



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AS0052156 (8) Date : 29 Aug 2014

Application No. : LS029210(3)

Client : GOTOLO LIMITED
ROOM 517, 5/F, KWONG LOONG TAI BLDG,
1016-1018 TAI NAN WEST STREET,
LAI CHI KOK, KOWLOON, HONG KONG

Sample Description : One(1) item of submitted sample stated to be LAMP
of Model No. CUP LAMP
Rating : 3 x 1.5V AAA size batteries
Power by USB
No. of submitted sample : Six (6) piece (s)

Date Received : 05 Aug 2014.

Test Period : 06 Aug 2014 to 12 Aug 2014.

Test Requested : Electromagnetic Compatibility (EMC) test.

Test Method : Emission
EN 55015: 2006 + A1: 2007 + A2: 2009
EN 61000-3-2: 2006 + A1: 2009 + A2: 2009
EN 61000-3-3: 2008
Immunity
EN 61547: 2009
IEC 61000-4-2: 2008
IEC 61000-4-3: 2006 + A1: 2007 + A2: 2010
IEC 61000-4-4: 2004
IEC 61000-4-5: 2005
IEC 61000-4-6: 2008
IEC 61000-4-11: 2004


Test Result : See attached sheet(s) from page 2 to 21.

Conclusion : The submitted sample was found to comply with the applicable EMC tests.

Remark : Data are copied from test report no. AS0047495(7) issued on 12 Aug 2014.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Mr. WONG Lap-pong, Andrew
Manager
Electrical Division

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Description of the Sample (EUT)

Sample registration No.:	RS033132-002
Rated frequency:	N/A
Number of phase(s):	N/A

Support Equipment:	Supplied by Client: - USB to DC jack cable
	Supplied by CMA: - Adaptor Model: A1299

Remark:	N/A
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TEST REPORT

Report No. : AS0052156 (8)

Date : 29 Aug 2014

Test and results of emission measurement according to EN55015 - EMC

Measurement of radiated disturbance for EN 55015 (9 kHz - 30 MHz)

General information about the test:

Instruments:		
Description	Manufacturer	Model number
EMI Test Receiver	Rohde & Schwarz	ESCS 30
3-Dimensional Loop Antenna	Schwarbeck	HXYZ 9170

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	28	° C
Relative humidity:	56	%

Information concerning the test:

Description: The Quasi-peak measurements were performed with the sample operating continuously.

Protocol: Light ON

Frequency (MHz)	Loop measured	Reading (dB μ A)	Limit (dB μ A)	Margin (dB)
1.025	Loop X	- 31.2	34.9	- 66.1
1.673	Loop X	- 22.0	29.0	- 51.0
2.482	Loop X	- 30.6	24.3	- 54.9
3.605	Loop Y	- 35.8	22.0	- 57.8
4.714	Loop Y	- 37.9	22.0	- 59.9
5.686	Loop Z	- 38.6	22.0	- 60.6
8.107	Loop Z	- 40.1	22.0	- 62.1

Result: PASS
No Emission was detected higher than the specified limit



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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Measurement of radiated disturbance for EN 55015 (30MHz - 300MHz)

General information about the test:

Instruments:		
Description	Manufacturer	Model number
Bilog Antenna	Schaffner	CBL6112B
EMI Test Receiver	Rohde & Schwarz	ESCS 30
Coaxial Cable (10m)	Schaffner	RG213/U
Coaxial Cable (3m)	Suhner	RG214/U

Environmental conditions:

Parameter	Recorded value
Ambient temperature:	30 °C
Relative humidity:	63 %

Information concerning the test:

Measurement: The Quasi-peak measurements were performed on the test site at 3m test distance from the antenna to the test sample with the sample operating continuously. Distance factors had been used to normalize the measured data for determining compliance.

