PRODUCT SPECIFICATION

TEC

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2.0 INTRODUCTION

2.1 SCOPE

This product specification describes compact multi-functional LASER facsimile AQ6, designed, developed, and manufactured by TEC Corporation for resale by TOSHIBA Corporation. This document and its subsequent approved revisions and other documents referenced herein shall be utilized as the sole source of product test of this product.

If discrepancies or differences exist between this specification and other applicable specifications or documents, this document shall take precedence. However, it must be noted that other specifications and documents will be referenced herein to completely define this product.

Values are nominal value, unless otherwise specified.

2.2 PRODUCT OVERVIEW

The product is multi-national product designed for transmitting and receiving multiple documents automatically over the Public Switched Telephone Network. The product complies with ITU-T Group 3 Recommendations T.4 and T.30 as well as proving other optional modes of operation.

2.3 PRODUCT CONFIGURATIONS

The product shall consist of and include accessories described in Appendix A, for every destination respectively.

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3.0 APPLICABLE REFERENCE

3.1 MANDATORY REFERENCE

The following documents are used as mandatory references to this specification.

ITU-T Recommendations
T.4 and T.30
V.29, V.27ter ,V.21 AND V.17

3.2 INFORMATIONAL REFERENCE

The following referenced documents are included as part of the specification and shall be applicable in all respects. When the specification and these referenced documents are in conflict, this specification takes precedence.

ITU-T Recommendation T.21
FDA 21 CFR. 1040. 10 (LASER) Class 1
Acoustical Noise Measurement, ISO 7779
CEPT

3.3 TEST CHARTS

ITU-T #1 Test Document
ITU-T #3 Test Chart
ITU-T #8 Test Chart
IIEEJ #1 Test Chart
TEC Original Test Chart

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4.0   GLOSSARY

The following definitions are given in order to assist in the interpretation of this specification.

ADF	Auto Document Feeder
ASF	Auto Sheet Feeder
DTMF	Dual Tone Multi Frequency
ECM	Error Correction Mode
GDI	Graphical Device Interface
IIEEJ	Institute of Image Electronic Engineer's of Japan
ITU	International Telecommunication Union
LASER	Light Amplitude Stimulation Emission of Radiation
LCD	Liquid Crystal Display
MH	Modified Huffman
MMR	Modified Modified Read
MPBF	Mean Paper Between Failure
MR	Modified Read
MTBF	Mean Time Between Failure
MTTR	Mean Time To Repair
NSC	Non Standard function Command
NSF	Non Standard Field
NSS	Non Standard function Setting
OD	Optical Density
OPC	Optical Photo Conductor
PABX	Private Automatic Branch Exchange
PSTN	Public Switched Telephone Network
RTI	Receiver Terminal Identification
RX	Reception
TTI	Transmitter Terminal Identification
TX	Transmission

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5.0   PHYSICAL REQUIREMENTS

5.1   APPEARANCE

The overall appearance shall be Appendix B. For KEYBOARD layout, refer to Appendix C.

5.1.1   MATERIAL

The major cover sets shall be made of HIPS (UL94V-0) or PPO(UL94V-1) material.

5.1.2   SHARP EDGES

Sharp edges, pinch points and sharp corners which can cause injury to the operator through accidental contact with the exterior or normal accessible interior areas of the ˛ product should not be present.

5.2   PHYSICAL DIMENSIONS
5.2.1   UNPACKED CONDITION

Height		TBD mm
Width,	with Handset	TBDmm
	without Handset	TBDmm
Depth,		TBDmm
Weight,		
	with handset	TBD Kg
	without handset	TBD Kg

5.2.2   PACKAGED, INDIVIDUAL, FOR SHIPMENT

Height	TBD mm
Width	TBD mm
Depth,	TBD mm
Weight	TBD Kg

6.0   COMMUNICATION SUBSYSTEM
6.1   SIGNAL DEFINITIONS
6.1.1   MANDATORY SIGNALS
See Reference 2.1.2 of ITU-T Recommendation T.30 and T.4.

6.1.2   OPTIONAL SIGNAL DEFINITIONS
The facsimile information Field for the NSF, NSC, and NSS frames shall conform to the following general format:

	OCTET	DESCRIPTION
1st	00000000	ITU-T country code(T.35)
2nd	00000000	ITU-T members code(T.30)
3rd	00001001	Manufacturer's code (TOSHIBA)
4th		Information area
end of FIF		

6.2   COMMUNICATION SIGNAL SPECIFICATIONS
6.2.1   BASIC MODULATION METHODS

Communication ratio (bits / second)	Modulation / Demodulation
14400	V.17
12000	V.17
9600	V.17
7200	V.17
9600	V.29
7200	V.29
4800	V.27 ter
2400	V.27 ter
300	V.21

6.2.2   TRANSMITTED POWER LEVEL
-15 to 0 dBm, Service Representative adjustable in 1 dBm steps. Transmitted power level shall be measured at the Network Termination Point of the terminal with connecting 600 ohm resistance.

6.2.3   RECEIVED POWER LEVEL
The terminal should perform all performance for received power level from -4 to -46 dBm. The received power level shall be measured at the Network Termination Point of the terminal.

6.2.4   SIGNAL DROPOUT
Signal interruption less than 1.0 seconds in G3 mode may cause copy perturbations but should not cause machine shutdown. Signal interruption greater than 6 seconds in G3 mode should cause immediate machine shutdown.

