

Essential Requirements (ER)

For

G3 Fax Machine

(With two variants)

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1. Scope:

This document lays down the Essential Requirements (ER) under the Mandatory Testing Framework in accordance with Government of India Gazette Notification No. G.S.R. 1131 (E), dated 5th September 2017, for “Group-3 Fax Machine” used in Indian Telecom Networks.

1.1 Variants:

This document covers the following two variants of the product “Fax Machine” (refer Table-I below):-

Table I: List of product variants		
Variants→ Product↓	Variant 1	Variant 2
Group 3 Fax Machine	FAX machine with handset	FAX machine without handset

1.2 Brief Description

This Document covers the following aspects of the Essential Requirements, namely-EMI/EMC Requirements, Safety Requirements, Security Requirements, Technical Requirements and Other Requirements (if any)

2. Essential Requirements

Essential Requirements, namely-EMI/EMC Requirements, Safety Requirements, Security Requirements, Technical Requirements and Other Requirements (if any) are as follows:

2.1 EMI/EMC Requirement:

The equipment shall conform to the EMC requirements as per the following standards and limits indicated therein.

S.N.	Parameter	Results
i)	<p>Conducted and radiated emission:</p> <p>Name of EMC Standard: "CISPR 22 (2008)/CISPR 32 - Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment".</p> <p>Limits:-</p> <ul style="list-style-type: none"> i. To comply with Class B of CISPR 22 (2008)/CISPR 32. ii. The values of limits shall be as per TEC Standard No. TEC/SD/DD/EMC-221/05.OCT 2016. iii. For Radiated Emission tests, limits below 1 GHz shall be as per Table 4 (a1) or 5 (a1) of TEC Standard No. TEC/SD/DD/EMC-221/05.OCT 2016 for measuring distance of 3m. 	<p>Test results from Designated CAB of TEC to be submitted for compliance.</p>
ii)	<p>Immunity to Electrostatic discharge:</p> <p>Name of EMC Standard: IEC 61000-4-2 {2008} "Testing and measurement techniques of Electrostatic discharge immunity test".</p> <p>Limits: -</p> <ul style="list-style-type: none"> i. Contact discharge level 2 {± 4 kV} or higher voltage; ii. Air discharge level 3 {± 8 kV} or higher voltage; 	<p>Test results from Designated CAB of TEC to be submitted for compliance</p>
iii)	<p>Immunity to radiated RF:</p> <p>Name of EMC Standard: IEC 61000-4-3 (2010) "Testing and measurement techniques- Radiated RF Electromagnetic Field Immunity test"</p> <p>Limits:-</p> <p>For Telecom Equipment and Telecom Terminal Equipment with Voice interface (s)</p>	<p>Test results from Designated CAB of TEC to be</p>

	<p>i. Under Test level 2 {Test field strength of 3 V/m} for general purposes in frequency range 80 MHz to 1000 MHz and</p> <p>ii. Under test level 3 (10 V/m) for protection against digital radio telephones and other RF devices in frequency ranges 800 MHz to 960 MHz and 1.4 GHz to 6.0 GHz.</p> <p>For Telecom Terminal Equipment without Voice interface (s)</p> <p>Under test level 2 {test field strength of 3 V/m} for general purpose in frequency range 80 MHz to 1000 MHz and for protection against digital radio telephones and other RF devices in frequency ranges 800 MHz to 960 MHz and 1.4 GHz to 6.0 GHz</p>	submitted for compliance
iv)	<p>Immunity to fast transients (burst):</p> <p>Name of EMC Standard: IEC 61000- 4- 4 {2012) "Testing and measurement techniques of electrical fast transients/burst immunity test"</p> <p>Limits:-</p> <p>Test Level 2 i.e. a) 1 kV for AC/DC power lines; b) 0. 5 kV for signal / control / data / telecom lines;</p>	Test results from Designated CAB of TEC to be submitted for compliance
v)	<p>Immunity to surges:</p> <p>Name of EMC Standard: IEC 61000-4-5 (2014) "Testing & Measurement techniques for Surge immunity test"</p> <p>Limits:-</p> <p>i. For mains power input ports:</p> <p>(a) 2 kV peak open circuit voltage for line to ground coupling</p> <p>(b) 1 kV peak open circuit voltage for line to line coupling</p> <p>ii. For telecom ports:</p> <p>(a) 2 kV peak open circuit voltage for line to ground</p>	Test results from Designated CAB of TEC to be submitted for compliance

