

TEST REPORT N°: BMH-ESH-P21080065B-1-A2
Supplement "A2" to test report No.: BMH-ESH-P21080065B-1-A1 dated on 2023-09-28

EMC TEST REPORT

To :	Hoymiles Power Electronics Inc.	Fax :	--
Attn :	--	Email :	--
Address :	No.18 Kangjing Road, HangZhou, Zhejiang Province, P.R. China		
Cc :	--	Fax/Email :	--
Attn :	--		
This document includes : 46 pages		Test date :	Oct.23 to Nov.10, 2023

MANUFACTURER NAME :	Hoymiles Power Electronics Inc.	
ADDRESS :	No.18 Kangjing Road, HangZhou, Zhejiang Province, P.R. China	
PRODUCT :	PV Microinverter	
TYPE REFERENCE :	HMS-1000-2T, HMS-900-2T, HMS-800-2T, HMS-700-2T, HMS-600-2T	
RATED VOLTAGE :	Refer to section 3.1	
RATED OUTPUT POWER :	Refer to section 3.1	
PROTECTION CLASS :	I	
TESTS REALISED :	On one sample of HMS-1000-2T	

STANDARDS USED(DATE) :
 EN 62920:2017+A11:2020+A1:2020/ IEC 62920:2017+A1:2020
 EN IEC 61000-6-3:2021/ IEC 61000-6-3:2020
 EN IEC 61000-6-4:2019/ IEC 61000-6-4:2018
 EN IEC 61000-6-1:2019/ IEC 61000-6-1:2016
 EN IEC 61000-6-2:2019/ IEC 61000-6-2:2016
 EN IEC 61000-3-2:2019+A1:2021/ IEC 61000-3-2:2018+A1:2020
 EN 61000-3-3:2013+A1:2019+A2:2021/ IEC 61000-3-3:2013+A1:2017+A2:2021
 EN 301 489-1 V2.2.3 (2019-11), EN 301 489-3 V2.3.2 (2023-01)

CLAUSES EXAMINED : All Clauses Relevant

Harmonic current and flicker tests(100% Load) in this report are subcontracted to Shanghai Testing & Inspection Institute For Electrical Equipment Co., Ltd.(STIEE).

Other test items in test Location: Building C, No. 829, Xin Zhuan Road, Shanghai, CHINA

CONCLUSION:

The sample does satisfy the clauses examined .

Test done by,

Approved by,

Name: Yuan ZHANG
Title: Projector Engineer
Date: Nov.21, 2023

Name: Sean YU
Title: RF Supervisor
Date: Nov.21, 2023

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



TEST REPORT N°: BMH-ESH-P21080065B-1-A2

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1 TESTING PROGRAM

The tests have been carried out according to the requirements of the following standards:

Emission standard EN 62920:2017+A11:2020+A1:2020

- Measurement of the disturbance voltage levels.
- Measurement of the radiated disturbance levels.
- Measurement of the harmonic currents.
- Measurement of the voltage fluctuations and flickers.

Immunity standard EN 62920:2017+A11:2020+A1:2020

- Immunity to electrostatic discharges - publication EN 61000-4-2.
- Immunity to fast transients/bursts - publication EN 61000-4-4.
- Immunity to conducted disturbances induced by radio-frequency fields - publication EN 61000-4-6.
- Immunity to radiated radio-frequency electromagnetic field with amplitude modulation - publication EN 61000-4-3.
- Immunity to surges - publication EN 61000-4-5.
- Immunity to voltage dips -publication EN 61000-4-11.
- Immunity to voltage interruptions - publication EN 61000-4-11.

Emission standard EN IEC 61000-6-3:2021/ IEC 61000-6-3:2020

- Measurement of the radiated emission.
- Measurement of the conducted emission.
- Measurement of the discontinuous interference.
- Measurement of the harmonic currents.
- Measurement of the voltage fluctuations.

Emission standard EN IEC 61000-6-4:2019/ IEC 61000-6-4:2018

- Measurement of the radiated emission.
- Measurement of the conducted emission.
- Measurement of the discontinuous interference.

Immunity standard EN IEC 61000-6-1:2019/ IEC 61000-6-1:2016

- Immunity to electrostatic discharges - publication IEC 61000-4-2.
- Immunity to fast transients/bursts - publication IEC 61000-4-4.
- Immunity to conducted disturbances induced by radio-frequency fields - publication IEC 61000-4-6.
- Immunity to power frequency magnetic field- publication IEC 61000-4-8.
- Immunity to radiated radio-frequency electromagnetic field with amplitude modulation - publication IEC 61000-4-3.
- Immunity to surges - publication IEC 61000-4-5.
- Immunity to voltage dips -publication IEC 61000-4-11.
- Immunity to voltage interruptions - publication IEC 61000-4-11.



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Immunity standard EN IEC 61000-6-2:2019/ IEC 61000-6-2:2016

- Immunity to electrostatic discharges - publication IEC 61000-4-2.
- Immunity to fast transients/bursts - publication IEC 61000-4-4.
- Immunity to conducted disturbances induced by radio-frequency fields - publication IEC 61000-4-6.
- Immunity to power frequency magnetic field- publication IEC 61000-4-8.
- Immunity to radiated radio-frequency electromagnetic field with amplitude modulation - publication IEC 61000-4-3.
- Immunity to surges - publication IEC 61000-4-5.
- Immunity to voltage dips -publication IEC 61000-4-11.
- Immunity to voltage interruptions - publication IEC 61000-4-11.