Protocol: Light on

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB μ V/m)	Normalised reading at 10m (dB μ V/m)	Limit at 10m (dB μ V/m)	Margin (dB)
44.134	V	25.9	15.4	30.0	- 14.6
51.242	V	19.8	9.3	30.0	- 20.7
59.071	V	19.2	8.7	30.0	- 21.3
65.017	V	17.9	7.4	30.0	- 22.6
137.191	V	24.5	14.0	30.0	- 16.0
193.493	V	21.6	11.1	30.0	- 18.9
242.033	V	23.8	13.3	37.0	- 23.7

Remark: All other readings in the frequency range mentioned in the standard were investigated, and found them well below the readings resented in the table shown above.

Result: PASS
No Emission was detected higher than the specified limit.

Uncertainty				
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.				
30MHz – 200MHz	Horizontal	Expanded Uncertainty U	k = 2	4.63dB
30MHz – 200MHz	Vertical	Expanded Uncertainty U	k = 2	4.65dB
200MHz – 1GHz	Horizontal	Expanded Uncertainty U	k = 2	4.45dB
200MHz – 1GHz	Vertical	Expanded Uncertainty U	k = 2	4.41dB

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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Test and results of emission measurement according to EN55015 – EMC

Measurement of disturbance voltage (9 kHz - 30 MHz)

Continuous RF disturbances (9 kHz - 30 MHz)

General information about the test:

Instruments:		
Description	Manufacturer	Model number
EMI Test Receiver	Rohde & Schwarz	ESCS 30
Artificial Mains Network	Rohde & Schwarz	ENV216
Coaxial Cable	Tyco Electronics	RG58C/U

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	30	° C
Relative humidity:	62	%

Protocol: Refer to graph and test data shown in following pages.

Terminal: AC mains
Mode: Light ON

Result: PASS
No Emission above the specified limits were detected

Uncertainty		
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.		
Expanded Uncertainty U	k = 2	3.16dB



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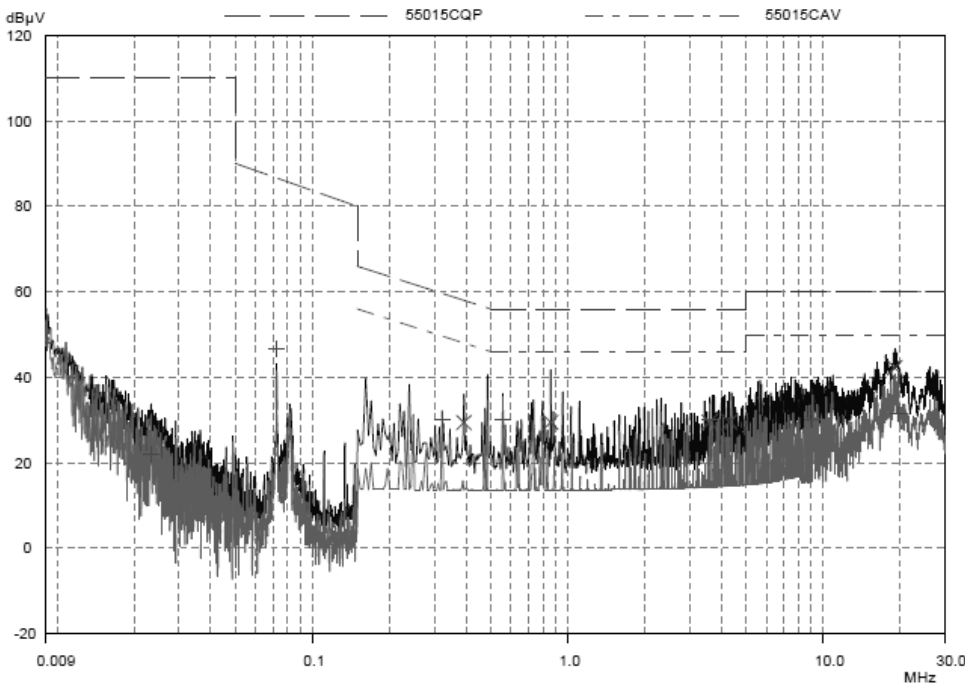
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Continuous RF disturbances (9kHz - 30 MHz) (con'd)

