# 2. Reference Information

This chapter contains the tools list, list of abbreviations used in this manual, and a guide to the location space required when installing the printer. A definition of tests pages and Wireless Network information definition is also included.

2.1 Tool for Troubleshooting

The following tools are recommended safe and easy troubleshooting as described in this service manual.
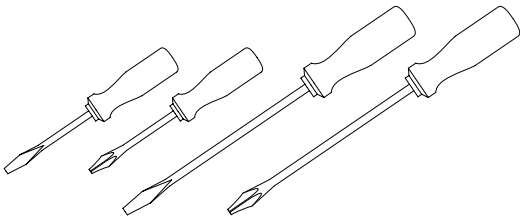
• **DVM(Digital Volt Meter)**
  Standard : Indicates more than 3 digits.
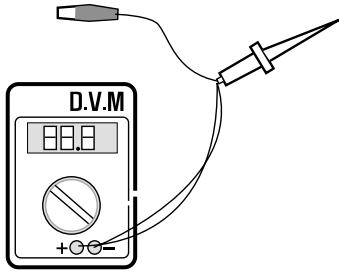
• **Driver**
  Standard : "-" type, "+" type (M3 long, M3 short, M2 long, M2 short).

• **Tweezers**
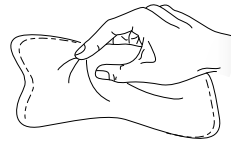 Standard : For general home use, small type.

• **Cotton Swab**
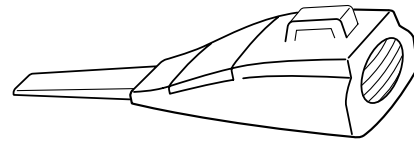 Standard : For general home use, for medical service.

• **Cleaning Equipments**
  Standard : An IPA(Isopropyl Alcohol)dry wipe tissue or a gentle neutral detergent and lint-free cloth.
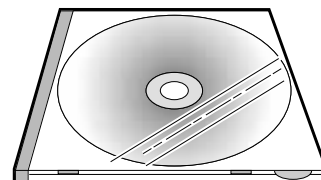

• **Vacuum Cleaner**

• **Brush**

• **Software (Driver) installation CD ROM**

2.2 Acronyms and Abbreviations

The table below explains the abbreviations and acronyms used in this service manual. Where abbreviations or acronyms are used in the text please refer to this table.

ADC	Analog-to-Digital-Conversion	EPP	Enhanced Parallel Port
AP	Access Point	F/W	Firmware
AC	Alternating Current	FCF/FCT	First Cassette Feeder/First Cassette Tray
ASIC Circuit	Application Specific Integrated	FISO	Front-In, Side-Out
ASSY	Assembly	FPOT	First Print out Time
BIOS	Basic Input Output System	GDI	Windows Graphic Device Interface
BLDC Motor	Brushless DC Motor	GIF	Graphic Interchange Format
CMOS	Complementary Metal Oxide Semiconductor	GND	Ground
CMYK	Cyan, Magenta, Yellow, Black	HBP	Host Based Printing
CN	Connector	HDD	Hard Disk Drive
CON	Connector	HTML	Hyper Text Transfer Protocol
CPU	Central Processing Unit	HV	High Voltage
CTD Sensor	Color Toner Density Sensor	HVPS	High Voltage Power Supply
dB	Decibel	I/F	Interface
dBA	A-Weighted decibel	I/O	Input and Output
dBm	Decibel milliwatt	lb	Pound(s)
DC	Direct Current	IC	Integrated Circuit
DCU	Diagnostic Control Unit	ICC	International Color Consortium
DIMM	Dual In-line Memory Module	IDE	Intelligent Drive Electronics or Integrated Drive Electronics
DPI	Dot Per Inch	IEEE	Institute of Electrical and Electronics Engineers. Inc
DRAM	Dynamic Random Access Memory		
DVM	Digital Voltmeter	IOT	Image Output Terminal (Color printer, Copier)
ECP	Enhanced Capability Port		
ECU	Engine Control Unit	IPA	Isopropy Alcohol
EEPROM	Electronically Erasable Programmable Read Only Memory	IPC	Inter Process CommunicationEPP Enhanced parallel Port
		IPM	Images Per Minute
EMI	Electro Magnetic Interference	ITB	Image Transfer Belt
EP	Electro photographic	LAN	local area network

