



Shenzhen CTL Electromagnetic Technology Co., Ltd.
Tel: +86-755-89486194 Fax: +86-755-89486194-805

TEST REPORT

ETSI EN 301 489-1 V1.9.2 (2011-09) / ETSI EN 301 489-17 V2.1.1 (2009-05)

Report Reference No......: CTL130619922-WE

Compiled by

(position+printed name+signature)...: File administrators Jennifer Ni

Jennifer Ni

Supervised by

(position+printed name+signature)...: Test Engineer Jacky Chen

Jacky Chen

Approved by

(position+printed name+signature)...: Manager Tracy Qi

Tracy Qi

Date of issue.....: June 21, 2013

Testing Laboratory Name: **Shenzhen CTL Electromagnetic Technology Co., Ltd.**

Address.....: Zone B, 4/F, Block 20, Guangqian Industrial Park, Longzhu Road, Nanshan, Shenzhen 518055 China.

Testing location/ procedure: Full application of Harmonised standards ☒
Partial application of Harmonised standards ☐
Other standard testing methods ☐

Applicant's name.....:

Address.....:

Test specification:

Standard: **ETSI EN 301 489-1 V 1.9.2 (2011-09)**

ETSI EN 301 489-17 V 2.1.1 (2009-05)

TRF Originator.....: Shenzhen CTL Electromagnetic Technology Co., Ltd.

Master TRF.....: Dated 2011-01

Shenzhen CTL Electromagnetic Technology Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen CTL Electromagnetic Technology Co., Ltd.. is acknowledged as copyright owner and source of the material. Shenzhen CTL Electromagnetic Technology Co., Ltd.. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description: **HEADPODS**

Trade Mark:



Model/Type reference.....: PH-4028-BL

Modulation.....: FHSS

Ratings.....: DC 5V from USB/ DC 3.7V from battery

Operating Frequency Range.....: 2402~2480MHz

Maximum Transmitter Power(EIRP)...: 1.68 dBm

Result.....: **Positive**

EMC -- TEST REPORT

Test Report No. : CTL130619922-WE	June 21, 2013 Date of issue
--	--------------------------------

Equipment under Test : HEADPODS

Model /Type : PH-4028-BL

Listed Models : /

Applicant :

Address :

Manufacturer :

Address :

Test Result according to the standards on page 4:

Positive

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1.	TEST STANDARDS	4
2.	SUMMARY	5
2.1.	General Remarks:	5
2.2.	Equipment Under Test	5
2.3.	Short description of the Equipment under Test (EUT)	5
2.4.	EUT operation mode:	5
2.5.	EUT configuration:	5
2.6.	Mode of Operation	6
2.7.	Immunity Performance criteria	6
3.	TEST ENVIRONMENT	9
3.1.	Address of the test laboratory	9
3.2.	Test Facility	9
3.3.	Environmental conditions	9
3.4.	Test Description	9
3.5.	Statement of the measurement uncertainty	10
3.6.	Equipments Used during the Test	10
4.	TEST CONDITIONS AND RESULTS	12
4.1.	Radiated Emission	12
4.2.	Conducted disturbance	15
4.3.	AC Mains Harmonic Current Emission	16
4.4.	AC Mains Voltage Fluctuation and Flicker	17
4.5.	Electrostatic discharge	18
4.6.	RF Electromagnetic Field	20
4.7.	Electrical Fast Transient/Burst Immunity Test	22
4.8.	Surge Immunity Test	23
4.9.	Immunity to conducted disturbances induced by RF fields	24
4.10.	Voltage Dips and Interruptions	24
5.	Test Setup Photos	24
6.	Photos of the EUT	24

1. TEST STANDARDS

The tests were performed according to following standards:

[ETSI EN 301 489-1 V1.9.2 \(2011-09\)](#) — Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

[ETSI EN 301 489-17 V2.1.1\(2009-05\)](#)—Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for 2,4 GHz wideband transmission systems, 5 GHz high performance RLAN equipment and 5,8 GHz Broadband Data Transmitting Systems



2. SUMMARY

2.1. General Remarks:

Date of receipt of test sample : June 19, 2013

Testing commenced on : June 19, 2013

Testing concluded on : June 21, 2013

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : ☐ 230V / 50 Hz ☐ 115V / 60Hz
☐ 12 V DC ☐ 24 V DC
☒ Other (specified in blank below)

DC 5V from USB/ DC 3.7V from battery

2.3. Short description of the Equipment under Test (EUT)

The device is a/an HEADPODS, work frequency at 2.4~2.4835GHz, Support Bluetooth.

For more details, refer to the user's manual of the EUT.

Series number: prototype

2.4. EUT operation mode:

The EUT has been tested under typical operating condition. No software used to control the EUT for staying in transmitting and receiving mode for testing.

2.5. EUT configuration:

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurement:

☐ - supplied by the manufacturer

☒ - supplied by the lab

☒ Notebook

Manufacturer: HP

Model No.: 4-1007TX

2.6. Mode of Operation

CTL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode	
EMI	Mode 1: Communicate by Bluetooth Mode 2: Charging
EMS	Mode 1: Communicate by Bluetooth

Test modes description:

1. Because the EUT is a/an Head pods, emissions test will not take account of wireless portions. The emission from EUT stand alone applies with harmonized radio standard. Please check it in reports CTL130619922-WR.
2. Bluetooth communicate mode: during the test, the Bluetooth function was on and transfer files to notebook PC.
3. Charging mode: during the test, the EUT was connected to notebook PC by USB line.