Graph:
Remarks:

Scan Settings					Receiver Settings				07 Aug 2014 15:28		
(2 Ranges)											
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge			
9kHz	150kHz	61Hz	200Hz	PK+AV	10msec	10 dB	OFF	60dB			
150kHz	30MHz	3.9063kHz	9kHz	PK+AV	2msec	10 dB	OFF	60dB			
Transducer	No.	Start	Stop	Name							
	12	9kHz	30MHz	EL333							
Final Measurement:		Detectors: X QP / + AV									
		Meas Time: 1sec									
		Subranges: 8									
		Acc Margin: 25 dB									





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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Continuous RF disturbances (9 kHz - 30 MHz) (con'd)

Test data:
Remarks:

Scan Settings		(2 Ranges) Frequencies			Receiver Settings				07 Aug 2014 15:28	
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge		
9kHz	150kHz	81Hz	200Hz	PK+AV	10msec	10 dB	OFF	80dB		
150kHz	30MHz	3.9083kHz	9kHz	PK+AV	2msec	10 dB	OFF	80dB		

Transducer	No.	Start	Stop	Name
	12	9kHz	30MHz	EL333

Final Measurement:	Detectors:	X QP / + AV
	Meas Time:	1sec
	Subranges:	8
	Acc Margin:	25 dB

Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase	PE
0.39218	29.41	58.02	28.61	L1	gnd
0.85703	29.45	58.00	28.55	N	gnd
3.5875	29.53	58.00	28.47	N	gnd
4.30825	29.58	58.00	28.44	L1	gnd
19.06798	42.23	80.00	17.77	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase	PE
0.32187	30.03	49.88	19.83	N	gnd
0.55625	30.12	48.00	15.88	N	gnd
3.5875	30.15	48.00	15.85	N	gnd
9.0875	30.17	50.00	19.83	N	gnd
19.7164	31.31	50.00	18.69	N	gnd

* limit exceeded

Indicated Phase/PE shows Configuration of max. Emission



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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Test and results of AC mains harmonics (DC - 2 kHz) according to EN61000-3-2

General information about the test:

Instruments:		
Description	Manufacturer	Model number
5 kVA AC Power source	California Instruments	5001iX
Harmonic and Flicker Test System	California Instruments	PACS-1

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	30	° C
Relative humidity:	56	%

AC mains harmonics (DC - 2 kHz)

Information concerning the test:

EUT Class according to the standard:	C
Measured power of EUT:	1.4 W
Observation period for harmonic:	2.5 minutes
Control principle:	No control principle used

Remark:	Test instrumentation according to EN 61000-4-7: 2002 No limit for given in clause 7 for non-discharge lighting equipment having an active input power smaller than or equal to 25 W. It was deemed to fulfil the relevant requirements without testing.
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Result:	PASS
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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Voltage fluctuations and flicker according to EN61000-3-3

General information about the test:

Instruments:		
Description	Manufacturer	Model number
5 kVA AC Power source	California Instruments	5001iX
Harmonic and Flicker Test System	California Instruments	PACS-1

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	30	° C
Relative humidity:	56	%
Significant voltage fluctuation:	AC 230V	

Information concerning the test:

Observation period for flicker:	10 minutes
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Protocol: Refer to graph and test data shown in following pages.

