GENESYS™ 2.7/3.4kW

EN61000

DATA

APPD	CHK	DWG
22/08/19	ASAF. A 22/08/19	PAVEL G. 22/08/19

TDK-LAMBDA

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The above data is typical value.
The values are considered to be actual capability data.

1-2 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL No.
1	ESD generator	Schloder	SESD 30000
2	Resistors for ESD test 470kΩ x 2	Hermon Labs	R470 x 2
3	Coupling Plane Vertical	Hermon Labs	CPV-2
4	Antenna, Log Periodic	Electro-Metric	LPA 25/30
5	Antenna, Biconical	A.H. Systems Inc.	SAS-200/543
6	Generator Swept Signal	HP	83640B
7	Attenuator	Midwest Microwave	0793-20-NN-07
8	Coupler coaxial bi-directional	Narda	3022
9	HygroThermometer	Delta TRAK	13301
10	Horn Antenna	GTE Sylvania	AN-10E
11	Directional Coupler High Power	WERLATONE	C 3910
12	Cable 40GHz, K/K-type	UtiFLEX	MICROCOAX
13	RF cable, 18 GHz, N-N	Huber-Suhner	SF118A/11N
14	Laser Probe Interface	Amplifier Research	FI7000
15	Load Termination	Amphenol	R404051
16	Broadband Amplifier, 80MHz to 1.0GHz, 500W	Rohde&Schwarz	BBA150-BC500
17	Broadband Amplifier, 0.69GHz to 3.2GHz, 200W	Rohde&Schwarz	BBA150-D200
18	Power Meter	Boonton Electronics	4220
19	Coupling Clamp, 100pF	Schaffner Electronic AG	CDN 125
20	EFT Decoupling Network	Hermon Labs	DN-3
21	Surge Impulse Module	Haefely Hipotronics	TW 8
22	EMC Compact Tester	Haefely Hipotronics	AXOS 8
23	Surge Generator	Hermon Labs	CDN-3PH
24	Generator Signal	Marconi Instruments	2023
25	Coupler Directional	WERLATONE	C3653
26	Attenuator 6dB	Hermon Labs	6-150
27	Bulk Current Injection Probe	Fisher Custom Comm.	F-120-9A
28	Multimeter	Fluke	115C
29	Cable, N/N-type, 0.3m	Belden	RG-213/U
30	Cable RF, 3.5m, N type-N type, DC-6.5GHz	Alpha Wire	RG 214/U
31	Coupling-decoupling network, STD 61000-4-6	Hermon Labs	S-T
32	Coupling-decoupling network	Hermon Labs	230-M3
33	Power amplifier	COM-POWER CORP.	ACS-250-100W
34	Generator Audio	HP	200CDR
35	Power Source AC	Elgar	751A
36	SmartWave Switching Amplifier	Elgar	SW5250AE-4
37	Compliance Test System	California Instruments	PACS-3
38	Induction coil according to EN 61000-4-8	Hermon Labs	IC-2
39	Dips Voltagetapped Transformer	EM Test	V4070
40	Commutation Panel for dips generator	Hermon Labs	CPD-1
41	Compact Simulator	EM Test	UCS 500-M4

1. Electrostatic discharge (ESD)
(IEC 61000-4-2; EN 61204-3/ IEC 61204-3)

(1) Equipment used:

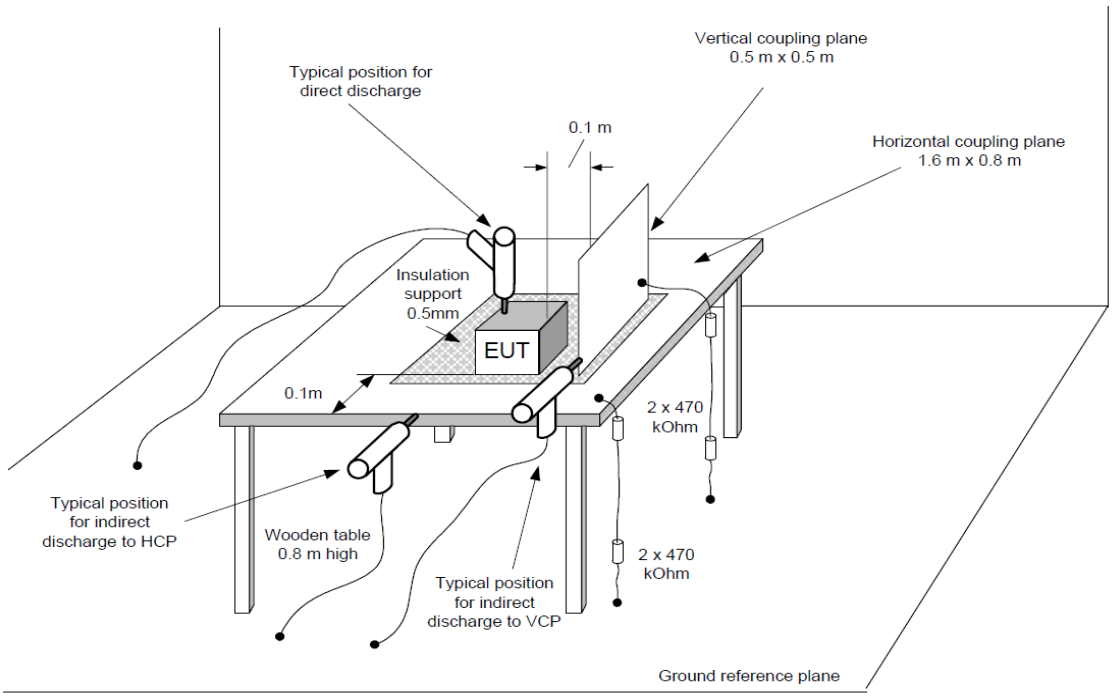
ESD generator — Coupling Plane Vertical
Resistors for ESD tests 470kΩ x 4

(2) Test conditions:

Input voltage:	Rated	Output voltage:	Rated
Output current:	100%	Polarity:	-,+
Number of tests:	10 Positive/ 10 Pegative	Discharge interval:	>1 Second

(3) Test setup:

Contact discharge: FG, Case screw
Air discharge: Input and Output terminal



(4) Acceptable conditions:

Performance Criteria: B

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failre.

(5) Test result:

Contact discharge		Air discharge	
Discharge (kV)	G80-42	Discharge (kV)	G80-42
2	PASS	2	PASS
4	PASS	4	PASS
		8	PASS

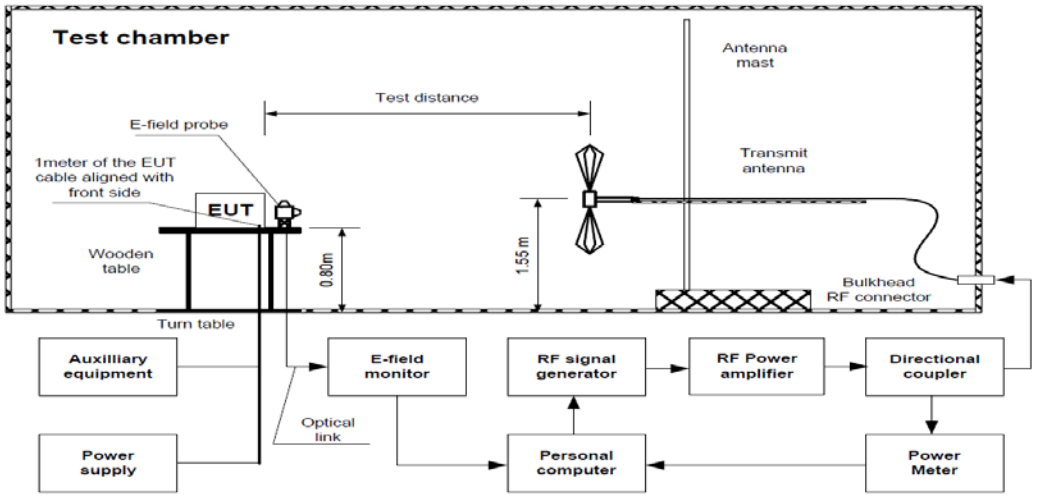
2. Radiated immunity to radio frequency electromagnetic field (IEC 61000-4-3; EN 61204-3/ IEC 61204-3)

