | 30.16 (6 sets) | | 36.10 |
| | Duplex - Word | 14.88 | 16.12 (1 set) | 29.74 (6 sets) | | 36.06 |
| | Duplex - Excel | 14.63 | 16.40 (1 set) | 29.75 (6 sets) | | 36.08 |
| | Duplex - Average | 14.50 | 16.56 | 29.89 | | 36.08 |
| | | | | | | |
| | | | | | | |

Notes:
1) All printing device and driver settings were default mode.
2) For the B/W results, the print driver was set to "print in B/W".
3) For more information see <http://www.hp.com/go/printerclaims>.
4) Port monitor not configured to follow device if the IP address changes.

| Test System Parameters | |
|-------------------------|--|
| Item | Value |
| Computer | HP Z240 SFF Workstation |
| Processor | Intel Core i7 -6770, 3.4 GHz |
| System Chip Set | Intel SKL/KBL Mobile/Desktop |
| System Board | system devices, default system BIOS |
| System Memory | 8 GB |
| Hard Drive Subsystem | Turbo Drive G2 256GB PCIe SSD |
| Video Subsystem | Microsoft Basic Display Adaptor |
| Optical Drive | HP HLDS DVD RW GUD1N |
| IO Subsystem | Builtin |
| USB Subsystem | USB 2.0/3.0 |
| | TCP/IP 1 TCP/IP 10/100 |
| Operating System | Win 10 Enterprise 64 Bit (10240) |
| Printing Applications | Microsoft Office Word 2016 Acrobat Reader DC Microsoft Office Excel 2016 |
| Print Driver | Not Specified |
| Test files and location | Office category files, hard drive |

ISO/IEC 24734 Printing Productivity Report: Office Category

Full Detailed Test Report - A4
HP LaserJet Pro MFP M428dn

| Printing device and settings | |
|------------------------------|----------------------------|
| Test Start Date and Time | 12/23/2019 17:41 |
| Tester | Tom |
| Machine name/model | HP LaserJet Pro MFP M428dn |
| Colour or B&W | B&W |
| PW Version | 002.1948A |
| Temperature and Humidity | 79 degF / 26 degC 68.0 %rH |
| Voltage | 220V |
| Test End Date and Time | 1/15/2020 17:30 |

| Mode and Setting | Item | Value |
|------------------|-------------------------|---|
| | Driver Version | 48.4.4578 |
| Mode and Setting | Media/Quality Setting | Default / Default |
| | Simplex B&W Settings | default |
| | Duplex B&W Settings | default |
| | Setting N set count | Application |
| Paper Path | Collating function | Activated (application) |
| | Paper Sending Direction | Default |
| | Paper Size Setting | Default |
| | Paper Feeding Tray | Tray 2 |
| Paper | Paper Exit | Standard Exit Tray |
| | Output Orientation | Default (face down) |
| | Duplexing Unit (Yes/No) | Yes |
| | Paper Manufacturer | HP / Xerox |
| Paper | Paper Weight | 20lb / 75 g/m2 |
| | Paper Size | Letter / A4 |
| | Paper type/name | HP Multipurpose Ultra White / HP Office |

| Summary Report: A4 | | | |
|-------------------------------------|---------|----------------|------------|
| Office Category Test for B&W Device | | FSOT (seconds) | ESAT (ipm) |
| B&W | Simplex | 11.16 | 38.36 |
| | Duplex | 14.84 | 34.59 |

Notes:

- 1) All printing device and driver settings were default mode.
- 2) For the B/W results, the print driver was set to "print in B/W".
- 3) For more information see <http://www.hp.com/go/printerclaims>.
- 4) Port monitor not configured to follow device if the IP address changes.

| Detailed Report: A4 | | | | | | |
|---|------------------------|--------------------|--------------------|---------------------------|--------------------------|---------------|
| | Office Category Test | FSOT (secs) | EFTP (ipm) | | ESAT (ipm) | |
| | | 1 set only (1 set) | 1 set only (1 set) | 1 set + 30sec (# of sets) | 1 set + 4min (# of sets) | 1 set + 30sec |
| Colour Mode | Simplex - Adobe Reader | | (1 set) | | | |
| | Simplex - Word | | (1 set) | | | |
| | Simplex - Excel | | (1 set) | | | |
| | Simplex - Average | | | | | |
| | Duplex - Adobe Reader | N/A | N/A | N/A | | N/A |
| | Duplex - Word | N/A | N/A | N/A | | N/A |
| | Duplex - Excel | N/A | N/A | N/A | | N/A |
| | Duplex - Average | N/A | N/A | N/A | | N/A |
| B&W mode (optional for color device) | Simplex - Adobe Reader | 10.57 | 22.71 (1 set) | 34.23 (6 sets) | 37.68 (40 sets) | 38.35 |
| | Simplex - Word | 11.70 | 20.53 (1 set) | 33.46 (6 sets) | | 38.36 |
| | Simplex - Excel | 11.21 | 21.41 (1 set) | 33.77 (6 sets) | | 38.37 |
| | Simplex - Average | 11.2 | 21.55 | 33.82 | 37.7 | 38.36 |
| | Duplex - Adobe Reader | 14.30 | 16.78 (1 set) | 29.02 (6 sets) | | 34.62 |
| | Duplex - Word | 15.25 | 15.72 (1 set) | 28.44 (6 sets) | | 34.58 |
| | Duplex - Excel | 14.97 | 16.02 (1 set) | 28.54 (6 sets) | | 34.58 |
| | Duplex - Average | 14.8 | 16.17 | 28.70 | | 34.59 |
| | | | | | | |
| | | | | | | |

