GENESYS™ 1.7kW

EN61000

DATA

DWG: IA845-58-01		
APPD	CHK	DWG
Sergey.K 4/9/2018	Uri M 4/9/2018	MICHAEL G. 4.9.2018

TDK-LAMBDA

INDEX

PAGE

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	Storage oscilloscope	Yokogawa	DL7100
2	Storage oscilloscope	Yokogawa	DL1740
3	Digital multimeter	HP	34401A
4	Digital power meter	Yokogawa	WT130
5	Digital power meter	Yokogawa	WT230
6	Digital power meter	Yokogawa	WT330
7	Autotransformer	Metrel	HSN 260/30
8	Autotransformer	Metrel	HTN 450/20
9	Resistive load	NLI	10V
10	Resistive load	NLI	600V
11	AC source	Chroma	6590
12	ESD simulator system	NOISEKEN	ESS2000
13	EFT/B Generator	TESEQ	NSG3060
14	Surge Generator	TESEQ	NSG3060 CDN3063
15	RF Signal Generator 150kHz-230MHz	SCHLODER	CDG-6000
16	Coupling/Decoupling Network	COMPOWER	ATTN-6-100W
17	Coupling/Decoupling Network	SCHLODER	CDN-RJ45-S
18	Coupling/Decoupling Network	SCHLODER	CDN-M4-32A
19	Current Injection Probe	FISCHER	F-120-9A
20	Anechoic test chamber	Hermon Labs	AC-2
21	Antenna,biconical, 20-300MHz,1kW	A.H.Systems inc.	SAS-200/543
22	Antenna,1-18GHz,300W	EMC Test Systems	3115
23	RF signal generator,10kHz-1.05GHz	Fluke	6061A
24	Monitor,field,10kHz-1GHz,1-300V/m	Amplifier Research	FM1000
25	Coupling-decoupling network according	Hermon Labs	50141S1
26	RF amplifier,500MHz -1000MHz,120W	Hermon Labs	A-120
27	RF amplifier,1 to 4 GHz,55W	Milmega	AS 0104-55/55
28	RF power meter	Boonton	4200

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

(1) Equipment used:

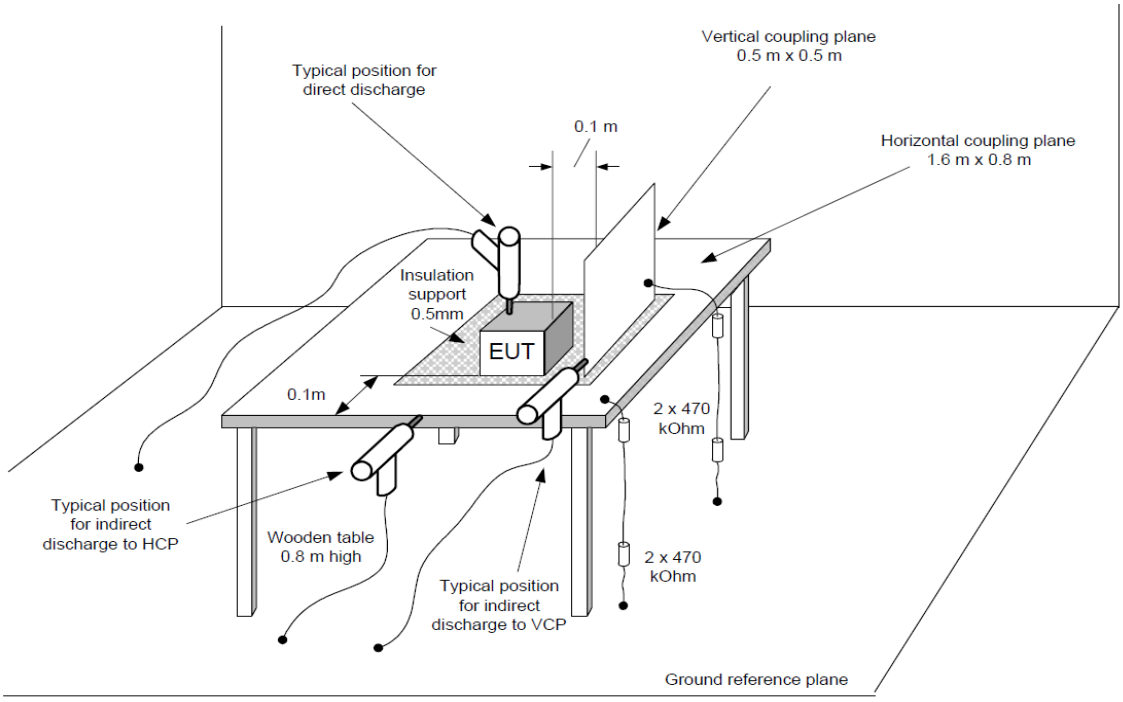
ESD simulator system:	NOISEKEN ESS2000
Discharge resistance: 330Ω	Capacitor: 150pF

