

	Third Party Analysis Printers / Cartridges	Contract No.:	9100162980
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Third Party Aftermarket and Counterfeit Product Analysis **HP Printers / Aftermarket Chips**

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Distribution Statement:

DISTRIBUTION STATEMENT C. Distribution authorized by HP Inc

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1.0 Introduction

1.1 Project overview

Document the origin and composition of different toner **aftermarket (AM)** products and their induced printer behavior. Ultimately, the goal is to identify the relationship, if any, between the different options available and manufacturers.

This project has been commissioned by HP Inc. All equipment and samples for testing were provided by HP Inc.

1.2 Summary findings

Through a series of tests at the printer and cartridge level, along with visual inspection of the chips, there is clear evidence that Ninestar Corporation, or its subsidiaries, is the chip manufacturer of the same chips that are used in both aftermarket and counterfeit cartridges.

Key findings:

1. Aftermarket chips made by Ninestar, or its subsidiaries lead user to believe that counterfeit cartridges are genuine HP cartridges.
2. Off-the-shelf aftermarket chips sold and made by Ninestar, or its subsidiaries identified the cartridges as genuine HP cartridges.
3. Re-programmable aftermarket chips sold and made by Ninestar, or its subsidiaries can be programmed by a 3rd party to identify the cartridge either as a genuine HP or as a non-HP cartridge.
4. Side by side comparison of the die markings on de-capped microcontrollers of the chip samples provide clear evidence that a) aftermarket chips found on counterfeit cartridges, b) off-the-shelf aftermarket chips sold and made by a Ninestar subsidiary, c) aftermarket chips found on cartridges made by Ninestar, and d) re-programmable aftermarket chips sold and made by Ninestar, or its subsidiaries, were all developed and made by the same company.

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2.0 Scope of work

2.1 Printers tested:

- HP LaserJet M402dn, mono printer which works with CF226A cartridge
- HP LaserJet M552dn, color printer which works with CF360A, CF361A, CF362A, CF363A cartridges

2.2 Chip types tested:


Sample type	Whole Cartridge vs Stand-alone chip	Trademark/ Manufacturing field	Pre-programmed vs Programmable
I	Whole cartridge	Non-HP	Pre-programmed
II	Stand-alone chip	HP	Pre-programmed
III	Stand-alone chip	Programmable	Programmable
IV	Whole cartridge (counterfeit)	HP	Pre-programmed
V	Original HP Cartridge	HP	Non-Programmable

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2.2.1 Tested chip samples details

Aftermarket and counterfeit cartridges, standalone aftermarket chips:

Samples	Description
Sample # 1	Aftermarket chip found on counterfeit CF226X cartridge found in Germany
Sample # 2	Aftermarket chip found on counterfeit CF226X cartridge found in Germany
Sample # 3	Aftermarket chip found on counterfeit CF361A cartridge found in China
Sample # 4	Aftermarket chip found on CF361A cartridge made by Ninestar
Sample # 5	Aftermarket CF361X chip sold by Apus Soluções – official distributor of Apex Microelectronics (a member of the Ninestar group)
Sample # 6	Aftermarket CF226X chip sold by Apus Soluções – official distributor of Apex Microelectronics (a member of the Ninestar group)
Sample # 7	Re-programmable aftermarket B73 chip sold by Apex Microelectronics (a member of the Ninestar group)
Sample # 7a	B73 chip programmed to CF226A-N-V2 part number (non-HP cartridge)
Sample # 7b	B73 chip programmed to CF226A-V2 part number (genuine HP cartridge)
Sample # 7c	B73 chip programmed to CF360A-N-V2 part number (non-HP cartridge)
Sample # 7d	B73 chip programmed to CF360A-V2 part number (genuine HP cartridge)
Sample # 8	Original CF226A HP chip
Sample # 9	Original CF361A HP chip

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2.3 Tests performed with each chip type (Aftermarket and Counterfeit):

- a. Photo of printer's Initial display
- b. Supply Status screenshot, print out Supply Status Page
- c. Document data in device firmware (M402dn printer)
- d. Document SNMP OID data (M553 printer)
- e. Test Resettable Chips with chip resetting device (Unismart device sold by Apex Microelectronics)
- f. Decapsulation

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3.0 Side by side comparison of user experience.

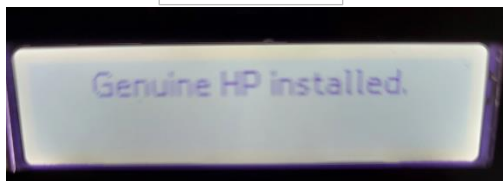
PURPOSE: Compare user experience when various samples of Aftermarket (AM) chips made by Ninestar, or its subsidiaries are installed on cartridges and into the printers. An original HP cartridge will inform the customer that cartridge is “Genuine HP Installed”. The printer will display “Non-HP supply installed” when an imitation cartridge is used. Counterfeit cartridges are programmed to inaccurately identify themselves as a “Genuine HP Installed”. These messages are displayed on the front panel and supplies status page.

3.1 HP LaserJet M402dn printer

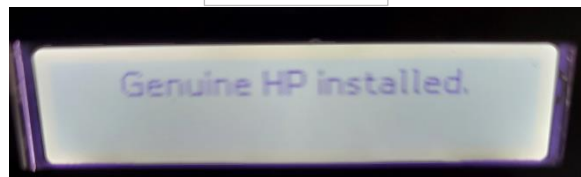
3.1.1 Initial display message when toner cartridge is installed

AM chips found on counterfeit CF226X cartridges

Sample #1

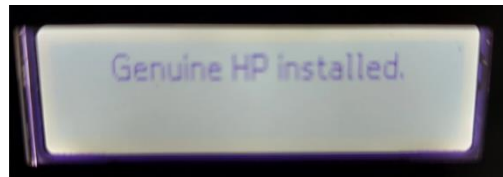


Sample #2



Note: User is led to believe that counterfeit cartridges are genuine HP supplies.