Notes:

- 1) All printing device and driver settings were default mode.
- 2) For the B/W results, the print driver was set to "print in B/W".
- 3) For more information see <http://www.hp.com/go/printerclaims>.
- 4) Port monitor not configured to follow device if the IP address changes.

| Test System Parameters | |
|-------------------------|-------------------------------------|
| Item | Value |
| Computer | HP Z240 SFF Workstation |
| Processor | Intel Core i7 -6770, 3.4 GHz |
| System Chip Set | Intel SKL/KBL Mobile/Desktop |
| System Board | system devices, default system BIOS |
| System Memory | 8 GB |
| Hard Drive Subsystem | Turbo Drive G2 256GB PCIe SSD |
| Video Subsystem | Microsoft Basic Display Adaptor |
| Optical Drive | HP HLDS DVD RW GUD1N |
| IO Subsystem | Builtin |
| USB Subsystem | USB 2.0/3.0 |
| | TCP/IP 1 TCP/IP 10/1000 |
| Operating System | Win 10 Enterprise 64 Bit (10240) |
| Printing Applications | Microsoft Office Word 2016 |
| | Acrobat Reader DC |
| Print Driver | Microsoft Office Excel 2016 |
| | Not Specified |
| Test files and location | Office category files, hard drive |

ISO/IEC 24734 Printing Productivity Report: Office Category

Feature Performance Full Report - Office Feature Performance Test
HP LaserJet Pro MFP M428dn

| Printing device and settings | |
|------------------------------|----------------------------|
| Test Start Date and Time | 12/23/2019 17:41 |
| Tester | Tom |
| Machine name/model | HP LaserJet Pro MFP M428dn |
| Colour or B&W | B&W |
| PW Version | 002.1948A |
| Temperature and Humidity | 79 degF / 26 degC 68.0 %rH |
| Voltage | 220V |
| Test End Date and Time | 11/15/2020 17:30 |

| Mode and Setting | Item | Value |
|------------------|-------------------------|---|
| | Driver Version | 48.4.4578 |
| Mode and Setting | Media/Quality Setting | Default / Default |
| | Simplex B&W Settings | default |
| | Duplex B&W Settings | default |
| | Setting N set count | Application |
| Paper Path | Collating function | Activated (application) |
| | Paper Sending Direction | Default |
| | Paper Size Setting | Default |
| | Paper Feeding Tray | Tray 2 |
| Paper | Paper Exit | Standard Exit Tray |
| | Output Orientation | Default (face down) |
| | Duplexing Unit (Yes/No) | Yes |
| | Paper Manufacturer | HP / Xerox |
| Paper | Paper Weight | 20lb / 75 g/m2 |
| | Paper Size | Letter / A4 |
| | Paper type/name | HP Multipurpose Ultra White / HP Office |

| ISO Print Productivity Report: Feature Performance Test Summary | | | | |
|---|---------|-------------------------------|-------------------------------|--|
| Printing Modes (Feature Adobe Reader - Office test file) | | Feature Performance Ratio | | |
| | | FSOT (base) FSOT (feature) | ESAT (feature) ESAT (base) | |
| A5, Landscape Feed, Simplex, Colour | Simplex | | | |
| A5, Portrait Feed, Simplex, Colour | Simplex | | | |
| Legal, Simplex, Colour | Simplex | | | |
| Legal, Duplex, Colour | Duplex | | | |
| A4, 1200 dpi, Simplex, Colour | Simplex | | | |
| Letter, 1200 dpi, Simplex, Colour | Simplex | | | |
| A4, HP High Speed, Simplex, Colour | Simplex | | | |
| Letter, HP High Speed, Simplex, Colour | Simplex | | | |
| A4, General Office, Simplex, Colour | Simplex | | | |
| Letter, General Office, Simplex, Colour | Simplex | | | |
| A5, Landscape Feed, Simplex, B/W | Simplex | 143% | 166% | |
| A5, Portrait Feed, Simplex, B/W | Simplex | 59% | 44% | |
| Legal, Simplex, B/W | Simplex | | | |
| Legal, Duplex, B/W | Duplex | | | |
| A4, 1200 dpi, Simplex, B/W | Simplex | | | |
| Letter, 1200 dpi, Simplex, B/W | Simplex | | | |
| A4, HP High Speed, Simplex, B/W | Simplex | 100% | 105% | |
| Letter, HP High Speed, Simplex, B/W | Simplex | 100% | 105% | |
| A4, General Office, Simplex, B/W | Simplex | | | |
| Letter, General Office, Simplex, B/W | Simplex | | | |

Notes:
1) All printing device and driver settings were default mode.
2) Test conducted with 8-paper Office Feature Performance file.
3) For more information see <http://www.hp.com/go/printerclaims>.
4) Port monitor not configured to follow device if the IP address changes.

