

Measurement Report

Issued Date : Aug. 30, 2006

Project No. : 0507126C

Equipment : POE INJECTOR

Model No. : GT-91085-1548

Applicant : GlobTek Inc.

186 Veterans Dr Northvale, NJ 07647 /
USA

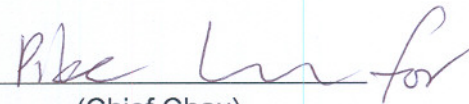
Tested by:

Neutron Engineering Inc. EMC Laboratory

Data of Test:

Jul. 26, 2005 ~ Dec. 28, 2005

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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1. General Information**1.1 Applicant**

Name : GlobTek Inc.

Address : 186 Veterans Dr Northvale, NJ 07647 / USA

1.2 Manufacturer

Name : N/A

Address : N/A

1.3 Equipment Under Tested

Name : POE INJECTOR

Trade Name : GlobTek

Model No. : GT-91085-1548

1.4 OEM Brand/Model (if applicable)

OEM Brand(s)/Model(s) except the basic model in sub-clause 1.3 is (are) the follows:

OEM Brand : N/A

Model No. : N/A

1.5 Model Difference (Series, Versions, if any)

Except the basic model no. (model designation of the sample tested in this test report), additional model no. covered is(are) :

N/A.

1.6 Product Descriptions (Application/Features/Specification)

The EUT is a POE INJECTOR.

Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual

1.7 Connecting I/O Port(s)

Please refer to the User's Manual

1.8 Power Supplied

Power Source : AC Mains.

Power Cord : Detachable, shielded type.

Power Rating : AC I/P 100-240V / DC O/P 48V, 0.35A

1.9 Products Covered (if applicable)

The sample tested including the following sub-system/module/accessory:

Sub-system/ Module/ Accessory	Model/Type No.	Int. Inst./ Ext. Cont.
N/A	N/A	N/A

1.10 Description of Test Mode(s)

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

1.11 EUT Modifications (if applicable)

No any modification required for the EUT to comply with the standards.

1.12 Summary of Test Results

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
EN 55022 (1998+A1: 2000+A2: 2003)	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	
EN 61000-3-2 (2000)	Harmonic Current Emission	Class A	PASS	NOTE (2)
EN 61000-3-3 (1995+A1: 2001)	Voltage Fluctuations & Flicker	-----	PASS	
EMC Immunity (EN 55024:1998+A1: 2001+A2: 2003)				
Section	Test Item	Performance Criteria	Judgment	Remark
IEC 61000-4-2 (2001)	Electrostatic Discharge	B	PASS	
IEC 61000-4-3 (2002)	RF electromagnetic field	A	PASS	
IEC 61000-4-4 (1995+A1: 2000+A2: 2001)	Fast transients	B	PASS	
IEC 61000-4-5 (2001)	Surges	B	PASS	
IEC 61000-4-6 (2001)	Injected Current	A	PASS	
IEC 61000-4-8 (2001)	Power Frequency Magnetic Field	A	PASS	
IEC 61000-4-11 (2001)	Volt. Interruptions Volt. Dips	B / C / C NOTE (3)	PASS	

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report
- (2) The power consumption of EUT is less than 75W and no Limits apply.
- (3) Voltage dip: >95% reduction – Performance Criteria **B**
Voltage dip: 30% reduction – Performance Criteria **C**
Voltage Interruption: >95% reduction – Performance Criteria **C**
- (4) For client's request and manual description, the test will not be executed.

2. RFI Emissions Measurement

2.1 Test Facility

The test facilities used to collect the test data in this report is C01/OS02 at the location of No.132-1, Lane 329, Sec. 2, Palain Road, Shijr City, Taipei, Taiwan.

2.2 Standard Compliance

The test data contained in this report relate only to the item(s) listed below:

Limitation Class B

EN 55022: 1998+A1: 2000+A2: 2003

2.3 Test Methodology

Both conducted and radiated tests were performed during the max. EMI emission evaluation.

Antenna to EUT distance is 10 m.

Test procedures according to the technical standards:

EN 55022: 1998+A1: 2000+A2: 2003

2.4 Deviations from Standard Test Method

N/A

2.5 Sample(s) Tested

The representative sample tested in this reports is(are): GT-91085-1548

Test results in this test report relate only to the sample(s) tested.

The EUT has been tested according to the following environmental condition:

Input Power	230Vac/50Hz
Environmental Conditions	Please refer to the measurement data.

2.6 Measurement Instruments

Valid measurement instruments used in this report refer to **Table-1** enclosed.

2.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

A. Conducted Measurement :5.05dB

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	NOTE
OS-01	ANSI	30MHz ~ 200MHz	H	4.59	
		30MHz ~ 200MHz	V	4.80	
		200MHz ~ 1,000MHz	H	4.47	
		200MHz ~ 1,000MHz	V	5.03	
OS-01	VCCI	30MHz ~ 200MHz	H	4.59	Only for VCCI Report
		30MHz ~ 200MHz	V	4.48	Only for VCCI Report
		200MHz ~ 1,000MHz	H	4.47	Only for VCCI Report
		200MHz ~ 1,000MHz	V	4.73	Only for VCCI Report
OS-02	ANSI	30MHz ~ 200MHz	H	4.34	
		30MHz ~ 200MHz	V	5.15	
		200MHz ~ 1,000MHz	H	5.28	
		200MHz ~ 1,000MHz	V	4.53	
OS-02	VCCI	30MHz ~ 200MHz	H	4.34	Only for VCCI Report
		30MHz ~ 200MHz	V	4.77	Only for VCCI Report
		200MHz ~ 1,000MHz	H	4.91	Only for VCCI Report
		200MHz ~ 1,000MHz	V	4.53	Only for VCCI Report

2.8 Tested System Set-Up/Configuration Details

The system was configured for testing in a typical fashion (as a user would normally use) or in accordance with the operating configuration specified in the user's manual. A Block Diagram (please refer to the Diagram - 1) and Photos (please refer to the attachment - **A**) showing the set-up/configuration of system tested. In addition, **Table-2** and **Table-3** provide a detail of all equipment items and cables information used in the system tested.

Table 1 Measurement Instruments List

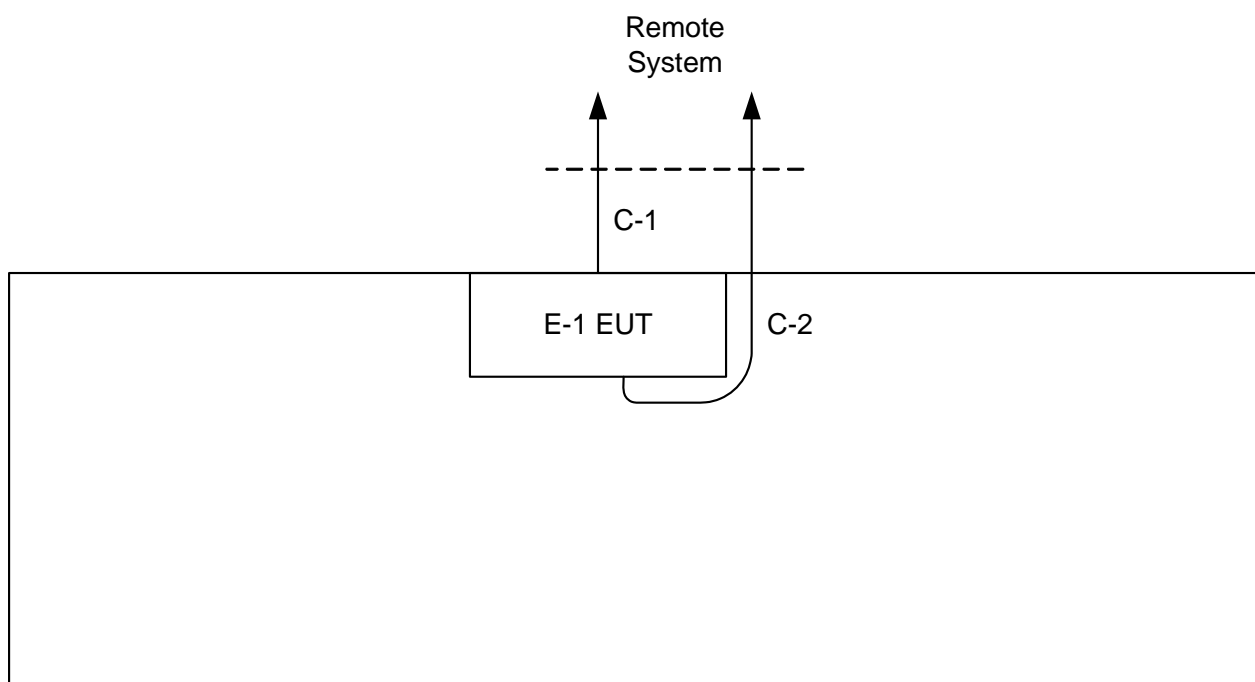
Item	Instruments	Mfr/Brand	Model/Type No.	Serial No.	Calibrated Date	Next Cali. Date	Note
1	LISN	EMCO	3825/2	9605-2539	2005-10-03	2006-10-02	
2	LISN	Rolf Heine	NNB-2/16Z	98083	2005-08-02	2006-08-01	
3	LISN	Rolf Heine	NNB-2/16Z	98053	2005-12-23	2006-12-22	✓
4	4L-V-LISN	Rolf Heine	NNB-4/63TL	02/10040	2005-04-08	2006-04-07	
5	LISN	EMCO	3816/2	00042991	2005-01-12	2006-01-11	
6	LISN	EMCO	3816/2	00042990	2005-01-12	2006-01-11	
7	LISN	EMCO	4825/2	00028234	2005-10-13	2006-10-12	
8	ISN	SCHAFFNER	ISN T400	16017	2005-04-01	2007-03-31	
9	Pulse Limiter	Electro-Metrics	EM-7600	112644	2005-11-30	2006-11-29	✓
10	50Ω Terminator	N/A	N/A	N/A	2005-05-12	2007-05-11	✓
11	Test Cable	N/A	C01	N/A	2005-11-30	2006-11-29	✓
12	Test Cable	N/A	CISPR 14	N/A	2005-10-03	2006-10-02	
13	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3058	2005-11-30	2006-11-29	✓
14	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3177	2005-02-07	2007-02-06	
15	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9161	4022	2005-08-17	2006-08-16	
16	Test Cable	N/A	10M_OS01	N/A	2005-11-30	2006-11-29	
17	Test Cable	N/A	OS01-1/-2	N/A	2005-11-30	2006-11-29	
18	Test Cable	N/A	10M_OS02	N/A	2005-11-30	2006-11-29	✓
19	Test Cable	N/A	OS02-1/-2/-3	N/A	2005-11-30	2006-11-29	✓
20	RF Switch	Anritsu	MP59B	M65982	2005-11-30	2006-11-29	
21	Pre-Amplifier	Anritsu	MH648A	M09961	2005-11-30	2006-11-29	✓
22	Spectrum Analyzer	ADVAN TEST	R3261C	81720298	2005-09-15	2006-09-14	
23	Spectrum Analyzer	ADVAN TEST	R3132	81700025	2005-02-23	2006-02-22	
24	Spectrum Analyzer	HP	8591EM	3536A00681010	2005-06-30	2006-06-29	
25	EMI Test Receiver	R&S	ESCI	100082	2005-02-02	2007-02-01	✓
26	EMI Test Receiver	R&S	ESCI	100080	2005-01-10	2007-01-09	
27	Test Receiver	MEB	SMV41	130	2005-11-23	2006-11-22	
28	Test Receiver	PMM	PMM 9000	4310J01002	2005-02-25	2006-02-24	
29	Horn Antenna	EMCO	3115	9605-4803	2005-06-10	2006-06-09	
30	Absorbing Clamp	Schwarzbeck	MDS-21	03195	2005-06-17	2006-06-16	
31	Voltage Probe	R&S	ESH2-Z3	841.800/023	2005-09-13	2006-09-12	
32	Antenna Mast	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
33	Turn Table	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
34	Loop Ant	EMCO	6502	00042960	2005-01-14	2008-01-13	