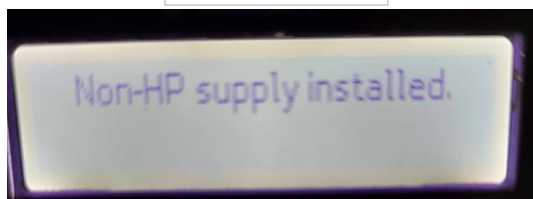
Sample #6: AM CF226X chip sold by Apus Soluções



Note: Off-the-shelf AM chip identified the cartridge as a genuine HP cartridge.

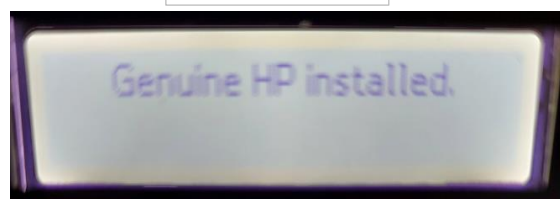
AM chip programmed to CF226A-N-V2 part number

Sample #7a



AM chip programmed to CF226A-V2 part number

Sample #7b



Note: Re-programmable AM chip can be programmed by a 3rd party to identify the cartridge either as a genuine HP or as a non-HP cartridge.


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3.1.2 Supply status page screenshots


Cartridges with non-original chips are labeled in the Supply status page as “non-HP” as seen with sample #7a. Compatible cartridges which do not have that label, identify themselves as original.

AM chips found on counterfeit CF226X cartridges

Sample #1

	Black Cartridge Order 26X (CF226X)	100% *
<hr/>		
Status:	Normal	
Approximate Pages Remaining *:	> 7200 †	
Pages Printed With This Supply *:	1	
Serial Number:	0016843771-6D22	
First Install Date:	Not Available	
Last Used Date:	Not Available	


Sample #2

	Black Cartridge Order 26X (CF226X)	100% *
<hr/>		
Status:	Normal	
Approximate Pages Remaining *:	> 7200 †	
Pages Printed With This Supply *:	1	
Serial Number:	0016922664-6C15	
First Install Date:	Not Available	
Last Used Date:	Not Available	

Note: User is led to believe that counterfeit cartridges are genuine HP supplies.


Original CF226A HP chip

Sample #8

	Black Cartridge Order 26A (CF226A)	30% *
<hr/>		
Status:	Normal	
Approximate Pages Remaining *:	700	
Pages Printed With This Supply *:	2024	
Serial Number:	0016919031-6H06	
First Install Date:	Not Available	
Last Used Date:	Not Available	

AM CF226X chip sold by Apus Soluções


Sample #6

	Black Cartridge Order 26X (CF226X)	100% *
<hr/>		
Status:	Normal	
Approximate Pages Remaining *:	> 7200 †	
Pages Printed With This Supply *:	1	
Serial Number:	0016915840-5J22	
First Install Date:	Not Available	
Last Used Date:	Not Available	

Note: Off-the-shelf AM chip identified the cartridge as a genuine HP cartridge leading user to believe that it is an original HP cartridge.


AM chip programmed to CF226A-N-V2 part number

Sample #7a


	Non-HP Black Cartridge * Order 26A (CF226A)	100% †
<hr/>		
Status:	Normal	
Approximate Pages Remaining †:	> 2450 ‡	
Pages Printed With This Supply †:	1	
Serial Number:	0016842825-6F21	
First Install Date:	Not Available	
Last Used Date:	Not Available	

AM chip programmed to CF226A-V2 part number

Sample #7b

	Black Cartridge Order 26A (CF226A)	100% *
<hr/>		
Status:	Normal	
Approximate Pages Remaining *:	> 2450 †	
Pages Printed With This Supply *:	1	
Serial Number:	0016842833-5F17	
First Install Date:	Not Available	
Last Used Date:	Not Available	

Note: Re-programmable AM chip can be programmed by a 3rd party to identify the cartridge as a genuine HP or as a non-HP cartridge.

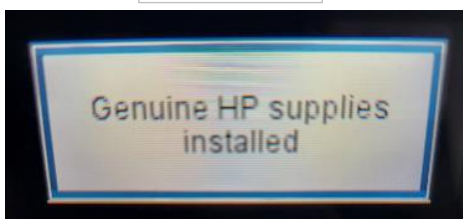
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3.2 HP Color LaserJet M553dn Printer

3.2.1 Initial display message when toner cartridge is installed

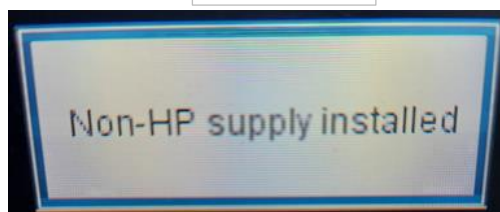
AM chip found on counterfeit CF361A cartridge

Sample #3



AM chip found on AM CF361A cartridge

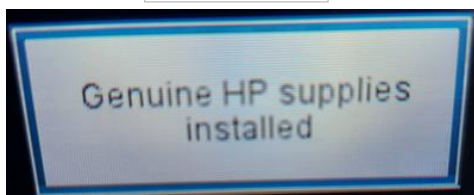
Sample #4



Note: User is led to believe that counterfeit cartridge is a genuine HP cartridge. AM cartridge clearly identified as a non-HP cartridge.