| Feature Performance Full Report - Feature Printing Mode: 'Office' Feature Performance Test | | | | | | |
|--|--------------------|--------------|----------------------|------------------------------|-------------------------------|-------------------------------|
| Printing Modes Feature Adobe Reader - Office test file (8-page) | Base Printing Mode | | Feature Performance | | | |
| | FSOT Base | ESAT Base | 1 set FSOT (secs) | 1 set + 30 sec ESAT (ipm) | FSOT (base) FSOT (feature) | ESAT (feature) ESAT (base) |
| A5, Landscape Feed, Simplex, Colour | | | | | | |
| A5, Portrait Feed, Simplex, Colour | | | | | | |
| Legal, Simplex, Colour | | | | | | |
| Legal, Duplex, Colour | | | | | | |
| A4, 1200 dpi, Simplex, Colour | | | | | | |
| Letter, 1200 dpi, Simplex, Colour | | | | | | |
| A4, HP High Speed, Simplex, Colour | | | | | | |
| Letter, HP High Speed, Simplex, Colour | | | | | | |
| A4, General Office, Simplex, Colour | | | | | | |
| Letter, General Office, Simplex, Colour | | | | | | |
| A5, Landscape Feed, Simplex, B/W | 17.07 | 38.35 | 11.95 | 63.8 | 143% | 166% |
| A5, Portrait Feed, Simplex, B/W | 17.07 | 38.35 | 29.28 | 17.2 | 59% | 44% |
| Legal, Simplex, B/W | 16.35 | 40.37 | | | | |
| Legal, Duplex, B/W | 16.35 | 40.37 | | | | |
| A4, 1200 dpi, Simplex, B/W | 17.07 | 38.35 | | | | |
| Letter, 1200 dpi, Simplex, B/W | 16.35 | 40.37 | | | | |
| A4, HP High Speed, Simplex, B/W | 17.07 | 38.35 | 17.16 | 40.4 | 100% | 105% |
| Letter, HP High Speed, Simplex, B/W | 16.35 | 40.37 | 16.45 | 42.5 | 100% | 105% |
| A4, General Office, Simplex, B/W | 17.07 | 38.35 | | | | |
| Letter, General Office, Simplex, B/W | 16.35 | 40.37 | | | | |

Notes:
1) All printing device and driver settings were default mode.
2) Test conducted with 8-paper Office Feature Performance file.
3) For more information see <http://www.hp.com/go/printerclaims>.
4) Port monitor not configured to follow device if the IP address changes.

| Test System Parameters | | |
|-------------------------|-----------------------|-------------------------------------|
| Item | Value | |
| Test System | Computer | HP Z240 SFF Workstation |
| | Processor | Intel Core i7-6770, 3.4 GHz |
| | System Chip Set | Intel SKL/KBL Mobile/Desktop |
| | System Board | system devices, default system BIOS |
| | System Memory | 8 GB |
| | Hard Drive Subsystem | Turbo Drive G2 256GB PCIe SSD |
| | Video Subsystem | Microsoft Basic Display Adaptor |
| | Optical Drive | HP HLDS DVD RW GUD 1N |
| | I/O Subsystem | Builtin |
| | USB Subsystem | USB 2.0/3.0 |
| I/O | TC/PI/F | TC/PI/10/1000 |
| Software | Operating System | Win 10 Enterprise 64 Bit (10240) |
| | Printing Applications | Microsoft Office Word 2016 |
| | | Acrobat Reader DC |
| | | Microsoft Office Excel 2016 |
| | Print Driver | Not Specified |
| Test files and location | | Office category files, hard drive |

ISO/IEC 17629 First Print Out Time Report: Office Category

Full Detailed Test Report - LETTER

HP LaserJet Pro MFP M428dn

| Printing device and settings | | |
|------------------------------|----------------------------|--|
| Test Start Date and Time | 2/15/2019 14:12 | |
| Tester | Rachel | |
| Machine name/model | HP LaserJet Pro MFP M428dn | |
| Colour or B&W | B&W | |
| FW Version | 1903A | |
| Configuration (options) | Default | |
| Controller | 11400 | |
| Printing device page count | Not Specified | |
| Printing supplies page count | Not Specified | |
| Temperature and Humidity | 70 degF / 21 degC 42.0 %rH | |
| Voltage | 220V | |
| Test End Date and Time | 2/15/2019 15:07 | |

| Item | | Value |
|------------------|------------------------|--------------------------------|
| Mode and Setting | PDL and driver version | 48.1.4421 |
| | Print Quality mode | default |
| | B&W settings | default |
| | Paper feed orientation | Short Edge |
| Paper | Paper type setting | default |
| | Paper feeding | Standard cassette |
| | Paper exit | Standard exit tray |
| Paper Path | Output orientation | default (face up or face down) |

ISO First Page Out Time Summary Report: Office Category

| Summary Report: Letter | | |
|------------------------|---------|---------------------------|
| | | FPOT from Ready (seconds) |
| B&W | Simplex | 5.86 |
| | Duplex | |

Notes

- 1) All printing device and driver settings were default mode.
- 2) For the B/W results, the print driver was set to "print in B/W".
- 3) For more information see <http://www.hp.com/go/printerclaims>.
- 4) Port monitor not configured to follow device if the IP address changes.
- 5) Page counts were collected after completion of the tests.

ISO First Page Out Time Report: Office Category

| Detailed Report: LETTER | | Word (seconds) | Excel (seconds) | Adobe Reader (seconds) | Average (seconds) | Delay Time |
|-------------------------|---------------------------|----------------|-----------------|------------------------|-------------------|------------|
| Color Mode | FPOT from Ready - Simplex | | | | | |
| | FPOT from Ready - Duplex | | | | | |
| | FPOT from Sleep - Simplex | | | N/A | | |
| | Recovery Time | | | | | |
| | FPOT from Off - Simplex | | | | | |
| | Warm-up Time | | | | | |
| B&W Mode | FPOT from Ready - Simplex | 6.40 | 5.62 | 5.56 | 5.86 | 48 Seconds |
| | FPOT from Ready - Duplex | | | | | |
| | FPOT from Sleep - Simplex | | | 8.08 | | 61 Minutes |
| | Recovery Time | | | 2.5 | | |
| | FPOT from Off - Simplex | | | 28.57 | | |
| | Warm-up Time | | | 23.01 | | |

Notes

- 1) All printing device and driver settings were default mode.
- 2) For the B/W results, the print driver was set to "print in B/W".
- 3) For more information see <http://www.hp.com/go/printerclaims>.
- 4) Port monitor not configured to follow device if the IP address changes.
- 5) Page counts were collected after completion of the tests.
- 6) Details for FPOT from Sleep are shown below.