Remark :

(1)" ✓" indicates the instrument used in Test Report.

(2)" N/A" denotes No Model No. / Serial No. and No Calibration specified.

Diagram - 1
Block diagram showing the configuration of system tested



C-1 RJ-45 Cable
C-2 RJ-45 Cable

Table 2 Equipments Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	POE INJECTOR	GlobTek	GT-91085-1548	DOC	N/A	EUT

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment.
- (2) Unless otherwise marked as ※ in 『Remark』 column, Neutron consigns the support equipment to the tested system.
- (3) The support equipment was authorized by Declaration of Confirmation.

Table 3 Information of Interface Cable

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	20M	
C-2	NO	NO	100M	

Note:

- (1) Unless otherwise marked as ※ in 『Remark』 column, Neutron consigns the support equipment to the tested system.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.9 EUT Operating Conditions

- (a) Both conducted and radiated testing were performed during the max. EMI emission evaluation.
- (b) The system was configured for testing in a typical fashion (as a customer would normally use it). The EUT was connected to support equipment-remote personal computer. Peripherals of remote system, such as monitor, keyboard, modem, and printer were contained in this system in order to comply with the CISPR22 Rules requirement. The remote system operated in the default 1024 X 768 VGA Graphic mode. This operating condition was tested and used to collect the included data.
- (c) The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use. The EUT send/receiver data to/from remote system.

3. Justification

3.1 Limitations

3.1.1 Power Line Conducted Emission (Frequency Range 150KHz-30MHz)

Measurement Frequency Range (MHz)	Mains Terminal Class A Limits (dBuV)		Mains Terminals Class B Limits (dBuV)		Note CISPR FCC Std.
	QP Mode	AV Mode	QP Mode	AV Mode	
0.15 - 0.50	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 - 5.00	73.00	60.00	56.00	46.00	CISPR
5.00 - 30.0	73.00	60.00	60.00	50.00	CISPR
0.15 - 0.50	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 - 5.00	73.00	60.00	56.00	46.00	FCC
5.00 - 30.0	73.00	60.00	60.00	50.00	FCC

Notes:

- (1). The tighter limit applies at the band edges.
- (2). The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

3.1.2 Radiated Emission Limits (Frequency Range 30MHz-1000MHz)

Measurement Frequency Range (MHz)	Quasi-Peak Mode Class A Limits (dBuV/m)		Quasi-Peak Mode Class B Limits (dBuV/m)		Note CISPR FCC Std.
	10m	30m	10m	3m	
30.00 -230.00	40.00	30.00	30.00	40.00	CISPR
230.0 -1000.0	47.00	37.00	37.00	47.00	CISPR
30.00 - 88.00	39.00	N/A	30.00	40.00	FCC
88.00 - 216.0	43.50	N/A	33.50	43.50	FCC
216.0 -960.0	46.00	N/A	36.00	46.00	FCC
above 960.0	49.50	N/A	46.00	54.00	FCC

Notes:

- (1). The tighter limit applies at the band edges.
- (2). Emission level (dBuV/m)=20log Emission level (uV/m).
- (3). A measuring distance of 10m is a primary used. However, either 3m or 10m (instead of 10m) distance may be allowed. If the distance is 3m, add 10dB to the QP-limit above. If the distance is 10m, subtract 10dB from the QP-limit above.

3.2 Measurement Justification

3.2.1 Conducted Emission

The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and these signals are then Quasi Peak detector mode and Average detector mode re-measured.

Data of **Table - 4.** lists the significant emission frequencies, measured levels, limits and safe margins. All readings are Peak Mode measured unless otherwise stated as QP or AV in column of " Remark ".

If the Peak Mode measured value lower than both QP Mode and AV Mode Limit, EUT shall be deemed to compliance with both QP & AV Limits and then no additional QP Mode or AV Mode measurement performed.

If additional QP or AV Mode measurement needed, and if the QP Mode measured value compliance with the QP Mode Limit and lower than AV Mode Limit, the EUT shall be deemed to meet both QP & AV Limits and then only QP Mode was measured, but AV Mode was not performed ◦

3.2.2 Radiated Emission

The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

Data of **Table - 5.** lists the significant emission frequencies, measured levels, limits and safe margins. All readings are Peak Mode measured unless otherwise stated as QP in column of " Remark ".

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

3.3 Measurement Data

Table - 4. Conducted Emission Data

Table - 5. Radiated Emission Data

Table 4 Conducted Emission Data

EUT : POE INJECTOR

Model/Type No. : GT-91085-1548

Temperature : 25 °C Relative Humidity : 57 % Pressure : 1023 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Minimum passing margin is -7.84dB at 0.33MHz

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins (dBuV)	
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		Note
0.33	Line	51.61	37.67	59.45	49.45	-7.84	(QP)
0.45	Line	45.83	38.48	56.83	46.83	-8.35	(AV)
0.55	Line	45.89	36.22	56.00	46.00	-9.78	(AV)
1.15	Line	41.93	*	56.00	46.00	-14.07	(QP)
1.87	Line	40.30	*	56.00	46.00	-15.70	(QP)
10.80	Line	45.89	*	60.00	50.00	-14.11	(QP)
0.28	Neutral	49.23	38.68	60.79	50.79	-11.56	(QP)
0.33	Neutral	50.82	39.97	59.42	49.42	-8.60	(QP)
0.55	Neutral	45.33	36.23	56.00	46.00	-9.77	(AV)
1.06	Neutral	41.61	*	56.00	46.00	-14.39	(QP)
1.86	Neutral	40.70	*	56.00	46.00	-15.30	(QP)
21.70	Neutral	48.40	34.37	60.00	50.00	-11.60	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz . Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz,VBW=10Hz, Swp. Time =0.3 sec./MHz .
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform . In this case, a " * " marked in AVG Mode column of Interference Voltage Measured .
- (3) Measuring frequency range from 150KHz to 30MHz .

Table 5 Radiated Emission Data

EUT : POE INJECTOR

Model/Type No. : GT-91085-1548

Temperature : 17.1 °C Relative Humidity : 88 % Pressure : 1023 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Minimum passing margin is -1.04dB at 32.05MHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Note
31.50	V	34.90	- 8.34	26.56	30.00	- 3.44	(QP)
32.05	H	37.20	- 8.24	28.96	30.00	- 1.04	(QP)
57.75	H	30.28	- 6.96	23.32	30.00	- 6.68	
80.30	V	38.70	- 9.99	28.71	30.00	- 1.29	(QP)
81.42	H	33.47	- 10.17	23.30	30.00	- 6.70	
130.20	V	32.60	- 5.90	26.70	30.00	- 3.30	(QP)
323.80	V	28.85	- 4.40	24.45	37.00	- 12.55	
329.60	H	28.54	- 4.27	24.27	37.00	- 12.73	
342.60	H	28.24	- 3.97	24.27	37.00	- 12.73	
366.80	V	28.49	- 3.48	25.01	37.00	- 11.99	
377.00	H	28.37	- 3.29	25.08	37.00	- 11.92	
386.00	V	27.68	- 3.12	24.56	37.00	- 12.44	

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz ◦
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦

4. Immunity Test

4.1 Standard compliance/Service Level/Criteria

Tests Standard No.	Test Specification Level	Test Mode Test Ports	Perform. Criteria	Remark
1. ESD IEC 61000-4-2	8KV air discharge 4KV contact discharge	Direct Mode	B	
	4KV HCP discharge 4KV VCP discharge	Indirect Mode	B	
2. RS IEC 61000-4-3	80 MHz to 1000 MHz 3V/m(rms), 1 KHz, 80%, AM modulated	Enclosure	A	
3. EFT/Burst IEC 61000-4-4	1.0KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	Power Supply Port	B	
	0.5 KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	CTL/Signal Data Line Port	B	
4. Surges IEC 61000-4-5	1 KV(5P/5N) 1.2/50(8/20) Tr/Th us	L-N	B	
	2 KV(5P/5N) 1.2/50(8/20) Tr/Th us	L-PE N-PE	B	
5 Injected Current IEC 61000-4-6	0.15 MHz to 80 MHz 3V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	CTL/Signal Port	A	
	0.15 MHz to 80 MHz 3V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	AC Power Port	A	
	0.15 MHz to 80 MHz 3V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	DC Power Port	A	N/A
6. Power Frequency Magnetic Field IEC 61000-4-8	50 Hz, 1A/m	Enclosure	A	
7. Volt. Interruptions Volt. Dips IEC 61000-4-11	Voltage dip > 95%	< 5%	B	
	Voltage dip 30%	70%	C	
	Interruption > 95%	< 5%	C	

* Remark:

N/A : denotes test is not applicable in this Test Report

(1) : The EUT is a battery operating device and no any other cable connection to PC device.