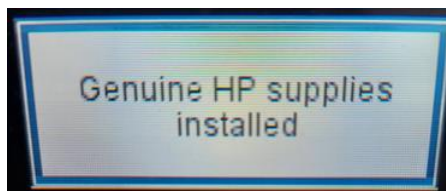
Original CF361A HP chip

Sample #9



AM CF361X chip sold by Apus Soluções

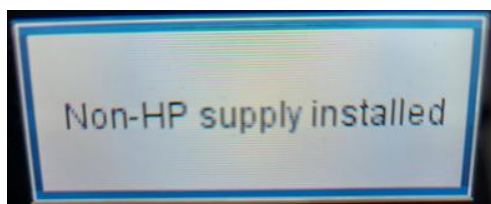
Sample #5



Note: Off-the-shelf AM chip identified the cartridge as a genuine HP cartridge leading user to believe that it is an original HP cartridge.

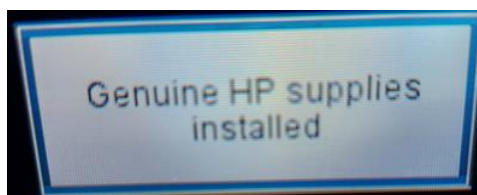
AM chip programmed to CF360A-N-V2 part number

Sample #7c



AM chip programmed to CF360A-V2 part number

Sample #7d



Note: Re-programmable AM chip can be programmed by a 3rd party to identify the cartridge either as a genuine HP or as a non-HP cartridge.

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3.2.2 Supply status page screenshots

AM chip found on counterfeit CF361A cartridge

AM chip found on AM CF361A cartridge

Sample #3

Sample #4

Cyan Cartridge	
Order 508A (CF361A)	
Status: OK	
Approximate Pages Remaining:†	>4100
Serial Number:	100731091
Pages printed with this supply:*	1
First Install Date:	20210820
Last Use Date:	20220914

Non-HP Cyan Cartridge††	
Order 508A (CF361A)	
Status: OK	
Approximate Pages Remaining:†	>4100
Serial Number:	100729165
Pages printed with this supply:*	1
First Install Date:	20220914
Last Use Date:	20220914

Note: User is led to believe that counterfeit cartridge is a genuine HP cartridge. AM cartridge clearly identified as a non-HP cartridge.

Original CF361A HP chip

AM CF361X chip sold by Apus Soluções

Sample #9

Sample #5

Cyan Cartridge	
Order 508A (CF361A)	
Status: OK	
Approximate Pages Remaining:†	>4100
Serial Number:	100729876
Pages printed with this supply:*	683
First Install Date:	20210317
Last Use Date:	20220828

Cyan Cartridge	
Order 508X (CF361X)	
Status: OK	
Approximate Pages Remaining:†	>7750
Serial Number:	100729898
Pages printed with this supply:*	1
First Install Date:	20220914
Last Use Date:	20220914

Note: Off-the-shelf AM chip identified the cartridge as a genuine HP cartridge.

AM chip programmed to CF360A-N-V2 part number

AM chip programmed to CF360A-V2 part number


Sample #7c

Sample #7d

Non-HP Black Cartridge††	
Order 508A (CF360A)	
Status: OK	
Approximate Pages Remaining:†	>4800
Serial Number:	100728852
Pages printed with this supply:*	2
First Install Date:	20220914
Last Use Date:	20220914

Black Cartridge	
Order 508A (CF360A)	
Status: OK	
Approximate Pages Remaining:†	>4800
Serial Number:	100728867
Pages printed with this supply:*	2
First Install Date:	20220914
Last Use Date:	20220914

Note: Re-programmable AM chip can be programmed to identify the cartridge either as a genuine HP or as a non-HP cartridge.

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4.0 Side by side comparison of HP trademark value in printer firmware.

PURPOSE: Compare the behavior of various samples of Aftermarket (AM) chips made by Ninestar, or its subsidiaries when installed on cartridges and into the printers as seen by printers' firmware – particularly, unauthorized use of HP as the brand and manufacturer of the supply.

4.1 HP LaserJet M402dn printer

This data shows the value of the trademark field as seen in the printer firmware. Note the red boxes for information about the Brand and the Manufacturer of the chips.

AM chips found on counterfeit CF226X cartridges

Sample #1

```
<dd:Brand>HP</dd:Brand>
</dd:ConsumableLifeState>
<dd:ConsumableStateAvailableActions>
<dd:ConsumableLowThreshold>3</dd:ConsumableLowThreshold>
<dd:ConsumablePercentageLevelRemaining>100</dd:ConsumablePercentageLevelRemaining>
<dd:ConsumableReplaceabilityType>userReplaceable</dd:ConsumableReplaceabilityType>
<dd:ConsumableSelectibilityNumber>26X</dd:ConsumableSelectibilityNumber>
<dd:ConsumableStation>0</dd:ConsumableStation>
<dd:ConsumableTypeEnum>toner</dd:ConsumableTypeEnum>
<dd:Manufacturer>
<dd:Name>HP</dd:Name>
<dd>Date>2016-04-22</dd>Date>
</dd:Manufacturer>
<dd:ProductNumber>CF226X</dd:ProductNumber>
<dd:SerialNumber>16843771</dd:SerialNumber>
<dd:ConsumableManufacturingSignature>7deb6884d5b1c58beaff95c291bf14d08df44427b
```

Sample #2

```
<dd:Brand>HP</dd:Brand>
</dd:ConsumableLifeState>
<dd:ConsumableStateAvailableActions>
<dd:ConsumableLowThreshold>3</dd:ConsumableLowThreshold>
<dd:ConsumablePercentageLevelRemaining>100</dd:ConsumablePercentageLevelRemaining>
<dd:ConsumableReplaceabilityType>userReplaceable</dd:ConsumableReplaceabilityType>
<dd:ConsumableSelectibilityNumber>26X</dd:ConsumableSelectibilityNumber>
<dd:ConsumableStation>0</dd:ConsumableStation>
<dd:ConsumableTypeEnum>toner</dd:ConsumableTypeEnum>
<dd:Manufacturer>
<dd:Name>HP</dd:Name>
<dd>Date>2016-03-15</dd>Date>
</dd:Manufacturer>
<dd:ProductNumber>CF226X</dd:ProductNumber>
<dd:SerialNumber>16922664</dd:SerialNumber>
<dd:ConsumableManufacturingSignature>005e484db088dfb93b41a010ab4ca4038dd606bl
```

Note: AM chips identified counterfeit cartridges as genuine HP supplies.

