

### Letter of Volatility

Model Number:	Part Number:	Manufacturer:
HP PageWide Managed MFP P77760z	W1B38A	Street Address: HP, Inc. 1115 SE 165 <sup>th</sup> Ave, Suite 210 Vancouver, WA 98683

### Volatile Memory

Does the item contain volatile memory (i.e., memory whose contents are lost when power is removed)?

**Yes**  No

If the answer is "Yes", please provide the following information for each type (use additional sheets if required)

Type (SRAM, DRAM, etc): DDR3 DRAM (3 devices)	Size 512MB + 512MB, and 512MB	User Modifiable: <input type="checkbox"/> Yes <input checked="checked" type="checkbox"/> <b>No</b>	Function: Contains decompressed system firmware and print data during printing	Process to Sanitize: Power Off printer
Type (SRAM, DRAM, etc): DDR3 DRAM (1 device)	Size: 256MB,	User Modifiable: <input type="checkbox"/> Yes <input checked="checked" type="checkbox"/> <b>No</b>	Function: Contains decompressed system firmware	Process to Sanitize: Power Off printer

### Non-Volatile Memory

Does the item contain non-volatile memory (i.e., memory whose contents are retained when power is removed)?  **Yes**  No

Type (eMMC, Flash, EEPROM, etc): eMMC (1 device), Flash (1 device)	Size: 16GB eMMC and 256MB Flash	User Modifiable: <input checked="checked" type="checkbox"/> <b>Yes</b> <input type="checkbox"/> No	Function: System Firmware and firmware upgrade, system control data, user preferences, user variables, image data, and encrypted job storage and PIN printing.	Process to Sanitize:  On units with older versions of Firmware (versions LIMOFWPP1N002 through 1N005), User preferences and user variables, image data, and encrypted job storage and PIN printing cleared by performing a reset via "Restore Factory Defaults". Access to this function can be found under: <ul style="list-style-type: none"> <li>Home menu</li> <li>Support tools</li> <li>Maintenance</li> <li>"Restore Factory Defaults"</li> </ul> On units with newer versions of Firmware (version LIMOFWPP1N006 or greater), User preferences and user variables, image data, and encrypted job storage and PIN printing cleared by performing a reset via the "Cold Reset" function. Access to this function can be found under: <ul style="list-style-type: none"> <li>Home menu</li> <li>Support tools</li> <li>Service (Note: the user needs to enter the Service pin number at this screen and after, the unit will boot into the Service mode screen)</li> <li>Maintenance</li> <li>Restore Factory Defaults</li> <li>Cold Reset</li> </ul>
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Type (eMMC, Flash, EEPROM, etc): <b>EEPROM</b> (3 devices)	Size: 64kB 32kB and 32kB	User Modifiable: <input checked="" type="checkbox"/> <b>Yes</b> <input type="checkbox"/> No	Function: Contains system control data, user preferences, and variables.	Process to Sanitize: User preferences and variables are cleared the following way: Unplug AC power cord. While pressing the front of the unit's On/Off button, plug in the AC power cord. Hold the ON/OFF button until the unit boots up into a special mode with the screen blank and only "Home" and "Back" LED buttons lit on the front panel. Press "home, back, home, home", then "menu", then press "next" two times, then press "OK" to initiate a full reset. Please be aware you may want to do a "Restore Factory Defaults" from the Printer Maintenance screen after you do the full reset.
Type (eMMC, Flash, EEPROM, etc): <b>EEPROM</b> (2 devices)	Size: 64kB, and 64kB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> <b>No</b>	Function: Contains backup of critical system control data.	Process to Sanitize: N/A, no user info stored here.
Type (eMMC, Flash, EEPROM, etc): <b>Secure EEPROM</b>	Size: 18kB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> <b>No</b>	Function: Contains secure internal printer data.	Process to Sanitize: N/A, no user info stored here.
Type (eMMC, Flash, EEPROM, etc): <b>EEPROM</b> (1 device)	Size: 1kB,	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> <b>No</b>	Function: Contains internal printer data.	Process to Sanitize: N/A, no user info stored here.

**Media**

Does the item contain media storage capability (i.e., removable or non-removable disk drives, tape drives, memory cards, etc.)?  **Yes**  No

Type (Disk, Tape, Memory Card, etc):  
Memory Card: eMMC module  
Removable:  Yes  No

Size:  
Upgrade option = 128GB

User Modifiable:  
 Yes  
 No

Function:  
System Firmware and firmware upgrade, system control data, user preferences, variables and Encrypted job storage and PIN printing.