Result: PASS



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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Voltage fluctuations and flicker according to EN61000-3-3 (con'd)

Protocol:

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Test Result: Pass

Status: Test Completed

Pst, and limit line

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt): 230.41
 Highest dt (%): 0.00
 Time(mS) > dt: 0.0
 Highest dc (%): 0.00
 Highest dmax (%): 0.00
 Highest Pst (10 min. period): 0.064

Test limit (%): 3.30 Pass
 Test limit (mS): 500.0 Pass
 Test limit (%): 3.30 Pass
 Test limit (%): 4.00 Pass
 Test limit: 1.000 Pass



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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Test and results of immunity measurement according to EN61547 – EMC Electrostatic discharge (ESD) according to IEC 61000-4-2

General information about the test:

Instruments:		
Description	Manufacturer	Model number
ESD simulator set	Schaffner	NSG435

Environmental conditions:

Parameter	Rated value	Measured value
Ambient temperature:	15 °C - 35 °C	30 °C
Atmospheric pressure:	(86 – 106) kPa	101.3 kPa
Relative humidity:	30 % - 60 %	54 %

Information concerning the test:

Performance criteria: B

Protocol:

Application of ESD	Point of Discharge	Applied Voltage (kV)			No. of Discharge	Result / Comment
Indirect Horizontally	Left, right, front, back	+4			10	PASS
Indirect Horizontally	Left, right, front, back	-4			10	PASS
Indirect Vertically	Left, right, front, back	+4			10	PASS
Indirect Vertically	Left, right, front, back	-4			10	PASS
Direct Air	Refer to description on next page	+2	+4	+8	10	PASS
Direct Air	Refer to description on next page	-2	-4	-8	10	PASS
Direct Contact	Refer to description on next page	+4			10	PASS
Direct Contact	Refer to description on next page	-4			10	PASS

Result:

PASS

The submitted sample met the requirement of Electrostatic Discharge Test with criterion B.



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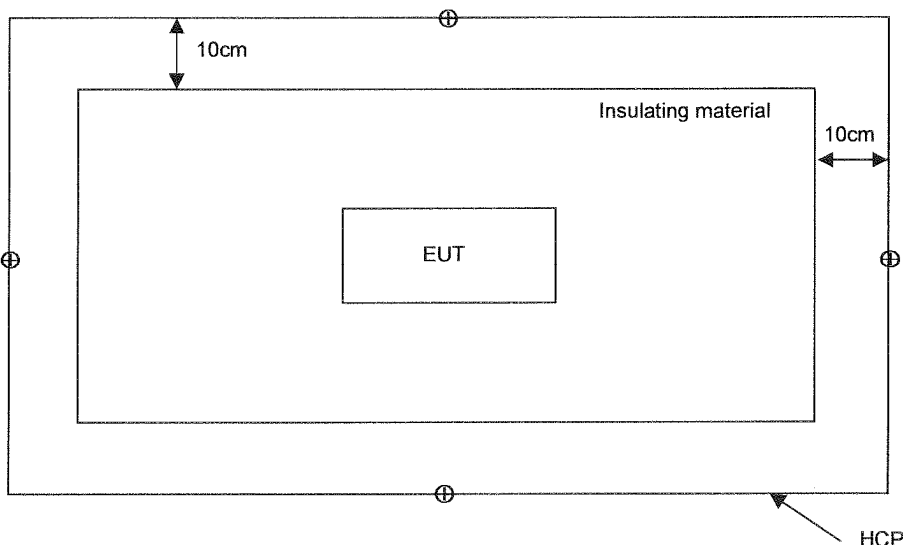
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Electrostatic discharge (ESD) according to IEC 61000-4-2 (con'd)