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LBP	Laser Beam Printer	RAM	Random Access Memory
LCD	Liquid Crystal Display	ROM	Read Only Memory
LED	Light Emitting Diode	SCF/SCT	Second Cassette Feeder/Second Cassette Tray
LSU	Laser Scanning Unit		
MB	Megabyte	SMPS	Switching Mode Power Supply
MHz	Megahertz	SPGP	Samsung Printer Graphic Processor
MPBF	Mean Prints Between Failure		
MPF/MPT	Multi Purpose Feeder/Multi Purpose Tray	SPL	Samsung Printer Language
		Spool	Simultaneous Peripheral Operation Online
NIC	Network Interface Card		
NPC	Network Printer Card	SURF	Surface Rapid Fusing
NVRAM	Nonvolatile Random Access Memory	SW	Switch
		sync	Synchronous or Synchronization
OPC	Organic Photo Conductor	T1	ITB
PBA	Printed Board Assembly	T2	Transfer Roller
PCL	Printer Command Language , Printer Control Language	TRC	Toner Reproduction Curve
		PnP	Universal Plug and Play
PCI	Peripheral Component Interconnect by Intel 1992/6/22, is a local bus standard developed by Intel and introduced in April, 1993 : A60, B60 Pins	URL	Uniform Resource Locator
		USB	Universal Serial Bus
		VCCI	Voluntary Control Council for Interference Information Technology Equipment
PDF	Portable Document Format		
PDL	Page Description Language	WECA Alliance	Wireless Ethernet Compatibility
Ping	Packet internet or Inter-Network Groper		
		Wi-Fi	Wireless Fidelity
PPD	Postscript Printer Discription		
PPM	Page Per Minute		
PS	Post Script		
PTL	Pre-Transfer Lamp		
PWM	Pulse Width Moduration		
Q'ty	Quantity		

2.3 Select a location for the printer

• Leave enough room to open the printer trays, covers, and allow for proper ventilation. (see diagram below)

• Provide the proper environment :
  - A firm, level surface
  - Away from the direct airflow of air conditioners, heaters, or ventilators
  - Free of extreme fluctuations of temperature, sunlight, or humidity
  - Clean, dry, and free of dust