Original CF226A HP chip

Sample #8


```
<dd:Brand>HP</dd:Brand>
</dd:ConsumableLifeState>
<dd:ConsumableStateAvailableActions>
<dd:ConsumableLowThreshold>3</dd:ConsumableLowThreshold>
<dd:ConsumablePercentageLevelRemaining>30</dd:ConsumablePercentageLevelRemaining>
<dd:ConsumableReplaceabilityType>userReplaceable</dd:ConsumableReplaceabilityType>
<dd:ConsumableSelectibilityNumber>26A</dd:ConsumableSelectibilityNumber>
<dd:ConsumableStation>0</dd:ConsumableStation>
<dd:ConsumableTypeEnum>toner</dd:ConsumableTypeEnum>
<dd:Manufacturer>
<dd:Name>HP</dd:Name>
<dd>Date>2016-08-06</dd>Date>
</dd:Manufacturer>
<dd:ProductNumber>CF226A</dd:ProductNumber>
<dd:SerialNumber>16919031</dd:SerialNumber>
<dd:ConsumableManufacturingSignature>4c69149c166623b3a09fe91cf93aae306b17ce2f
```

AM CF226X chip sold by Apus Soluções

Sample #6

```
<dd:Brand>HP</dd:Brand>
</dd:ConsumableLifeState>
<dd:ConsumableStateAvailableActions>
<dd:ConsumableLowThreshold>3</dd:ConsumableLowThreshold>
<dd:ConsumablePercentageLevelRemaining>100</dd:ConsumablePercentageLevelRemaining>
<dd:ConsumableReplaceabilityType>userReplaceable</dd:ConsumableReplaceabilityType>
<dd:ConsumableSelectibilityNumber>26X</dd:ConsumableSelectibilityNumber>
<dd:ConsumableStation>0</dd:ConsumableStation>
<dd:ConsumableTypeEnum>toner</dd:ConsumableTypeEnum>
<dd:Manufacturer>
<dd:Name>HP</dd:Name>
<dd>Date>2015-10-22</dd>Date>
</dd:Manufacturer>
<dd:ProductNumber>CF226X</dd:ProductNumber>
<dd:SerialNumber>16915840</dd:SerialNumber>
<dd:ConsumableManufacturingSignature>1f1cc3f8834ea4485054a113477b44510f333d42
```

Note: Off-the-shelf AM chip identified the cartridge as genuine HP.

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4.1 HP LaserJet M402dn printer (continue)

AM chip programmed to CF226A-N-V2 part number

Sample #7a

```

<dd:Brand>clone</dd:Brand>
</dd:ConsumableLifeState>
<dd:ConsumableStateAvailableActions>
<dd:ConsumableLowThreshold>3</dd:ConsumableLowThreshold>
<dd:ConsumablePercentageLevelRemaining>100</dd:ConsumablePercentageLevelRemaining>
<dd:ConsumableReplaceabilityType>userReplaceable</dd:ConsumableReplaceabilityType>
<dd:ConsumableSelectibilityNumber>26A</dd:ConsumableSelectibilityNumber>
<dd:ConsumableStation>0</dd:ConsumableStation>
<dd:ConsumableTypeEnum>toner</dd:ConsumableTypeEnum>
<dd:Manufacturer>
<dd:Name></dd:Name>
<dd:Date>2016-06-21</dd:Date>
</dd:Manufacturer>
<dd:ProductNumber>CF226A</dd:ProductNumber>
<dd:SerialNumber>16842825</dd:SerialNumber>
<dd:ConsumableManufacturingSignature>8155e391472e1656aa036b7c8ac882733dbdc69f

```

AM chip programmed to CF226A-V2 part number

Sample #7b

```

<dd:Brand>HP</dd:Brand>
</dd:ConsumableLifeState>
<dd:ConsumableStateAvailableActions>
<dd:ConsumableLowThreshold>3</dd:ConsumableLowThreshold>
<dd:ConsumablePercentageLevelRemaining>100</dd:ConsumablePercentageLevelRemaining>
<dd:ConsumableReplaceabilityType>userReplaceable</dd:ConsumableReplaceabilityType>
<dd:ConsumableSelectibilityNumber>26A</dd:ConsumableSelectibilityNumber>
<dd:ConsumableStation>0</dd:ConsumableStation>
<dd:ConsumableTypeEnum>toner</dd:ConsumableTypeEnum>
<dd:Manufacturer>
<dd:Name>HP</dd:Name>
<dd:Date>2015-06-17</dd:Date>
</dd:Manufacturer>
<dd:ProductNumber>CF226A</dd:ProductNumber>
<dd:SerialNumber>16842833</dd:SerialNumber>
<dd:ConsumableManufacturingSignature>23db7793754b2be1ed4b243bb47754bd7e3a530

```

Note: Re-programmable AM chip can be programmed by a 3rd party to identify the cartridge either as a genuine HP or as a non-HP cartridge.

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4.2 HP LaserJet M553dn printer, SNMP OID Data

This data shows the trademark field as seen by SNMP accessing the printer firmware.