6.2.5   CABLE EQUALIZER
Equalization function shall be provided to improve performance when operating over low quality lines. 2 levels of cable equalizations are programmable:

0   Km (default)
3.6   Km

6.2.6   REDUNDANCY REDUCTION METHOD
ITU-T MH, MR, MMR coding scheme shall be utilized by the terminal.

6.2.7   ERROR CORRECTION METHOD (ECM)
ITU-T ECM shall be utilized by the terminal.
ECM Buffer memory size is 128 K Byte that occupy a part of the Image Memory
when receiving. Performing of ECM shall be programmed. ON is default setting.

6.2.8   PROPRIETARY MODE
Between another appropriate AQ6 or TOSHIBA facsimile, AQ6 shall communicate in
TOSHIBA proprietary mode as follows:

Relay Broadcasting Request
Mailbox Transmission & Polling (Private Box, Public Box)

6.2.9   MESSAGE TRANSMISSION TIME (PHASE C)
Message transmission time between the two AQ6 terminals is as follows:

ITU-T #1 Test Document	: 7 seconds
TEC Original Test Chart	: 6 seconds
Conditions	: ECM-MMR, Memory to Memory, STANDARD resolution

6.2.10   TIMER PER TOTAL SCANNING LINE
The minimum time per total scanning line shall be as follows:

Memory to Memory communication	10 milli seconds
Direct communication (S-FINE)	10 milli seconds
Direct communication (FINE)	10 milli seconds
Direct communication (STANDARD)	20 milli seconds

6.2.11   TTI / RTI
6.2.11.1   TTI TRANSMISSION
The terminal shall have the option of transmitting or not transmitting a header (TTI)
that is printed out at the top of each received page of the remote receiving terminal.
Header shall be transmitted inside of the document.

When in the ON state, the terminal shall transmit the following fields:

LOCAL MACHINE DATE AND TIME
User-programmable in one of the following formats:
    YY-MM-DD HH:MM

MM-DD-YY HH:MM
DD-MM-YY HH:MM

LOCAL MACHINE ID
A operator programmed 20 digit numeric and plus symbol.
Typically this is the local phone number for the terminal.

LOCAL MACHINE NAME
A 30 alpha-numerical field that can be programmed using any characters,
numeric, and symbols from the terminal's character set.

TRANSMIT PAGE COUNT
The consecutive count of pages being transmitted in the format "PAGE P", where "P"
is the numerical count. Maximum Count = 99

6.2.11.2   TTI PRINTING

When the remote terminal is transmitting a header, the receiving
terminal shall print, just above the actual usable (scanned) image area, the
information contained in the transmitted header. The printing of the transmit header
can not be disabled by the receiving terminal operator.

6.2.12   RTI PRINTING

Receiver's ID with received date and time can be printed at bottom of received
message. Printing of RTI is user-programmable.

7.0 NETWORK INTERFACE

The terminal shall operate via P.S.T.N. or PABX with connecting with RJ-1 1 modular jack.

7.1 PIN ASSIGNMENT OF LINE JACK

Refer to Appendix D.

7.2 TEL / FAX Automatic Switch

Facsimile incoming is automatically received by AQ6 if calling facsimile transmit CNG signal for 5.5 seconds after line is connected, when TEL/FAX reception mode is selected. After 5.5 seconds elapse without CNG signal, pseudo ring tone is emitted from monitor speaker as telephone incoming.

7.3 FAX / TAD Automatic Switch

When Telephone Answering Device (TAD) is connected to "TEL" jack (or cascaded through European type plug) and TAD/FAX reception mode is selected, AQ6 does not answer until it detects CNG signal or detects no voice on the line or on hook for certain period.

8. DIALING CAPABILITY

8.1. DIALING METHOD

The terminal shall have the ability to perform tone (DTMF) or pulse dialing.
Pulse rate whether 10, 16 or 20 pps is user-programmble, where PTT permits.

8.2 AUTO DIALING

The terminal shall have the ability to automatically dial any valid phone number stored in its 125 dial directory.

Alphabet Dial Directory	126 stations
Abbreviated Dial	120 stations
One touch Dial	24 stations (include group dial)
Group Dial	6 groups, 10 stations / group
Phone number length	32 digits, 15 characters
Automatic Redial	Yes, maximum 10 times

8.3 OTHER DIALING FEATURES

Last Number Redial	The terminal shall have the ability to make redialing automatically.
Manual Dial	Yes
Off-Hook Dial	Yes

8.4. HANDSET

Handset is available for North American model only.

9.0 TRANSCEIVER CHARACTERISTICS

9.1 COMMUNICATION RESOLUTION

9.1.1 TRANSMISSION RESOLUTION

The terminal shall have ability to transmit document in STANDARD, FINE, and S-FINE resolution. Switch to another resolution during scanning to memory or transmission can be accepted before beginning of the document scan.

9.1.2 RECEIVING RESOLUTION

The terminal shall receive document in STANDARD or FINE resolution.

9.2 GUARANTEED COPY WIDTH

The receiver should record 208 mm minimum of an original 210 mm (A4) document when the two AQ6 terminals are communicating with each other.

9.3 GRAY REPRODUCTION

Image density of less than 0.25-OD relative to the background should be sent as white and image density of greater than 0.30-OD relative to the background (background density is less than 0.1-OD) should be sent as black.

9.4 HALFTONE REPRODUCTION

The terminal shall provide 64 logical levels of gray scale processing. The terminal should visibly reproduce 8 levels of gray scale, including black and white, when processing IIEEJ #1 Test chart.

9.5 RECORDING LEGIBILITY

At least 15 out of 18 characters within the same group should be read when reading "3.10" of ITU-T #3 chart in FINE resolution. Legibility is measured by detecting character orientation.

9.6 JITTER

Jitter caused through communication shall not exceed 1 pels total over adjacent lines.