2.7. Immunity Performance criteria

General Requirements (ETSI EN 301489-1):

The performance criteria criteria are used to take a decision on whether radio equipment passes or fails immunity tests.

For the purpose of the present document four categories of performance criteria apply:

- performance criteria for continuous phenomena applied to transmitters;
- performance criteria for transient phenomena applied to transmitters;
- performance criteria for continuous phenomena applied to receivers;
- performance criteria for transient phenomena applied to receivers.

Normally, the performance criteria depend on the type of radio equipment. Thus, the present document only contains general performance criteria commonly used for the assessment of radio equipment. More specific and product-related performance criteria for a dedicated type of radio equipment may be found in the part of EN 301 489 series [22] dealing with the particular type of radio equipment.

(1) Performance criteria for continuous phenomena applied to transmitters and receivers

If no further details are given in the relevant part of EN 301 489 series [22] dealing with the particular type of radio equipment, the following general performance criteria for continuous phenomena shall apply. During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

(2) Performance criteria for transient phenomena applied to transmitters and receivers

If no further details are given in the relevant part of EN 301 489 series [22] dealing with the particular type of radio equipment, the following general performance criteria for transient phenomena shall apply.

After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the EMC exposure to an electromagnetic phenomenon, a degradation of performance is, however, allowed. No change of the actual mode of operation (e.g. unintended transmission) or stored data is allowed.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

(3) Performance criteria for equipment which does not provide a continuous communication link

For radio equipment which does not provide a continuous communication link, the performance criteria described in clauses (1) and (2) are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 of EN 301 489-1 V1.9.2 (2011-09) have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses (1) and (2).

(4) Performance criteria for ancillary equipment tested on a stand alone basis

If ancillary equipment is intended to be tested on a stand alone basis, the performance criteria described in clauses (1) and (2) are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 of EN 301 489-1 V1.9.2 (2011-09) have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses (1) and (2).

Special Performance Requirements (ETSI EN 301489-17):

The performance criteria are:

- performance criteria A for immunity tests with phenomena of a continuous nature;
- performance criteria B for immunity tests with phenomena of a transient nature;
- performance criteria C for immunity tests with power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following clauses.

Performance criteria for Continuous phenomena applied to Transmitters (CT)

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Transmitters (TT)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Continuous phenomena applied to Receivers (CR)

The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Receivers (TR)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5000 ms duration for which performance criteria C shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may

occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

EN 301 489 -17 Performance criteria		
Criteria	During Test	After test
A	Shall operate as intended May show degradation of performance (see note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (see note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (see note 1) No unintentional transmission	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (see note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (see note 2)

NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2011.

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 24, 2008.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	22-25 ° C
Humidity:	40-54 %
Atmospheric pressure:	950-1050mbar

3.4. Test Description

No	Basic Standard	Test Type	Result
EMISSION (EN 301 489-1 §7.1)			
1	EN 55022	Radiated emission	PASS
2	EN 55022	Conducted emission, DC ports	N/A
3	EN 55022	Conducted emission, AC ports	N/A
4	EN 55022	Conducted emission, Telecom ports	N/A
5	EN 61000-3-2	Harmonic current emissions	N/A
6	EN 61000-3-3	Voltage fluctuations & flicker	N/A
IMMUNITY (EN 301 489-1 §7.2)			
7	EN 61000-4-2	Electrostatic discharge immunity	PASS
8	EN 61000-4-3	Radiated RF electromagnetic field immunity (80MHz to 2000MHz)	PASS
9	EN 61000-4-4	Electrical fast transient/burst immunity	N/A
10	ISO 7637-1, -2	Transients and surges, DC ports	N/A
11	EN 61000-4-5	Surge immunity, AC ports, Telecom ports	N/A
12	EN 61000-4-6	Immunity to conducted disturbances induced by RF fields	N/A
13	EN 61000-4-11	Voltage dips and short interruptions immunity	N/A

Remark: The measurement uncertainty is not included in the test result.

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	$\pm 4.10\text{dB}$	(1)
Radiated Emission	1~12.75GHz	$\pm 4.32\text{dB}$	(1)
Conducted Emission	0.15~30MHz	$\pm 3.22\text{dB}$	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3.6. Equipments Used during the Test

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100251	2013/04/14
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	105539	2013/04/14
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	352178/ 1221	2013/04/14
4	TURNTABLE	ETS	2088	2515	2013/04/14
5	ANTENNA MAST	ETS	2075	2466	2013/04/14
6	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	N/A

Electrostatic Discharge					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ESD Simulator	EM TEST	DITOC0103Z	0326-52	2013/04/14

RF Field Strength Susceptibility					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	SIGNAL GENERATOR	IFR	2032	203222/135	2013/04/14
2	AMPLIFIER	AR	150W1000	304561	2013/04/14
3	DUAL DIRECTIONAL COUPLER	AR	DC6080	304516	2013/04/14
4	POWER HEAD	AR	PH2000	302251	2013/04/14
5	POWER METER	AR	PM2002	302567	2013/04/14