HP Data Table

| Detailed Report: LETTER | | FPOT Avg (secs) | FPOT (secs) Iteration 1 | FPOT (secs) Iteration 2 | FPOT (secs) Iteration 3 | Application | Delay Time |
|-------------------------|--|-----------------|-------------------------|-------------------------|-------------------------|--------------|------------|
| Color Mode | FPOT from Sleep | N/A | N/A | N/A | N/A | Adobe Reader | |
| | FPOT from Sleep (15 minutes) HP/Non ISO Test | N/A | N/A | N/A | N/A | Adobe Reader | |
| | FPOT from Sleep | 8.08 | 8.07 | 8.09 | N/A | Adobe Reader | 61 Minutes |
| B&W Mode | FPOT from Sleep (15 minutes) HP/Non ISO Test | 6.51 | 6.46 | 6.55 | N/A | Adobe Reader | 16 Minutes |

Notes

- 1) All printing device and driver settings were default mode.
- 2) For the B/W results, the print driver was set to "print in B/W".
- 3) DLP includes detailed iterations as data measurements may vary run to run.

| Test System Parameters | | |
|----------------------------|-----------------------|-------------------------------------|
| Item | Value | |
| Test System | Computer | HP Z240 SFF Workstation |
| | Processor | Intel Core i7 -6770, 3.4 GHz |
| | System Chip Set | Intel SKL/KBL Mobile/Desktop |
| | System Board | system devices, default system BIOS |
| | System Memory | 8 GB |
| | Hard Drive Subsystem | Turbo Drive G2 256GB PCIe SSD |
| | Video Subsystem | Microsoft Basic Display Adaptor |
| | Optical Drive | HP HLDS DVD/DRW GUD1N |
| | I/O Subsystem | Builtin |
| USB Subsystem | USB 2.0/3.0 | |
| Printing Device Connection | TCP/IP | 10/1000 |
| | Operating System | Win 10 Enterprise 64 Bit (10240) |
| Software | Printing Applications | Microsoft Word 2016 |
| | | Microsoft Excel 2016 |
| | | Adobe Reader DC |

ISO/IEC 17629 First Print Out Time Report: Office Category

Full Detailed Test Report - A4

| | | |
|------------------------------|------------------------------|----------------------------|
| HP LaserJet Pro MFP M428dn | | |
| | | |
| Printing device and settings | | |
| | Test Start Date and Time | 2/15/2019 14:12 |
| | Tester | Rachel |
| | Machine name/model | HP LaserJet Pro MFP M428dn |
| | Colour or B&W | B&W |
| | FW Version | 1903A |
| | Configuration (options) | Default |
| | Controller | 11400 |
| | Printing device page count | Not Specified |
| | Printing supplies page count | Not Specified |
| | Temperature and Humidity | 70 degF / 21 degC 42.0 %rH |
| | Voltage | 220V |
| | Test End Date and Time | 2/15/2019 15:07 |

| | | | |
|------------------|--|------------------------|--------------------------------|
| | | Item | Value |
| Mode and Setting | | PDL and driver version | 48.1.4421 |
| | | Print Quality mode | default |
| | | B&W settings | default |
| | | Paper feed orientation | Short Edge |
| Paper | | Paper type setting | default |
| | | Paper feeding | Standard cassette |
| | | Paper exit | Standard exit tray |
| Paper Path | | Output orientation | default (face up or face down) |

ISO First Page Out Time Summary Report: Office Category

| | | |
|--------------------|---------|---------------------------|
| Summary Report: A4 | | |
| | | |
| | | FPOT from Ready (seconds) |
| B&W | Simplex | 6.02 |
| | Duplex | |

Notes

1) All printing device and driver settings were default mode.
2) For the B/W results, the print driver was set to "print in B/W".
3) For more information see <http://www.hp.com/go/printerclaims>.
4) Port monitor not configured to follow device if the IP address changes.
5) Page counts were collected after completion of the tests.

ISO First Page Out Time Report: Office Category

| | | | | | | |
|---------------------|---------------------------|----------------|-----------------|------------------------|-------------------|------------|
| Detailed Report: A4 | | | | | | |
| | | Word (seconds) | Excel (seconds) | Adobe Reader (seconds) | Average (seconds) | Delay Time |
| Color Mode | FPOT from Ready - Simplex | | | | | |
| | FPOT from Ready - Duplex | | | | | |
| | FPOT from Sleep - Simplex | | | N/A | | |
| | Recovery Time | | | | | |
| | FPOT from Off - Simplex | | | | | |
| | Warm-up Time | | | | | |
| B&W Mode | FPOT from Ready - Simplex | 6.68 | 5.71 | 5.66 | 6.02 | 48 Seconds |
| | FPOT from Ready - Duplex | | | | | |
| | FPOT from Sleep - Simplex | | | 8.14 | | 61 Minutes |
| | Recovery Time | | | 2.5 | | |
| | FPOT from Off - Simplex | | | 28.87 | | |
| | Warm-up Time | | | 23.21 | | |