9.7 SKEW

Between the two AQ6 terminals, the skew ,caused by scanning and recording process, shall not exceed 4 mm in the vertical direction over any 297 mm (A4) of document length.

9.8 REGISTRATION

Right hand registration for A4 documents shall be as follows:

Element Tolerance   + 8 / - 7 pels
Effective Minimum Recorded Line Length
                                                                  208 mm referenced to element of 1703
Right Hand Registration   1720
Document Size   A4 (210 mm)

9.9 LOCAL COPY FUNCTION

Normal Copy   FINE resolution,
                                                      user-programmable, FINE-default

Multiple Copy   Up to 99 batch, with uncollated
                                                      FINE resolution,

Halftone Copy   FINE resolution

Copy Reduction   selectable (72,83,86,90,92,96%,off)

Note: When the reduction ratio is selected the -
            "Reduction off" in copy mode,
            image shall be automatically reduced by 97.8%
            in the direction of vertical.

10.0 SCANNING SUBSYSTEM

10.1 SCANNING METHOD

Scanning type	TBD
Scanner type	Contact Image Scanner

10.2 SCANNING ILLUMINATION

A LED Array whose wavelength is (TBD) nano meter shall be used as document illumination. Because of its single spectrum, yellow colored image on the document shall be reproduced as white.

10.3 SCANNING SPEED

The document is scanned at a speed of 5 milli seconds per line, so that pre-scanning for Memory Transmission is processed at a speed of 6 seconds per page(A4) in STANDARD resolution, 12 seconds in FINE resolution, and 24 seconds in S-FINE resolution.

10.4 SCANNING RESOLUTION

Horizontal Scan Resolution	8 pels / mm

Vertical Scan Resolution

STANDARD	3.85 lines / mm +-1 %
FINE	7.7 lines / mm +-1 %
S-FINE	15.4 lines / mm +-1 % (Transmission only)

10.5 EFFECTIVE SCANNING WIDTH

216 mm

10.6 CONTRAST CONTROL

Scanning density can be changed by user according to image contrast on the document, in 3 steps (Darker / Normal / Lighter, Normal is default) .

10.7 INPUT DOCUMENT SPECIFICATIONS

The terminal shall accept input document (s) that meet the following specifications.

10.7.1 DOCUMENT THICKNESS

Single page document	0.06 through 0.15 mm
Multiple page documents	0.065 through 0.10 mm

10.7.2 DOCUMENT WEIGHT

Single page document	48 through 120 g / m^2
Multiple page documents	60 through 105 g / m^2

10.7.3 DOCUMENT WIDTH

Minimum,	148 mm
Maximum	216 mm

10.7.4 DOCUMENT LENGTH

Minimum,   105 mm

Maximum
    without operator assistance   381 mm
    with operator assistance   1000 mm

10.7.5 DOCUMENT CONDITION

The terminal should accept documents normally used in a general office environment. Physical conditions not worse than the following conditions shall be accommodated.

10.7.5.1 HOLES

5 mm max. holes, cleanly bored or drilled, in the document within 5 mm of either the left or right edge of the document should be acceptable.

10.7.5.2 EDGE

To be flat within 6 mm of the edge and to be free of perforations. Tears, wrinkles, breaks, folds, or darting are not acceptable.

10.7.5.3 SURFACE SUBSTANCE

Glue, paste, and such materials heaped upon the paper are unacceptable. Paper clips, rubber bands, etc. are not acceptable. Thermal paper is acceptable, however, use of copied document (s) is recommended.

10.7.5.4 OPAQUENESS

The document (s) shall be opaque. (Transparency: less than 30%)

10.7.5.5 SMOOTHNESS

Single document with a smoothness of 10 to 270 seconds should be accommodated. Multiple documents with a smoothness of 30 to 50 seconds should be accommodated.

10.8 DOCUMENT REMOVAL

It should be possible to remove document (s) from the scanner without damage to them in the event of power failure or document jam.

10.9 AUTOMATIC DOCUMENT FEEDER (ADF)

Loading of the documents in the ADF shall not normally require special operational procedures by the operator. The information surface of documents to be transmitted or copied shall be placed downward in the ADF.. .

10.9.1 ADF CAPACITY

The ADF capacity should be as indicated in Appendix E for different combination of paper size and weight.

10.9.2   ADF MALFUNCTION TYPE DEFINITIONS

Document Jam
Defined as when a single page becomes jammed in the ADF mechanism.

Multi-feed
Defined as when more than one documents are fed into the ADF simultaneously.

Non-feed
Defined as when a document fails to feed into the ADF.

10.9.3   ADF PERFORMANCE

ADF performance shall not exceed the limit indicated in Appendix E.

10.9.4   ADF TESTING

The ADF performance shall be measured as follows;

A document stack shall be utilized repeatedly 10 times.
Fresh document stack shall be replaced until total pages reaches 1000 sheets.
The document stack shall consist of as many numbers of copied ITU-T #1 chart as the maximum capacity for respective paper size.

ITU-T # 1 chart shall be copied on appropriate XEROX paper with a XEROX Copier or equivalent to make the document stack.

ADF feed performance shall be tested at 18 to 26 C and 35 to 50 % relative humidity. Rates at other temperature and humidity levels may exceed those listed Appendix E.

10.10   SCANNED DOCUMENT STACKING

Scanned document (s) is ejected and stacked in front of the terminal, face-down, in correct order.