Electrical Fast Transient/Burst

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Ultra Compact Simulator	EM TEST	UCS500M6	0510-11	2013/04/14

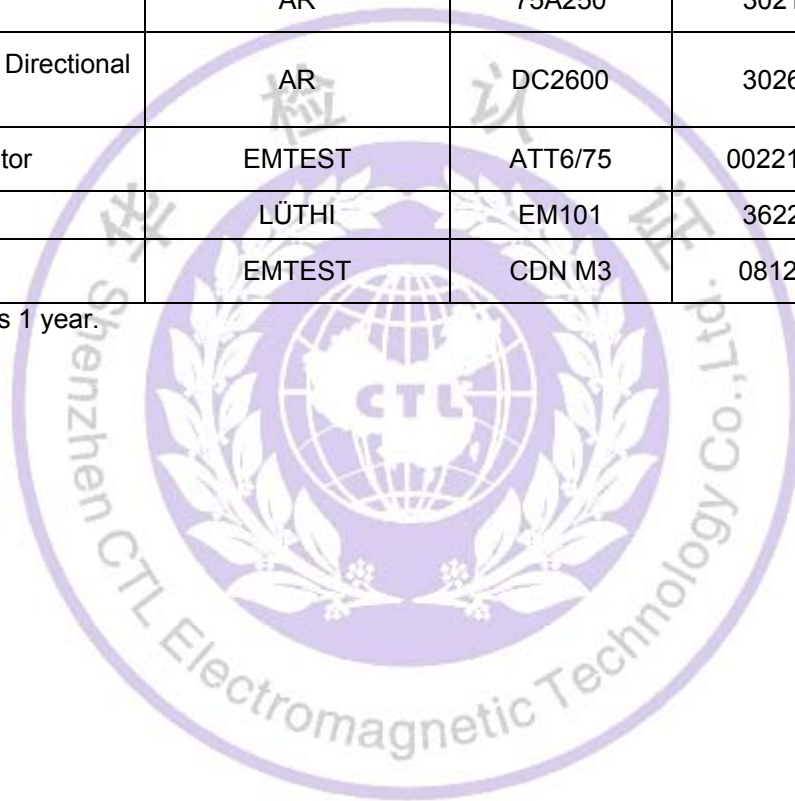
Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA COMPACT SIMULATOR	EM TEST	UCS500M6	0510-11	2013/04/14

Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal Generator	IFR	2023A	201104/156	2013/04/14
2	Amplifier	AR	75A250	302166	2013/04/14
3	Dual Directional Coupler	AR	DC2600	302671	2013/04/14
4	6db Attenuator	EMTEST	ATT6/75	0022175A	2013/04/14
5	EM CLAMP	LÜTHI	EM101	362251	2013/04/14
6	CDN	EMTEST	CDN M3	0812-01	2013/04/14

Mark: The Cal. Due is 1 year.



4. TEST CONDITIONS AND RESULTS

4.1. Radiated Emission

For test instruments and accessories used see section 3.6.

4.1.1. Description of the test location

Test location: Shielded room No. 2

4.1.2. Limits of disturbance (EN55022 B)

Please refer to ETSI EN 301 489-1 Clause 8.2.3, Table 4 and EN 55022 Clause 6, Table 6, Class B

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

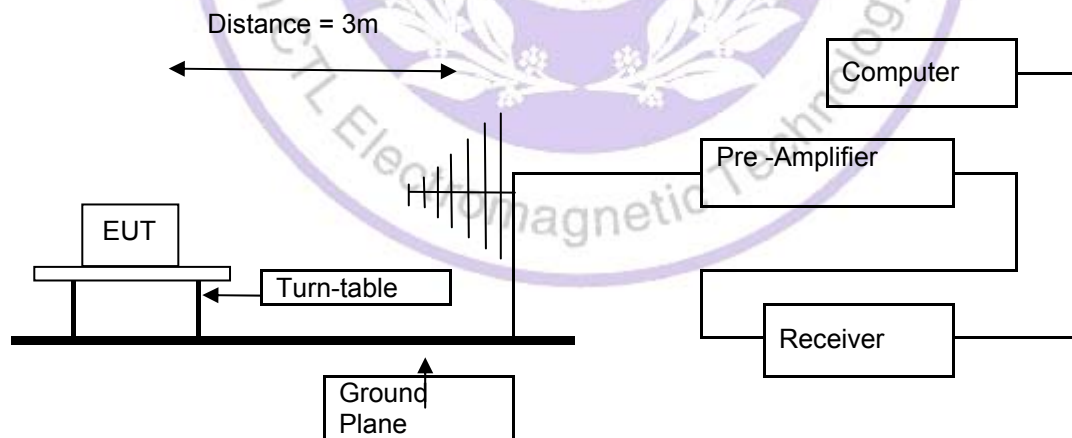
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.1.3. Description of the test set-up