Emission standard EN IEC 61000-3-2:2019+A1:2021/ IEC 61000-3-2:2018+A1:2020

- Measurement of the harmonic currents.

Emission standard EN 61000-3-3:2013+A1:2019+A2:2021/ IEC 61000-3-3:2013+A1:2017+A2:2021

- Measurement of the voltage fluctuations and flickers.

Emission standard EN 301 489-1 V2.2.3 (2019-11), EN 301 489-3 V2.1.1 (2019-03)

- Measurement of the conducted emission levels.
- Measurement of the radiated emission levels.
- Measurement of the harmonic currents.
- Measurement of the voltage fluctuations and flickers.
-

Immunity standard EN 301 489-1 V2.2.3 (2019-11), EN 301 489-3 V2.1.1 (2019-03)

- Immunity to electrostatic discharges - publication IEC 61000-4-2.
- Immunity to fast transients/bursts - publication IEC 61000-4-4.
- Immunity to conducted disturbances induced by radio-frequency fields - publication IEC 61000-4-6.
- Immunity to radiated radio-frequency electromagnetic field with amplitude modulation - publication IEC 61000-4-3.
- Immunity to surges - publication IEC 61000-4-5.
- Immunity to voltage dips -publication IEC 61000-4-11.
- Immunity to voltage interruptions - publication IEC 61000-4-11.
- Immunity to transients and surges- publication ISO 7637-2

Special comments: This report is based on history report BMH-ESH-P21080066B-1-A1 for adding standard. After evaluation, We choose model HMS-1000-2T to apply CE, RE, Harmonic , Flicker, EFT and CS tests, the test result is applicable to all models.

2 HISTORY OF FAILURE

None.

Bureau Veritas ADT (ShangHai) Corporation 必维诚硕科技(上海)有限公司	No.829,Xin Zhuan Road,Song Jiang District,Shanghai,China	Tel: +86 21 6195 7000 Fax: +86 21 6195 7001 Email: contact@cn.bureauveritas.com
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3 EQUIPMENT CHARACTERISTICS**3.1 Technical characteristics**

hoymiles

PV Microinverter

Model: HMS-600-2T

Hoymiles Power Electronics Inc.

hoymiles.com

Made in China

Max. Input Voltage	60V d.c.	Nominal Output Voltage	230/240V a.c.
MPPT Voltage Range	16-60V d.c.	Nominal Output Frequency	50/60Hz
Start-up Voltage	22V d.c.	Peak Conversion Efficiency	96.7%
Max. Continuous Input Current	2 × 12A d.c.	Enclosure	IP67
Max. Input Short Circuit Current	2 × 20A d.c.	Overvoltage Category	PV:II, Mains:III
Max. Continuous Output Power	600VA	Protective Class	I
Max. Continuous Output Current	2.61A a.c.	Pollution Degree	PD3
Output Power Factor	>0.99(Default)	Ambient Temperature Range	-40°C to +65°C

CE

5 min

hoymiles

PV Microinverter

Model: HMS-700-2T

Hoymiles Power Electronics Inc.

hoymiles.com

Made in China

Max. Input Voltage	60V d.c.	Nominal Output Voltage	230/240V a.c.
MPPT Voltage Range	16-60V d.c.	Nominal Output Frequency	50/60Hz
Start-up Voltage	22V d.c.	Peak Conversion Efficiency	96.7%
Max. Continuous Input Current	2 × 13A d.c.	Enclosure	IP67
Max. Input Short Circuit Current	2 × 20A d.c.	Overvoltage Category	PV:II, Mains:III
Max. Continuous Output Power	700VA	Protective Class	I
Max. Continuous Output Current	3.04A a.c.	Pollution Degree	PD3
Output Power Factor	>0.99(Default)	Ambient Temperature Range	-40°C to +65°C

CE

5 min

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PV Microinverter
Model: HMS-800-2T**Hoymiles Power Electronics Inc.**
hoymiles.com Made in China

Max. Input Voltage	65V d.c.	Nominal Output Voltage	230/240V a.c.
MPPT Voltage Range	16-60V d.c.	Nominal Output Frequency	50/60Hz
Start-up Voltage	22V d.c.	Peak Conversion Efficiency	96.7%
Max. Continuous Input Current	2 × 14A d.c.	Enclosure	IP67
Max. Input Short Circuit Current	2 × 25A d.c.	Overvoltage Category	PV:II, Mains:III
Max. Continuous Output Power	800VA	Protective Class	I
Max. Continuous Output Current	3.48A a.c.	Pollution Degree	PD3
Output Power Factor	>0.99(Default)	Ambient Temperature Range	-40°C to +65°C

PV Microinverter
Model: HMS-900-2T**Hoymiles Power Electronics Inc.**
hoymiles.com Made in China