100 mm <Rear Side>

350 mm

350 mm
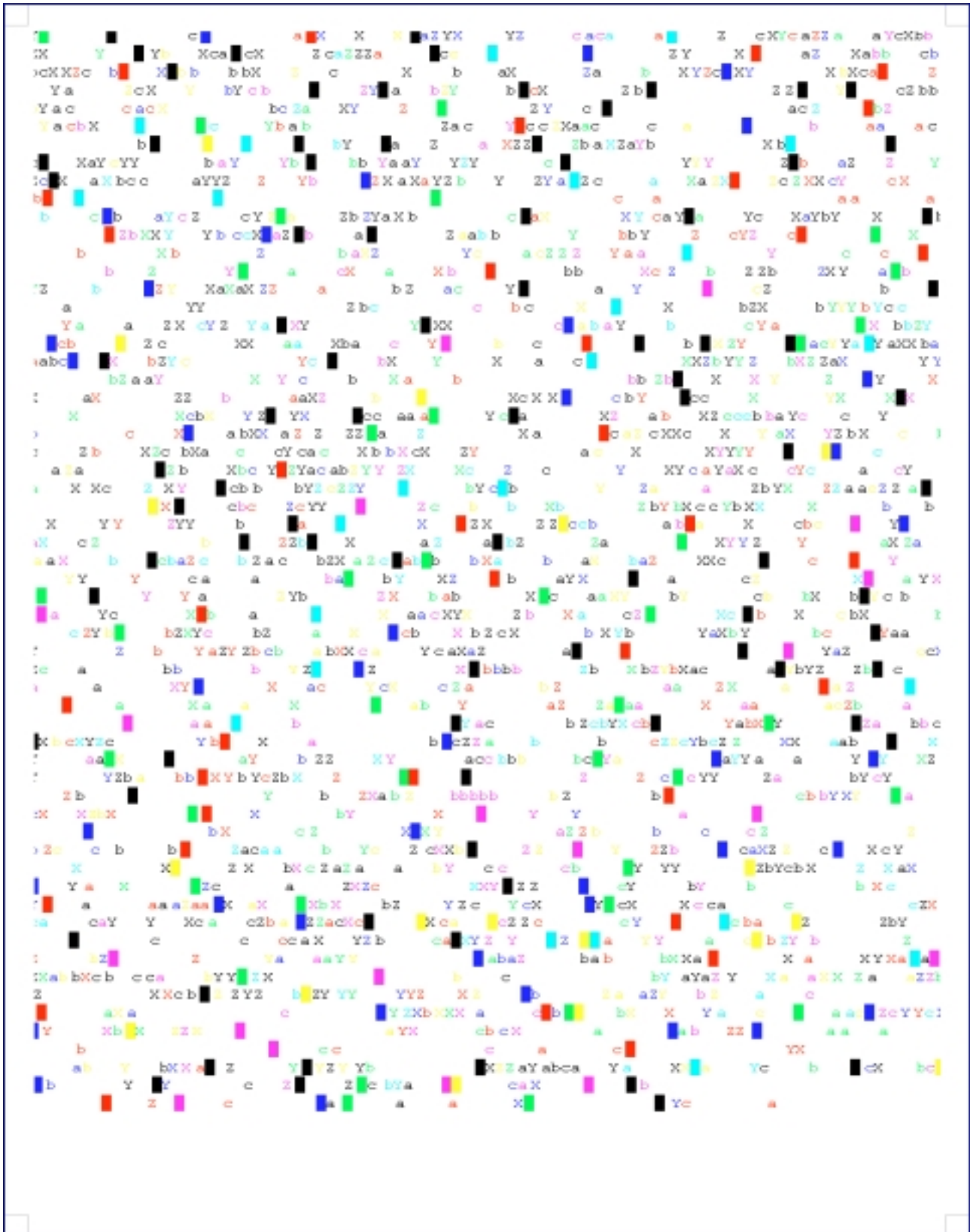
<Operator Panel>

450 mm
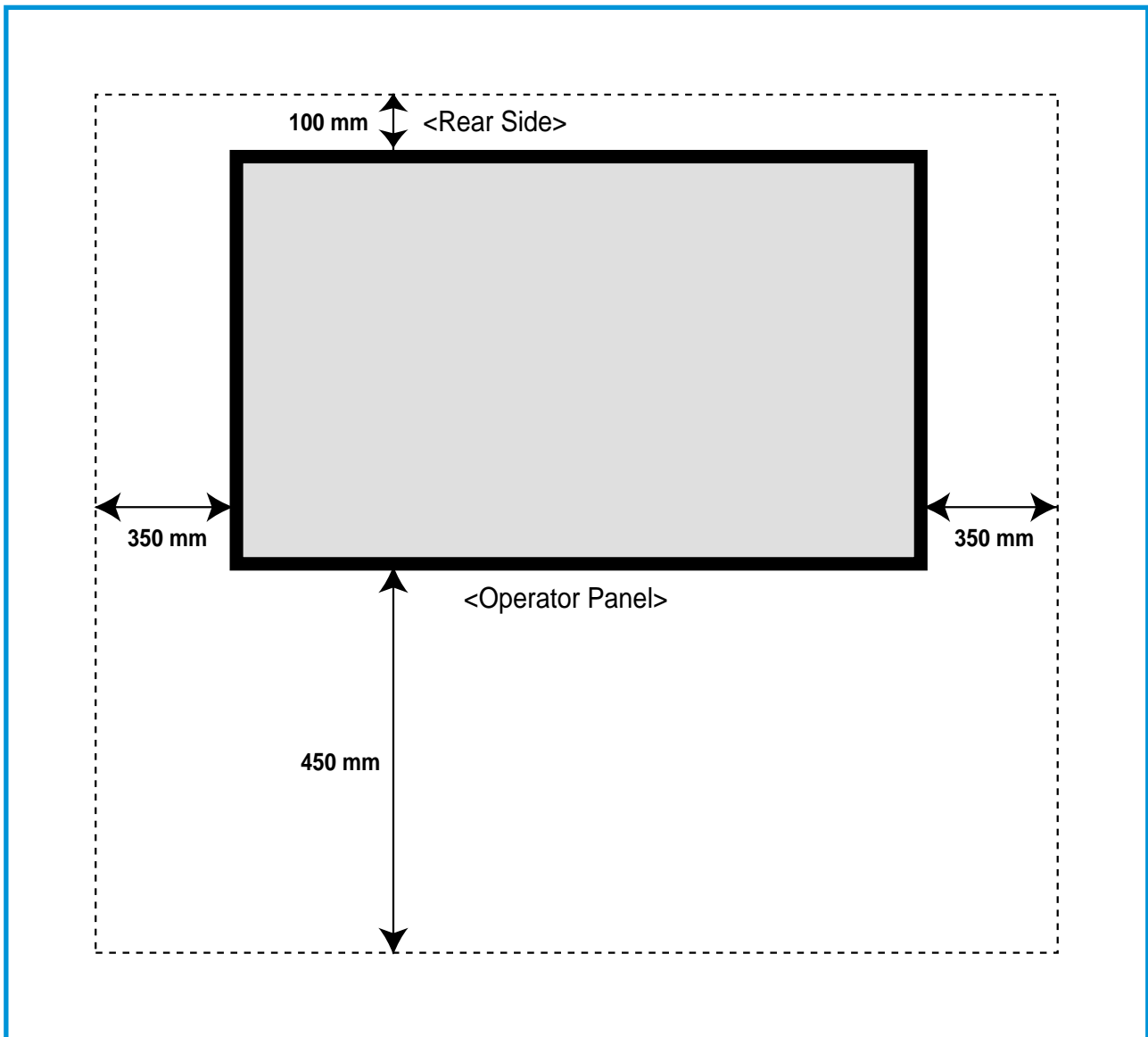
2.4 Sample Tests Patterns

The sample patterns shown below are the standard test patterns used in the factory.