4.1.3.1. Operating Condition

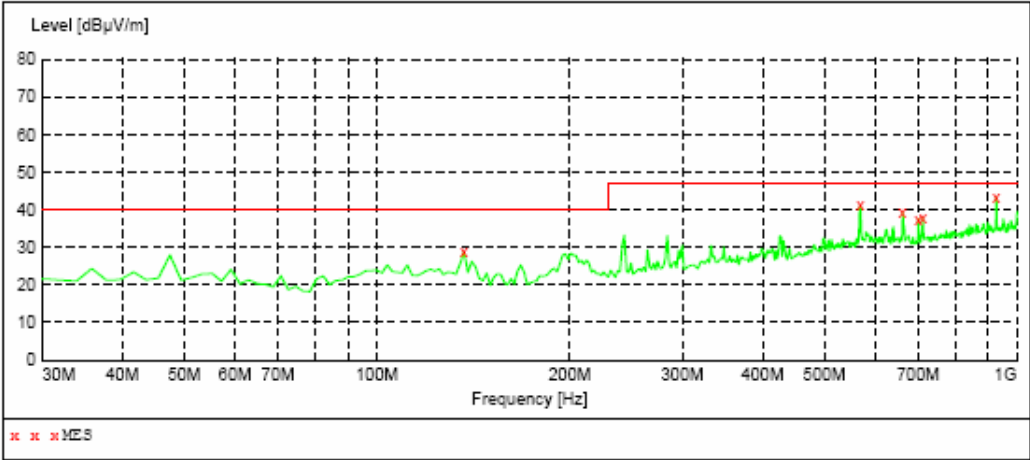
The EUT is set to work shall be carried out with normal communication mode during the test, and the maximum emanating results are recorded.

4.1.3.2. Configuration of test setup



4.1.4. Test result

SWEEP TABLE: "test (30M-1G)"
Short Description: Field Strength
Start Stop Detector Meas. IF Transducer
Frequency Frequency Time Bandw.
30.0 MHz 1.0 GHz MaxPeak Coupled 100 kHz VULB9163 NEW



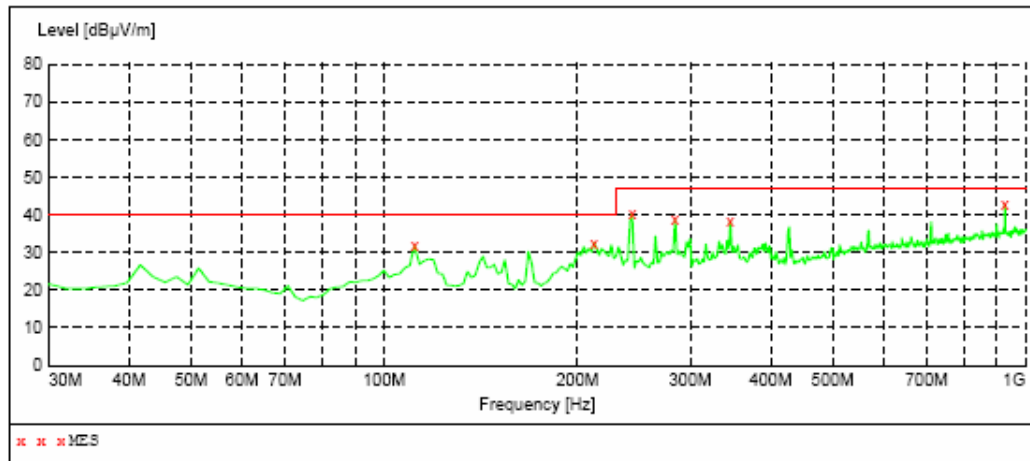
MEASUREMENT RESULT:

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
136.700000	28.90	12.5	40.0	11.1	---	100.0	0.00	VERTICAL
569.320000	41.10	25.4	47.0	5.9	---	100.0	0.00	VERTICAL
662.440000	39.30	26.3	47.0	7.7	---	100.0	0.00	VERTICAL
701.240000	37.60	26.5	47.0	9.4	---	100.0	0.00	VERTICAL
712.880000	38.00	26.7	47.0	9.0	---	100.0	0.00	VERTICAL
928.220000	43.40	29.4	47.0	3.6	---	100.0	0.00	VERTICAL



SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
111.480000	32.00	16.2	40.0	8.0	---	300.0	0.00	HORIZONTAL
212.360000	32.60	15.1	40.0	7.4	---	100.0	0.00	HORIZONTAL
243.400000	40.20	17.0	47.0	6.8	---	100.0	0.00	HORIZONTAL
284.140000	38.90	18.3	47.0	8.1	---	100.0	0.00	HORIZONTAL
346.220000	38.40	20.3	47.0	8.6	---	100.0	0.00	HORIZONTAL
928.220000	42.80	29.4	47.0	4.2	---	100.0	0.00	HORIZONTAL

Note: Radiated emission test above 1GHz up to 6GHz was verified, and no any emission was found except system noise floor.



4.3. AC Mains Harmonic Current Emission

For test instruments and accessories used see section 3.6.

4.3.1. Description of the test location

Test location: Shielded room No. 3

4.3.2. Limits of Harmonic Current

Test configuration and procedure see clause 7.1 of standard EN 61000-3-2.