Max. Input Voltage	65V d.c.	Nominal Output Voltage	230/240V a.c.
MPPT Voltage Range	16-60V d.c.	Nominal Output Frequency	50/60Hz
Start-up Voltage	22V d.c.	Peak Conversion Efficiency	96.5%
Max. Continuous Input Current	2 × 15A d.c.	Enclosure	IP67
Max. Input Short Circuit Current	2 × 25A d.c.	Overvoltage Category	PV:II, Mains:III
Max. Continuous Output Power	900VA	Protective Class	I
Max. Continuous Output Current	3.91A a.c.	Pollution Degree	PD3
Output Power Factor	>0.99(Default)	Ambient Temperature Range	-40°C to +65°C





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PV Microinverter
Model: HMS-1000-2T

Hoymiles Power Electronics Inc.
hoymiles.com Made in China

Max. Input Voltage	65V d.c.	Nominal Output Voltage	230/240V a.c.
MPPT Voltage Range	16-60V d.c.	Nominal Output Frequency	50/60Hz
Start-up Voltage	22V d.c.	Peak Conversion Efficiency	96.5%
Max. Continuous Input Current	2 × 16A d.c.	Enclosure	IP67
Max. Input Short Circuit Current	2 × 25A d.c.	Overvoltage Category	PV:II, Mains:III
Max. Continuous Output Power	1000VA	Protective Class	I
Max. Continuous Output Current	4.35A a.c.	Pollution Degree	PD3
Output Power Factor	>0.99(Default)	Ambient Temperature Range	-40°C to +65°C



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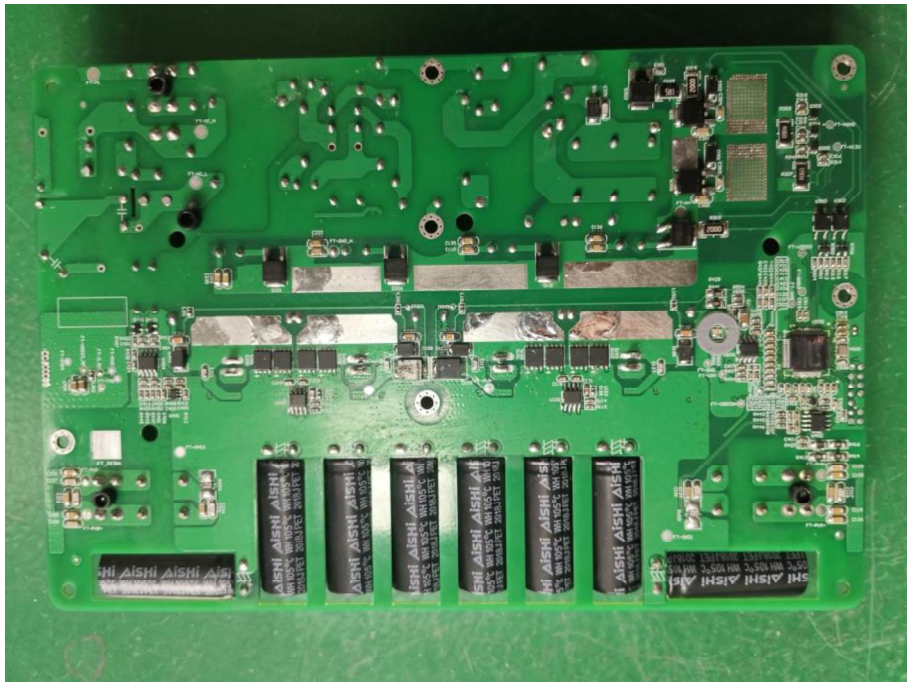
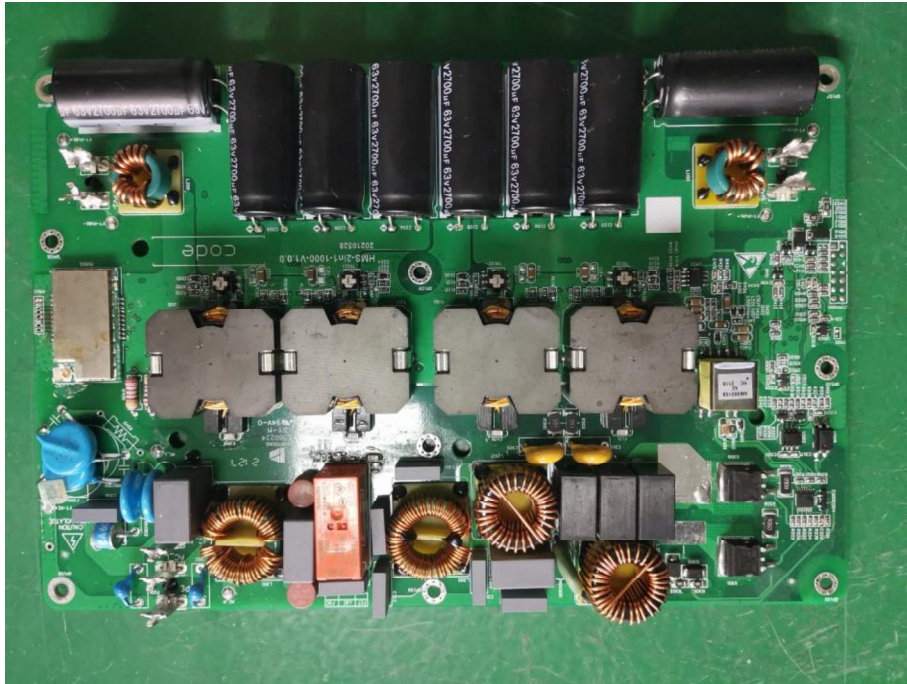
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3.2 Pictures of sample