11.0 RECORDING SUBSYSTEM

11.1 RECORDING TECHNOLOGY

Recording method utilizes plain paper recording with the following technology:

Dry Type Electro-photography

LASER Beam Scanning	LASER Diode Polygonal Mirror Scanning
Photo Conductor	OPC Drum
Charger	Brush Charger
Toner	Non magnetic single component type
Transfer	Corona Discharger
Fixer	Heat Roller

11.2 RECORDING RESOLUTION

Recording Resolution	300 x 300 dots / inch

11.3 RECORDING SPEED

A4, Letter	4 pages / minute
Legal	TBD
First Copy Time, hot start	24 seconds
Warm up time, cold start	1 minutes

11.4 RECORDING MEDIA

Recording Media	Cut sheet plain paper
for North American	Letter / Legal
for other destinations	A4

11.5 RECOMMENDED PAPER

A4	RANK XEROX 80 (3R91720)
Letter	XEROX 4024, 20 lb.
Legal	XEROX 4024, 20 lb.

11.6 RECORDING DENSITY

Solid image density should meet the following in all recording areas.

Average Density	1.2 + 0.6 / - 0.4 OD
Density Variation	not greater than 0.4 OD
Minimum Density	greater than 0.8 OD

Note:
Density (Optical Density) measurements shall be made at nine equally spaced points across the recorded image.

Test Condition:
New machines equipped with new drum, new developer, and new toner.

11.7   RECORDED PAPER STACKING
Recorded paper (s) shall be ejected and stacked in front of the terminal, face-up, in reverse order.

11.8   RECORDED PAPER REMOVAL
It shall be possible to remove papers from the printer in the event of power failure or ASF malfunction.

11.9   AUTOMATIC SHEET FEEDER (ASF)
Loading of the paper in the paper cassette shall not normally require special procedures by the operator.

11.9.1   PAPER CASSETTE (ASF) CAPACITY
The paper cassette capacity in stack height (sheets in 80 gram / m² paper) should be TBD mm or 250 sheets.

11.9.2   ASF MALFUNCTION TYPE DEFINITIONS
Paper Jam
Defined as when a single page becomes jammed in the ASF mechanism.

Multiple feed
Defined as when more than one sheets are fed into the ASF simultaneously.

Miscellaneous Error
Defined as errors other than the above relating paper feed function.

11.9.3   ASF PERFORMANCE
ASF feed performance shall not exceed the following malfunction rates.

INDIVIDUAL RATES

Paper Jam	less than 3 / 1000 sheets
Multiple feed	less than 3 / 1000 sheets
Miscellaneous Error	less than 3 / 1000 sheets
COMBINED RATE	less than 5 / 1000 sheets

11.9.4   ASF TESTING
ASF performance shall be evaluated with recommended paper, not with used papers. ASF performance shall be evaluated at the standard condition (18 to 26 C and 35 to 50% relative humidity). Rates at other temperature and relative humidity levels may exceed those listed above.

11.10   RECORDING REDUCTION
Received image shall be automatically reduced according to data length and REDUCTION PARAMETER if automatic reduction is selected. Appendix F shows reduction rate of horizontal and vertical for every combination of conditions.

12.0   MEMORY SUBSYSTEM

12.1   DUAL ACCESS

The terminal can perform two jobs at a time, e.g.; scanning to memory while receiving. Refer to Appendix G for further details.

12.2   IMAGE MEMORY PARAMETERS

Capacity,	0.38 M bytes, including 128 KB ECM buffer
Option Memory	2 M bytes, user-installable
Storage capacity	18 pages
	ITU-T #1 test document, Standard resolution

12.3   MEMORY RELATED OPERATIONS

MEMORY TRANSMISSION	Yes
SUBSTITUTION RECEPTION	Yes, 50 files max.
SEQUENTIAL BROADCASTING	Yes, 6 group, 10 stations
MANUAL BROADCASTING	Yes, 20 stations
MAILBOX TRANSMISSION	Yes, TOSHIBA proprietary mode
POLLING	Yes
DELAYED TRANSMISSION	Yes, 24 hours maximum

13.0   PRINTER INTERFACE AND PC INTERFACE

13.1   PRINTER INTERFACE

PRINTER INTERFACE shall be provided for GDI printing from Windows PC application.

Emulation	Windows GDI printing
Interface	Bi-directional high speed parallel, Centronics connector (38 pin)
Driver Software	Newly developed GDI printing driver (German / French / English)
Compatibility	Windows 3.1
Operating Environment	Windows 3.1 or 95 or NT
Printer Resolution	300 dpi

13.2   PC INTERFACE

PC interface shall be provided so that PC-Facsimile (Transmit and receive) and PC-Scanning function can be available with appropriate PC-Fax software.

PC-Fax Transmission	Yes (except for broadcasting function)
PC-Fax Reception	Yes
PC-Scanning	Yes, in FINE resolution
Required Driver software	WinfaxPro 3.0 or 4.0 by Derlina
Operating Environment	Windows 3.1 Windows 95 (TBD)
Interface	RS232C, D-sub 25 pin (female) connector

14.0 MISCELLANEOUS
14.1 INTERNAL CLOCK

Format	DD-MM-YY (default), DD-MM-YY, YY-MM-DD, or MM-DD-YY, user programmable
Accuracy	3 seconds / day maximum

14.2 LIST, RECEIPT AND REPORTS

Activity Report	last recent 30 transactions (transmit and receive operation only)
Pending Job List	Yes
Visual Confirmation Report	Yes, ON / OFF user programmable for complete or incomplete respectively
Broadcast Report	Yes
Manual Broadcast Report	Yes
Group Dial List	Yes
Abbreviated Dial List	Yes
Parameter List	Yes, user / service parameter
Power failure report	Yes

14.3 ELECTRONIC COUNTERS

Drum counter	Yes
Total transaction counter	Yes

14.4 DIAGNOSTICS
14.4.1 POWER ON DIAGNOSTICS

AQ6 performs power on diagnostic automatically every power on sequence. It diagnose whether if all status of machine sensors, memory (RAM, and ROM) are in correct condition.