- The value is set to “**yèHP**” when the cartridge is identified as an HP original cartridge.
- The value is set to “**yè__**” when the cartridge is identified as an aftermarket cartridge.

```
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.1.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.2.0 = STRING: "yè"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.3.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.4.0 = STRING: "yèHP"
```

- The value is set to **01** when the cartridge is identified as an HP original cartridge.
- The value is set to **02** when the cartridge is identified as a non-HP cartridge.

```
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.1.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.2.0 = Hex-STRING: 80 00 00 02
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.3.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.4.0 = Hex-STRING: 80 00 00 01
```

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4.2 HP LaserJet M553dn printer, SNMP OID Data (Continue)

AM chip found on counterfeit CF361A cartridge

Sample #3

```
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.1.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.2.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.3.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.4.0 = STRING: "yèHP"

SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.1.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.2.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.3.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.4.0 = Hex-STRING: 80 00 00 01
```

AM chip found on AM CF361A cartridge

Sample #4

```
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.1.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.2.0 = STRING: "yè"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.3.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.4.0 = STRING: "yèHP"

SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.1.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.2.0 = Hex-STRING: 80 00 00 02
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.3.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.4.0 = Hex-STRING: 80 00 00 01
```

Note: AM chip identified counterfeit cartridge as genuine HP cartridge. AM cartridge identified as a non-HP cartridge.

Original CF361A HP chip

Sample #9

```
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.1.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.2.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.3.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.4.0 = STRING: "yèHP"

SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.1.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.2.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.3.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.4.0 = Hex-STRING: 80 00 00 01
```

AM CF361X chip sold by Apus Soluções

Sample #5

```
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.1.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.2.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.3.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.4.0 = STRING: "yèHP"

SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.1.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.2.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.3.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.4.0 = Hex-STRING: 80 00 00 01
```

Note: Off-the-shelf AM chip identified the cartridge as genuine HP.

AM chip programmed to CF360A-N-V2 part number

Sample #7c

```
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.1.0 = STRING: "yè"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.2.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.3.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.4.0 = STRING: "yèHP"

SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.1.0 = Hex-STRING: 80 00 00 02
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.2.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.3.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.4.0 = Hex-STRING: 80 00 00 01
```

AM chip programmed to CF360A-V2 part number

Sample #7d

```
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.1.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.2.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.3.0 = STRING: "yèHP"
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.1.1.20.4.0 = STRING: "yèHP"

SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.1.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.2.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.3.0 = Hex-STRING: 80 00 00 01
SNMPv2-SMI::enterprises.11.2.3.9.4.2.1.4.1.10.7.4.0 = Hex-STRING: 80 00 00 01
```

Note: Re-programmable AM chip can be programmed to identify the cartridge either as a genuine HP or as a non-HP cartridge.

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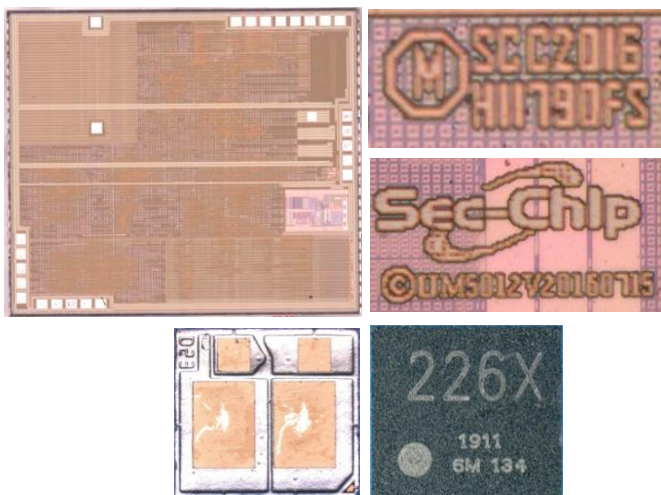
5.0 Side by side comparison of the die markings on de-capped microcontrollers of the chip samples.

PURPOSE: To confirm if various chip samples tested by the lab were developed and manufactured by the same company. The chip layouts, manufacturer branding, markings and IDs serve as a fingerprint for confirming that the chips are made by the same manufacturer.

5.1 AM chip type 1

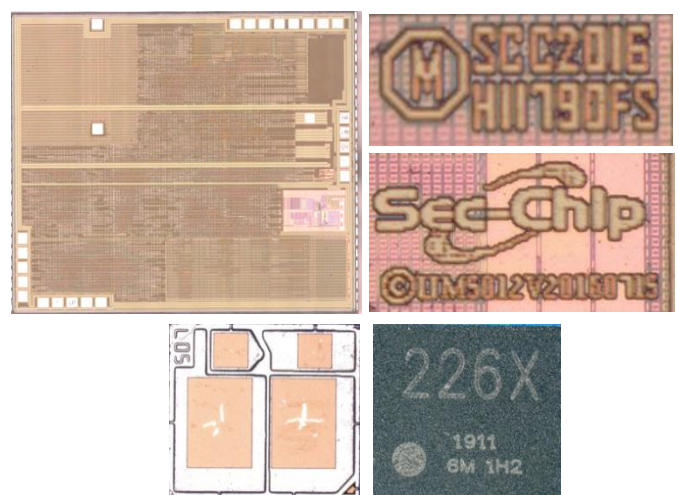
AM chip found on counterfeit CF226X cartridge