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4 Test Configuration of Equipment under Test

4.1 DESCRIPTION OF TEST MODES

MODE	CONFIGURATION
1	DC input: dc 48V, AC output: 230V
2	DC input: dc 42V, AC output: 230V
3	DC input: dc 34V, AC output: 230V

4.2 Description of test modes

Test Item	Test Mode
Conducted Emission	1,2,3
Radiated Emission(Below 1GHz)	1,2,3
Radiated Emission(Above 1GHz)	1
Harmonics	1(Note)
Voltage Fluctuations	1(Note)
Electrostatic Discharge Immunity Test (ESD)	1
Radio electromagnetic field immunity test (RS)	1
Electrical Fast Transient/ Burst Immunity Test (EFT)	1
Surge Immunity Test	1
Conduction Disturbances induced by Radio-Frequency Fields	1
Voltage Dips and Voltage Interruptions Immunity Test	1

Note: Testing was conducted at 25 %, 50 % and 100 % of nominal power.



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5 OPERATING CONDITIONS

The apparatus was placed in a shielded room, full or semi anechoic chamber, and was powered with an alternative current source through filters mounted on the shielded room wall. The apparatus was worked continuously.

Climatic conditions :	Temperature	:	19-22 °C
	Relative humidity	:	48-53 %
	Atmospheric pressure	:	101 kPa

6 Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2 Ed 1.0.

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

This lab's measurement uncertainty U_{Lab} , is low than U_{Cispr} , Table 1 – Values of U_{Cispr} of CISPR 16-4-2 Ed. 1.0, therefore compliance is deemed to occur if no measured disturbance exceeds the disturbance limit.

Measurement		Value
Conducted emissions		2.55 dB
Conducted emissions at telecom port		2.60 dB
Radiated emissions	30 MHz ~ 1GHz	3.22 dB
	Above 1GHz	2.89 dB



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7 PERFORMANCE CRITERIA

EN 61000-6-2

- Criterion A : The apparatus operate as intended during the test. No degradation of performance or loss of function is allowed below the performance level.
- Criterion B : The apparatus operate as intended after the test. No change of operating state and the stored data are allowed. During the test, degradation of performance is allowed.
- Criterion C : Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

For 301 489-3

- performance criterion A applies for immunity tests with phenomena of a continuous nature;
- performance criterion B applies for immunity tests with phenomena of a transient nature.

NOTE: Whether a phenomenon is considered transient, continuous or otherwise is indicated in the test procedures for the phenomenon in ETSI EN 301 489-1 [1], clause 9.

Table 2: Performance Requirements

Criterion	During test	After test
A	Operate as intended No loss of function No unintentional responses	Operate as intended No loss of function No degradation of performance No loss of stored data or user programmable functions
B	May show loss of function No unintentional responses	Operate as intended Lost function(s) shall be self-recoverable No degradation of performance No loss of stored data or user programmable functions

EN 62920:

Item	Criterion A	Criterion B	Criterion C
Operating status	No noticeable change of the operating status. Operating as intended.	Noticeable changes of the operating characteristic. Self-recoverable	Shutdown, changes in operating status. Triggering of protective devices. Not self-recoverable
Power output	Power output permitted to vary only within $\pm 25\%$.	Power output permitted to temporarily vary outside $\pm 25\%$ Self-recoverable	Loss of power output. Not self-recoverable
External and internal indications and metering	No noticeable change of the operating status.	Changes only during test	Shutdown, triggering of protective devices. Not self-recoverable
Control signal to external devices	Undisturbed communication and data exchange to external devices	Temporarily disturbed communication, but no error reports of the internal or external devices which could cause shut-down	Errors in communication, loss of data and information. No loss of stored program, no loss of user program. Not self-recoverable

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8 TEST RESULTS**8.1 EMISSION STANDARD EN IEC 61000-6-3:2021/ IEC 61000-6-3:2020**

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9	<u>Radiated disturbance</u> Frequency range: 30 – 1000 MHz Table 1: Emission Enclosure	Operating conditions : according to the article 9 Measuring Distance: 10 m Antenna : - horizontal position - vertical position Diagram(s) No. <1>	 [X] [X]	 [] []	 [] []	 [] []
9	<u>Conducted disturbance</u> Frequency range: 0,15 – 30 MHz Table 4: Emission AC mains	Operating conditions : according to the article 9 Port(s) : • AC mains port Diagram(s) No. <3>	 [X]	 []	 []	 []
9	<u>Discontinuous interference</u> Frequency range: 0,15 – 30 MHz Table 1: Emission AC mains Basic standard: EN 55014-1	Operating conditions : according to the article 9 Port(s) : • AC mains port Table(s) No. <>	 []	 []	 [X]	 []
9	<u>Limits for harmonic currents emission</u> Basic standard: EN 61000-3-2	Frequency range: 0 to 2 kHz Class of the apparatus : A Table(s) No. <1>	 [X]	 []	 []	 []
9	<u>Limitation of voltage fluctuations and flicker in low-voltage supply systems</u> Basic standard: EN 61000-3-3	Frequency range: 0 to 2 kHz Table(s) No. <2>	 [X]	 []	 []	 []