(1) Equipment used:

Antenna, Log Periodic
Antenna, Biconical
Generator Swept Signal
Attenuator
Coupler coaxial bi-directional
HygroThermometer
Horn Antenna
Directional Coupler High Power
RF cable, 18 GHz, N-N x 2
Laser Probe Interface
Load Termination
Broadband Amplifier, 80MHz to 1.0GHz, 500W
Broadband Amplifier, 0.69GHz to 3.2GHz, 200W
Power Meter
Cable 40GHz, K/K-type

(2) Test conditions and test setup:

Input voltage: Rated
Output current: 100%
Electromagnetic Frequency: 80~2700MHz
Sweep Condition: 1.5×10^{-3} Decade/Second, 3.0 Second Hold
Output voltage: Rated
Amplitude Modulated: 80%,1kHz
Ambient temperature: 25°C



(3) Acceptable conditions:

Performance Criteria: A

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failre.

(4) Test Result:

Frequency (GHz)	Radiated Field Strength (Vrms/m)	G80-42
0.08-1	10	PASS
1.4-2	3	PASS
2-2.7	1	PASS

3. Eelectrical fast transient/ burst (EFT/ B)
(IEC 61000-4-4; EN 61204-3/ IEC 61204-3)

(1) Equipment used:

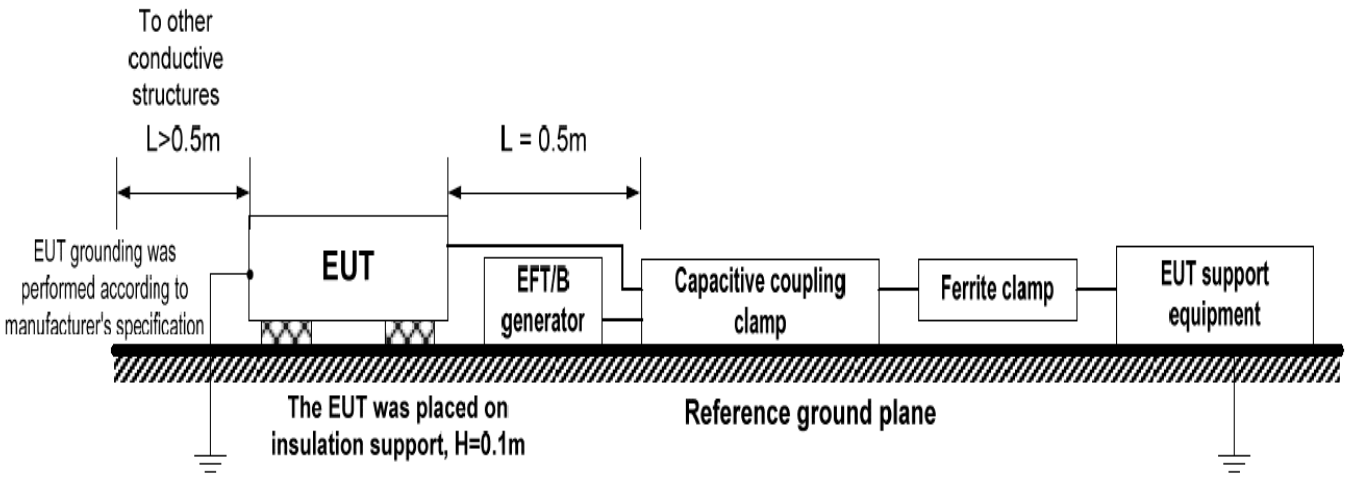
Coupling Clamp, 100pF
EFT Decoupling Network
Surge Impulse Module

HygroThermometer
EMC Compact Tester

(2) Test conditions:

Input voltage:	Rated	Output voltage:	Rated
Output current:	100%	Test time:	1minute
Polarity:	-,+	Ambient temperature:	25°C
Number of tests:	3 times		

(3) Test setup



(4) Acceptable conditions:

Performance Criteria: B

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failre.