Sample #1



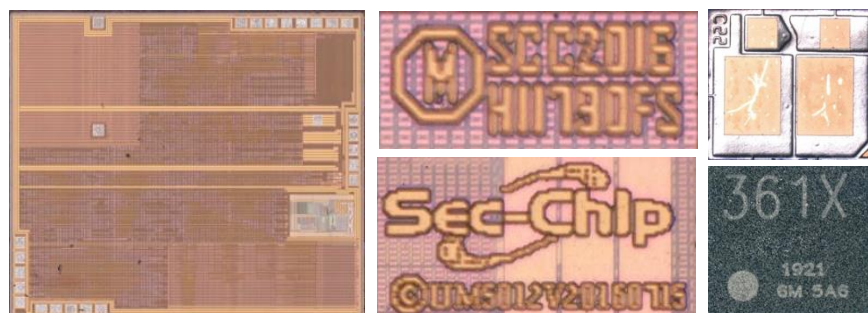
AM CF226X chip sold by Apus Soluções

Sample #6



AM CF361X chip sold by Apus Soluções

Sample #5



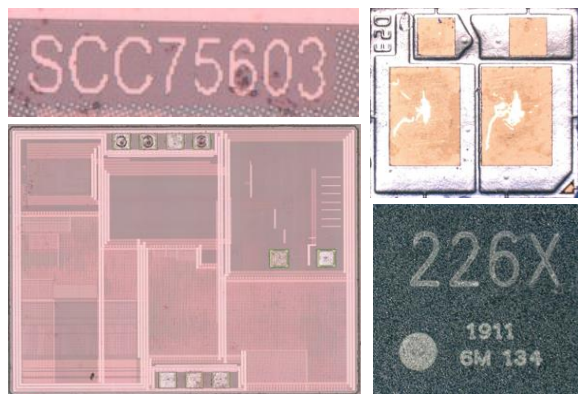
Note: There is clear evidence that AM chips found on counterfeit CF226X cartridges and AM chips sold by Apus Soluções were developed and manufactured by the same company.

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5.2 AM chip type 2

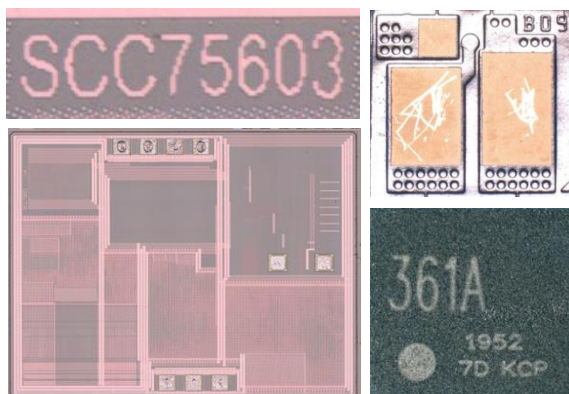
AM chip found on counterfeit CF226X cartridge

Sample #2



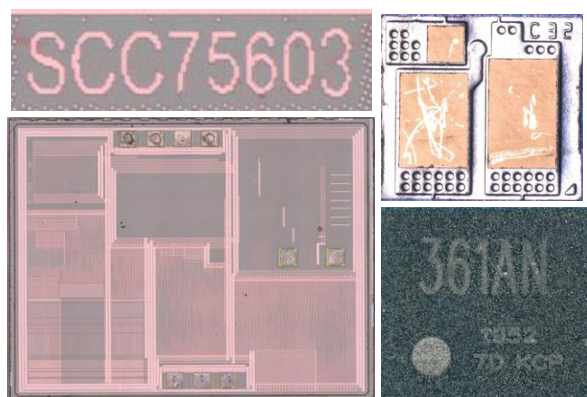
AM chip found on counterfeit CF361A cartridge

Sample #3



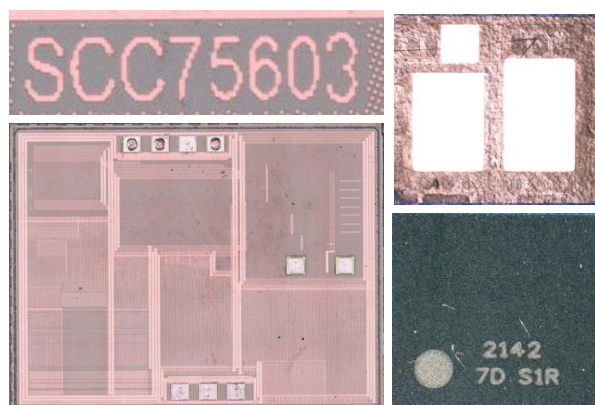
AM chip found on AM CF361A cartridge

Sample #4



Re-programmable AM B73chip

Sample #7



Note: There is clear evidence that AM chips found on counterfeit CF226X and CF361A cartridges, AM chips found on the AM cartridge made by Ninestar, and pre-programmable AM chips were developed and manufactured by the same company.

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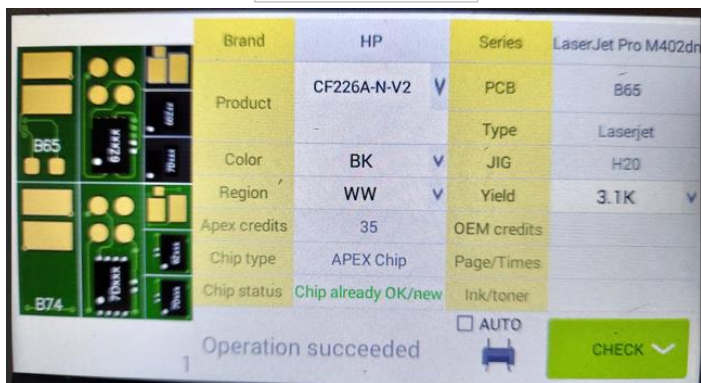
6.0 Programming AM chips using a Unismart device

PURPOSE: To confirm that re-programmable aftermarket (AM) chips made by Ninestar, or its subsidiaries can be programmed and re-programmed to identify the cartridge either as a genuine HP or as a non-HP cartridge. It further demonstrates that the reprogramming tools distributed by Ninestar, or its subsidiaries, recognize the chips as Ninestar products.