P : pass – F : Fail – NA : not applicable – Rem : remark



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8.2 IMMUNITY STANDARD EN IEC 61000-6-2:2019

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9	<u>Electrostatic discharges</u>	Contact discharges Level : ± 4 kV Application points : • horizontal coupling plane • vertical coupling plane • metal part				
	Table 1 Enclosure		[X]	[]	[]	[1]
	Performance criteria B		[X]	[]	[]	[1]
	Performance criteria B	Air discharges Level : ± 8 kV Application points : • enclosure	[X]	[]	[]	[1]
9	<u>Radio-frequency electromagnetic fields 80 to 1000 MHz</u>	Test field strength : 10 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 2 s Logperiodic antenna : - horizontal position - vertical position				
	Table 1 Enclosure		[X]	[]	[]	[1]
	Performance criteria A		[X]	[]	[]	[1]
9	<u>Radio-frequency electromagnetic fields 1400 to 6000 MHz</u>	Test field strength : 3 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 2 s Horn antenna : - horizontal position - vertical position				
	Performance criteria A		[X]	[]	[]	[1]
	<u>Radio-frequency electromagnetic fields 1000 to 6000 MHz</u>	Test field strength : 3 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 2 s Horn antenna : - horizontal position - vertical position				
	<u>Performance criteria A</u>		[X]	[]	[]	[1]
			[X]	[]	[]	[1]
9	<u>Power Frequency Magnetic Field</u>	Field frequency : 50/60 Hz Level : 30 A/m				
	Table 1 Enclosure		[]	[]	[X]	[2]
	Performance criteria A					

P : pass – F : Fail – NA : not applicable – Rem : remark



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Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9	<u>Fast transients/bursts</u> Table 4 Alternative current power input and output ports Performance criteria B	Level : ± 2 kV Rise time/hold time : 5/50 ns Repetition rate : 5 kHz Testing time : 2 min Port(s) : • AC mains	[X]	[]	[]	[1]
9	<u>Injected current 0.15 to 80 MHz</u> Table 4 Alternative current power input and output ports Performance criterion A	Voltage level : 10 V (unmodulated signal) Modulation frequency : 1 kHz Frequency Step : 1% Dwell Time: 2 s Modulation depth : 80 % Application with Port(s) : • AC mains	[X]	[]	[]	[1]
9	<u>Surges</u> Table 4 Alternative current power input and output ports Performance criterion B	Tr/Th(μ s) : 1.2/50 (8/20) Number of surges : 5 positive and 5 negative Phase angles : 0°, 90°, 180° and 270° Level : ± 1 kV Port(s) : • power input, between lines and neutral	[X]	[]	[]	[1]
	Performance criterion B	Level : ± 2 kV Port(s) : • power input, between lines and earth • power input, between neutral and earth	[X] [X]	[] []	[] []	[1] [1]
9	<u>Voltage dips and voltage interruptions</u> Table 4 Alternative current power input port(s) Performance criterion C	Voltage interruptions Test level : 0 % $U_t \rightarrow 0$ V Duration : 5 s Phase angles : 0° Port(s) : • AC mains	[X]	[]	[]	[1]
	Table 4 Alternative current power input port(s) Performance criterion C	Voltage dips Test level : 40 % $U_t \rightarrow 92$ V Duration : 100 ms Phase angles : 0° Port(s) : • AC mains	[X]	[]	[]	[1]
	Table 4 Alternative current power input port(s) Performance criterion B	Voltage dips Test level : 70 % $U_t \rightarrow 161$ V Duration : 10 ms Phase angles : 0° and 180° Port(s) : • AC mains	[X]	[]	[]	[1]

P : pass – F : Fail – NA : not applicable – Rem : remark

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8.3 EMISSION STANDARD EN 301 489-1 V2.2.3 (2019-11), EN 301 489-3 V2.1.1 (2019-03)

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
8.4 8.4.3	<u>Conducted emission Limit</u> Frequency range: 0.15 to 30 MHz	Operating conditions : according to the standard EN 301 489-1 V2.2.3 clause 8.4.2 Port(s) : • AC mains port Diagram No. <3>	 [X]	 []	 []	 []
8.2 8.2.3	<u>Radiated disturbance limits</u> Frequency range: 30 to 6000 MHz	Operating conditions : according to the standard EN 301 489-1 V2.2.3 clause 8.2.2 Enclosure of ancillary equipment measured on a stand alone basis Measuring Distance: 3 m Antenna : - horizontal position - vertical position Diagram(s) No. <1> to <2>	 [X] [X]	 [] []	 [] []	 [] []
8.5	<u>Limits for harmonic currents emission</u>	Frequency range: 0 to 2 kHz Class of the apparatus : A Table(s) No. < >	 []	 []	 [X]	 [2]
8.6	<u>Limits of voltage fluctuations and flicker in low-voltage supply systems</u>	Frequency range: 0 to 2 kHz Table(s) No. < >	 []	 []	 [X]	 [2]



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8.4 IMMUNITY STANDARD EN 301 489-1 V2.2.3 (2019-11), EN 301 489-3 V2.3.2 (2023-01)