Notes

1) All printing device and driver settings were default mode.
2) For the B/W results, the print driver was set to "print in B/W".
3) For more information see <http://www.hp.com/go/printerclaims>.
4) Port monitor not configured to follow device if the IP address changes.
5) Page counts were collected after completion of the tests.
6) Details for FPOT from Sleep are shown below.

| | | | | | | | |
|---------------------|------------------------------|-----------------|-------------------------|-------------------------|-------------------------|--------------|------------|
| HP Data Table | | | | | | | |
| Detailed Report: A4 | | | | | | | |
| | | FPOT Avg (secs) | FPOT (secs) Iteration 1 | FPOT (secs) Iteration 2 | FPOT (secs) Iteration 3 | Application | Delay Time |
| Color Mode | FPOT from Sleep | N/A | N/A | N/A | N/A | Adobe Reader | |
| | FPOT from Sleep (15 minutes) | N/A | N/A | N/A | N/A | Adobe Reader | |
| | HP/Non ISO Test | | | | | | |
| B&W Mode | FPOT from Sleep | 8.14 | 8.17 | 8.11 | N/A | Adobe Reader | 61 Minutes |
| | FPOT from Sleep (15 minutes) | 7.65 | 7.67 | 7.63 | N/A | Adobe Reader | 16 Minutes |
| | HP/Non ISO Test | | | | | | |

Notes

1) All printing device and driver settings were default mode.
2) For the B/W results, the print driver was set to "print in B/W".
3) DLP includes detailed iterations as data measurements may vary run to run.

| | | |
|----------------------------|-----------------------|-------------------------------------|
| Test System Parameters | | |
| | | |
| Test System | Item | Value |
| | Computer | HP Z240 SFF Workstation |
| | Processor | Intel Core i7 -6770, 3.4 GHz |
| | System Chip Set | Intel SKL/KBL Mobile/Desktop |
| | System Board | System devices, default system BIOS |
| | System Memory | 8 GB |
| | Hard Drive Subsystem | Turbo Drive G2 256GB PCIe SSD |
| | Video Subsystem | Microsoft Basic Display Adaptor |
| | Optical Drive | HP HLDS DVD/DRW GUD1N |
| | I/O Subsystem | Builtin |
| Printing Device Connection | TCP/IP | 10/1000 |
| | | |
| Software | Operating System | Win 10 Enterprise 64 Bit (10240) |
| | Printing Applications | Microsoft Word 2016 |
| | | Microsoft Excel 2016 |
| | | Adobe Reader DC |

ISO/IEC 29183 Copy Productivity Report

Full Detailed Test Report - LETTER

HP LaserJet Pro MFP M428fdn

Machine Setup Information

| | | |
|--|--------------------------|-----------------------------|
| | Test Start Date and Time | 1/23/2019 14:15 |
| | Tester | Rachel |
| | Machine name/model | HP LaserJet Pro MFP M428fdn |
| | Colour or B&W | B&W |
| | FW Version | 1903A |
| | Configuration (options) | Not Specified |
| | Temperature and Humidity | 70 degF / 21 degC 42.0 %rH |
| | Test End Date and Time: | 4/2/2019 17:02 |

| | Pre-set Item | Pre-set Value |
|-----------------------|-------------------------|-----------------------------------|
| Mode | Output Resolution | Default |
| | Output Quality | Default |
| | Copying Mode | Colour for Colour and B&W for B&W |
| | Auto Density Adjustment | Default |
| | Collating function | Set in Control Panel |
| Paper | Paper Sending Direction | Default |
| | Paper Type Setting | Default |
| Paper Path | Paper Feeding | Tray 2 |
| | Paper Exit | Default |
| | Face Up Exit | Default (face down) |
| Temporary Stop | Fixing Capability | Default |
| | Image Quality Stability | Default |
| | Capacity of Paper | Default |
| | Others | None |

| | | |
|--------------|--------------------|---|
| Paper | Paper Manufacturer | HP / Xerox |
| | Paper Weight | 20lb / 75 g/m2 |
| | Paper Size | Letter / A4 |
| | Paper type/name | HP Multipurpose Ultra White / HP Office |

Summary Report: Letter

| | sFCOT | sESAT (ipm) |
|----------------|-------|-------------|
| B&W | 5.77 | 40.40 |

Notes

First Copy Out and Copy Speed measured using ISO/IEC 29183, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration and document.
Only Target A was used, all test documents have the same Saturated throughput. Reference ISO/IEC29183:2010 Clause 5, Sections 5.3.1 and 5.3.2

Detailed Report: LETTER

| | Target | sFCOT (secs) | sEFTP (ipm) | | | sESAT (ipm) |
|----------------|---------|--------------|-------------|------------------|-------------------|-------------|
| | | | 1copy | 1copy+30sec | 1copy+4minutes | |
| | | | | | | |
| B&W | A | 5.77 | 10.40 | 35.71 22 sets | 39.69 163 sets | 40.40 |
| | B | | | | | |
| | C | | | | | |
| | D | | | | | |
| | Average | 5.77 | 10.40 | 35.71 | 39.69 | 40.40 |

Notes

First Copy Out and Copy Speed measured using ISO/IEC 29183, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration and document.
Only Target A was used, all test documents have the same Saturated throughput. Reference ISO/IEC29183:2010 Clause 5, Sections 5.3.1 and 5.3.2