(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:

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)	G10-170	G600-2.8	Discharge (kV)	G10-170	G600-2.8
2	PASS	PASS	2	PASS	PASS
4	PASS	PASS	4	PASS	PASS
			8	PASS	PASS

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

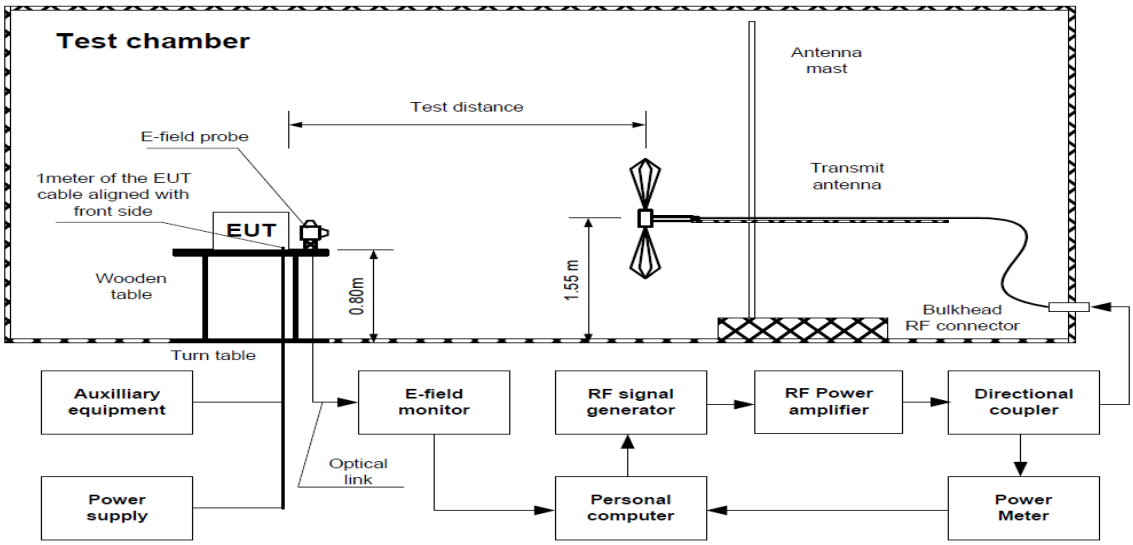
(1) Equipment used:

Anechoic test chamber	Hermon Labs AC-2
Antenna, biconical, high power 20-300MHz, 1kW	A.H.Systems inc. SAS-200/543
Antenna, double-ridged waveguide horn, 1-18GHz, 300W	EMC Test Systems 3115
Synthesized RF signal generator, 10kHz-1.05GHz	Fluke 6061A
Monitor, field, 10kHz-1GHz, 1-300V/m, w/fiberoptic	Amplifier Research FM1000
Coupling-decoupling network according to ENV 50141 (S1)	Hermon Labs 50141S1
RF amplifier, 500MHz to 1000MHz, 120W	Hermon Labs A-120
RF amplifier, 1 to 4 GHz, 55W	Milmega AS 0104-55/55B
RF power meter	Boonton 4200

(2) Test conditions and test setup:

Input voltage:	Rated	Output voltage:	Rated
Output current:	100%	Amplitude Modulated:	80%,1kHz
Electromagnetic Frequency:	80~2700MHz	Ambient temperature:	25℃