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9.3	<u>Electrostatic discharges</u>	Contact discharges				
	<u>Table 2</u>	Level : $\pm$ 4 kV				
	Enclosure	Application points :				
		• horizontal coupling plane	[X]	[]	[]	[1]
		• vertical coupling plane	[X]	[]	[]	[1]
	Performance criteria B	• metal part	[X]	[]	[]	[1]
	Performance criteria B	Air discharges				
		Level : $\pm$ 8 kV				
		Application points :				
		• enclosure	[X]	[]	[]	[1]
9.2	<u>Radio-frequency electromagnetic fields 80 to 6000 MHz</u>	Test field strength : 3 V/m (unmodulated signal)				
	<u>Table 2</u>	Modulation frequency : 1 kHz				
	Enclosure	Modulation depth : 80 %				
		Frequency Step : 1% Dwell Time : 3 s Logperiodic/Gtem antenna :				
	Performance criteria A	- horizontal position	[X]	[]	[]	[1]
		- vertical position	[X]	[]	[]	[1]
9.4	<u>Fast transients/bursts</u>	Level : $\pm$ 1 kV				
	<u>Table 2</u>	Rise time/hold time : 5/50 ns				
	Alternative current power input and output ports	Repetition rate : 5 kHz				
		Testing time : 2 min				
	Performance criteria B	Port(s) :				
		• AC mains	[]	[]	[X]	[2]

P : pass - F : Fail - NA : not applicable - Rem : remark

TEST REPORT N°: BMH-ESH-P21080065B-1-A2

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
9.5	<u>RF common mode 0,15 MHz to 80 MHz</u> <u>Table 2</u> Alternative current power input and output ports Performance criterion A	Voltage level : 3 V (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time: 3 s Application with CND-M3 Port(s) : • AC mains	[]	[]	[X]	[2]
9.8	<u>Surges</u> <u>Table 2</u> Alternative current power input and output ports Performance criterion B	Tr/Th(μs) : 1.2/50 (8/20) Number of surges : 5 positive and 5 negative Phase angles : 0°, 90°, 180° and 270° Level : ± 1 kV Port(s) : • power input, between lines and neutral	[]	[]	[X]	[2]
	Performance criterion B	Level : ± 2 kV Port(s) : • power input, between lines and earth • power input, between neutral and earth	[] []	[] []	[X] [X]	[2] [2]
9.7	<u>Voltage dips and voltage interruptions</u> <u>Table 2</u> Alternative current power input and output port(s) Performance criterion C	<u>Voltage interruptions</u> Test level : 0 % Ut-> 0 V Duration : 250 cycles (at 50Hz) Port(s) : • AC mains	[]	[]	[X]	[2]
	<u>Table 2</u> Alternative current power input and output port (s) Performance criterion B	<u>Voltage dips</u> Test level : 70 % residual voltage Duration : 25 cycles (at 50Hz) Test level : 0% residual voltage Duration : 0.5 cycle Test level : 0% residual voltage	[] [] []	[] [] []	[X] [X] [X]	[2] [2] [2]
9.6	<u>Transients and surges</u> for 12V and 24V DC powered equipment	According to ISO 7637-2 Test level III: 1, 2a, 2b and 4, 10 times each Test level III : 3a and 3b for 20 minutes each	[] []	[] []	[X] [X]	[3] [3]

P : pass - F : Fail - NA : not applicable - Rem : remark

**TEST REPORT N°: BMH-ESH-P21080065B-1-A2**

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

8.5 EMISSION STANDARD EN 62920:2017+A11:2020+A1:2021Class: ☐ Class A
☒ Class B

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
8.2	<u>Disturbance voltage limits</u> Frequency range: 0.15 to 30 MHz Table 7 & 9 & 11	Port(s) : - auxiliary AC power input ports - DC power input port - Wired network port and signal/control port Diagram(s) No. <2>	[X] [] []	[] [] []	[] [X] [X]	[] [4] [5]
8.2	<u>Radiated disturbance limits</u> Frequency range: 30 to 1000 MHz Table 13	Measuring Distance: 10 m Port(s) : Enclosure port Diagram(s) No. <1>	[X]	[]	[]	[]
8.1	<u>Limits for harmonic currents emission</u>	Frequency range: 0 to 2 kHz Class of the apparatus : A Table(s) No. <1>	[X]	[]	[]	[]
8.1	<u>Limitation of voltage fluctuations and flicker in low-voltage supply systems</u>	Frequency range: 0 to 2 kHz Table(s) No. <2>	[X]	[]	[]	[]