(5) Test result:

Test Voltage (kV)	Repitition Rate (kHz)	G10-340	G80-42	G600-5.6
2	5	PASS	PASS	PASS
2	100	PASS	PASS	PASS

4. Conducted immunity to voltage surges (IEC 61000-4-5; EN 61204-3/ IEC 61204-3)

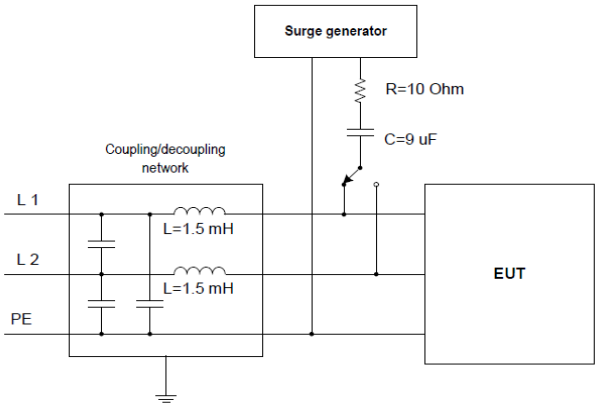
(1) Equipment used:

Surge Generator	Coupling impedance: Common - 10 Ohm
EMC Compact Tester	
HygroThermometer	
Coupling impedance:	Common - 10Ω
Coupling capacitance:	Common - 9uF
	Differential - 18uF

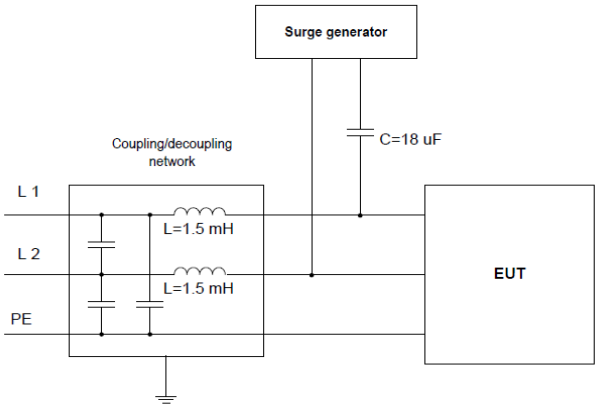
(2) Test conditions and test setup:

Input voltage:	Rated	Output voltage:	Rated
Output current:	100%	Number of tests:	5 times
Polarity:	-,+	Mode: Common, Differential	
Phase:	0°, 90°, 180°, 270°	Ambient temperature: 25°C	

Common mode application



Differential mode application



(3) Acceptable conditions:

Performance Criteria: B

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(4) Test Result:

Test Voltage (kV) Common	G80-42	Test Voltage (kV) Differential	G80-42
2.0	PASS	1.0	PASS

5. Conducted immunity to disturbances by radio frequency field (IEC 61000-4-6; EN 61204-3/ IEC 61204-3)

(1) Equipment used:

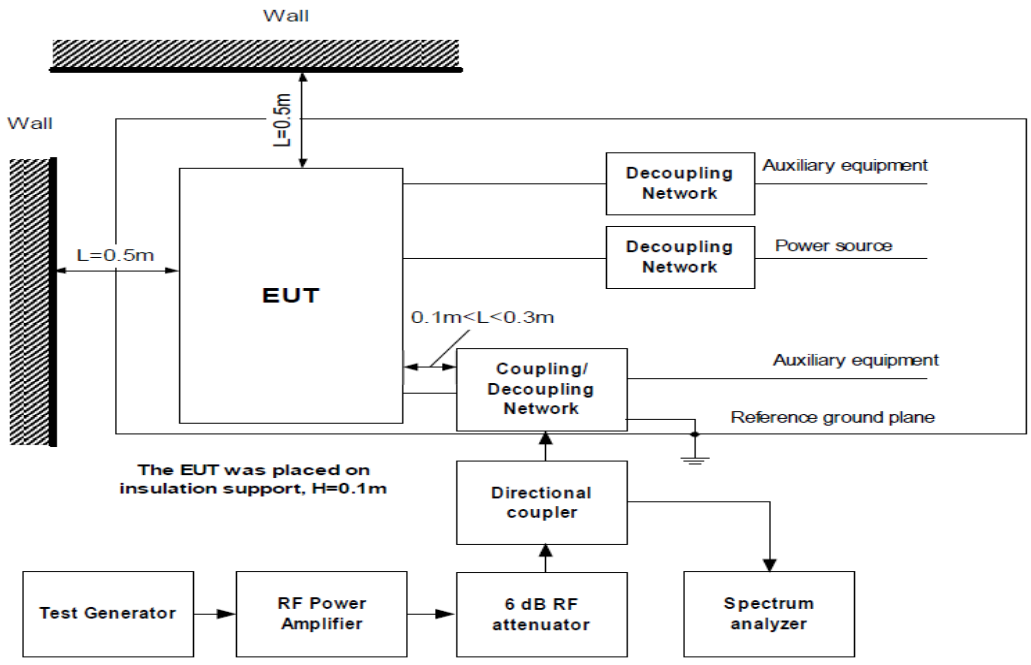
Generator Signal
Coupler Directional
Attenuator 6dB
Bulk Current Injection Probe
Multimeter
Coupling-decoupling network, STD 61000-4-6