14.4.2 SERVICE MODE DIAGNOSTICS

Service representative can perform special diagnostics that is not permitted to operator. Special password is required to enter this mode.

15.0　　POWER REQUIREMENTS

15.1　　VOLTAGE INPUT

The terminal shall operate safely and meet all the specifications of this specification with the following electrical input conditions.

AC　96-132 V 50 / 60 Hz, (120 V nominal) or
AC 198-264 V 50 Hz, (230 V nominal),· whichever required for destination.

15.2　　POWER INPUT CORD

The ac voltage power input cord shall be provided with required MAIN PLUG.

15.3　　POWER CONSUMPTION

Power consumption for the following modes while using a ITU-T #1 as a test chart at nominal input voltage should be:

Standby,	POWER SAVE-ON	14 watts, average, default
	POWER SAVE-OFF	40 watts, average
Transmission		25 watts, maximum
Receiving		340 watts, maximum
Copying		340 watts, maximum

15.4　　POWER SAVE MODE

To save STANDBY power consumption for FIXING UNIT, POWER SAVE MODE is set ON as default. It is effective in less operation, mostly during night or day-off. In POWER SAVE mode, incoming facsimile message is stored in the memory first. After printer is ready to print, the message is automatically printed out, then the terminal returns to POWER SAVE MODE again. User may switch OFF if necessary.

15.5　　POWER FAILURE OPERATION / BACKUP

The terminal shall have an emergency battery back up that will enable retaining of programmed parameters and clock, not image memory. Life of the battery is expected to be for 5 years long.

16.0 ENVIRONMENT REQUIREMENTS

16.1 OPERATING ENVIRONMENT

The terminal shall meet all requirements of this specification when operated within the following condition:

16.1.1 TEMPERATURE AND HUMIDITY

The terminal shall operate in accordance with this specification between 10 C(50 F) and 35 C(95 F). The terminal shall operate in accordance with this specification for relative humidity without condensation between 20% and 80%.

For outer the range, degraded performance may occur.

Continuous operation at temperatures above 35 C may cause equipment damage and will affect reliability.

16.1.2 ALTITUDE

Relative to 760 H-pascal at sea level, the terminal shall operate at altitudes between -10 and 2400 meters above sea level.

16.2 NON-OPERATING ENVIRONMENT

The terminal shall perform properly when normalized to the operating environment after indefinite exposure to the following non-operating environment. The recording paper shall not be subjected to this non- operating environment.

16.2.1 TEMPERATURE

Storage

for Main Unit

0 to 35 C	(12 months)
-20 to 0 C	(1 month)
35 to 45 C	(1 month)

for Toner and Drum

0 to 35 C	(24 months)
-20 to 0 C	(1 month)
35 to 40 C	(1 month)

16.2.2 HUMIDITY

Storage	20 to 80 % (without condensing)
Transportation	20 to 90 % (without condensing)

16.2.3 SHIPMENT

With approved packaging, the terminal should withstand shipment to destination by common carriers without physical damage and without causing settings to exceed installation tolerance or affecting functional performance. The drop and vibration tests described in 16.3 and 16.4 shall be used to verify conformance to this requirement.

16.2.4 ALTITUDE

Relative to 760 H-pascal at sea level, pressure equivalent to altitudes between -10 and 3,000 meters should be withstood.

16.3 DROP TEST

The terminal should be capable of withstanding drop test as described below:

Packaged product under the test shall be dropped at 6 faces, 3 edges, and 1 corner from 60 centimeter height.

16.4 VIBRATION TEST

The unpacked terminal should be capable of withstanding vibration as described below during operation:

Frequency:		10 to 25 Hz
Amplitude:		1 mm
Duration,	vertical	for 1 hour
	horizontal	for 0.5 hours

16.5 ELECTRO-STATIC DISCHARGE SUSCEPTIBILITY

The terminal shall be tolerant of sporadic static discharge of 7 kilo volts (KV) without degradation of terminal performance. Minor copy perturbations (e.g. black dots or lines) are permitted when the terminal is subjected to this level of static discharge.

The terminal shall be tolerant of static discharge of 15 KV without permanent damage of the terminal. Malfunctions are permitted when the terminal is subjected to this level of static discharge.

The tolerance test shall consist of applying a static potential to susceptible operator accessible areas, e.g. document input area, document/copy output area and control panel. A minimum of 20 trials shall be applied to each test areas.

Static discharge will be simulated by charging a 200 pico-farad capacitor to the test level and discharging to the system through a 500 ohm.

16.6   POWER LINE DISTURBANCE

The terminal shall be tolerant when subjected to the following power line disturbances. Minor copy perturbations (e.g. black dots or lines) are permitted when the terminal is subjected to the disturbance.

16.6.1   LINE NOISE INTERFERENCE

across the line   : +/- 2000 volts p-p, 800 nano-second.

between line and frame ground   : +/- 2000 volts p-p, 800 nano-second.

16.6.2   LINE DROP

100 % drop for 20 milli-seconds at nominal voltage input.

17.0   RELIABILITY

17.1   MACHINE RELIABILITY

Design life shall exceed 5 years or 70,000 transactions which ever occurs first, with periodic preventive maintenance.

MTBF	13,000 hours of power on operation, or
MPBF	10000 sheets whichever occurs first
MTTR	less than 30 minutes

17.2   CONSUMABLE LIFE

Toner	at printing rate 4% of effective area in A4
Initial Toner	approximately 750 sheets
Supply Toner	approximately 1500 sheets
Drum Unit	approximately 8000 sheets

18.0   AGENCY APPROVALS/COMPLIANCE

The terminal shall have approval or compliance for applicable PTT, Safety, EMC requirements. Refer to Appendix H for details.