(2) : Applicable only to cables which according to the manufacturer's specification supports communication on cables lengths greater than 3 m.

(3) : Applicable only to equipment containing devices susceptible to magnetic fields

4.2 General Performance Criteria

According to **EN55024** standard, the general performance criteria as following:

Criterion A	<p>The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.</p> <p>If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
Criterion B	<p>After the test, the equipment shall continue to operate as intended without operator Intervention. No degradation of performance or loss of function is allowed, after the application of the phenomenon below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.</p> <p>During the test, degradation of performance is allowed. However, no change of operating state if stored data allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
Criterion C	<p>Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.</p> <p>Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>

4.3 Sample(s) Tested

The representative sample tested in this report is the same as the statements of **2.5** unless otherwise a special model no. is specified in the record (Table of Test Results).

4.4 EUT Operating Condition

The EUT tested system was configured as the statements of **2.9** Unless otherwise a special operating condition is specified in the follows during the testing.

4.5 Measurement Instruments

Valid measurement instruments used in this report refer to **Table- 6** enclosed.

Table 6 EMS Measurement Instruments List

Item	Instruments	Mfr/Brand	Model/Type No.	Serial No.	Calibrated Date	Next Cali.Date	Note
1	ESD Simulator	Thermo	MZ-15/EC	0502184	2005-11-28	2006-11-27	✓
2	Signal Generator	R&S	SMT 06	832080/007	2005-08-04	2006-08-03	✓
3	Power Amplifier(RS)	M2S	AC8113-800/250A	9904-113	2004-03-29	2006-03-28	✓
4	Antenna(500W)	MESS-ELEKTRONIK	VULB9161	4022	2005-08-17	2006-08-16	✓
5	Signal Generator	IFR	2023A	202301/368	2004-03-26	2006-03-25	✓
6	Power Amplifier(CS)	M2S	A0122-250	9902-111	2004-03-29	2006-03-28	✓
7	CDN	MEB	M3	13389	2005-06-07	2007-06-06	✓
8	CDN	MEB	M2	12127	2005-06-07	2007-06-06	
9	CDN	MEB	S1	14393	2005-06-07	2007-06-06	
10	CDN	MEB	S25	12426	2005-06-07	2007-06-06	
11	EM Clamp	MEB	KEMZ 801	14291	2005-07-08	2007-07-07	✓
12	EMC Immunity Test System	Thermo	EMCPRO PLUS	0502176	2005-02-07	2006-02-06	✓
13	Capacitive Clamp	Thermo	CCL	0502218	N/A	N/A	✓
14	Telecom Coupler/Decoupler	Thermo	CM-TELCD	0502217	N/A	N/A	
15	Magnetic Field Test Generator	FCC	F-100-4-8-G-12 5A	04029	2005-02-11	2006-02-10	✓
16	Harmonic & Flicker	California	PACS-1	72345	2005-02-11	2006-02-10	✓
17	Power Source	California	3001iX	56310	2005-02-11	2006-02-10	✓

Remark:

(1)" ✓" indicates the instrument used in Test Report.

(2)" N/A" - denotes tests is not applicable in Test Report

4.6 EUT Tested Results

The setup and result of testing system is described in list below:

Tested Items	Basic Standards	Test Set-up	Test Result	Remark
1. ESD	EN 61000-4-2 IEC 61000-4-2	Fig-4-6-1	Table 7	
2. RF Electromagnetic Field Strength	EN 61000-4-3 IEC 61000-4-3	Fig-4-6-2	Table 8	
3. EFT/Burst	EN 61000-4-4 IEC 61000-4-4	Fig-4-6-3	Table 9	
4. Surges	EN 61000-4-5 IEC 61000-4-5	Fig-4-6-4	Table 10	
5. Injected Current	EN 61000-4-6 IEC 61000-4-6	Fig-4-6-5	Table 11	
6. Power-frequency Magnetic-field	EN 61000-4-8 IEC 61000-4-8	Fig-4-6-6	Table 12	
7. Volt. Interruptions Volt. Dips	EN 61000-4-11 IEC 61000-4-11	Fig-4-6-7	Table 13	

Remark: * N/A - denotes test is not applicable in this Test Report

Fig. 4-6-1 ESD Test Set-Up Configuration

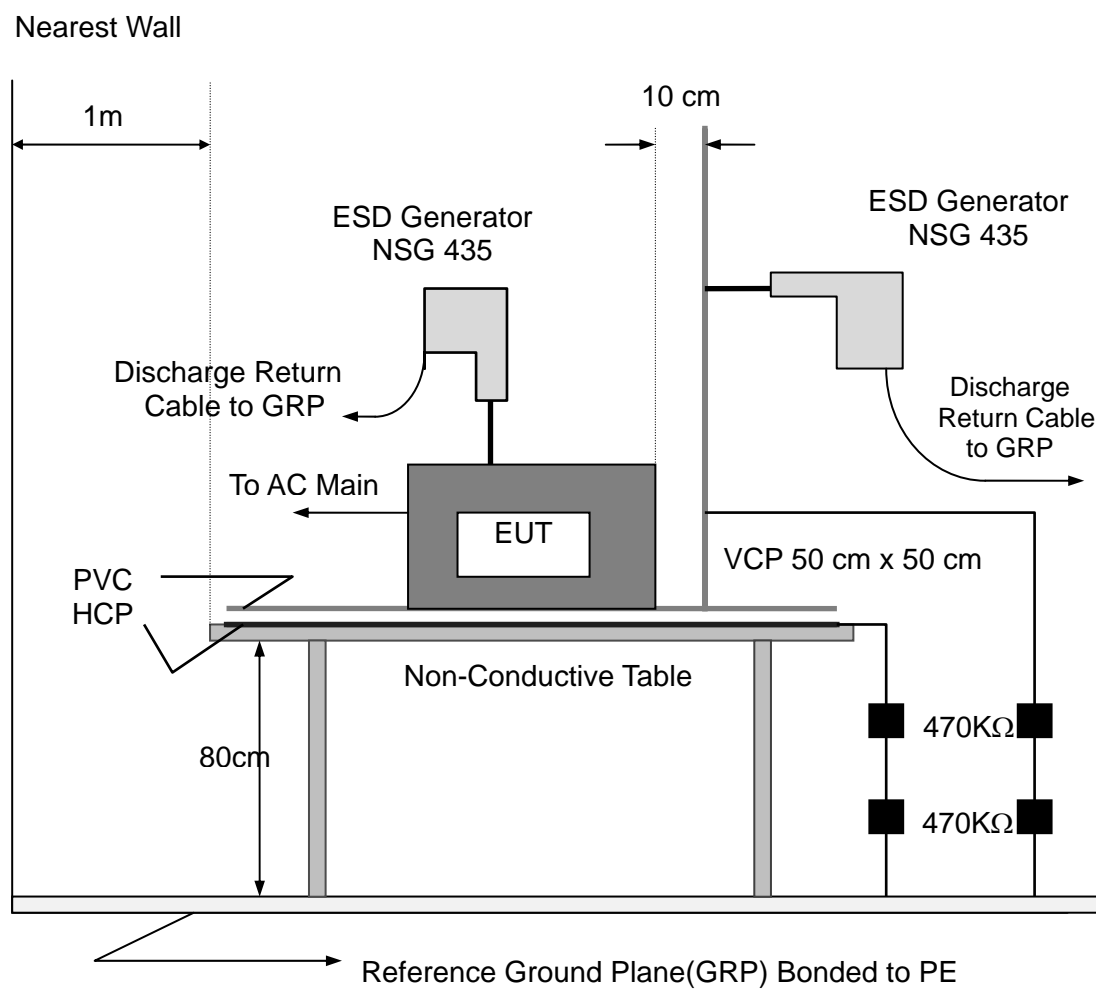


Table 7 ESD Testing

EUT : POE INJECTOR Model/Type No. : GT-91085-1548

Temperature : 20.3 °C Relative Humidity : 48 % Pressure : 1020 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Mode	Air Discharge								Contact Discharge							
	2KV		4KV		8KV		12KV		2KV		4KV		6KV		8KV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1									A	A	B	B				
2									A	A	B	B				
3																
4																
5																
6																
7																
8																
9																
10																
Criteria	B								B							
Result	N/A								B							
Judgment	N/A								PASS							

Mode	HCP Discharge								VCP Discharge							
	2KV		4KV		6KV		8KV		2KV		4KV		6KV		8KV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1	A	A	B	B					A	A	A	A				
2	A	A	B	B					A	A	A	A				
3	A	A	B	B					A	A	A	A				
4	A	A	B	B					A	A	A	A				
Criteria	B								B							
Result	B								A							
Judgment	PASS								PASS							

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) Test condition:
Direct / Indirect (HCP/VCP) discharges: Minimum 50 times (Positive/Negative) at each point. Air discharges: Minimum 10 times (Positive/Negative) at each point.
- 3) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)
- 4) The Indirect (HCP/VCP) discharges description of test point as following:
1.left side 2.right side 3.front side 4.rear side
- 5) N/A - denotes test is not applicable in this test report
- 6) Criteria A: There was no change operated with initial operating during the test.
- 7) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 8) Criteria C: The system shut down during the test.