ISO/IEC 29183 Copy Productivity Report

Full Detailed Test Report - A4

HP LaserJet Pro MFP M428fdn

Machine Setup Information

| | | |
|--|--------------------------|-----------------------------|
| | Test Start Date and Time | 1/23/2019 14:15 |
| | Tester | Rachel |
| | Machine name/model | HP LaserJet Pro MFP M428fdn |
| | Colour or B&W | B&W |
| | FW Version | 1903A |
| | Configuration (options) | Not Specified |
| | Temperature and Humidity | 70 degF / 21 degC 42.0 %rH |
| | Test End Date and Time: | 4/2/2019 17:02 |

| | Pre-set Item | Pre-set Value |
|-----------------------|-------------------------|-----------------------------------|
| Mode | Output Resolution | Default |
| | Output Quality | Default |
| | Copying Mode | Colour for Colour and B&W for B&W |
| | Auto Density Adjustment | Default |
| | Collating function | Set in Control Panel |
| Paper | Paper Sending Direction | Default |
| | Paper Type Setting | Default |
| Paper Path | Paper Feeding | Tray 2 |
| | Paper Exit | Default |
| | Face Up Exit | Default (face down) |
| Temporary Stop | Fixing Capability | Default |
| | Image Quality Stability | Default |
| | Capacity of Paper | Default |
| | Others | None |

| | | |
|--------------|--------------------|---|
| Paper | Paper Manufacturer | HP / Xerox |
| | Paper Weight | 20lb / 75 g/m2 |
| | Paper Size | Letter / A4 |
| | Paper type/name | HP Multipurpose Ultra White / HP Office |

Summary Report: A4

| | sFCOT | sESAT (ipm) |
|----------------|-------|-------------|
| B&W | 5.87 | 38.33 |

Notes

First Copy Out and Copy Speed measured using ISO/IEC 29183, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration and document.
Only Target A was used, all test documents have the same Saturated throughput. Reference ISO/IEC29183:2010 Clause 5, Sections 5.3.1 and 5.3.2

Detailed Report: A4

| | Target | sFCOT (secs) | sEFTP (ipm) | | | sESAT (ipm) |
|----------------|---------|--------------|-------------|------------------|-------------------|-------------|
| | | | 1copy | 1copy+30sec | 1copy+4minutes | |
| | | | | | | |
| B&W | A | 5.87 | 10.22 | 34.09 22 sets | 37.73 162 sets | 38.33 |
| | B | | | | | |
| | C | | | | | |
| | D | | | | | |
| | Average | 5.87 | 10.22 | 34.09 | 37.73 | 38.33 |

Notes

First Copy Out and Copy Speed measured using ISO/IEC 29183, excludes first set of test documents. For more information see <http://www.hp.com/go/printerclaims>. Exact speed varies depending on the system configuration and document.
Only Target A was used, all test documents have the same Saturated throughput. Reference ISO/IEC29183:2010 Clause 5, Sections 5.3.1 and 5.3.2

Full Detailed Test Report - LETTER

| ISO/IEC 24735 Copy Productivity Report | | | | | | |
|--|--------------|-------------|------------|---------------|--------------|---------------|
| Detailed Report: LETTER | | | | | | |
| | Copying Mode | FSOT (secs) | EFTP (ipm) | | | ESAT (ipm) |
| | | 1 set only | 1 set only | 1 set + 30sec | 1 set + 4min | 1 set + 30sec |
| Color Mode | 1:1 | | | | | |
| | | | (1 set) | | | |
| | 1:2 | | | | | |
| | | | (1 set) | | | |
| | 2:2 | | | | | |
| | | | (1 set) | | | |
| B&W mode | 1:1 | 13.27 | 18.09 | 35.08 | 39.28 | 40.41 |
| | | | | 8 sets | 43 sets | |
| | 1:2 | 20.67 | 11.60 | 27.34 | | 36.26 |
| | | | | 7 sets | | |
| | 2:2 | 16.39 | 14.64 | 27.20 | | 36.14 |
| | | | | 6 sets | | |

Notes
 Reports located: <http://www.hp.com/go/printerclaims>

Full Detailed Test Report - A4

| ISO/IEC 24735 Copy Productivity Report | | | | | | |
|--|--------------|-------------|------------|---------------|--------------|---------------|
| Detailed Report: A4 | | | | | | |
| | Copying Mode | FSOT (secs) | EFTP (ipm) | | | ESAT (ipm) |
| | | 1 set only | 1 set only | 1 set + 30sec | 1 set + 4min | 1 set + 30sec |
| Colour Mode | 1:1 | | | | | |
| | | (1 set) | | | | |
| | 1:2 | | | | | |
| | | (1 set) | | | | |
| | 2:2 | | | | | |
| | | (1 set) | | | | |
| B&W mode | 1:1 | 13.31 | 18.03 | 32.96 | 37.32 | 38.35 |
| | | | | 7 sets | 41 sets | |
| | 1:2 | 21.30 | 11.26 | 26.24 | | 34.52 |
| | | | | 7 sets | | |
| | 2:2 | 16.73 | 14.34 | 27.08 | | 34.54 |
| | | | | 6 sets | | |