19.0   USER INTERFACE

The terminal shall have the following user interface for easy operation. Refer to Appendix C for layout of KEYBOARD.

19.1   DISPLAY

A 20 digits - 7 x 5 dot matrix LCD indicates for informing the operator of the status of the terminal.

In STANDBY mode

The display indicates the date and time, memory remaining capacity, and existence of received messages in the memory.

In all other modes

The display indicates the status of the terminal to the operator or to prompt the operator for further input.

19.2   KEYBOARD

JOB STATUS Button

This button allows the operator to view background job status in the LCD display for 10 seconds.

COMMUNICATION OPTION Button

Used for selecting special communication modes such as Manual broadcasting, Delayed transmission, polled, polling, speed-selected communication, or relay broadcast request.

ANSWER Button

Used for changing receive mode between AUTO RECEIVE and MANUAL RECEIVE.

RESOLUTION Button

In STANDBY mode, actuation switches the terminal between S-FINE, FINE, STANDARD, and HALFTONE resolution with each subsequent actuation.

ONE TOUCH Buttons

With document(s) loaded, pressing one of these buttons starts transmission in one touch operation.

GROUP Button

In STANDBY mode, one touch of these buttons activates SEQUENTIAL BROADCASTING to the pre-programmed destinations.

CANCEL Button

1. Used for cancellation of programmed data or entered digit.
2. Used for cancellation of uncompleted DELAYED TRANSMISSION, SEQUENTIAL BROADCASTING, etc.

ACCESS Button
1. In OFF-HOOK mode, used for sending special dial digits or flash to access outer PBX
2. Used for entering "+" in programming of ID.
3. Used for programming special digit or flash into all dial directory.

REDIAL / PAUSE Button
1. Used for redialing of last number called.
2. During telephone number entry into alphabetical dial list, this button enables operator to enter a pause symbol into the telephone number sequence.

0-9 KEY
1. Used for entering alphabet or numerics.
2. Used for direct dialing.
3. Used for alphabetical dialing.
4. Used for entering alphanumeric in programming mode.

* , # KEY
Used for output of a corresponding DTMF signal to the line.

SPEED DIAL / ALPHABET Button
1. Used for abbreviated dialing
2. Used to bring up Alphabet dial directory.
3. Used for setting of abbreviated telephone number in DELAYED TRANSMISSION and SEQUENTIAL BROADCASTING etc.

MANUAL DIAL Button
Used for seizing the line. Signal on the line can be monitored from speaker.

STOP Button
1. Actuating STOP cancels any active mode the terminal is in and causes it to return to STANDBY mode.
2. Actuating STOP cancels any activated programming operation.

START Button
1. Used for entering the programmed operation.
2. Actuation in OFF-HOOK mode activates facsimile communication.
3. Used for activating dialing when alphabet dialing.

COPY Button
Used to begin Copy mode.

Menu / (UP KEY)
1. Used for entering programming mode.
2. Used for scrolling up of the display field in selecting functions, searching for alphabetical dial directory or programming of the parameters.
3. Used for altering of programmed parameters.

v (DOWN KEY)
1. Used for scrolling down of the display field in selecting functions, searching for alphabetical dial directory, or programming of the parameters.
2. Used for altering of programmed parameters.

> (RIGHT KEY)
Used for shifting cursor to the right in programming of character and numeric numbers.

< (LEFT KEY)
Used for shifting cursor to the left in programming of character and numeric numbers.

ENTER Button
Used to confirm input of the programmed operation (selection of menu items, entering the data, etc.).

CONTRAST Button
Action switch between Normal, Lighter and Darker of the contrast of the copied and transmitted document.

DIRECT SEND Button
Used for send from tray function.

19.3   AUDIBLE ALARM
1. Single short beep indicates confirmation of entered data during programming mode, etc.
2. Single one seconds beep indicates completion of the communication.
3. A series of short beep during three seconds indicates incompleteness of the communication.

Speaker volume for incoming ring and beep / line monitor can be selected by user parameter, independently.

Incoming Ring volume   : High / Medium / Low / None (default - Medium)
Beep / Line Monitor volume   : High / Medium / Low / None (default - Medium)

19.4   MULTI LANGUAGE IN DISPLAY AND PRINT
Language for display and print text can be selected by user. Refer to Appendix A.

19.5   INDICATORS
BUSY LED
Blink when machine holds the line.

ALARM LED
Blink when the machine has experienced a fault.

SUPER FINE LED
When this LED is on, the document (s) will be scanned in ITU-T G3 facsimile S-FINE mode.

FINE LED
1. When this LED is on, the document (s) will be scanned in G3 facsimile FINE mode as foreground job.
2. During COPY mode, this LED will be·on to indicate that copy mode is performed in FINE mode.
3. During scanning in half tone mode, this LED will be on to indicate that scanning is performed in FINE mode.

PHOTO LED
When this LED is on, it indicates that the document (s) will be scanned or copied in HALF TONE mode as foreground job.

Contrast LED(Lighter/Darker)
These LEDs indicate that the document (s) will be scanned in of Lighter or Darker or Normal contrast

AUTO LED
Indicate when machine is in AUTO RECEIVE mode.

ONLINE LED
Indicate when machine is in GDI printing mode.

19.6   SCANNER OPEN RELEASE
A mechanical knob, that when pulled front, disengages the scanner cover so that access can be had to internal scanner assembly.

19.7   PRINTER OPEN RELEASE
Pulling up of printer cover disengages the printer cover so that access can be had to internal printer assembly.