4.3.3. Description of the test set-up

4.3.3.1. Operating Condition

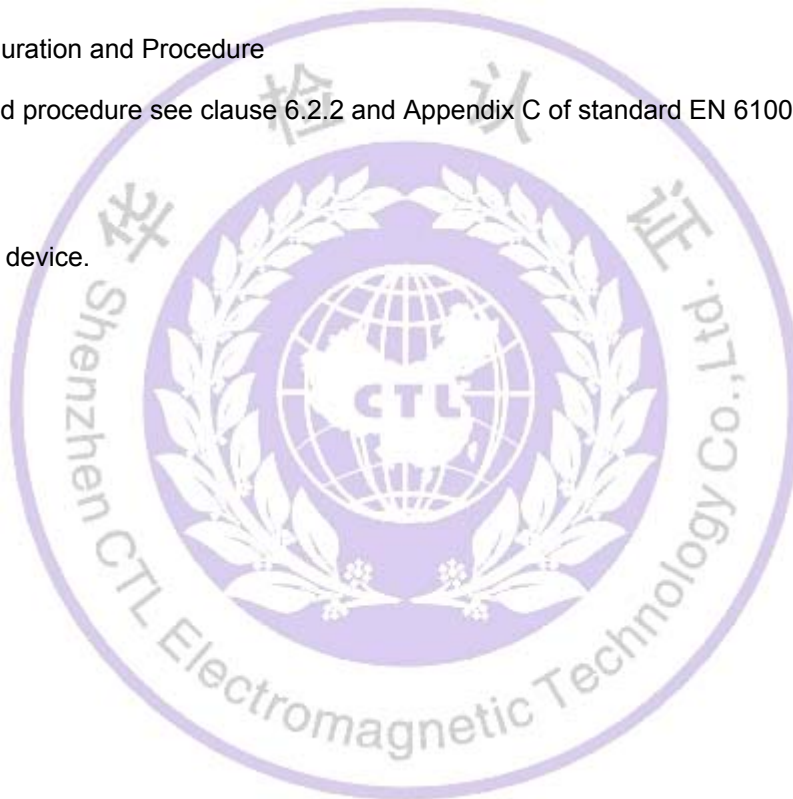
The EUT is Normal communication mode during the test, and the maximum emanating results are recorded.

4.3.3.2. Test Configuration and Procedure

Test configuration and procedure see clause 6.2.2 and Appendix C of standard EN 61000-3-2.

4.3.4. Test result

Not applicable to this device.



4.4. AC Mains Voltage Fluctuation and Flicker

For test instruments and accessories used see section 3.6.

4.4.1. Description of the test location

Test location: Shielded room No. 3

4.4.2. Limits of Voltage Fluctuation and Flicker

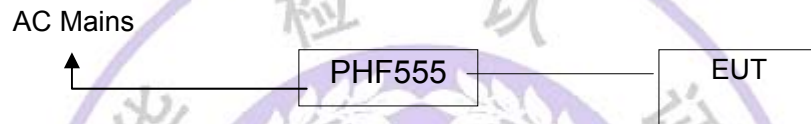
Test configuration and procedure see clause 5 of standard EN 61000-3-3.

4.4.3. Description of the test set-up

4.4.3.1. Operating Condition

The EUT is set to work shall be carried out with normal communication mode during the test, and the maximum emanating results are recorded.

4.4.3.2. Configuration of test setup



4.4.4. Test result

Not applicable to this device.

4.5. Electrostatic discharge

For test instruments and accessories used see section 3.6.

4.5.1. Description of the test location and date

Test location: Shielded room No. 3

Date of test: June 20, 2013

Operator: NADA

4.5.2. Severity levels of electrostatic discharge

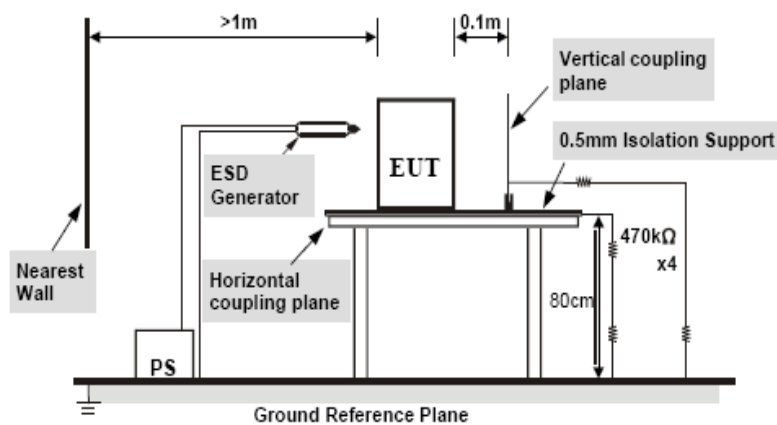
Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

4.5.3. Description of the test set-up

4.5.3.1. Operating Condition

The EUT is set to work shall be carried out with normal communication mode during the test, and the maximum emanating results are recorded.