Photo(s) shown the location(s) of ESD evaluated



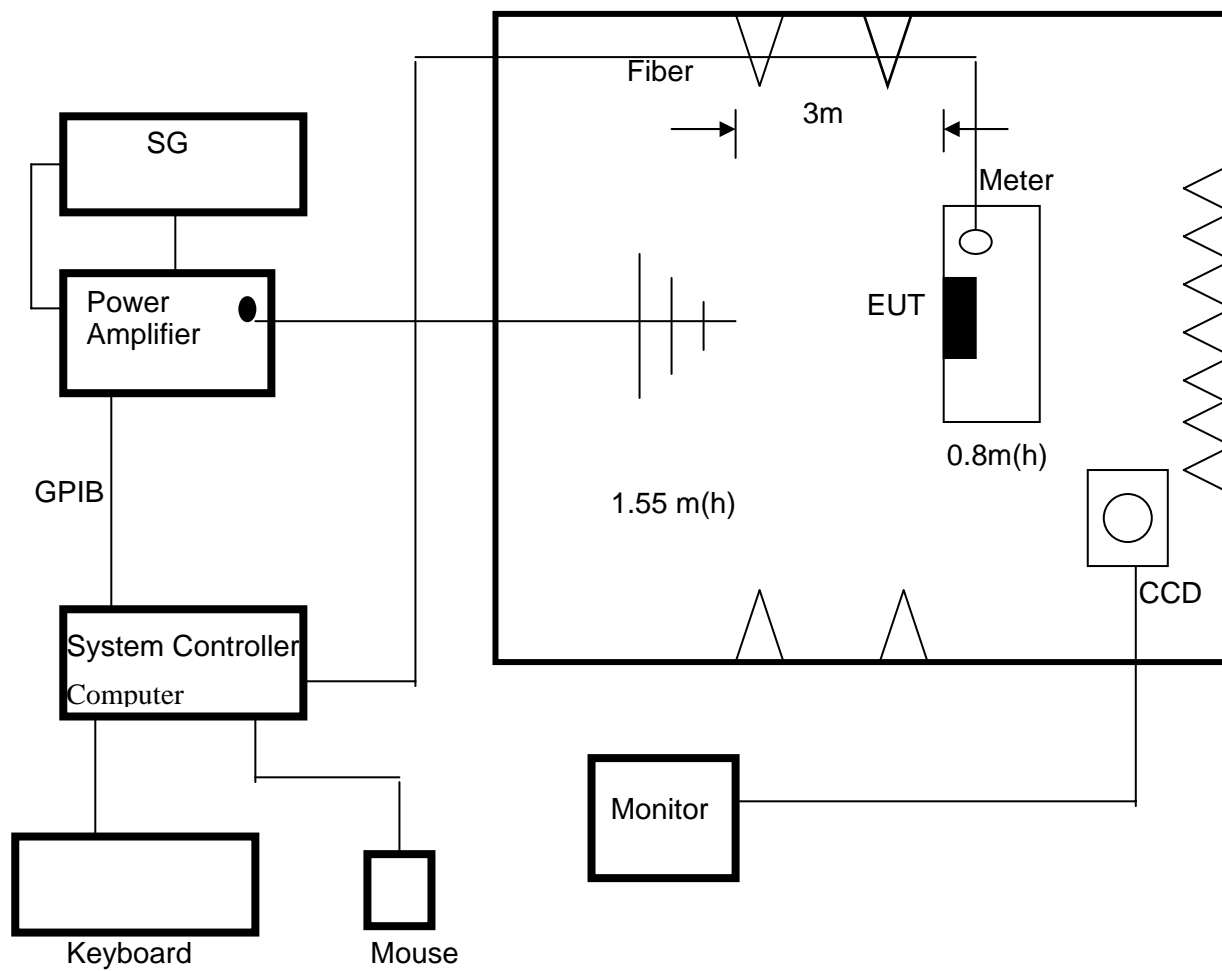
Fig. 4-6-2 RF Electromagnetic Field Strength Test Set-Up configuration

Table 8 RS Testing

EUT : POE INJECTOR Model/Type No. : GT-91085-1548

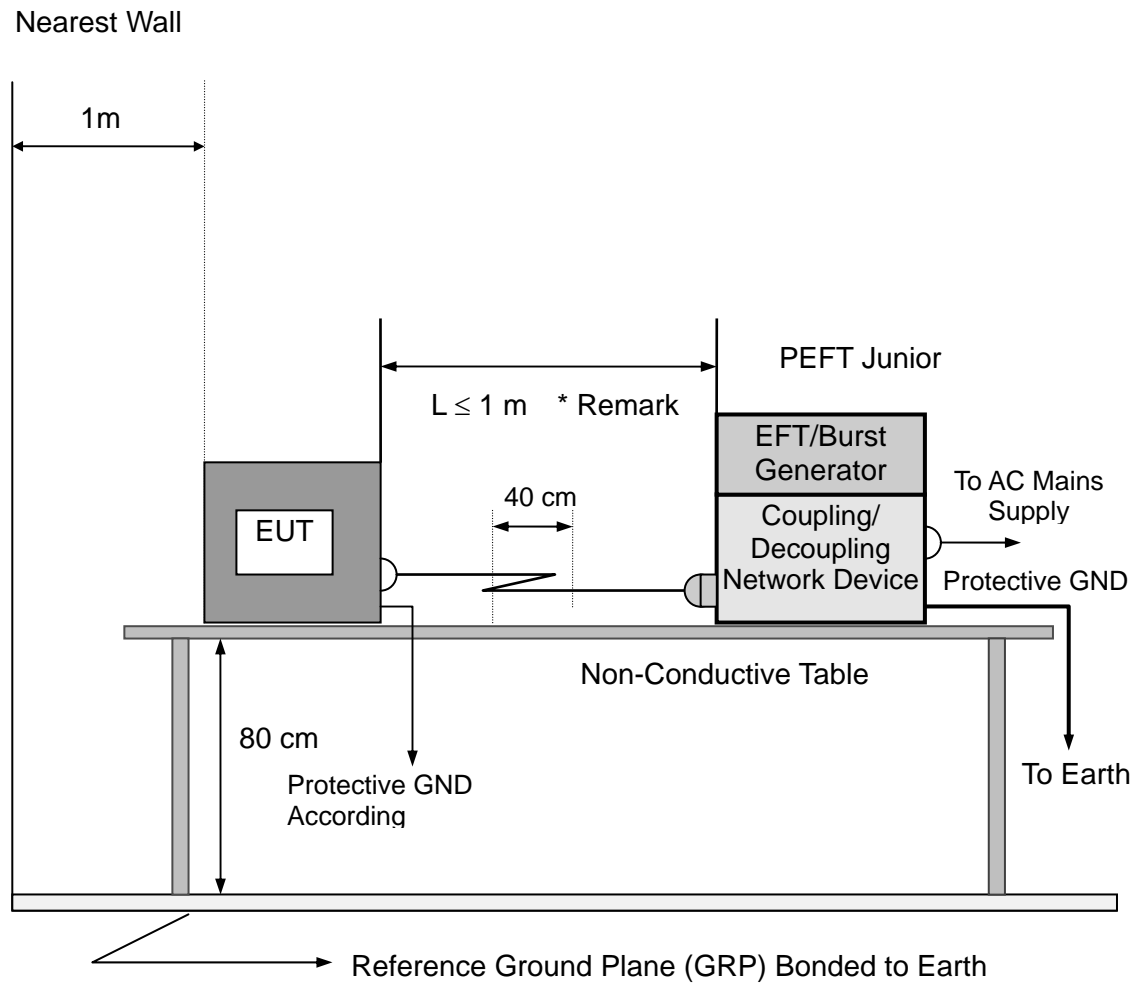
Temperature : 20.3 °C Relative Humidity : 48 % Pressure : 1020 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Perform. Criteria	Results	Judgment
80MHz - 1000MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	0	A	A	PASS
			90			
			180			
			270			

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) N/A - denotes test is not applicable in this test report.

Fig. 4-6-3(A) EFT Test Set-Up Configuration for Power Supply Ports**Remark:**

If the manufacturer provides a non-detachable power cord more than 1m long with the EUT, the excess length of this power cord shall be folded back and forth forming a bundle 30-40 cm long and situated at a distance of 10 cm above the reference ground plane (GRP).