19.8   SENSORS
This section describes the overall function of the sensors present in the product.

DOCUMENT SENSOR (A4 SENSOR)
Located in the ADF, this sensor detects if a document is in the ADF.

DOCUMENT STANDBY SENSOR
Located in the Scanner, this sensor detects if a document is in the Scanner.

COVER OPEN SENSOR
One sensor is located in the scanner this sensor detect if printer cover is open.

TONER END SENSOR
Located in the Toner Cartridge, this sensor detects if toner is running short.

PAPER FEED SENSOR 1
Located in the printer unit, this sensor detects if a paper is at its position.

PAPER FEED SENSOR 2
Located in the printer unit, this sensor detects if a paper is at its position.

20.0   COUNTRY SETTING

The NCU printed circuit board of EU generic can be set to each country, refer to Appendix I.

The parameter of softwear is also set to each country. Operation and parameter specification, refer to SS-GC29-00245.

21.0   PACKAGING

The product is packed in appropriate carton box.   Refer to Appendix J for external view and size of carton box.

end of specification

Appendix B.   APPEARANCE

A4 model, without handset

Letter/Legal model, with handset
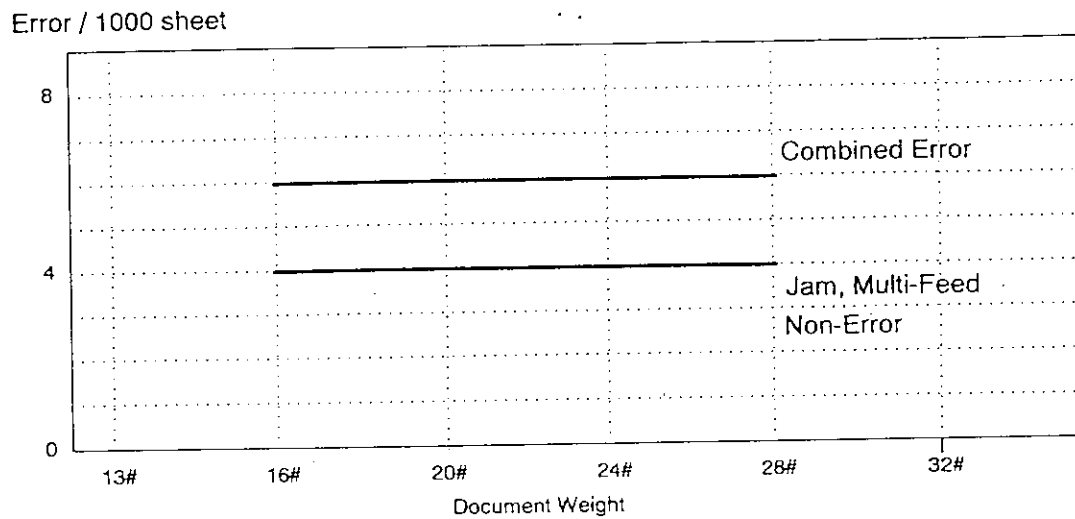
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Appendix C.   KEYBOARD LAYOUT

American (Type A)

European (Type B)

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Appendix E.   ADF CAPACITY / PERFORMANCE

ADF CAPACITY

Error / 1000 sheet

Document Weight

ADF PERFORMANCE

Document Weight / Size

TEC
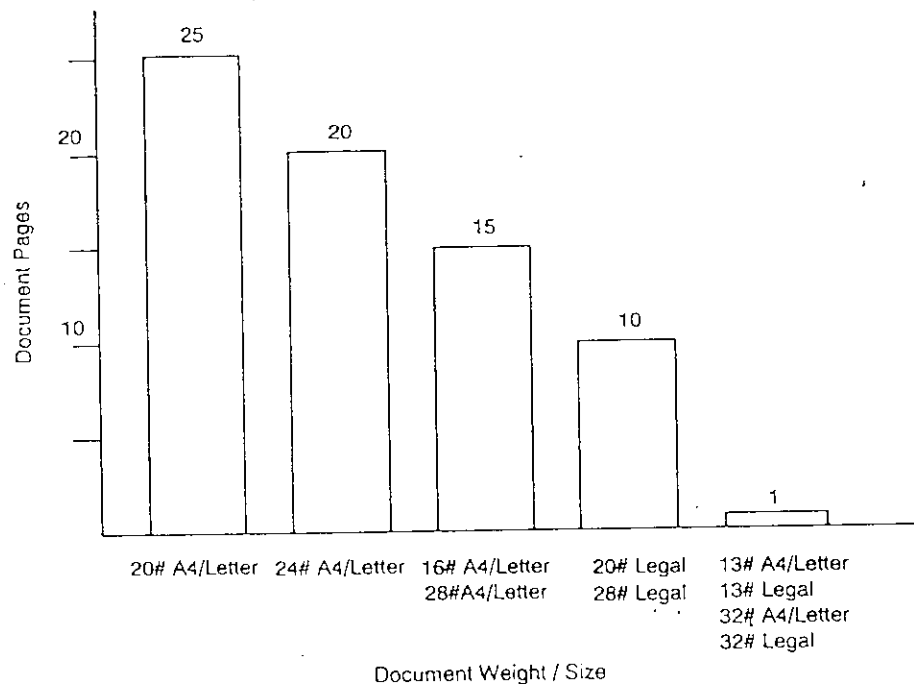
Appendix F.   RECORDING REDUCTION

Recording Reduction in Copy mode on A4 paper

Paper Size Select *3	Reduction Ratio Select *3	Data Length	Reduction Ratio		Remark
			Horizontal	Vertical	
A4	Reduction off	- 288	Note		*1
		288 - 303			
		303 -			2 page *2
	96%	- 300	96%		*1
		300 - 315			
		315 -			2 page *2
	92%	- 313	92%		*1
		313 - 328			
		328 -			2 page *2
	90%	- 320	90%		*1
		320 - 335			
		335 -			2 page *2
	86%	- 335	86%		*1
		335 - 350			
		350 -			2 page *2
	83%	- 347	83%		*1
		347 - 362			
		362 -			2 page *2
	72%	- 365	72%		*1
		365 - 380			
		380 -			2 page *2

*1:   Overflow data will be discarded.
*2:   Overflow data its length not greater than 15 mm will be discarded.
*3:   User selectable.