P : pass – F : Fail – NA : not applicable – Rem : remark

**TEST REPORT N°: BMH-ESH-P21080065B-1-A2**

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

8.6 IMMUNITY STANDARD EN 62920:2017+A11:2020+A1:2021Class: ☐ Class A
☒ Class B

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
7.1	<u>Electrostatic discharges</u> <u>Table 1</u> Enclosure Performance Criterion B	Contact discharges Level : $\pm$ 4kV Application points :				
		• horizontal coupling plane	[X]	[]	[]	[1]
		• vertical coupling plane	[X]	[]	[]	[1]
		• enclosure	[X]	[]	[]	[1]
		• screw	[X]	[]	[]	[1]
		Air discharges Level : $\pm$ 8 kV Application points :				
		• enclosure	[X]	[]	[]	[1]
		• panel				
		• ports				
7.1	<u>Fast transients/bursts</u> <u>Table 1</u> AC power port, DC power port and signal/control port Performance Criterion B	Level : $\pm$ 1 kV for AC power port $\pm$ 0.5 kV for DC power port and signal/control port Repetition rate : 5 kHz Testing time : 2 min Port(s) :				
		• AC power output port	[X]	[]	[]	[1]
		• DC power input port	[X]	[]	[]	[1]
		• Signal/control port	[]	[]	[X]	[5]
7.1	<u>Injected current 0.15 to 80 MHz</u> <u>Table 1</u> AC power port, DC power port and signal/control port Performance Criterion A	Voltage level : 3V Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time: 3 s Application with CDN Port(s) :				
		• AC power output port	[X]	[]	[]	[1]
		• DC power input port	[X]	[]	[]	[1]
		• Signal/control port	[]	[]	[X]	[5]

P : pass - F : Fail - NA : not applicable - Rem : remark



TEST REPORT N°: BMH-ESH-P21080065B-1-A2

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
7.1	<u>Radio-frequency electromagnetic fields 80 to 1000 MHz</u> Table 1 Enclosure Performance Criterion A	Test field strength : 3 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 3 s ☒ Logperiodic antenna - horizontal position - vertical position	[X] [X]	[] []	[] []	[1] [1]
7.1	<u>Radio-frequency electromagnetic fields 1400 to 6000 MHz</u> Performance criteria A	Test field strength : 3 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 3 s Horn antenna : - horizontal position - vertical position	[X] [X]	[] []	[] []	[1] [1]
7.1	<u>Surges</u> Table 1 AC power port, DC power port and signal/control port Performance Criterion B	Tr/Th(μs) : 1.2/50 (8/20) Number of surges : 5 positive and 5 negative Phase angles : 0°, 90°, 180° and 270° Level : ± 1 kV for AC power port ± 0.5 kV for DC power port Port(s) : • power input, between positive and negative • DC power input port	[X] []	[] []	[] [X]	[1] [4]
		Level : ± 2 kV for AC power port ± 1 kV for DC power port Port(s) : • power input, between lines and earth • power input, between neutral and earth • DC power input port	[X] [X] []	[] [] []	[] [] [X]	[1] [1] [4]

**TEST REPORT N°: BMH-ESH-P21080065B-1-A2**

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
7.1	<u>Voltage dips and voltage interruptions</u> Table 3 AC power port Performance criterion B	<u>Voltage dips</u> Test level : 0 % Ut-> 0 V Duration : 10 ms Phase angles : 0° and 180° Port(s) : AC output port	[X]	[]	[]	[1]
		<u>Voltage dips</u> Test level : 0 % Ut-> 0 V Duration : 20 ms Phase angles : 0° and 180° Port(s) : AC output port	[X]	[]	[]	[1]
		<u>Voltage dips</u> Test level : 70 % Ut-> 161 V Duration : 500 ms Phase angles : 0° and 180° Port(s) : AC output port	[X]	[]	[]	[1]
	Table 3 AC power port Performance criterion C	<u>Voltage interruptions</u> Test level : 0 % Ut-> 0 V Duration : 5000 ms Phase angles : 0° Port(s) : AC output port	[X]	[]	[]	[1]

Remark(s) :

- 1 : During and after the test, there are no loss of function and no change of power consumption and operating state.
- 2 : As there are no components in the EUT susceptible to magnetic fields, so it is not needed to perform this test.
- 3 : The EUT does not work in in the vehicular environment.
- 4 : The cable length of DC power port is less than 30 m.
- 5 : The EUT have no related port.

9 CONCLUSION

The apparatus PV Microinverter and models HMS-1000-2T, HMS-900-2T, HMS-800-2T, HMS-700-2T, HMS-600-2T are in compliance with the requirements of the standards EN 62920:2017+A11:2020+A1:2020, IEC 62920:2017+A1:2020, EN IEC 61000-6-3:2021, IEC 61000-6-3:2020, EN IEC 61000-6-4:2019, IEC 61000-6-4:2018, EN IEC 61000-6-1:2019, IEC 61000-6-1:2016, EN IEC 61000-6-2:2019, IEC 61000-6-2:2016, EN IEC 61000-3-2:2019+A1:2021, IEC 61000-3-2:2018+A1:2020, EN 61000-3-3:2013+A1:2019+A2:2021 and IEC 61000-3-3:2013+A1:2017+A2:2021 and EN 301 489-1 V2.2.3 (2019-11), EN 301 489-3 V2.3.2 (2023-01).