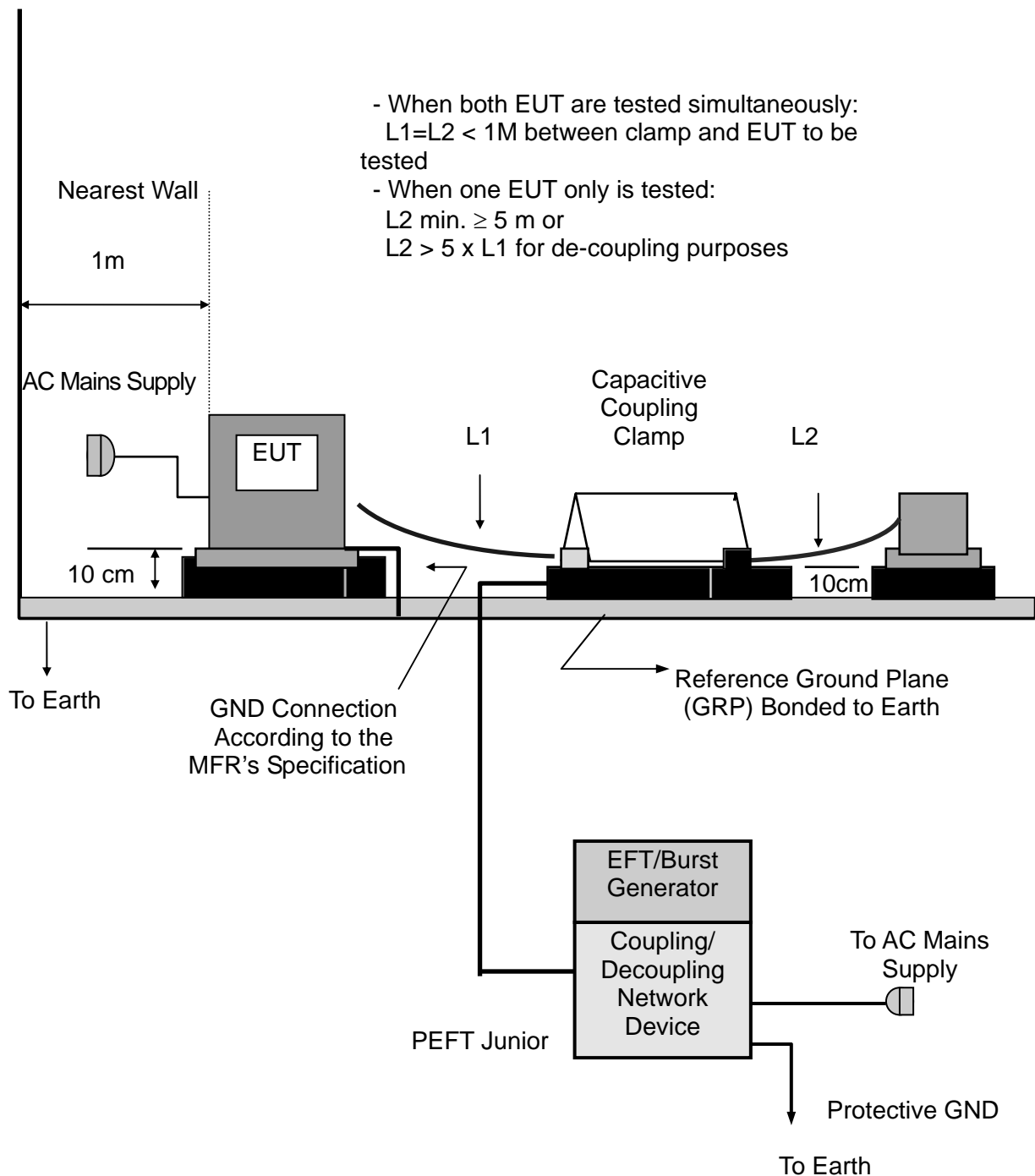
Fig. 4-6-3(B) EFT Test Set-Up Configuration for CTL/Signal I/O Ports

Table 9 EFT/Burst Testing

EUT : POE INJECTOR

Model/Type No. : GT-91085-1548

Temperature : 20.3 °C Relative Humidity : 48 % Pressure : 1020 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Mode	(X) AC Power Line		() DC Power Line		(X) Signal/Control Line	
Test Level	1KV		0.5KV		0.5KV	
Port(s)	Polarity	Results	Polarity	Results	Polarity	Results
Line (L)	P	B	P		P	
	N	B	N		N	
Neutral (N)	P	A	P		P	
	N	A	N		N	
Ground (PE)	P	A	P		P	
	N	A	N		N	
Signal/Control Line	P		P		P	A
	N		N		N	A
Criteria	B		B		B	
Result	B		N/A		A	
Judgment	PASS		N/A		PASS	

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) N/A - denotes test is not applicable in this test report
- 3) Criteria A: There was no change operated with initial operating during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.

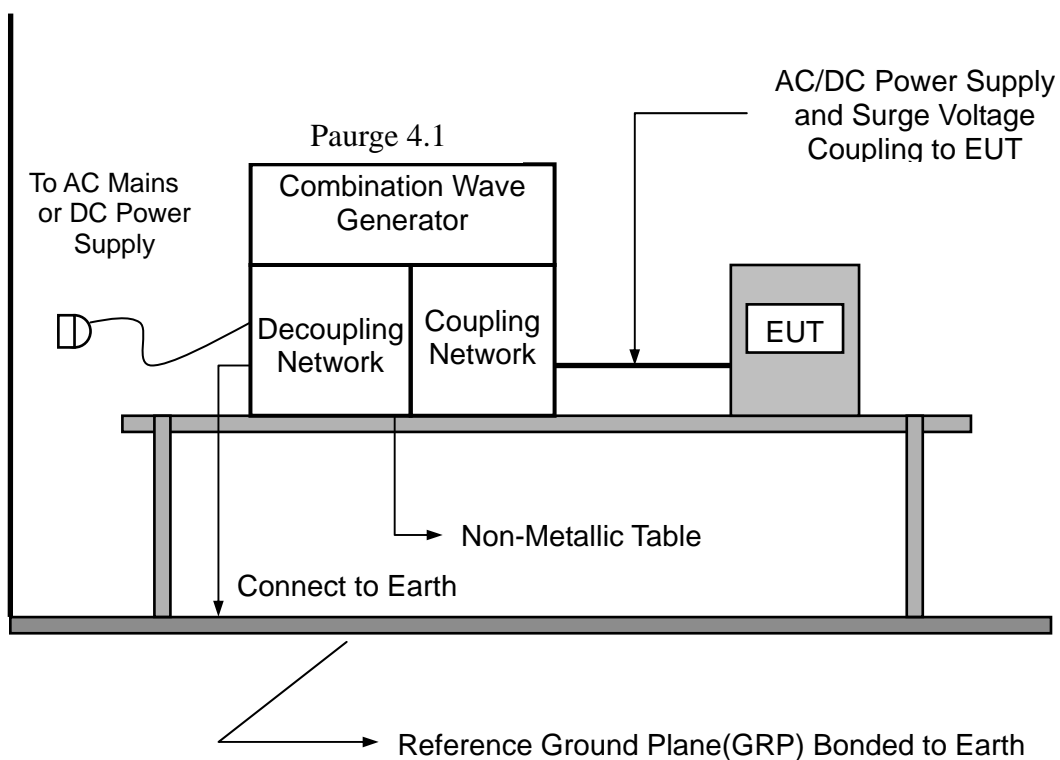
Fig. 4-6-4 Surge Test Set-Up Configuration

Table 10 Surge Test Results

EUT : POE INJECTOR

Model/Type No. : GT-91085-1548

Temperature : 20.3 °C Relative Humidity : 48 % Pressure : 1020 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Wave Form EUT Ports Tested	1.2/50(8/20)Ti/Th us						Criteria	Judgment
	Polarity	Phase	Voltage					
			0.5kV	1kV	1.5kV	2kV		
L - N	+/-	0°	A	A			B	PASS
	+/-	90°	A	A				
	+/-	180°	A	A				
	+/-	270°	A	A				
L - PE	+/-	0°	A	A	A	A	B	PASS
	+/-	90°	A	A	A	A		
	+/-	180°	A	A	A	A		
	+/-	270°	A	A	A	A		
N - PE	+/-	0°	A	A	A	A	B	PASS
	+/-	90°	A	A	A	A		
	+/-	180°	A	A	A	A		
	+/-	270°	A	A	A	A		
Signal Line (N/A)	+/-	0°					B	N/A
	+/-	90°						
	+/-	180°						
	+/-	270°						

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) Polarity and Numbers of Impulses : 5 Pst / Ngt at each tested mode
- 3) N/A - denotes test is not applicable in this Test Report
- 5) Criteria A: There was no change operated with initial operating during the test.
- 6) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 7) Criteria C: The system shut down during the test.