Notes
 Reports located: <http://www.hp.com/go/printerclaims>

ISO/IEC 17991 Scanning Productivity Report

Full Detailed Test Report - LETTER

| Machine Setup Information | | |
|---------------------------|--------------------------|-----------------------------|
| | Test Start Date and Time | 1/27/2019 8:59 |
| | Tester | Rachel |
| | Machine name/model | HP LaserJet Pro MFP M428fdn |
| | Colour or B&W | B&W |
| | Configuration (options) | Default |
| | Temperature and Humidity | 70 degF / 21 degC 42.0 %rH |
| | Voltage | 220V |
| | Test End Date and Time | 1/27/2019 11:35 |

| Preset Item | | Preset Value |
|------------------|------------------------------|--|
| Mode and Setting | Scanning resolution | default (200 dpi) |
| | Colour or grey scale/B&W | default (colour) |
| | Duplex / simplex | default (simplex) |
| | Original page size | default (A4) |
| | Paper feed orientation | default (long edge) |
| | Scan destination | default (shared network) |
| | Storing File Type | default (PDF-multi) |
| | Auto scan quality adjustment | default (factory preset default setting) |
| ADF Paper-path | Paper feed direction | default (long edge) |
| | Output orientation | default |
| | Scanning unit | default (duplex ADF) |

ISO/IEC 17991 - Scan Summary Report: ADF Productivity Measurement

Summary Report: Letter

| | Scanning Mode | | | Measurement result |
|--------|---------------------|------------|---------------|---------------------|
| | File format version | Resolution | Scanning side | scESAT 30secA (ipm) |
| Colour | PDF 1.6 | 300 | single sided | 21.52 |
| | | | double sided | 37.51 |
| B&W | PDF 1.6 | 300 | single sided | 31.15 |
| | | | double sided | 50.08 |

Notes

- 1) For more information see <http://www.hp.com/go/printerclaims>.
 2) For the B/W results, the device scan setting is set to "Scan in B/W".

ISO/IEC 17991 - Scan Summary Report: Network Folder Productivity Measurement

Summary Report: Letter

| | Scanning Mode | | | Measurement result | | |
|--------|---------------------|------------|---------------|---------------------|--------------------------|-------------------------|
| | File format version | Resolution | Scanning side | scEFTP 30secF (ipm) | File size 30secF (Mbyte) | Number of Sets (30secF) |
| Colour | PDF 1.6 | 300 | single sided | 3096.77 | 8.85 | 4.00 |
| | | | double sided | 4645.16 | 12.31 | 6.00 |
| B&W | PDF 1.6 | 300 | single sided | 3870.96 | 10.67 | 5.00 |
| | | | double sided | 6193.54 | 15.16 | 8.00 |

Notes

- 1) For more information see <http://www.hp.com/go/printerclaims>.
 2) For the B/W results, the device scan setting is set to "Scan in B/W".

ISO/IEC 17991 - Scan Full Report: ADF Productivity Measurement

Summary Report: Letter

| | Scanning Mode | | | Measurement result | | |
|--------|---------------------|------------|---------------|--------------------|---------------------|---------------------|
| | File format version | Resolution | Scanning side | scEFTP 1setA (ipm) | scEFTP 30secA (ipm) | scESAT 30secA (ipm) |
| Colour | PDF 1.6 | 300 | single sided | 16.94 | 20.21 | 21.52 |
| | | | double sided | 25.96 | 34.88 | 37.51 |
| B&W | PDF 1.6 | 300 | single sided | 22.70 | 29.03 | 31.15 |
| | | | double sided | 32.89 | 46.34 | 50.08 |

Notes

- 1) For more information see <http://www.hp.com/go/printerclaims>.
 2) For the B/W results, the device scan setting is set to "Scan in B/W".

ISO/IEC 17991 - Scan Full Report: Network Folder Productivity Measurement

Summary Report: Letter

| | Scanning Mode | | | Measurement result | | | |
|--------|---------------------|------------|---------------|--------------------|---------------------|--------------------------|-------------------------|
| | File format version | Resolution | Scanning side | scEFTP 1setF (ipm) | scEFTP 30secF (ipm) | File size 30secF (Mbyte) | Number of Sets (30secF) |
| Colour | PDF 1.6 | 300 | single sided | 774.19 | 3096.77 | 8.85 | 4 |
| | | | double sided | 787.09 | 4645.16 | 12.31 | 6 |
| B&W | PDF 1.6 | 300 | single sided | 774.19 | 3870.96 | 10.67 | 5 |
| | | | double sided | 787.09 | 6193.54 | 15.16 | 8 |

Notes

- 1) For more information see <http://www.hp.com/go/printerclaims>.
 2) For the B/W results, the device scan setting is set to "Scan in B/W".

| Test System Parameters | | |
|----------------------------|----------------------------|---|
| | Item | Value |
| System | Computer name | HP Compaq Elite 8300 Small Form Factor |
| | Processor | Intel Core i7 -3770, 3.4 GHz |
| | System Chip Set | Intel C216 Chipset Family SMBus Host Controller |
| | System Board | System devices, default system BIOS |
| | System Memory | 4 GB |
| | Hard Drive Subsystem | Standard disk drive (Seagate) |
| | Video Subsystem | AMD Radeon HD 6350 |
| | Optical Drive | HP DVD A DH16aCSHR ATA |
| | I/O Subsystem | Builitin |
| | USB Subsystem | USB 2.0/3.0 |
| | Operating System | Windows 7 Business/Ultimate, 64 bit, Build 7601, SP 1 |
| Scanning Device Connection | Location of network folder | PC |
| | Internet Protocol | IPv4 |
| | Transfer Protocol | SMB |
| | Hub | Trendnet Router and Gbit Switch |
| | Network Speed | TCP 10/1000 Mbit Ethernet |
| | Connction Cable | Cat6 Straight cable |
| | Wireless router | No use |
| | Others | No use |