6.1 HP LaserJet M402dn Printer and B73 pre-programmable AM chip

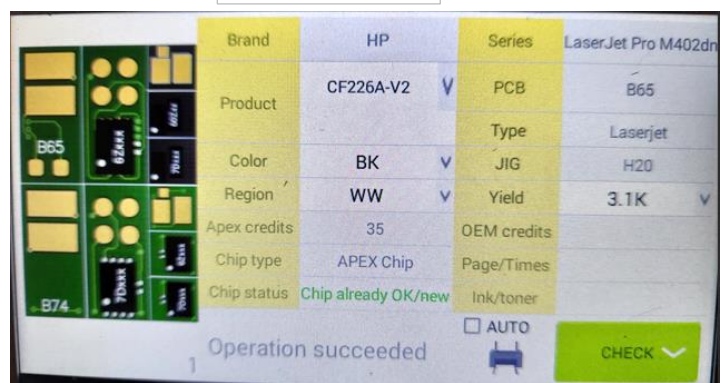
AM chip programmed to CF226A-N-V2 part number

Sample #7a



AM chip programmed to CF226A-V2 part number

Sample #7b



6.2 HP LaserJet M553dn Printer and B73 pre-programmable AM chip

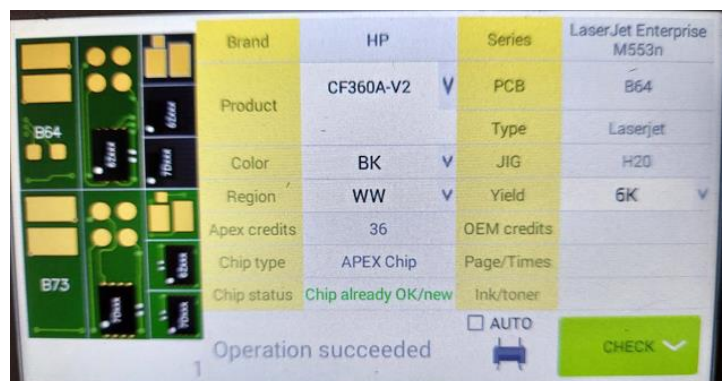
AM chip programmed to CF360A-N-V2 part number

Sample #7c




AM chip programmed to CF360A-V2 part number

Sample #7d



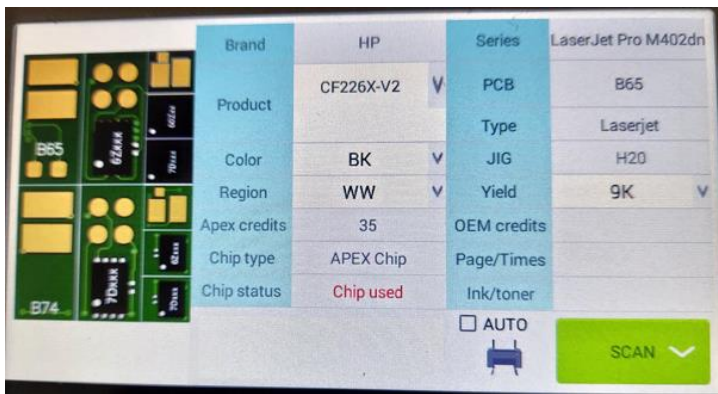
Note: The same re-programmable AM chip can be easily programmed and re-programmed to identify the cartridge either as a genuine HP or as a non-HP cartridge.

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6.3 Other programmable AM chip samples

AM chip found on counterfeit CF226X cartridge

Sample #2



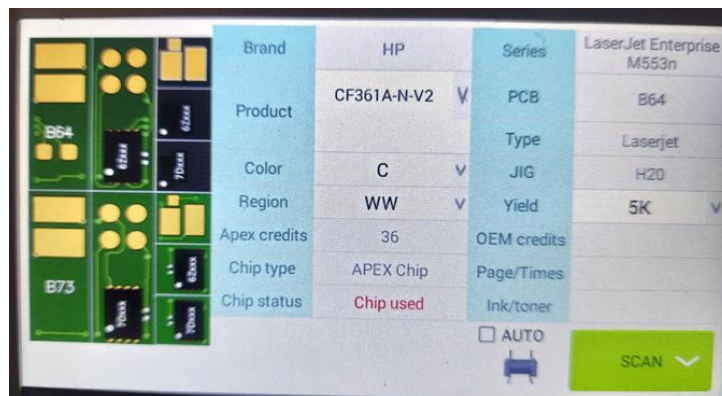
AM chip found on counterfeit CF361A cartridge

Sample #3



AM chip found on AM CF361A cartridge










Sample #4



Note: There is clear evidence that AM chips found on counterfeit CF226X and CF361A cartridges are of programmable type and originated from the same manufacturer as AM chips found on the AM cartridge made by Ninestar and pre-programmable AM B73 chips sold by Apex Microelectronics.

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Annex 1: Chip sample category

	CF226X Sample #1	CF226X Sample #2	CF361A Sample #3
Aftermarket chips found on counterfeit cartridges			
	CF361A Sample #4		
Aftermarket chip found on cartridge made by Ninestar		---	---
	CF361X Sample #5	CF226X Sample #6	
Aftermarket chips sold by Apus Soluções			---
	B73 Sample #7		
Re-programmable aftermarket chip sold by Apex Microelectronics		---	---
	CF226A Sample #8	CF361A Sample #9	
Original HP chip			---