The life of the toner cartridge, developer cartridge and printing speed are measured with the pattern shown below (5%). The 5% and 2% samples are reproduced reduced to 70% of the actual A4 size.

2.4.1   A4 5% Pattern

Samsung Electronics
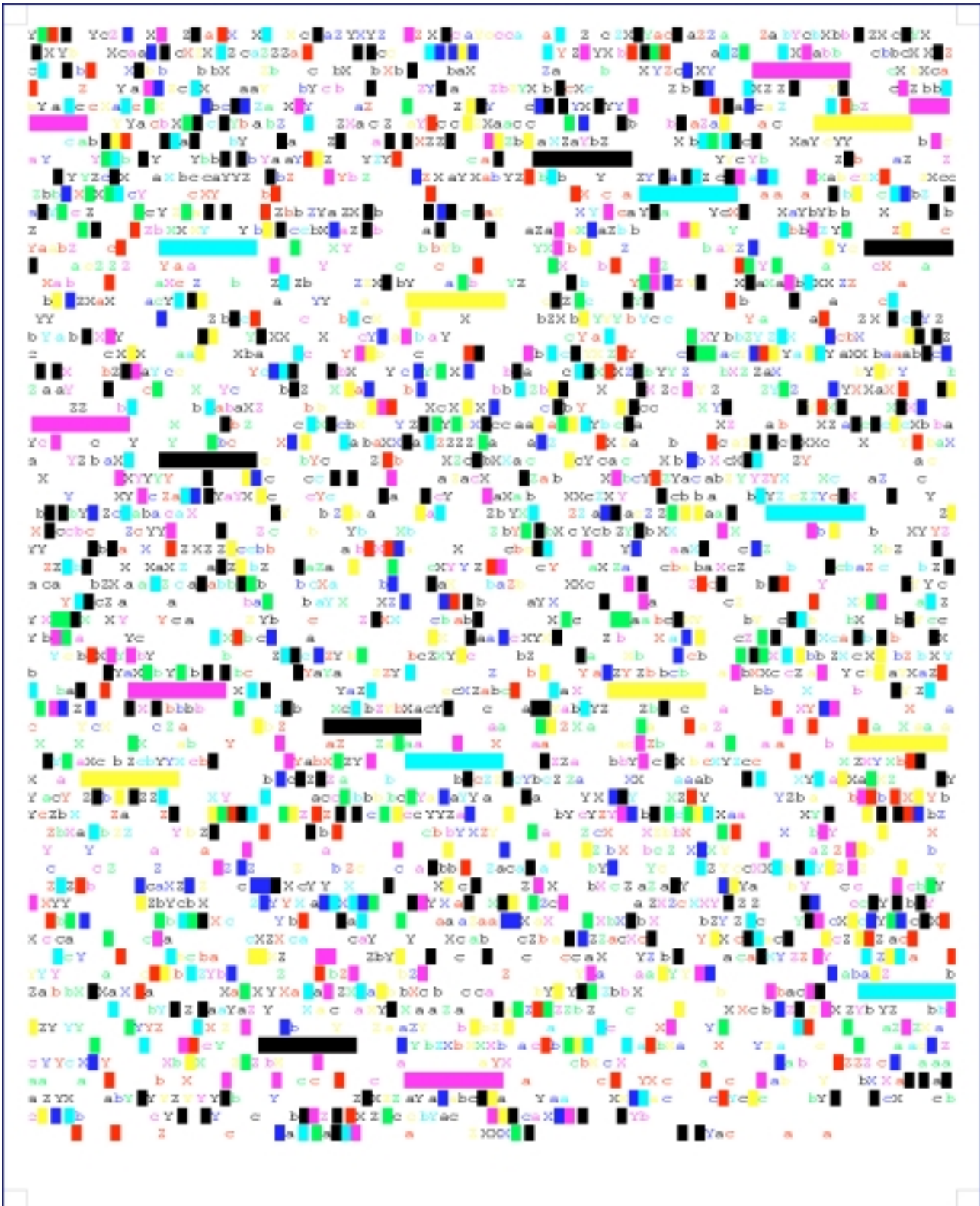
2.4.2   A4 2% Pattern