Note   When the reduction ratio is selected the "Reduction off" in copy mode, received image shall be automatically reduced by 97.8% in the direction of vertical.

TEC

Recording Reduction in Copy mode on Letter / Legal Paper

Paper Size Select *3	Reduction Ratio Select *3	Data Length	Reduction Ratio Horizontal	Reduction Ratio Vertical	Remark
Letter	Reduction off	- 270	NOTE		*1
		270 - 285			
		285 -			2 page *2
	96%	- 281	96%		*1
		281 - 296			
		296 -			2 page *2
	92%	- 293	92%		*1
		293 - 308			
		308 -			2 page *2
	90%	- 300	90%		*1
		300 - 315			
		315 -			2 page *2
	86%	- 314	86%		*1
		314 - 329			
		329 -			2 page *2
	83%	- 325	83%		*1
		325 - 340			
		340 -			2 page *2
	72%	- 365	72%		*1
		365 - 380			
		380 -			2 page *2
Legal	Reduction off	- 347	NOTE		*1
		347 - 362			
		362 -			2 page *2
	96%	- 361	96%		*1
		361 - 376			
		376 -			2 page *2
	92%	- 365	92%		*1
		365 - 380			
		380 -			2 page *2
	90%	- 365	90%		*1
		365 - 380			
		380 -			2 page *2
	86%	- 365	86%		*1
		365 - 380			
		380 -			2 page *2
	83%	- 365	83%		*1
		365 - 380			
		380 -			2 page *2
	72%	- 365	72%		*1
		365 - 380			
		380 -			2 page *2

*1:   Overflow data will be discarded.
*2:   Overflow data its length not greater than 15 mm will be discarded.
*3:   User selectable.Note
Note   When the reduction ratio is selected the "Reduction off" in copy mode,
           received image shall be automatically reduced by 97.8% in the direction of
           vertical.

TEC

Recording Reduction in Reception mode

Paper Size Select *3	Data Length	Reduction Ratio		Remark
		Horizontal	Vertical	
A4	- 300	96%		*0
	300 - 313	92%		
	313 - 320	90%		
	320 - 335	86%		
	335 - 347	83%		*1
	347 - 362			
	362 -	96%		2 page *2
Letter	- 281	96%		*0
	281 - 293	92%		
	293 - 300	90%		
	300 - 314	86%		
	314 - 325	83%		
	325 - 365	72%		*1
	365 - 380			
	380 -	96%		2 page *2
Legal	- 361	96%		*0
	361 - 376			*1
	376 -			2 page *2

*0:   When RTI is printed, trailing data (maximum 3 mm) will be discarded.

*1:   Overflow data will be discarded. When RTI is printed, data (maximum 3 mm) other than overflow will be also discarded.

*2:   Overflow data its length is not greater than 15 mm will be discarded. When RTI is printed, data (maximum 3 mm) other than overflow will be discarded.

*3:   User selectable.

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Recording Reduction in Reception Mode (special case)

Because some Country's PTT does not allow to reduce the received image in their requirements, Automatic reduction can be selected ON / OFF in T/A parameters.
The following is recording style in automatic reduction OFF for reception.

Paper Size Select *3	Data Length	Reduction Ratio		Remark
		Horizontal	Vertical	
A4	- 288			*0
	288 - 303			*1
	303 -			2 page *2
Letter	- 270			*0
	270 - 285	NOTE		*1
	285 -			2 page *2
Legal	- 347			*0
	347 - 362			*1
	362 -			2 page *2

*0: When RTI is printed, trailing data (maximum 3 mm) will be discarded.

*1: Overflow data will be discarded. When RTI is printed, data (maximum 3 mm) other than overflow will be also discarded.

*2: Overflow data its length is not greater than 15 mm will be discarded. When RTI is printed, data (maximum 3 mm) other than overflow will be discarded.

*3: User selectable.

Note When the reduction ratio is selected the "Reduction off" in copy mode, received image shall be automatically reduced by 97.8% in the direction of vertical.

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Appendix G.   DUAL ACCESS

1st Access \ 2nd Access	Direct Reception	Direct Transmission	Memory Reception	Memory Transmission	Scan to Memory	Memory/ Report Print	Copy	Transfer to PC	Transfer from PC	GDI Print from PC
Direct Reception	-	-	-	-	○	-	-	-	-	-
Direct Transmission	-	-	-	-	-	-	-	-	-	○
Memory Reception	-	-	-	-	○	-	-	-	-	-
Memory Transmission	-	-	-	-	○	-	-	-	-	○
Scan to Memory	○	-	○	○	-	-	-	-	-	○
Memory/ Report Print	-	-	-	-	○	-	-	-	-	-
Copy	-	-	-	-	-	-	-	-	-	-
Transfer to PC	-	-	-	-	-	-	-	-	-	-
Transfer from PC	-	-	-	-	-	-	-	-	-	-
GDI Print from PC	-	○	○	○	○	-	-	-	-	-

"○" means available, "-" means not available.

Appendix J.   PACKAGING

Blank page