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Annex 2: Printer details

HP LaserJet M402dn printer



HP LaserJet M402dn Configuration Report

Product Information Product Name: HP LaserJet M402dn Formatter Number: 13.39807 Serial Number: PH80735015 Cartridge Index: IC5B-ENPA Service ID: 2521B Firmware Softwarecode: 20150916 Control Panel Version: 5400 Location: USA Device Location: US Location Max Print Quality: Profiles 1200 Controller Number: 11803 Qualifier Version: 0	Product Settings Device Description: HP LaserJet M402dn Language: English Default Settings: Self-managed Asset Number: Your Company Name: Contact Person: Product Security: Off Queue Print Mode: Off Hardware Address: 70:54:00:a3:e9:50 Host Name: HP-LASERJ IPv4 Status: Network Cable Disconnected IPv6 Status: Network Cable Disconnected Show IP Address: Enabled
Memory Total Memory: 128 Mbytes Available Memory: 65.19 Mbytes	Installed Personalities and Options PCL6 AirPrint PCL PS
Paper Settings Default Paper Size: Letter Default Paper Type: Plain Tray 1 Size: Any Size Tray 1 Type: Any Type Tray 2 Size: Any Size Tray 2 Type: Any Type Paper Out Action: Wait Forever Manual Feed: Off Tray Size Prompt: On Duplex: Off Bind: Long Edge	Print Auto Continue: On Number of Copies: 1 Courier Fast: Regular Economode: Off Orientation: Portrait Monochrome BCL: On wide A4: No A5 Feed Orientation: Landscape Print Density: 3 Monochrome Resolution: 600 Monochrome Bits per Pixel: 2 ID Timeout: 120 Seconds Jam Recovery: Auto Personality: Auto Print PS Errors: Off
Impressions Total Impressions: 0 Total Equivalent Impressions (A4/Letter): 0.0 Duplex Sheets: 0 Jam Events: 0 Missed Events: 0 Economode Impressions: 0	HP Web Services HP Web Services: Disabled




HP Color LaserJet M553dn printer



HP Color LaserJet M553 Configuration Page



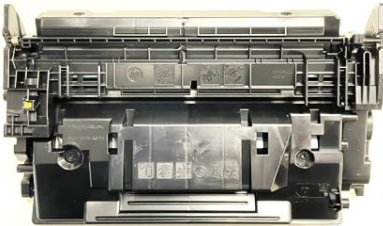

Device Information Product Name: HP Color LaserJet M553 Device Name: hpcolor (11865) Model Number: B5L25A Pages Since Last Full Maintenance: 4,132 Optional Toner Version: 3,102 Product Serial Number: 298C2900C8 Formatter Number: 2940731 Firmware Bundle Version: 3.7 Firmware Revision: 230781_55186 Firmware Softwarecode: 20160520 HP FutureSmart Level: HP FutureSmart 3 NFC revision: Not installed Service ID: 29275 Fuser Kit Interval: 150000 Pages Since Last Fuser Maintenance: 7600 PS Wait Time: 300 seconds Engine Cycles: 4272 Color Engine Cycle: 3621 Cartridge Protection: Off Cartridge Policy: Off Cartridge Index: J40D NG8C *Not weighted for billing	Color Density <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th></th><th>C</th><th>M</th><th>Y</th><th>K</th></tr> <tr> <td>Highlights</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr> <tr> <td>Midtones</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr> <tr> <td>Shadows</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr> </table> Calibration Information Last CRG (Engine Cycle): 4270 Last CRG: 7/30/2022 4:19:00 AM Last DRG/DRM (Engine Cycle): 4270 Last DRG/DRM: 7/30/2022 4:19:00 AM		C	M	Y	K	Highlights	0.0	0.0	0.0	0.0	Midtones	0.0	0.0	0.0	0.0	Shadows	0.0	0.0	0.0	0.0
	C	M	Y	K																	
Highlights	0.0	0.0	0.0	0.0																	
Midtones	0.0	0.0	0.0	0.0																	
Shadows	0.0	0.0	0.0	0.0																	
Installed Personalities and Options PCL: 20010402 PCL6: 20010402 POSTSCRIPT: 20010402 PDF: 20010402 AirPrint: 2040201 PWG: 2040201 Embedded HP Jetdirect: NP18A0051 Custom Color Table: Not installed	Memory Total RAM: 1024 MB																				
Event Log Number of Entries in Use: 8 Three Most Recent Entries: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Number</th><th>Cycles</th><th>Event</th></tr> <tr> <td>8</td><td>4270</td><td>43:56:09</td></tr> <tr> <td>7</td><td>4270</td><td>32:10:27</td></tr> <tr> <td>6</td><td>3534</td><td>13:59:40</td></tr> </table>	Number	Cycles	Event	8	4270	43:56:09	7	4270	32:10:27	6	3534	13:59:40	Security Hard Disk Encryption Status: Internal Disk: Disk cannot be encrypted Joo Data Persistence: Volatile (not persistent) File Erase Mode: Non-Secure Fast Erase (No overprint) Control Panel Password: Disabled Support Key: 8773-3464-9989 Host USB plug and play: Disabled Device USB: Enabled HP SureStart: Present Whitelisting: Present Runtime Intrusion Detection: Present								
Number	Cycles	Event																			
8	4270	43:56:09																			
7	4270	32:10:27																			
6	3534	13:59:40																			
HP Web Services HP Web Services: Disabled ePrint: Disabled	Paper Trays and Options Default Paper Size: Letter Tray 1 Size: Any Size Tray 1 Type: Any Type Tray 2 Size: Letter Tray 2 Type: Plain Tray 3 Size: Letter Tray 3 Type: Plain Duplex Unit: 1. Output Bin 1: 250 Sheets, Standard bin																				





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Annex 3: Cartridges and Packaging



3.1 Counterfeit Cartridges and Packaging (CF226X and CF361A)

Counterfeit CF226X Cartridge	Counterfeit CF361A Cartridge
	
	

3.2 Original HP CF226A Cartridge and Packaging

	
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3.3 Aftermarket CF361A Cartridge Made by Ninestar, with Packaging

	
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3.4 Aftermarket Chips Sold by Apus Soluções – Official Distributor of Apex Microelectronics

CF361X chips sold by Apus Soluções	CF226X chips sold by Apus Soluções
	