	(b) 2 kV peak open circuit voltage for line to line coupling.	
vi)	<p>Immunity to conducted disturbance induced by Radio frequency fields:</p> <p>Name of EMC Standard: IEC 61000-4-6 (2013) "Testing & measurement techniques-Immunity to conducted disturbances induced by radio- frequency fields"</p> <p>Limits:-</p> <p>Under the test level 2 {3 V r.m.s.}in the frequency range 150 kHz-80 MHz for AC / DC lines and Signal /Control/telecom lines.</p>	Test results from Designated CAB of TEC to be submitted for compliance
vii)	<p>Immunity to voltage dips & short interruptions (applicable to only ac mains power input ports, if any):</p> <p>Name of EMC Standard: IEC 61000-4-11 (2004) "Testing & measurement techniques-voltage dips, short interruptions and voltage variations immunity tests"</p> <p>Limits:-</p> <ul style="list-style-type: none"> i. a voltage dip corresponding to a reduction of the supply voltage of 30% for 500ms (i.e. 70 % supply voltage for 500ms) ii. a voltage dip corresponding to a reduction of the supply voltage of 60% for 200ms; (i.e. 40% supply voltage for 200ms) iii. a voltage interruption corresponding to a reduction of supply voltage of > 95% for 5s. iv. a voltage interruption corresponding to a reduction of supply voltage of >95% for 10ms. 	Test results from Designated CAB of TEC to be submitted for compliance

Note: For checking compliance with the above EMC requirements, the method of measurements shall be in accordance with TEC Standard No. TEC/SD/RD/EMC-002/02.OCT.2016 and the references mentioned therein.

2.2 Safety Requirements:

S.N.	Parameter	Limits	Results
i)	The device shall conform to IS 13252 (2003) "Safety of information technology device including electrical business device" {equivalent to IEC Publication 60950 (2001)}.	Compliance	
ii)	The operating personnel should be protected against shock hazards as per IS 8437 {1993} "Guide on the effects of current passing through the human body" [equivalent to IEC publication 479-1 {1894}].	Compliance	

2.3 Security Requirements:

As and when prescribed by DoT.

2.4 Technical Requirements:

For technical requirements, refer Table-II for interfaces used for product variants, Table-III A for Interface parameters and Table III B for other test parameters for product variants.

Table II: List of Interfaces for product variants		
Applicable to→ Interface ↓	Product Variant	
	FAX machine with handset	FAX machine without handset
2 Wire/PSTN	y	y

Table III-A: List of Interface parameters and their international standards			
Applicable to→ Test Parameter↓	(Standards)	2-Wire/ PSTN	ISDN
Longitudinal/ Transverse Conversion Loss/ (Impedance Unbalance about earth)	Q.552 (clause 2.1.2)	y	
Return Loss	Q.552(clause 2.1.1.2)	y	
Over Voltage/ Over Current Protection	K.21	y	
Max. Loop Current	ETSI EN 300 01(<60 mA)	y	
Idle State Current	ETSI EN 300 001 (< 30 μ A)	y	
Insulation Test	ETSI EN 300 001(>5 M Ω)	y	

Table III-B: List of additional test parameters applicable to products			
Applicable to→ Test Parameter↓	FAX machine with handset	FAX machine without handset	(Standard)
Transmit Power	y	y	T.4 (-3dBm to -15 dbm)
Receiver Sensitivity	y	y	T.4 (receive fax -43dBm)
Acoustic Shock Absorption	y		P.360

2.5 Other Requirements (if any):