2.4.3   A4 IDC 5% Pattern

This test page is reproduced at 70% of the normal A4 size

INTEROFFICE MEMORANDUM

TO: Cathy Scott
FROM: Lane Wolters
SUBJECT: The Typical Printed Page
DATE: 07/14/09

What does the typical laser printer document look like? Well, across the diverse business community it would be impossible to capture all aspects of printing style within a single page document. However, if attention is focused on the majority of printing volume, text and simple business graphics would stand out as the most prevalent output from laser printers. This sample memo represents a reasonable example of the typical business document. This memo covers approximately 5% of a letter or A4-sized piece of paper. This number (5%) has historically been called the "average" page coverage by laser printer manufacturers. It may seem to the naked eye that there is much more than 5%, but in fact, alphanumeric characters rely on a large portion of white space for their composition.

Profit and Revenue ($M)

Mileage Chart

City	London	Los Angeles	New York	Tokyo
London	--	5456	3453	5975
Los Angeles	5456	--	2468	5451
New York	3453	2468	--	6736
Tokyo	5975	5451	6736	--

There are many factors that can influence the actual page coverage of a document as well as the page-yield of a toner cartridge. Testing parameters such as font size and style, internal printer settings, print environment, paper stock, sample size, job length and criteria for determining "end of life", can all influence how long a toner cartridge will last. The best competitive analysis of printer page yield should occur under similar conditions using industry standards for the variables listed above.

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2.6 Wireless LAN

• This product can be used with a wireless LAN, (this is an option.)
- The wireless LAN function uses radio technology, instead of using LAN cable, to connect to an access point for printing.
- For a wireless LAN connection in Infrastructure mode an AP is needed, (purchased separately)
- For a wireless LAN connection in Ad-Hoc mode an appropriate Wireless I/F card is required fitted to a computer, (purchased separately)
- It is possible to use a wireless LAN connection with wired LAN.
- If an AP is installed in an office or at home, the wireless LAN function can be simply configured and used.

• Types of desk top PC (or Lap top) that uses the wireless LAN.

Division	Basic type	Recommend type
CPU	Over PENTIUM 233M	PENTIUM 300MHz
MEMORY	Over 64MB	Over 128MB
VIDEO CARD	Over 800X600	Over 1024X768
OS	Over WINDOWS 98	Over WINDOWS ME
INTERFACE CARD	A product has a certificated mark of Wi-Fi™	

• **About the certificated mark of Wi-Fi™**

- Wi-Fi™ is a registered trademark of the WECA (Wireless Ethernet Compatibility Alliance). Over 50 wireless LAN companies are member of this organisation. Most of the main wireless networking companies are attending including such companies as Lucent Technologies, Cisco, Intel/Symbol, 3Com, Enterasys (Cabletron), Compaq, IBM, Nokia, Dell, Philips, Samsung Electronics, Sony, Intersil, etc.. This mark certifies mutual compatibility amongst the product of these companies. Wi-Fi™ (IEEE 802.1) is certified as a standard of the wireless LAN market.