Sweep Condition: 1.5×10^{-3} Decade/Second,1.0 Second Hold



(3) Acceptable conditions:

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)	G10-170	G600-2.8
0.08-1	10	PASS	PASS
1.4-2	3	PASS	PASS
2-2.7	1	PASS	PASS

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

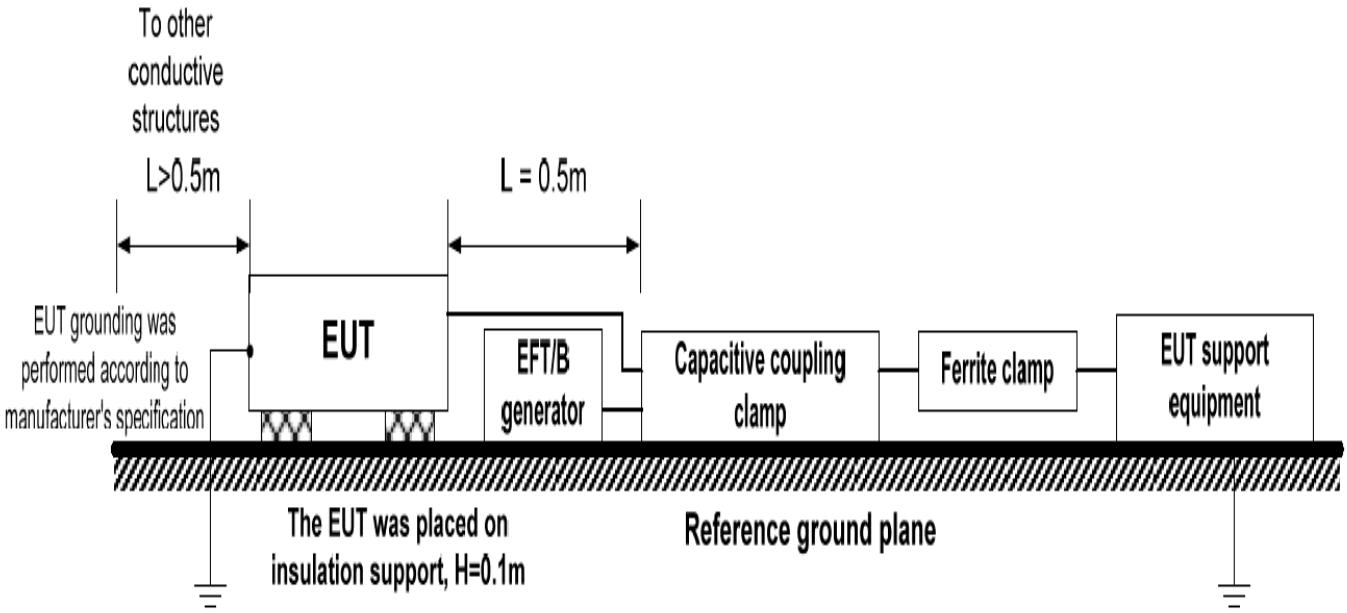
(1) Equipment used:

EFT/B Generator: TESEQ NSG3060

(2) Test conditions:

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

(3) Test setup



(4) Acceptable conditions:

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)	G10-170	G600-2.8
2	5	PASS	PASS
2	100	PASS	PASS

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

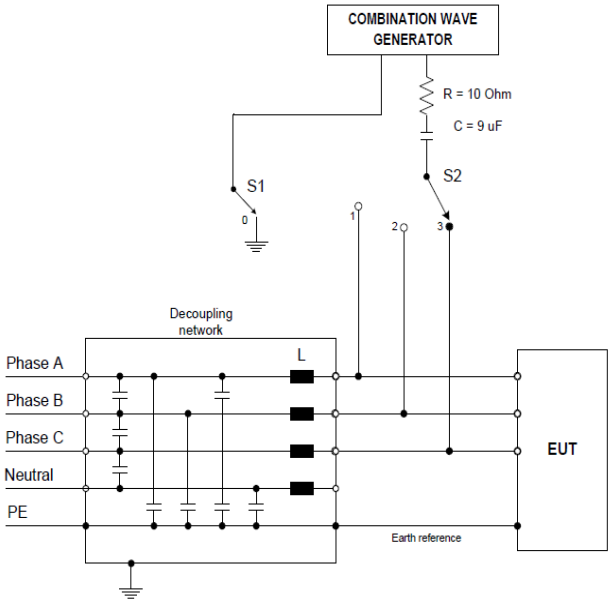
(1) Equipment used:

Surge Generator:	TESEQ - NSG3060 CDN3063
Coupling impedance:	Common - 12 OHm
	Normal - 2 OHm
Coupling capacitance:	Common - 9uF
	Normal - 18uF
Coupling network:	SCHLODER - CDN-M4-32A

(2) Test conditions and test setup:

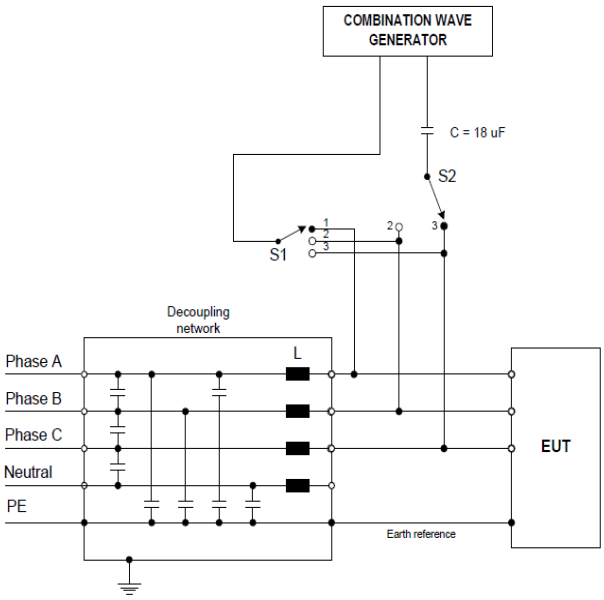
Input voltage:	Rated	Output voltage:	Rated
Output current:	100%	Number of tests:	5 times
Polarity:	-,+	Mode: Common, Normal	
Phase:	0,90 DEG.	Ambient temperature: 25℃	

Common mode



1) Switch S1
-line to earth: position 0
2) Switch 2
-during the test positions 1 to 3

Differential mode



(3) Acceptable conditions:

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:

Test Voltage (kV) Common	G300-5.6
2.0	PASS

Test Voltage (kV) Normal	G300-5.6
1.0	PASS

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

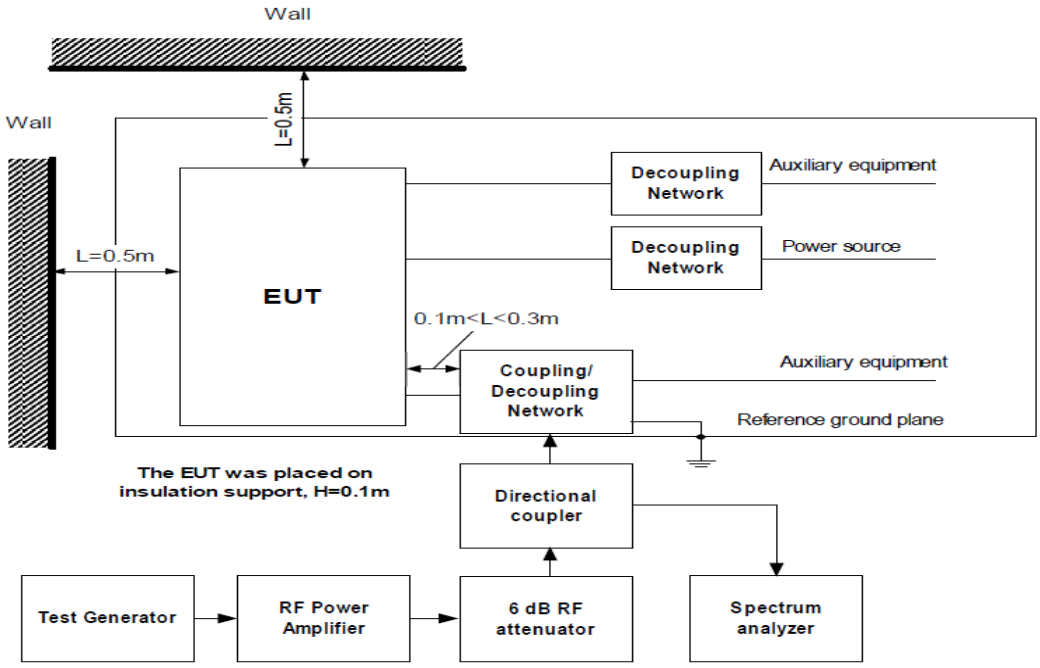
(1) Equipment used:

RF Signal Generator 150kHz-230MHz	SCHLODER CDG-6000
Coupling/Decoupling Network	SCHLODER CDN-RJ45-S
Coupling/Decoupling Network	SCHLODER CDN-M4-32A

(2) Test condition:

Ambient temperature: 25℃		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:

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)	G10-170	G600-2.8
10	PASS	PASS

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

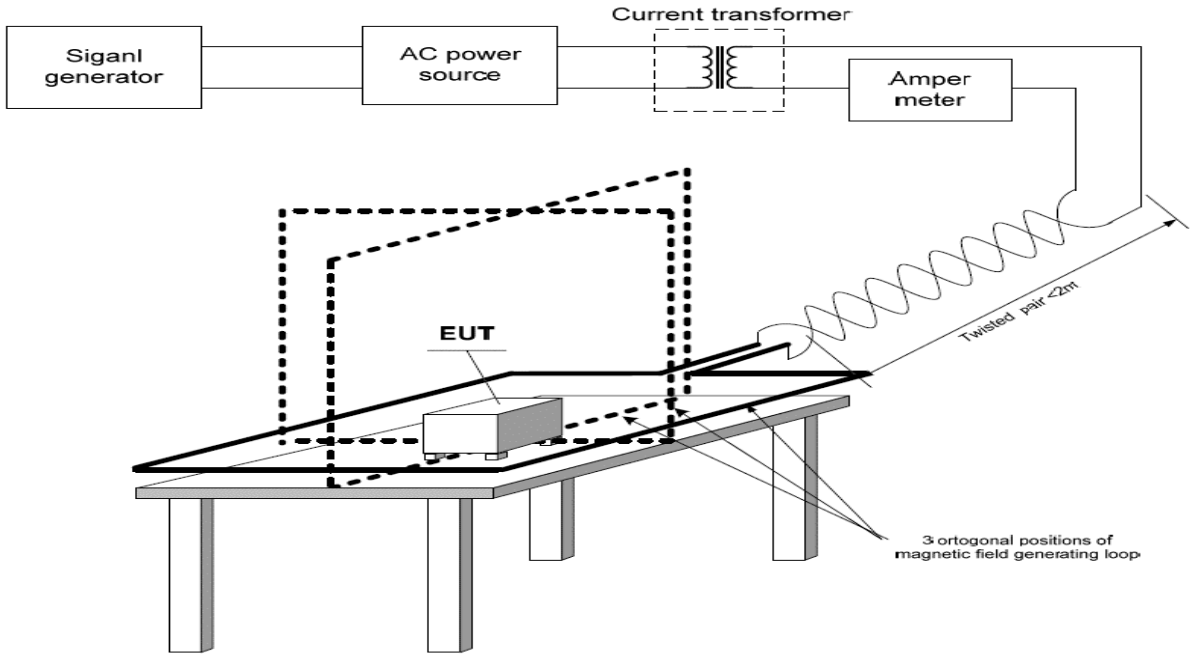
(1) Equipment used:

Current Generator:	F-1000-4-8-125A	FCC
Magnetic Loop:	F-1000-4-8/9/10-L-1M	FCC

(2) Test Condition:

Input voltage:	Rated	Duration: 10 min
Output current:	100%	Freq.: 50Hz & 60 Hz
Output voltage:	Rated	
Ambient temperature:	25℃	