ISO/IEC 17991 Scanning Productivity Report

Full Detailed Test Report - A4

| Machine Setup Information | | |
|---------------------------|--------------------------|-----------------------------|
| | Test Start Date and Time | 1/27/2019 8:59 |
| | Tester | Rachel |
| | Machine name/model | HP LaserJet Pro MFP M428fdn |
| | Colour or B&W | B&W |
| | Configuration (options) | Default |
| | Temperature and Humidity | 70 degF / 21 degC 42.0 %rH |
| | Voltage | 220V |
| | Test End Date and Time | 1/27/2019 11:35 |

| Preset Item | | Preset Value |
|------------------|------------------------------|--|
| Mode and Setting | Scanning resolution | default (200 dpi) |
| | Colour or grey scale/B&W | default (colour) |
| | Duplex / simplex | default (simplex) |
| | Original page size | default (A4) |
| | Paper feed orientation | default (long edge) |
| | Scan destination | default (shared network) |
| | Storing File Type | default (PDF-multi) |
| | Auto scan quality adjustment | default (factory preset default setting) |
| ADF Paper-path | Paper feed direction | default (long edge) |
| | Output orientation | default |
| | Scanning unit | default (duplex ADF) |

ISO/IEC 17991 - Scan Summary Report: ADF Productivity Measurement

Summary Report: A4

| | Scanning Mode | | | Measurement result |
|--------|---------------------|------------|---------------|---------------------|
| | File format version | Resolution | Scanning side | scESAT 30secA (ipm) |
| Colour | PDF 1.6 | 300 | single sided | 21.00 |
| | | | double sided | 36.08 |
| B&W | PDF 1.6 | 300 | single sided | 30.35 |
| | | | double sided | 47.69 |

Notes

- 1) For more information see <http://www.hp.com/go/printerclaims>.
 2) For the B/W results, the device scan setting is set to "Scan in B/W".

ISO/IEC 17991 - Scan Summary Report: Network Folder Productivity Measurement

Summary Report: A4

| | Scanning Mode | | | Measurement result | | |
|--------|---------------------|------------|---------------|---------------------|--------------------------|-------------------------|
| | File format version | Resolution | Scanning side | scEFTP 30secF (ipm) | File size 30secF (Mbyte) | Number of Sets (30secF) |
| Colour | PDF 1.6 | 300 | single sided | 3096.77 | 10.41 | 4.00 |
| | | | double sided | 4504.39 | 14.16 | 6.00 |
| B&W | PDF 1.6 | 300 | single sided | 3753.66 | 11.86 | 5.00 |
| | | | double sided | 5090.90 | 14.77 | 7.00 |

Notes

- 1) For more information see <http://www.hp.com/go/printerclaims>.
 2) For the B/W results, the device scan setting is set to "Scan in B/W".

ISO/IEC 17991 - Scan Full Report: ADF Productivity Measurement

Summary Report: A4

| | Scanning Mode | | | Measurement result | | |
|--------|---------------------|------------|---------------|--------------------|---------------------|---------------------|
| | File format version | Resolution | Scanning side | scEFTP 1setA (ipm) | scEFTP 30secA (ipm) | scESAT 30secA (ipm) |
| Colour | PDF 1.6 | 300 | single sided | 16.61 | 19.64 | 21 |
| | | | double sided | 25.77 | 33.37 | 36.08 |
| B&W | PDF 1.6 | 300 | single sided | 22.26 | 28.24 | 30.35 |
| | | | double sided | 32.32 | 43.36 | 47.69 |

Notes

- 1) For more information see <http://www.hp.com/go/printerclaims>.
 2) For the B/W results, the device scan setting is set to "Scan in B/W".

ISO/IEC 17991 - Scan Full Report: Network Folder Productivity Measurement

Summary Report: A4

| | Scanning Mode | | | Measurement result | | | |
|--------|---------------------|------------|---------------|--------------------|---------------------|--------------------------|-------------------------|
| | File format version | Resolution | Scanning side | scEFTP 1setF (ipm) | scEFTP 30secF (ipm) | File size 30secF (Mbyte) | Number of Sets (30secF) |
| Colour | PDF 1.6 | 300 | single sided | 787.09 | 3096.77 | 10.41 | 4 |
| | | | double sided | 774.18 | 4504.39 | 14.16 | 6 |
| B&W | PDF 1.6 | 300 | single sided | 774.19 | 3753.66 | 11.86 | 5 |
| | | | double sided | 750.72 | 5090.90 | 14.77 | 7 |

Notes

- 1) For more information see <http://www.hp.com/go/printerclaims>.
 2) For the B/W results, the device scan setting is set to "Scan in B/W".

| Test System Parameters | | |
|----------------------------|----------------------------|---|
| | Item | Value |
| System | Computer name | HP Compaq Elite 8300 Small Form Factor |
| | Processor | Intel Core i7 -3770, 3.4 GHz |
| | System Chip Set | Intel C216 Chipset Family SMBus Host Controller |
| | System Board | System devices, default system BIOS |
| | System Memory | 4 GB |
| | Hard Drive Subsystem | Standard disk drive (Seagate) |
| | Video Subsystem | AMD Radeon HD 6350 |
| | Optical Drive | HP DVD A DH16aCSHR ATA |
| | I/O Subsystem | Built-in |
| | USB Subsystem | USB 2.0/3.0 |
| Scanning Device Connection | Operating System | Windows 7 Business/Ultimate, 64 bit, Build 7601, SP 1 |
| | Location of network folder | PC |
| | Internet Protocol | IPv4 |
| | Transfer Protocol | SMB |
| | Hub | Trendnet Router and Gbit Switch |
| | Network Speed | TCP 10/1000 Mbit Ethernet |
| | Connection Cable | Cat6 Straight cable |
| | Wireless router | No use |
| | Others | No use |