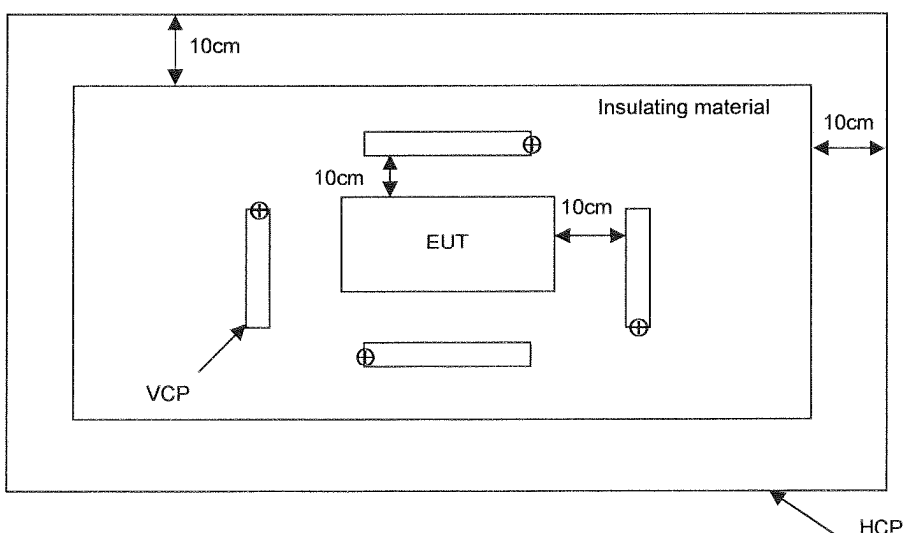
Details of indirect discharges applied:

Horizontal Coupling Plane (0.8 m x 1.6 m)



⊕ – application of indirect contact discharge

Vertical Coupling Plane (0.5 m x 0.5 m)



⊕ – application of indirect contact discharge



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Electrostatic discharge (ESD) according to IEC 61000-4-2 (con'd)

Details of direct discharges applied:

Application of direct contact discharges and direct air discharges

Description of ESD Test

Contact discharge is applied to the following positions of EUT:

- the metallic shell of DC jack

Air discharge is applied to the following positions of EUT:

- the button
- the insulated case
- gap located at the insulated case
- LEDs



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Radiated, RF, electromagnetic field immunity test according to IEC 61000-4-3

General information about the test:

Instruments:		
Description	Manufacturer	Model number
Bilog Antenna	Teseq	CBL6143A
Signal Generator	R&S	SMB 100A
Power Amplifier	Amplifier Research	50W1000B
Power Amplifier	Amplifier Research	60S1G3

Environmental conditions:

Parameter	Recorded value
Ambient temperature:	29 °C
Relative humidity:	62 %

Generator:

Dwell time per frequency:	1 s
Frequency range:	80 MHz – 1000 MHz
Modulation:	80% AM with 1 kHz sinusoidal signal
Step size in %(log.):	1%

Information concerning the test:

Performance criteria:	A
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Protocol:

Frequency (MHz)	Exposed Side	Field Strength (V/m)	Result / Comment
80 - 1000	Front	3V/m (rms)	PASS
80 - 1000	Left	3V/m (rms)	PASS
80 - 1000	Rear	3V/m (rms)	PASS
80 - 1000	Right	3V/m (rms)	PASS

Result:

PASS
The submitted sample met the requirement of Immunity Test with criterion A.



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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Fast transients (Burst) according to IEC 61000-4-4

General information about the test:

Instruments:		
Description	Manufacturer	Model number
Conducted Immunity Test System	Schaffner	Best EMC

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	30	° C
Relative humidity:	56	%

Information concerning the test:

Performance criteria:	B
Burst Duration:	75 (15ms at 5kHz)

Protocol:

Terminal	Test voltage (kV)	Polarity	Coupling	Test duration (min)	Result / Comment
Mains input	1	+	L1	2	PASS
Mains input	1	+	N	2	PASS
Mains input	1	+	PE	2	PASS
Mains input	1	-	L1	2	PASS
Mains input	1	-	N	2	PASS
Mains input	1	-	PE	2	PASS

Terminal	Test voltage (kV)	Polarity	Test duration (min)	Result / Comment
Control and Signal Line	0.5	+	2	N/A
Control and Signal Line	0.5	-	2	N/A

Result:

PASS
The submitted sample met the requirement of Immunity Test with criterion B.