Cable, N/N-type, 0.3m
Cable RF, 3.5m, N type-N type
Coupling-decoupling network
Power amplifier
Load Termination

(2) Test condition:

Ambient temperature:	25°C	Freq. range: 0.15 ~ 80MHz
Input voltage:	Rated	Type of modulation: AM 80% @ 1kHz
Output current:	100%	DWELL Time: 2.8s
Output voltage:	Rated	Freq. step: 1% of current freq.

(3) Test setup:



(4) Acceptable conditions:

Performance Criteria: A

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

(5) Test result:

Voltage Level (Vrms)	G10-340	G80-42	G600-5.6
10	PASS	PASS	PASS

6. Radiated immunity to power frequency magnetic field (IEC 61000-4-8; IEC 61204-3)

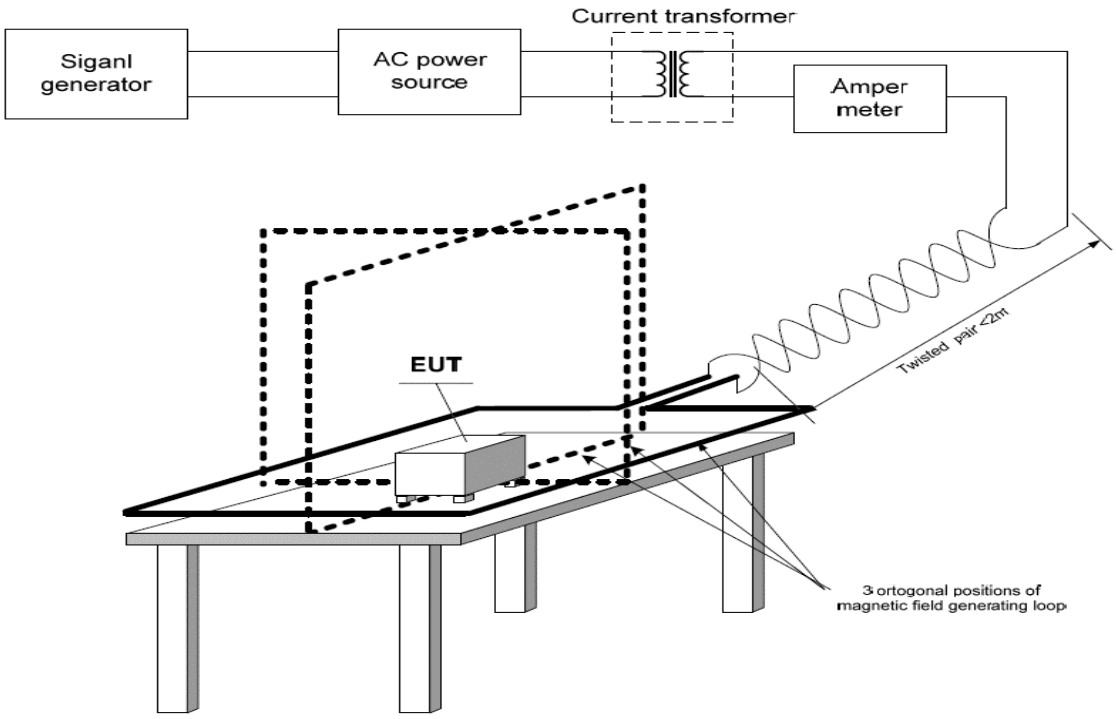
(1) Equipment used:

Generator Audio	Compliance Test System
Power Sourse AC	Multimeter
SmartWave Switching Amplifier	Induction coil according to EN 61000-4-8

(2) Test Condition:

Input voltage:	Rated	Duration: 10 min
Output current:	100%	Frequency: 50Hz & 60 Hz
Output voltage:	Rated	Magnetic field strength: 30 A/m
Ambient temperature:	25°C	

(3) Test setup:



(4) Acceptable conditions:

Performance Criteria: A

1. Output voltage regulation not to exceed ± 5% of initial (before test) value during test.
2. Output voltage to be within regulation specification after the test.
3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failre.

(5) Test result:

Position	Strenght of magnetic field (A/m)	G80-42
Vertical	30	PASS
Vertical at 90^0	30	PASS
Horizontal	30	PASS

7. Voltage dips and short interruptions (IEC 61000-4-11; EN 61204-3/ IEC 61204-3)

(1) Equipment used:

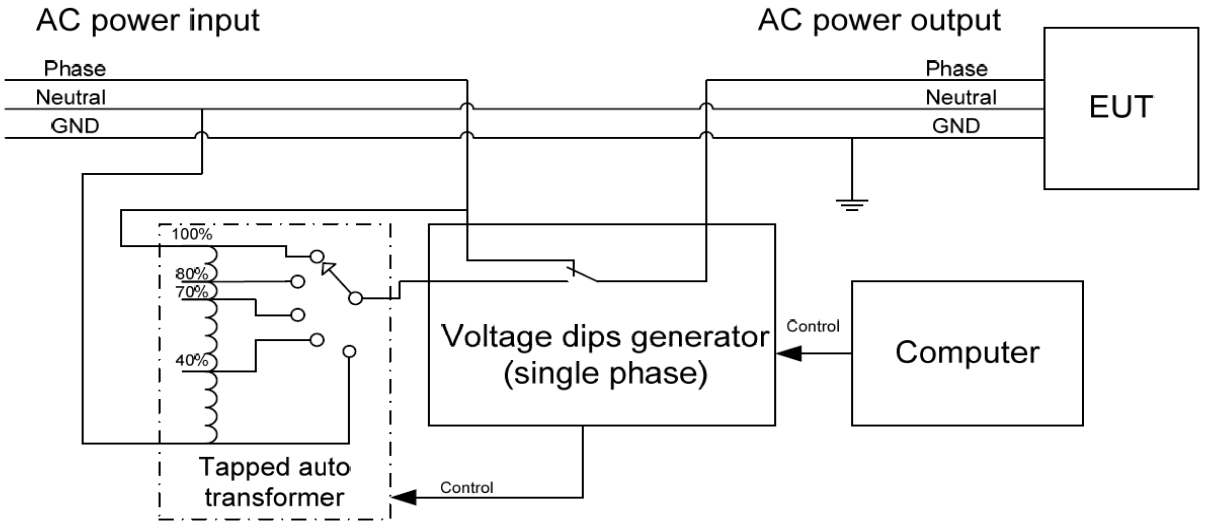
HygroThermometer
Multimeter
Dips Voltagetapped Transformer
Commutation Panel for dips generator
Compact Simulator

(2) Test Condition:

Input voltage: Rated
Output current: 100%
Output voltage: Rated
Ambient temperature: 25°C

Number of dips: 3
Repetition rate: 0.1 Hz

(3) Test setup:



(4) Acceptable conditions:

Performance Criteria: B, C

1. Output voltage to be within output voltage regulation specification after the test.
2. No discharge of fire or smoke.

(5) Test Result:

For Phase A, B, C				
Test level [%]	DIP rate [%]	Duration [ms]	G80-42	
<5	>95	10	PASS	(criteria B)
<5	>95	20	PASS	(criteria B)
70	30	10	PASS	(criteria B)
70	30	500	PASS	(criteria C)
40	60	100	PASS	(criteria C)
40	60	200	PASS	(criteria C)
80	20	5000	PASS	(criteria C)
<5	>95	5000	PASS	(criteria C)