4.5.3.2. Configuration of test setup



4.5.4. Test specification:Test Modes:

Mode 1: Communicate by Bluetooth

Mode 2 :Charging

Contact discharge voltage:☒ 2 kV☒ 4 kVAir discharge voltage:☒ 2 kV☒ 4 kV☒ 8 kVNumber of discharges:☐ ≥ 10 ☒ ≥ 25 Type of discharge:

Direct discharge

☒ Air discharge☒ Contact discharge

Indirect discharge

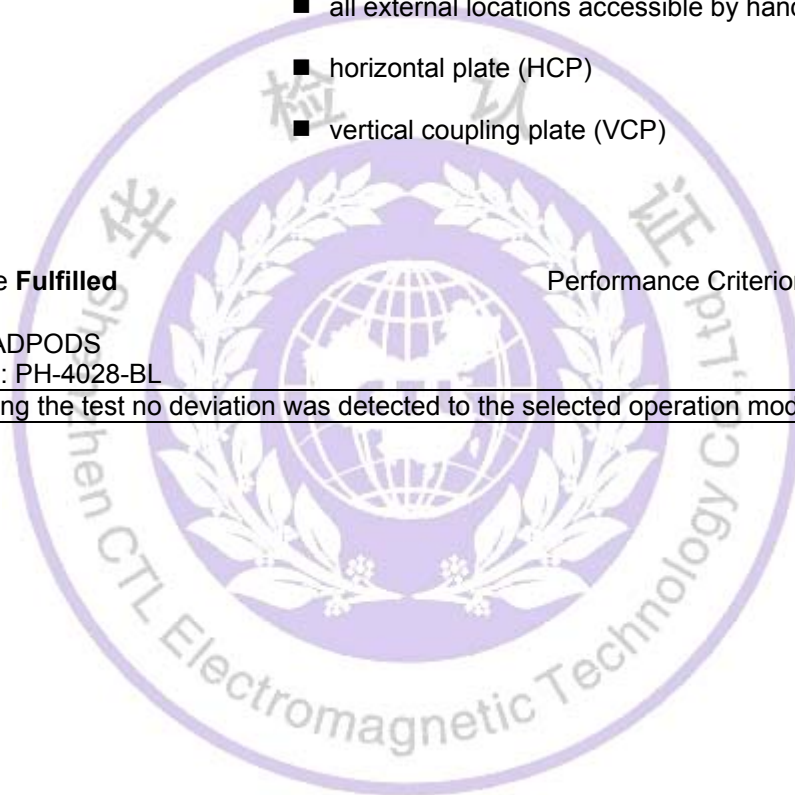
☒ Contact dischargePolarity:☒ Positive☒ NegativeDischarge location:☒ see photo documentation of the test set-up☒ all external locations accessible by hand☒ horizontal plate (HCP)☒ vertical coupling plate (VCP)**4.5.5. Test result**The requirements are **Fulfilled**Performance Criterion: **B****E. U. T.:**

HEADPODS

M/N: PH-4028-BL

Remarks:

During the test no deviation was detected to the selected operation mode(s).



4.6. RF Electromagnetic Field

For test instruments and accessories used see section 3.6.

4.6.1. Description of the test location and date

Test location: Shielded room No. 2

Date of test: June 19, 2013

Operator: Bove

4.6.2. Severity levels of radiated, radio-frequency, electromagnetic field

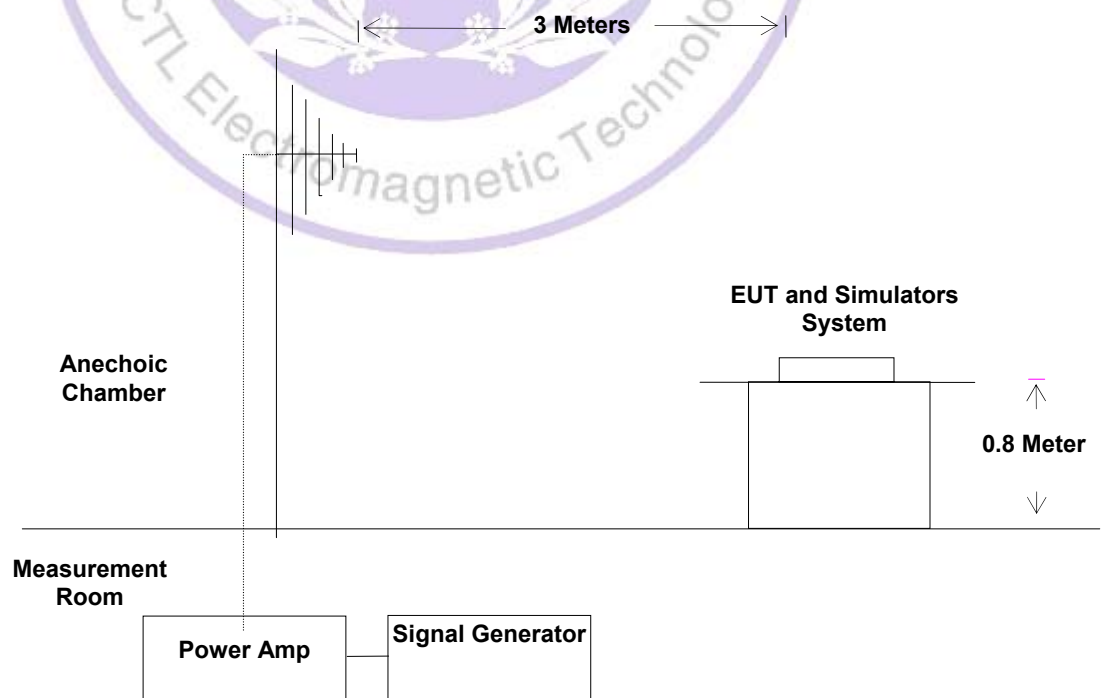
Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X	Special

4.6.3. Description of the test set-up

4.6.3.1. Operating Condition

The EUT is set to work shall be carried out normal communication mode during the test, and the maximum emanating results are recorded.