Fig. 4-6-5 Injection Current Test Set-Up Configuration

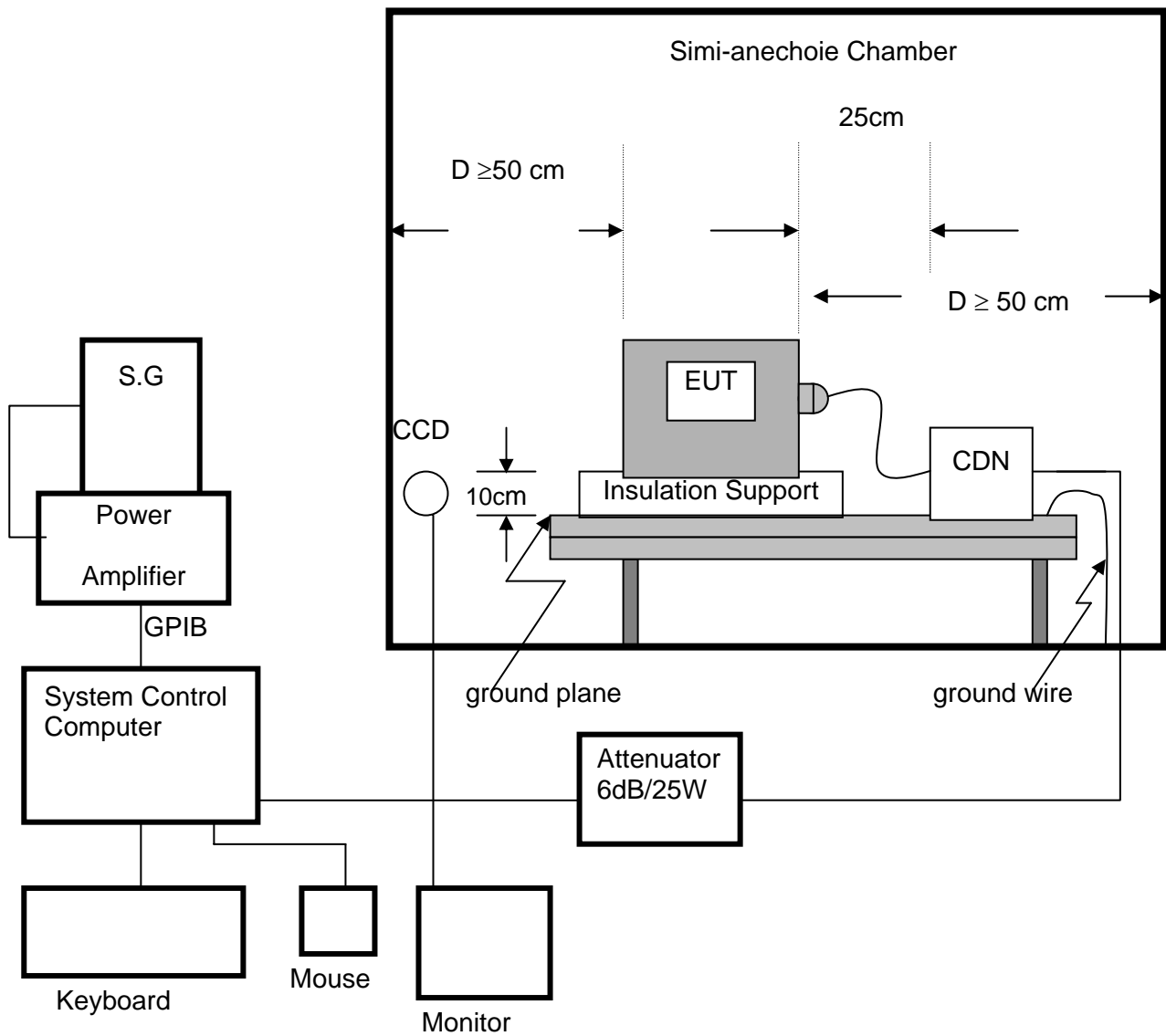


Table 11 Injection Current Test Results

EUT : POE INJECTOR Model/Type No. : GT-91085-1548

Temperature : 20.3 °C Relative Humidity : 48 % Pressure : 1020 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Perform. Criteria	Results	Judgment
Input/ Output AC. Power Port	0.15 ---80	3V(rms) AM Modulated 1000Hz, 80%	A	A	PASS
Input/ Output DC. Power Port	0.15 --- 80		A	N/A	N/A
Signal Line (RJ-45)	0.15 --- 80		A	A	PASS

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) N/A - denotes test is not applicable in this Test Report.
- 3) Criteria A: There was no change operated with initial operating during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.

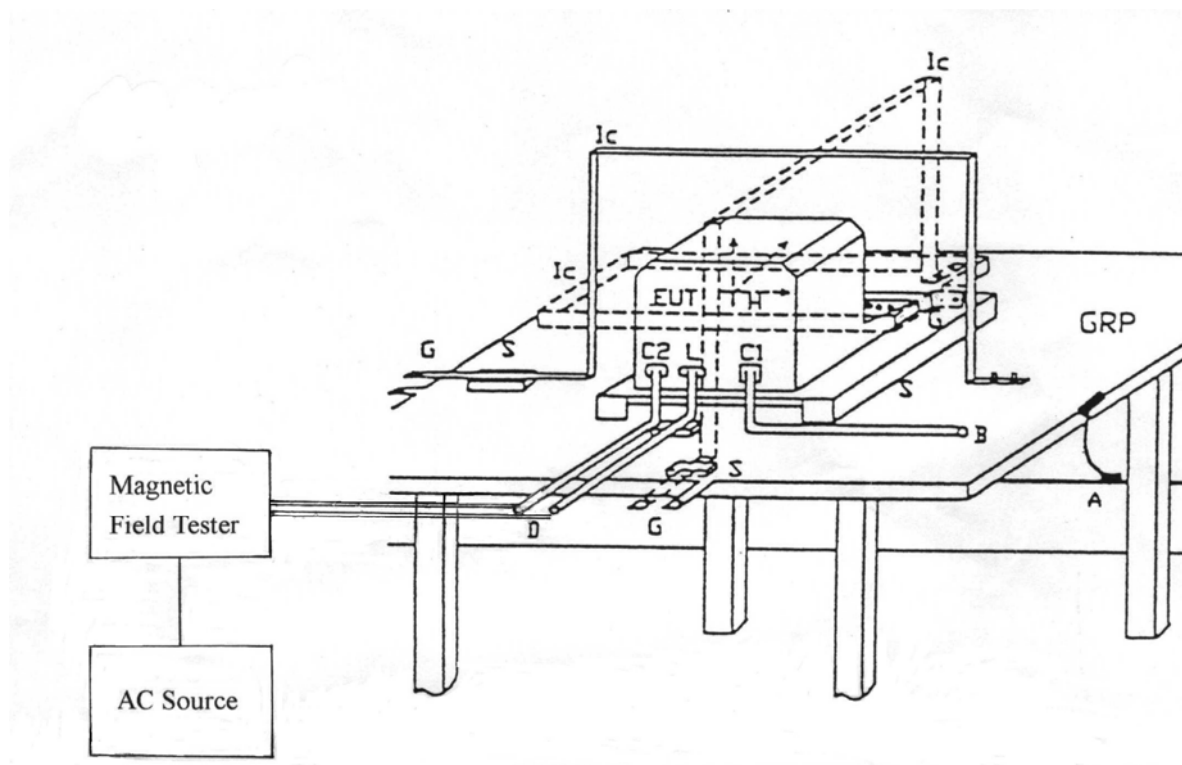
Fig. 4-6-6 Power Frequency Magnetic Field Test Set-Up Configuration

Table 12 Power Frequency Magnetic Field Testing

EUT : POE INJECTOR Model/Type No. : GT-91085-1548

Temperature : 20.3 °C Relative Humidity : 48 % Pressure : 1020 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Test Mode	Test Level	Antenna aspect	Duration (s)	Perform Criteria	Results	Judgment
Enclosure	1 A/m	X	30 s	A	A	PASS
Enclosure	1 A/m	Y	30 s	A	A	PASS
Enclosure	1 A/m	Z	30 s	A	A	PASS

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) N/A - denotes test is not applicable in this test report
- 3) Criteria A: There was no change operated with initial operating during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.

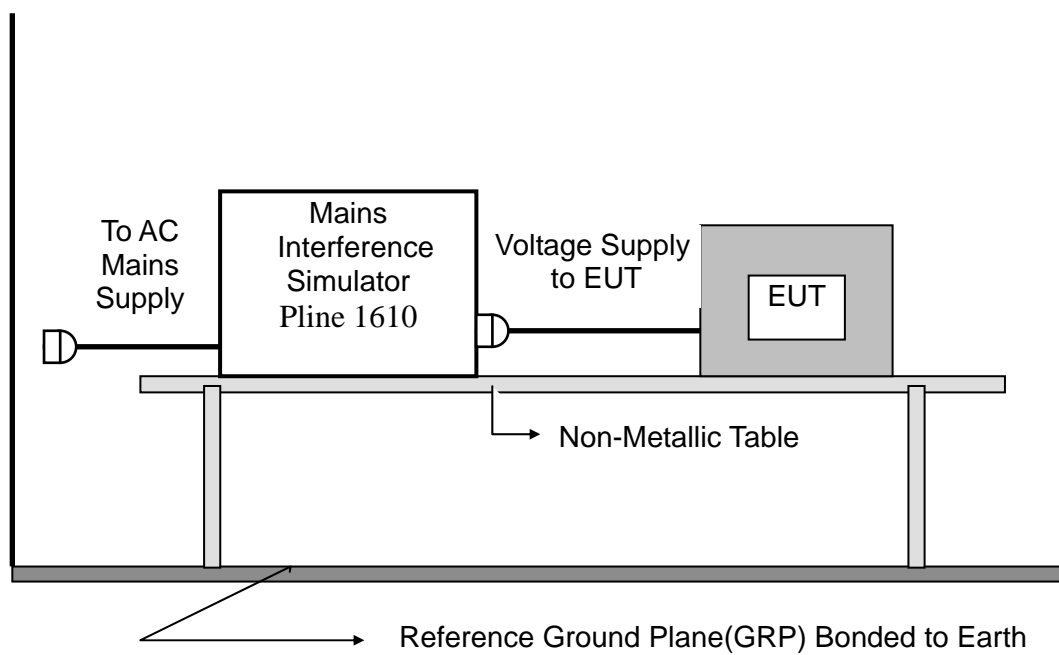
Fig. 4-6-7 Voltage Interruption/Dips Test Set-Up Configuration

Table 13 Tests of Voltage Interruption/DIPs

EUT : POE INJECTOR Model/Type No. : GT-91085-1548

Temperature : 20.3 °C Relative Humidity : 48 % Pressure : 1020 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Voltage Reduction	Duration (ms)	Perform Criteria	Results	Judgment
Voltage dip >95%	0.5	B	A	PASS
Voltage dip 30%	25	C	A	PASS
Interruption >95%	250	C	B	PASS

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2). N/A - denotes test is not applicable in this test report.
- 3) Criteria A: There was no change operated with initial operating during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.

5. HARMONICS TEST

5.1 Limits

5.1.1 Limits of Harmonic Current

IEC 555-2					
Table - I			Table - II		
Equipment Category	Harmonic Order n	Max. permissible harmonic current (in Ampers)	Equipment Category	Harmonic Order n	Max. permissible harmonic current (in Ampers)
Non Portable Tools or TV Receivers	odd harmonics		TV Receivers	odd harmonics	
	3	2.30		3	0.80
	5	1.14		5	0.60
	7	0.77		7	0.45
	9	0.40		9	0.30
	11	0.33		11	0.17
	13	0.21		13	0.12
	15≤n≤39	0.15 · 15/n		15≤n≤39	0.10 · 15/n
	even harmonics			even harmonics	
	2	1.08		2	0.30
	4	0.43		4	0.15
	8	0.30		DC	0.05
8≤n≤40	0.23 · 8/n				

Note: For Portable tools, a multiplication factor of 1.5 shall be applied to the limits specified in Table - I.