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TEST REPORT

Report No. : AS0052156 (8)

Date : 29 Aug 2014

Surges according to IEC 61000-4-5

General information about the test:

Instruments:		
Description	Manufacturer	Model number
Conducted Immunity Test System	Schaffner	Best EMC

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	30	° C
Relative humidity:	56	%

Information concerning the test:

Performance criteria:	B
Repetition Rate:	1 min

Protocol: Refer to test data shown in following pages.

Result:	PASS The submitted sample met the requirement of Immunity Test with criterion B.
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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Surges according to IEC 61000-4-5 (con'd)

Protocol:

Terminal	Test Voltage (kV)	Polarity	Coupling	Phase	Number of Impulses	Result / Remarks
Mains	0.5	+	L1-N	90°	5	PASS
Mains	0.5	-	L1-N	270°	5	PASS
Mains	1	+	L1-PE	90°	5	PASS
Mains	1	-	L1-PE	270°	5	PASS
Mains	1	+	N-PE	90°	5	PASS
Mains	1	-	N-PE	270°	5	PASS



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Report No. : AS0052156 (8)

Date : 29 Aug 2014

Injected RF currents according to IEC 61000-4-6

General information about the test:

Instruments:		
Description	Manufacturer	Type
Signal generator	IFR	2023A
RF Power Amplifier	Haefely	PAMP 250
6 dB 50 W attenuator	Huber + Suhner AG	5096.17.0005
CDN	Frankonia	M2/M3-801
Coaxial Cable (0.5m)	Suhner	RG213/U
Coaxial Cable (0.5m)	Suhner	RG213/U
Coaxial Cable (2m)	Suhner	RG213/U

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	30	° C
Relative humidity:	56	%

Information concerning the test:

Performance criteria:	A
Required test level:	3 V (e. m. f.)

Protocol:

Generator:

Dwell time per frequency:	3 s
Frequency range:	0.15MHz – 80MHz
Modulation:	80% AM with 1 kHz sinusoidal signal
Step size in % (log.):	1%
Control software:	WinPAMP

Immunity against conducted disturbances

Table of tests applied

Scan No.	Test voltage e.m.f. [V]	Component under investigation	Port under investigation	Coupling device	Result	Comments
1	3V	AC mains	N/A	CDN	Pass	N/A

Result:

PASS
The submitted sample met the requirement of Immunity Test with criterion A.



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Report No. : AS0052156 (8)

Date : 29 Aug 2014

AC mains voltage dips and interruptions according to IEC 61000-4-11

General information about the test:

Instruments:		
Description	Manufacturer	Model number
Conducted Immunity Test System	Schaffner	Best EMC

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	30	° C
Relative humidity:	56	%

Generator, Parameter:

Repetition rate:	10 seconds
Number of dips per test:	3

Information concerning the test:

Performance criteria:	C (Test level at 70% of rated voltage) B (Test level at 0% of rated voltage)
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Protocol: Refer to test data shown in following pages.

Result:	PASS The submitted sample met the requirement of Immunity Test with criterion C. (Test level at 70% of rated voltage) The submitted sample met the requirement of Immunity Test with criterion B. (Test level at 0% of rated voltage)
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Report No. : AS0052156 (8)

Date : 29 Aug 2014

AC mains voltage dips and interruptions according to IEC 61000-4-11 (con'd)

Protocol:

Voltage Dips		Operating Frequency: 50Hz				
Number	Terminal	Test Level [% U _T]	Duration of Impulse [periods]	Time between the Impulses [s]	Phase Position of the disturbance relative to phase L1	Result / Comment
1	L1	70 %	10	10	0°	Pass
2	L1	70 %	10	10	180°	Pass

Voltage Interruptions		Operating Frequency: 50Hz				
Number	Terminal	Test Level [% U _T]	Duration of Impulse [periods]	Time between the Impulses [s]	Phase Position of the disturbance relative to phase L1	Result / Comment
3	L1	0 %	0.5	10	0°	Pass
4	L1	0 %	0.5	10	180°	Pass



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Outlook of the Sample



***** End of Report *****