4.6.3.2. Configuration of test setup



4.6.4. Test specification:Test Modes:

Mode 1: Communicate by Bluetooth
Mode 2: Charging

Frequency range:

■ 80 MHz to 2700 MHz

Field strength:

■ 3 V/m

EUT - antenna separation:

■ 3 m

Modulation:

■ AM: 80 %
■ sinusoidal 1000Hz

Frequency step:

■ 1 % with 3 s dwell time

Antenna polarisation:

■ horizontal ■ vertical

4.6.5. Test result

The requirements are **Fulfilled**

Performance Criterion: **A**

☒ Description of Preliminary Test (Operating & Standby (Receiving) Modes)

	Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Selection for the final test
1	80-1000	6V/m	Yes	H / V	Front	
	1400-2700	6V/m	Yes	H / V	Front	
2	80-1000	6V/m	Yes	H / V	Right	☒
	1400-2700	6V/m	Yes	H / V	Right	☒
3	80-1000	6V/m	Yes	H / V	Back	
	1400-2700	6V/m	Yes	H / V	Back	
4	80-1000	6V/m	Yes	H / V	Left	
	1400-2000	6V/m	Yes	H / V	Left	

☒ Result of Final Tests (Operating Mode & Standby(Receiving) Mode)

Freq. Range (MHz)	Field	Modulation	Polarity	Position	Mode	Result (Pass/Fail)
1400-2700	3V/m	Yes	H / V	Right	Normal Operating	PASS
80-1000	3V/m	Yes	H / V	Right		PASS

PERFORMANCE CRITERIA	
Criteria requested	☒ A / ☐ B / ☐ C
Criteria meet	☒ A / ☐ B / ☐ C

E. U. T.: HEADPODS
M/N: PH-4028-BL

Remarks: During the test no deviation was detected to the selected operation mode(s).

4.7. Electrical Fast Transient/Burst Immunity Test

4.7.1. Description of the test location

Test location: Shielded room No. 2

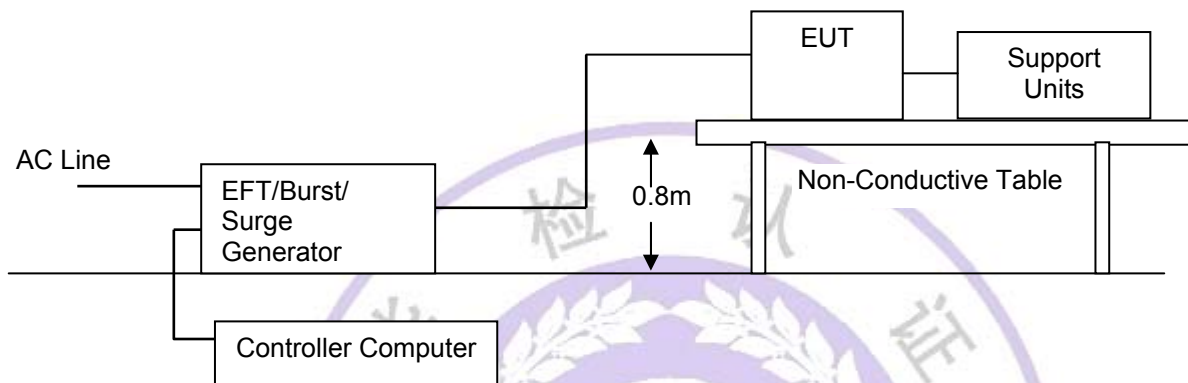
Date of test:

Operator:

4.7.2. Limit

Please refer to EN 61000-4-4

4.7.3. Test configuration



4.7.4. Test Procedure

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and EN 61000-4-4 for the measurement methods.

4.7.5. Test results

Not applicable to this device.

4.8. Surge Immunity Test

4.8.1. Description of the test location

Test location: Shielded room No. 2

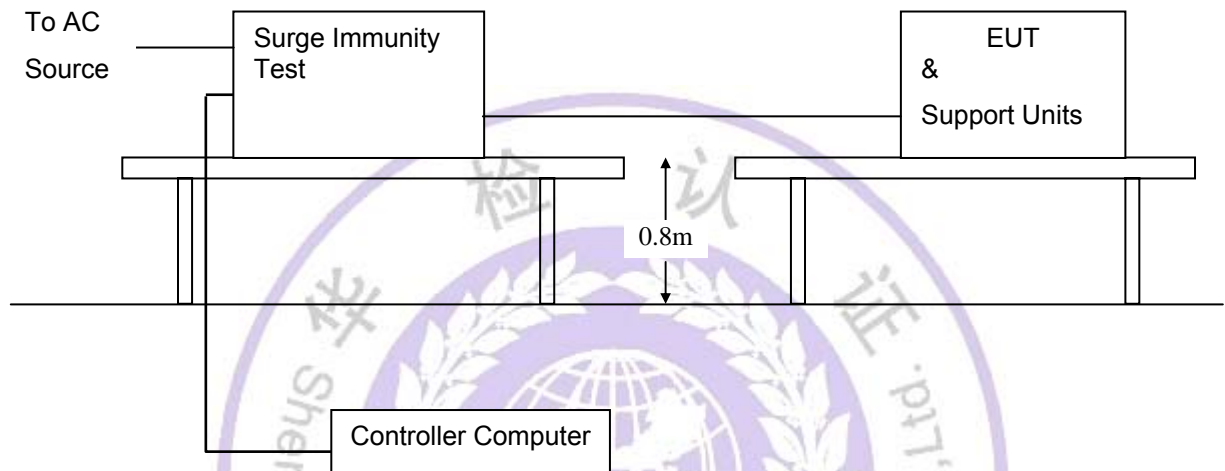
Date of test:

Operator:

4.8.2. Limit

Please refer to EN 61000-4-5

4.8.3. Test Configuration



4.8.4. Test procedure

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and EN 61000-4-5 for the measurement methods.

4.8.5. Test results

Not applicable to this device.

4.9. Immunity to conducted disturbances induced by RF fields

For test instruments and accessories used see section 3.6.

4.9.1. Description of the test location

Test location: Shielded room No. 2

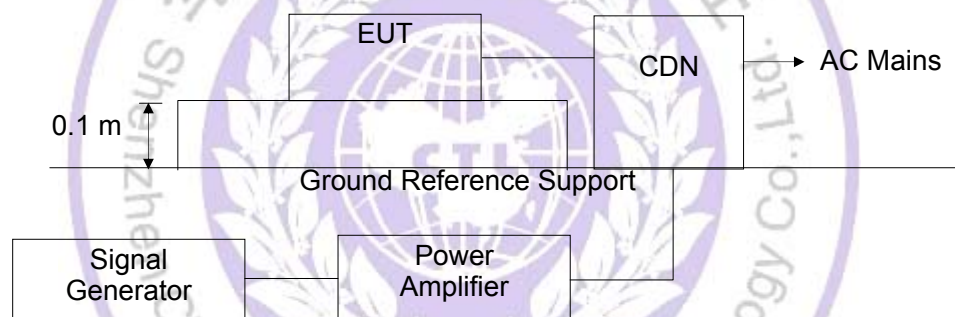
Date of test:

Operator:

4.9.2. Severity levels of conducted disturbances

Level	Field Strength (V)
1.	1
2.	3
3.	10
X	Special

4.9.3. Description of the test set-up



4.9.4. Test specification:

Frequency range: ■ 0.15 MHz to 80 MHz

Test voltage: ■ 3 V

Modulation: ■ AM: 80 %
■ sinusoidal 1000Hz

Frequency step: ■ 1 % with 3 s dwell time

4.9.5. Coupling points

Cable description

DC power line

Screening:

o screened

■ unscreened

Status:

o passive

■ active

Signal transmission:

■ analogue

o digital

Length:

■ 1.5 m

4.9.6. Test result

Not applicable to this device.

4.10. Voltage Dips and Interruptions

For test instruments and accessories used see section 3.6.

4.10.1. Description of the test location

Test location: Shielded room No. 2

Date of test:

Operator:

4.10.2. Limit

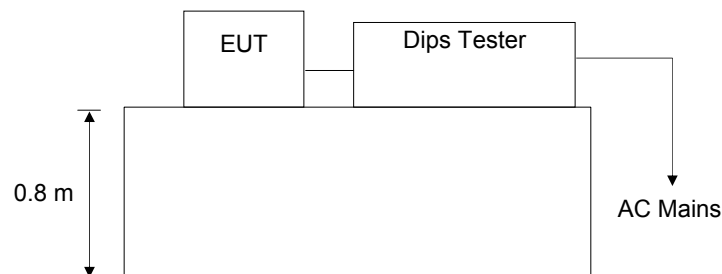
Environmental phenomenon	Test specification	Units	Performance criterion
AC mains power input ports			
Voltage dips	0	% residual	TT, TR
	0.5	cycle	(B)
	0	% residual	TT, TR
	1	cycle	(B)
	70	% residual	TT, TR
Voltage interruptions	0.5	cycle	(B) (Note 2)
	70	% residual	TT, TR
	25	cycle	(B)
Voltage interruptions	0	% residual	TT, TR
	250	cycle	(C)
Note 1: Changes to occur at 0 degree crossover point of the voltage waveform.			
Note 2: As per EN 301489-7, there is special requirement for voltage dip.			

4.10.3. Description of the test set-up

4.10.3.1. Operating Condition

The EUT is set to work shall be carried out normal communication mode during the test, and the maximum emanating results are recorded.

4.10.3.2. Configuration of test setup



4.10.4. Test specification:

<u>Nominal Mains Voltage (V_N):</u>	■ 230 V AC
<u>Number of voltage fluctuations:</u>	■ 3
<u>Level of reduction(dip) / duration:</u>	■ 100 % / 10ms ■ 30 % / 500ms
<u>Nominal Mains Voltage (V_N):</u>	■ 230 V AC
<u>Number of Interruptions:</u>	■ 3
<u>Duration of the Interruption:</u>	■ 5000 ms

4.10.5. Test result

Not applicable to this device.



5. Test Setup Photos



6. Photos of the EUT