EN 61000-3-2/IEC 61000-3-2					
Equipment Category	Max. permissible harmonic current (in Amperes)	Equipment Category	Harmonic Order n	Max. permissible harmonic current (in A) (mA/w)	
Class A	Same as Limits Specified in 4-2.1, Table - I, but only odd harmonics required	Class D	3	2.30	3.4
			5	1.14	1.9
			7	0.77	1.0
			9	0.40	0.5
			11	0.33	0.35
			13≤n≤39	see Table I	3.85/n
only odd harmonics required					

5.1.2 Limits of Fluctuation and Flicker

Tests	Limits		Descriptions
	IEC555-3	IEC 61000-3-2	
Pst	≤ 1.0 , Tp= 10 min.	≤ 1.0 , Tp= 10 min.	Short Term Flicker Indicator
Plt	N/A	≤ 0.65 , Tp=2 hr.	Long Term Flicker Indicator
dc	$\leq 3 \%$	$\leq 3 \%$	Relative Steady-State V-Chang
dmax	$\leq 4 \%$	$\leq 4 \%$	Maximum Relative V-change
d (t)	N/A	$\leq 3\%$ for > 200 ms	Relative V-change characteristic

5.2 Test Methodology

5.2.1 Harmonic Current Test

Tests was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC 61000-3-2 depend on which standard adopted for compliance measurement.

5.2.2 Fluctuation and Flickers Test

Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in **Clause 5.0/6.0 of IEC555-3** and/or **Clause 6.0/4.0 of IEC 61000-3-3** depend on which standard adopted for compliance measurement.

All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter, which compliance with the specification given in IEC868, connected as the test set-up configuration described in **Section 6**.

5.3 Sample(s) Tested

The representative sample tested in this reports is the same as the statements of **2.5** unless otherwise a special model no. is specified in the record (Table of Test Results).

5.4 Test Set-Up Configuration

The test set-up configuration, including the auxiliary instruments, is sketched as block diagram of **Fig. 5-4-1** in next page.

5.5 EUT Operating Condition

The EUT tested system was configured as the statements of **2.9** unless otherwise a special operating condition is specified in the follows during the testing.

5.6 EUT Tested Results

Items	Tests	EUT Tested Results	Remark
1.	Harmonics Current	Table 14	
2.	Voltage Fluctuations/Flickers	Table 15	

* **Remark:** N/A - denotes test is not applicable in this Test Report

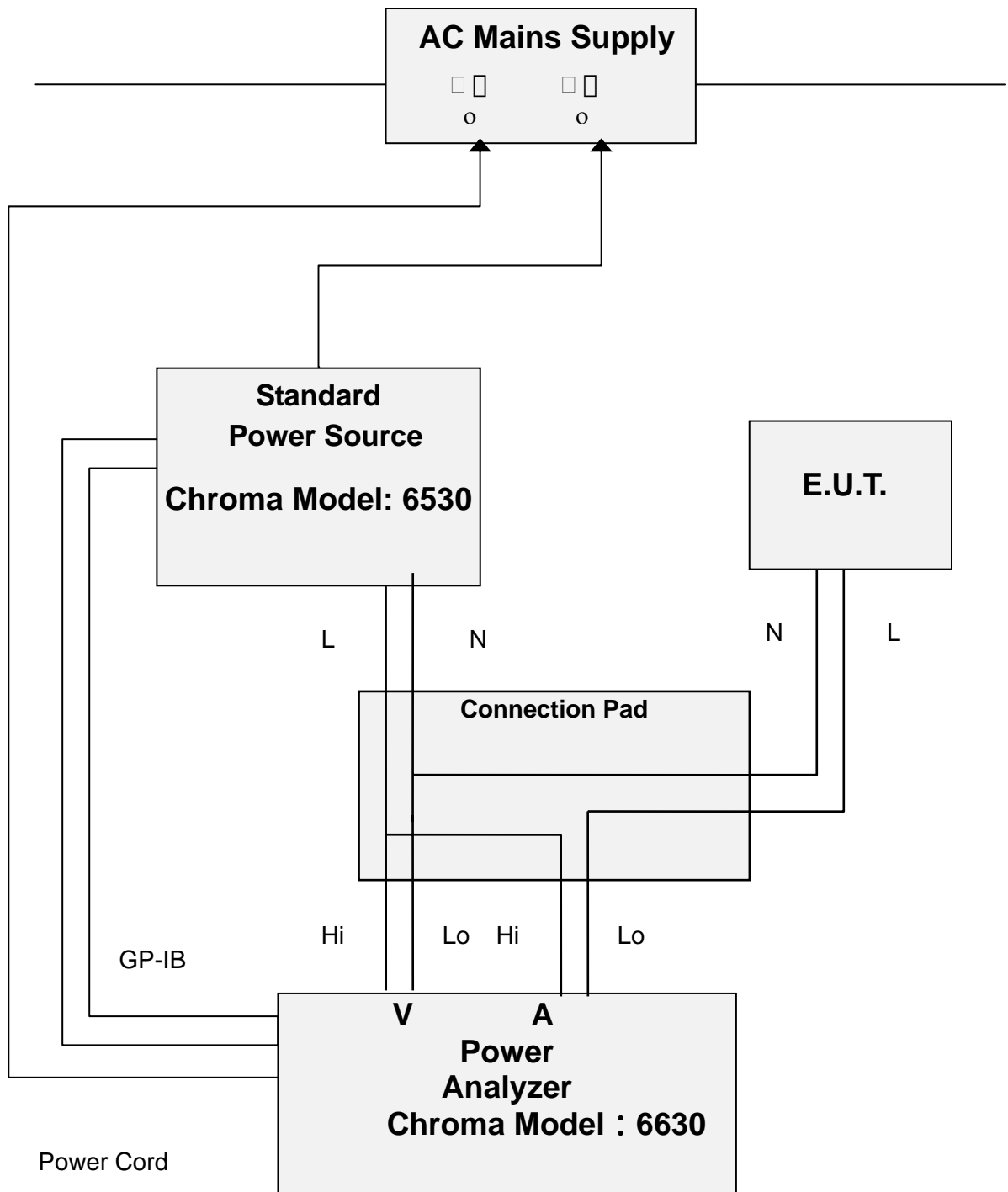
Fig. 5-4-1 Harmonics / Flicker Test Set-Up Configuration

Table 14 Harmonics Current Testing

EUT : POE INJECTOR Model/Type No. : GT-91085-1548

Temperature : 23 °C Relative Humidity : 57 % Pressure : 1023 hPa

Highest parameter values during test :

V_RMS: 229.94 V Frequency: 50.00 Hz I_Peak: 0.803 A I_RMS: 0.194 A

I_Fund: 0.102 A Crest Factor: 4.155 Power Factor: 0.462 Power: 20.5 W

Standard No. Apply : () IEC 555-2 () Table I () Table I x 1.5

(X) IEC 61000-3-2 (X) Class A () Class D

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Harmonics – Class-A per Ed. 2.1(Run time)

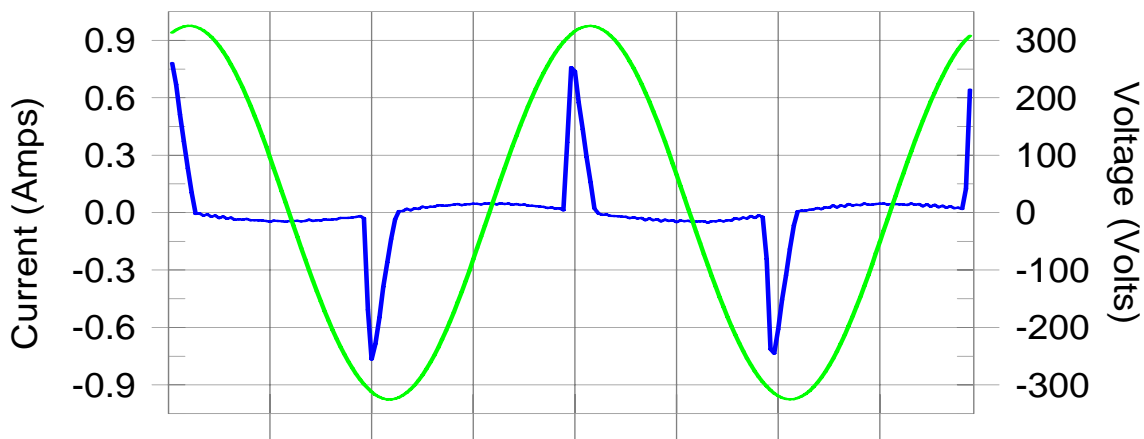
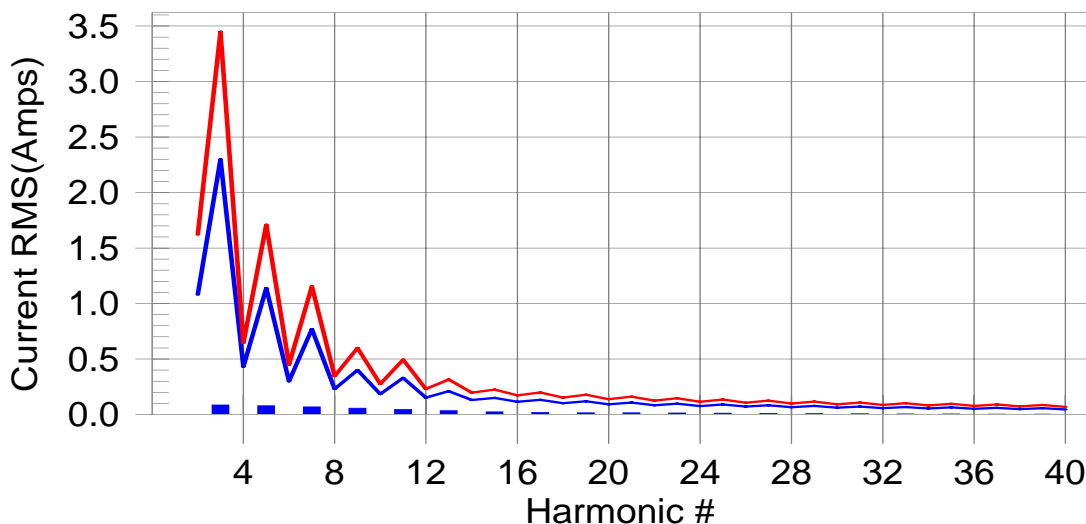
Current & voltage waveforms**Harmonics and Class A limit line****European Limits****Test result: Pass Worst harmonic was #15 with 10.97% of the limit.**