(3) Test setup:



(4) Acceptable conditions:

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)	G10-170
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)

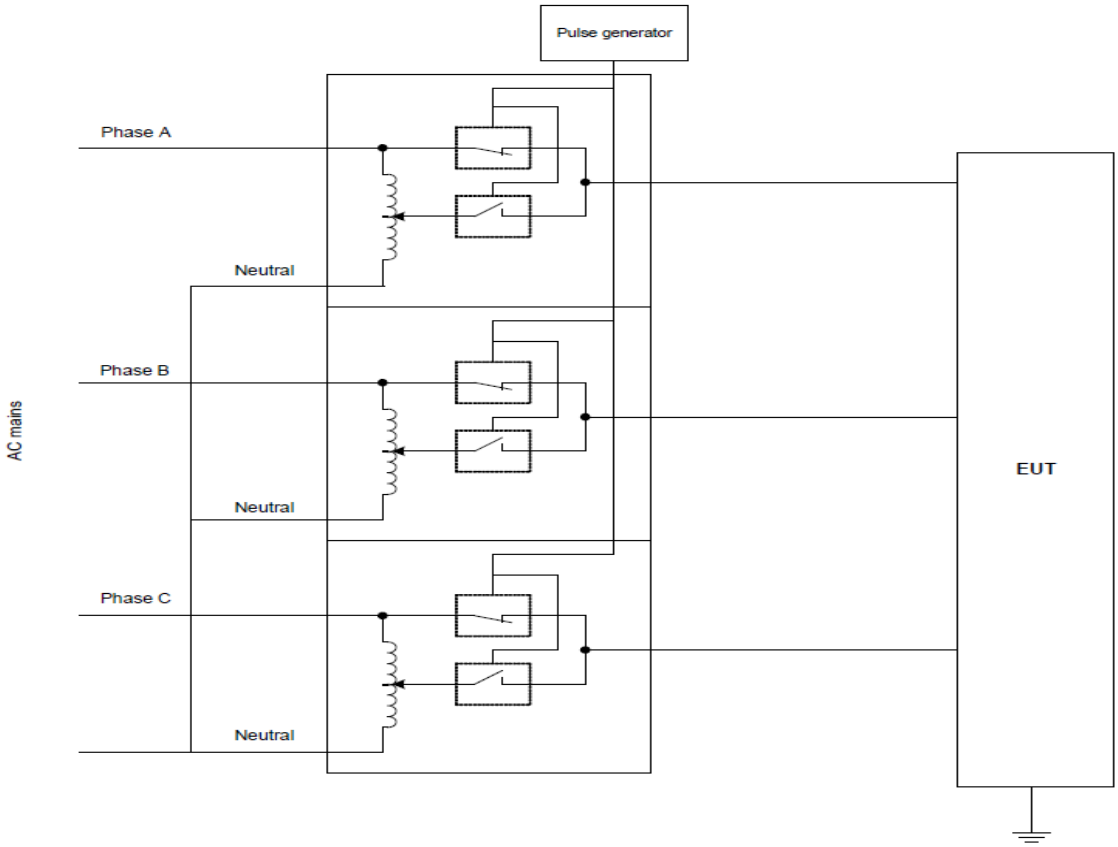
(1) Equipment used:

Surge Generator:	UCS500 -M4	EM TEST
AC Power Source:	UCS500 -M4	EM TEST

(2) Test Condition:

Input voltage:	Rated	Number of dips: 3
Output current:	100%	Repetition rate: 0.1 Hz
Output voltage:	Rated	
Ambient temperature:	25℃	

(3) Test setup:



(4) Acceptable conditions:

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	G300-5.6	
0%	100%	10ms	PASS	(criteria B)
0%	100%	20ms	PASS	(criteria B)
70%	30%	10ms	PASS	(criteria B)
70%	30%	500ms	PASS	(criteria C)
40%	60%	100ms	PASS	(criteria C)
40%	60%	200ms	PASS	(criteria C)
80%	20%	5000ms	PASS	(criteria C)
0%	100%	5000ms	PASS	(criteria C)