**Process to Sanitize:**

On units with older versions of Firmware (versions LIMOFWPP1N002 through 1N005), User preferences and user variables, image data, and encrypted job storage and PIN printing cleared by performing a reset via “Restore Factory Defaults”. Access to this function can be found under:

- Home menu
- Support tools
- Maintenance
- “Restore Factory Defaults”

On units with newer versions of Firmware (version LIMOFWPP1N006 or greater), User preferences and user variables, image data, and encrypted job storage and PIN printing cleared by performing a reset via the “Cold Reset” function. Access to this function can be found under:

- Home menu
- Support tools
- Service (Note: the user needs to enter the Service pin number at this screen and after, the unit will boot into the Service mode screen)
- Maintenance
- Restore Factory Defaults
- Cold Reset

A second method to sanitize Image data, encrypted job storage and PIN printing can be performed using the printer’s Embedded Web Server (EWS). Using a web browser on the same network as the printer, browse to the printer’s IP address. Select the “Settings” tab at the top, and then from the left navigation bar, select the “Security->Protect Stored Data” menu items. Near the bottom of the page will be the section called “Erase Job Data”. Click on the “Erase Now” button.

See the Administrator’s Guide for more details.

**Additional Information:**  
The media storage capability described here is an option where the internal eMMC memory system can be upgraded from the standard 16GB to the optional 128GB. The fact this memory can be upgraded makes it “removable” from the upgrade standpoint, but it is not “removable” in the same fashion as is a USB thumb drive. Job storage data, Pin Printing data and Digital send data are encrypted using an AES 256 encryption algorithm. User private data and Fax data use an AES 128 encryption algorithm. While all user data, job storage data, Pin Printing data, Digital send data, and Fax data are encrypted on the eMMC memory (standard or upgrade sizes), the process of encryption is a software process which provides the encryption capabilities.

## USB

Does the item accept USB input and if so, for what purpose (i.e Print Jobs, device firmware updates, scan upload)?

**Yes** - Purpose is for Print Jobs, Device FW updates, scan uploads and 3<sup>rd</sup> part application loading.

Can any data other than scan upload be sent to the USB device?

**Yes** -Diagnostic service logs can be uploaded. Back-up of encrypted system settings. Supports Hardware Integration Pocket (HIP) devices.

**Additional Information:** This product has both a USB device port and 2 USB host ports. Data on the USB host ports can be accessed from the device port. Also, an internal mini-B USB port enables an accessory option where a Hardware Integration Pocket (HIP) device can be added. The HIP option conforms to the HIP protocol and enables both HP and 3<sup>rd</sup> party hardware/software. The HIP device does not ship with the product and is added by the user as an option.

## RF/Rfid

Does the item use RF or RFID for receive or transmit of **any** data including remote diagnostics. (e.g. Cellular Phone, Wifi, Bluetooth)

**Yes** - Wifi  No

If yes, what is the purpose WiFi connectivity for printer activity such as print jobs and printer configuration

If yes, what is the frequency 2.4GHz ISM band (2400-2500MHz) and 5GHz U-NII-1,2,3 band (5.1-5.9GHz)

Bandwidth 20MHz and 40MHz; Typical speed for 20MHz BW = 50Mbps/ 40MHz BW = 100Mbps

Modulation DSSS(Direct sequence spread spectrum), DBPSK, DQPSK, CCK, OFDM

Effective Radiate Power (EIRP) 20.5 dbm

Specifications 802.11a/n

**Additional Information:** This product uses WiFi connectivity for printer activity such as print jobs and printer configuration.

## RF/Rfid

Does the item use RF or RFID for receive or transmit of **any** data including remote diagnostics. (e.g. Cellular Phone, Wifi, Bluetooth)

**Yes** - Bluetooth 4.0  No

If yes, what is the purpose Bluetooth 4.0 connectivity for easier attachment with printer Networking subsystems

If yes, what is the frequency 2.4-2.5 GHz

Bandwidth ~2 MHz

Modulation 1 Mbps GFSK

Effective Radiate Power (EIRP) less than 10 dbm

Specifications BT 4.0 compliant

**Additional Information:** This product uses Bluetooth 4.0 connectivity for easier attachment with printer Networking subsystems

## Other Transmission Capabilities

Does the device employ any other methods of **non-wired access** to transmit or receive any data whatsoever (e.g. anything other than standard hard wired TCP/IP, direct USB, or parallel connections)?

**Yes** - NFC  No

If yes, what is the purpose: Near-Field Authentication (NFC) with printer Networking subsystems

If yes, what is the frequency 13.56 MHz; Bandwidth 848 kbit/s max:

Modulation: ISO/IEC 14443B; Effective Radiate Power (ERP): 0 Watts (passive writer only).

Specifications RF Standard ISO/IEC 14443B and NFC Tag Type 4B

**Additional Information:** This product uses NFC connectivity for Authentication with printer Networking subsystems

### Other Capabilities

Does the device employ any other method of communications such as a Modem to transmit or receive any data whatsoever?

**Yes** - FAX

No

If yes, what is the purpose: FAX

Specifications: T.30 FAX protocol standard for FAX communication.

Within T.30, we use V21 protocol as control channel

Within T.30, we use V.17, V.29, and V.34 as data transfer protocols

Speeds = Slow (9.6Kbps), Medium (14.4Kbps), and Fast (33.6Kbps).

Default setting = Medium (14.4Kbps)

Note: Kbps = thousand bits per second

Note: If line transmission is poor, the data protocols may lower speed.

Additional Information: This product can send and receive FAX transmissions over a standard telephone line.

### Vendor Engineer/SME Representative Information

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