Table 14 Harmonics Current Testing

EUT : POE INJECTOR Model/Type No. : GT-91085-1548

Temperature : 23 °C Relative Humidity : 57 % Pressure : 1023 hPa

Highest parameter values during test :

V_RMS: 229.94 V Frequency: 50.00 Hz I_Peak: 0.803 A I_RMS: 0.194 A

I_Fund: 0.102 A Crest Factor: 4.155 Power Factor: 0.462 Power: 20.5 W

Standard No. Apply : () IEC 555-2 () Table I () Table I x 1.5

(X) IEC 61000-3-2 (X) Class A () Class D

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Current Test Result Summary (Run time)

Harm#Harms(avg)100%Limit%of Limit Harms(max)150%Limit %of Limit Status

2	0.000	1.080	0.0	0.000	1.620	0.03	Pass
3	0.084	2.300	3.7	0.086	3.450	2.50	Pass
4	0.000	0.430	0.1	0.001	0.645	0.09	Pass
5	0.077	1.140	6.8	0.079	1.710	4.61	Pass
6	0.000	0.300	0.2	0.001	0.450	0.20	Pass
7	0.067	0.770	8.7	0.069	1.155	5.96	Pass
8	0.000	0.230	0.2	0.001	0.345	0.23	Pass
9	0.056	0.400	13.9	0.057	0.600	9.52	Pass
10	0.000	0.184	0.2	0.001	0.276	0.29	Pass
11	0.044	0.330	13.3	0.045	0.495	9.10	Pass
12	0.000	0.153	0.2	0.001	0.230	0.27	Pass
13	0.033	0.210	15.6	0.034	0.315	10.71	Pass
14	0.000	0.131	0.2	0.001	0.197	0.32	Pass
15	0.024	0.150	16.0	0.025	0.225	10.97	Pass
16	0.000	0.115	0.2	0.000	0.173	0.28	Pass
17	0.018	0.132	13.8	0.019	0.199	9.44	Pass
18	0.000	0.102	0.2	0.001	0.153	0.36	Pass
19	0.016	0.118	13.2	0.016	0.178	9.12	Pass
20	0.000	0.092	0.2	0.000	0.138	0.29	Pass
21	0.015	0.107	13.8	0.015	0.161	9.54	Pass
22	0.000	0.084	0.3	0.000	0.125	0.26	Pass
23	0.014	0.098	14.3	0.014	0.147	9.82	Pass
24	0.000	0.077	0.3	0.000	0.115	0.26	Pass
25	0.013	0.090	13.9	0.013	0.135	9.55	Pass
26	0.000	0.071	0.3	0.000	0.106	0.26	Pass
27	0.011	0.083	12.6	0.011	0.125	8.68	Pass
28	0.000	0.066	0.3	0.000	0.099	0.33	Pass
29	0.008	0.078	10.6	0.009	0.116	7.36	Pass
30	0.000	0.061	0.2	0.000	0.092	0.34	Pass
31	0.006	0.073	8.9	0.007	0.109	6.16	Pass
32	0.000	0.058	0.2	0.000	0.086	0.36	Pass
33	0.005	0.068	7.9	0.006	0.102	5.50	Pass
34	0.000	0.054	0.2	0.000	0.081	0.30	Pass
35	0.005	0.064	7.8	0.005	0.096	5.46	Pass
36	0.000	0.051	0.3	0.000	0.077	0.24	Pass
37	0.005	0.061	8.0	0.005	0.091	5.52	Pass
38	0.000	0.048	0.3	0.000	0.073	0.25	Pass
39	0.004	0.058	7.6	0.005	0.087	5.24	Pass
40	0.000	0.046	0.3	0.000	0.069	0.27	Pass

Table 14 Harmonics Current Testing

EUT : POE INJECTOR Model/Type No. : GT-91085-1548

Temperature : 23 °C Relative Humidity : 57 % Pressure : 1023 hPa

Highest parameter values during test :

V_RMS: 229.94 V Frequency: 50.00 Hz I_Peak: 0.803 A I_RMS: 0.194 A

I_Fund: 0.102 A Crest Factor: 4.155 Power Factor: 0.462 Power: 20.5 W

Standard No. Apply : () IEC 555-2 () Table I () Table I x 1.5

(X) IEC 61000-3-2 (X) Class A () Class D

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Voltage Source Verification Data (Run time)

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.152	0.460	32.98	OK
3	0.535	2.069	25.84	OK
4	0.052	0.460	11.39	OK
5	0.063	0.920	6.90	OK
6	0.046	0.460	10.07	OK
7	0.029	0.690	4.26	OK
8	0.031	0.460	6.77	OK
9	0.039	0.460	8.54	OK
10	0.016	0.460	3.56	OK
11	0.048	0.230	20.76	OK
12	0.023	0.230	9.91	OK
13	0.029	0.230	12.80	OK
14	0.020	0.230	8.90	OK
15	0.032	0.230	14.05	OK
16	0.020	0.230	8.67	OK
17	0.032	0.230	13.96	OK
18	0.017	0.230	7.31	OK
19	0.026	0.230	11.42	OK
20	0.018	0.230	7.89	OK
21	0.016	0.230	6.80	OK
22	0.016	0.230	6.91	OK
23	0.025	0.230	10.68	OK
24	0.012	0.230	5.19	OK
25	0.015	0.230	6.38	OK
26	0.010	0.230	4.21	OK
27	0.018	0.230	7.84	OK
28	0.010	0.230	4.56	OK
29	0.015	0.230	6.37	OK
30	0.008	0.230	3.28	OK
31	0.017	0.230	7.25	OK
32	0.008	0.230	3.44	OK
33	0.017	0.230	7.19	OK
34	0.008	0.230	3.56	OK
35	0.013	0.230	5.61	OK
36	0.008	0.230	3.56	OK
37	0.017	0.230	7.48	OK
38	0.007	0.230	3.21	OK
39	0.007	0.230	3.24	OK
40	0.008	0.230	3.35	OK

Table 15 Voltage Fluctuations/Flickers Testing

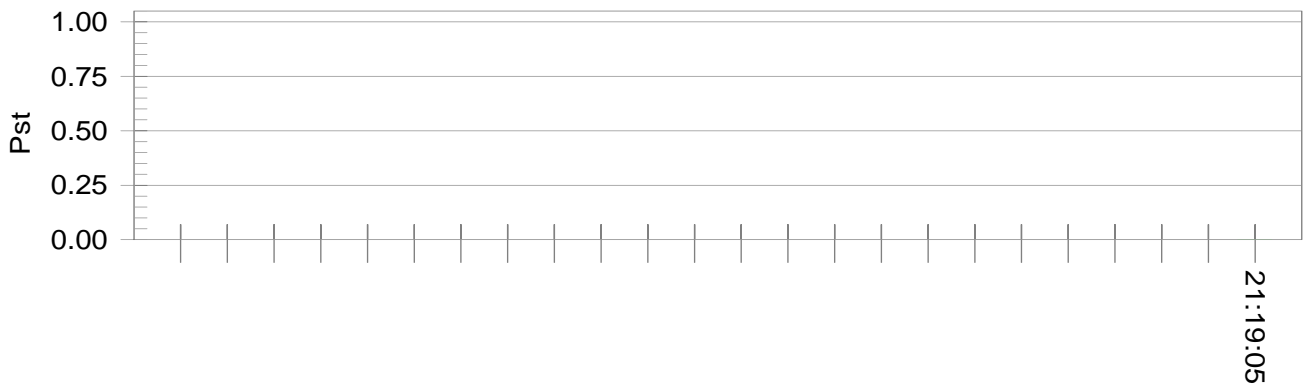
EUT : POE INJECTOR Model/Type No. : GT-91085-1548

Temperature : 23 °C Relative Humidity : 57 % Pressure : 1023 hPa

Special Notes : (EUT Operation Mode or Test Configuration Mode, if applicable)

Pst_i and limit line

European Limits



Time is too short for Plt plot

Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.88				
Highest dt (%):	0.00	Test limit (%):	3.30	PASS
Time(mS) > dt:	0.0	Test limit (mS):	500.0	PASS
Highest dc (%):	0.00	Test limit (%):	3.30	PASS
Highest dmax (%):	0.00	Test limit (%):	4.00	PASS
Highest Pst (10 min. period):	0.001	Test limit:	1.000	PASS
Highest Plt (2 hr. period):	0.001	Test limit:	0.650	PASS

Attachment

Table Contents

A. EUT Test Photos

Attachment - A

EUT Test Photos

- 1. Conducted Measurement Photos**
- 2. Radiated Measurement Photos**

Conducted Measurement Photos



Radiated Measurement Photos