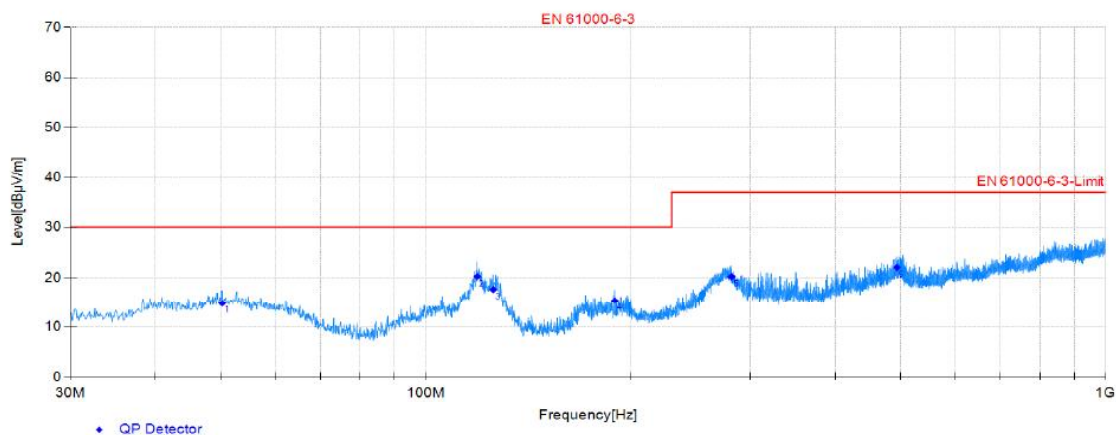
TEST REPORT N°: BMH-ESH-P21080065B-1-A2

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Diagram No. 1

Mode 1

H



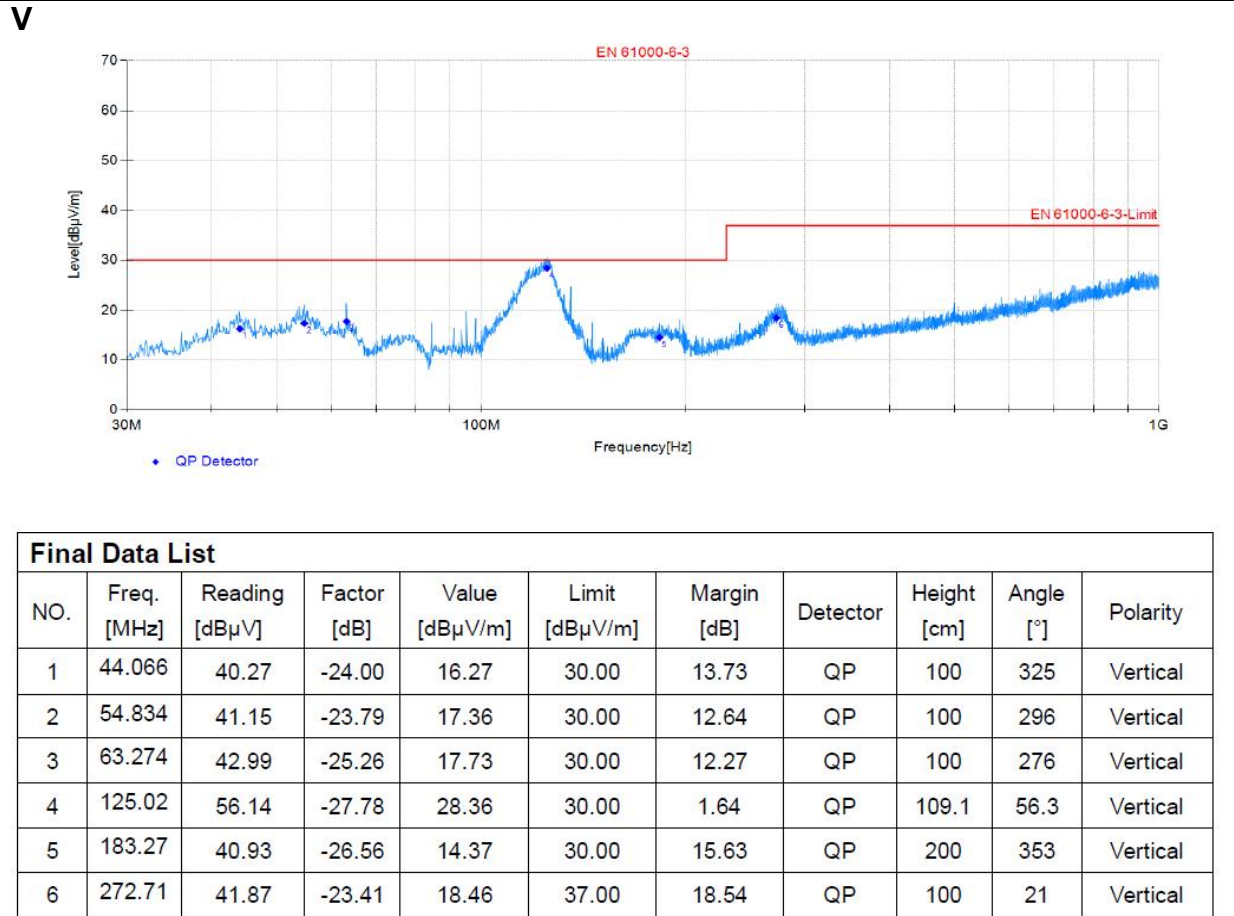
Final Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Value [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	50.178	25.68	-10.94	14.74	30.00	15.26	QP	100	208	Horizontal
2	119.05	35.04	-14.82	20.22	30.00	9.78	QP	400	246	Horizontal
3	125.65	33.34	-15.69	17.65	30.00	12.35	QP	400	198	Horizontal
4	189.67	29.41	-14.09	15.32	30.00	14.68	QP	400	43	Horizontal
5	281.54	32.17	-11.99	20.18	37.00	16.82	QP	300	53	Horizontal
6	493.22	29.2	-7.17	22.03	37.00	14.97	QP	200	355	Horizontal

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Continued

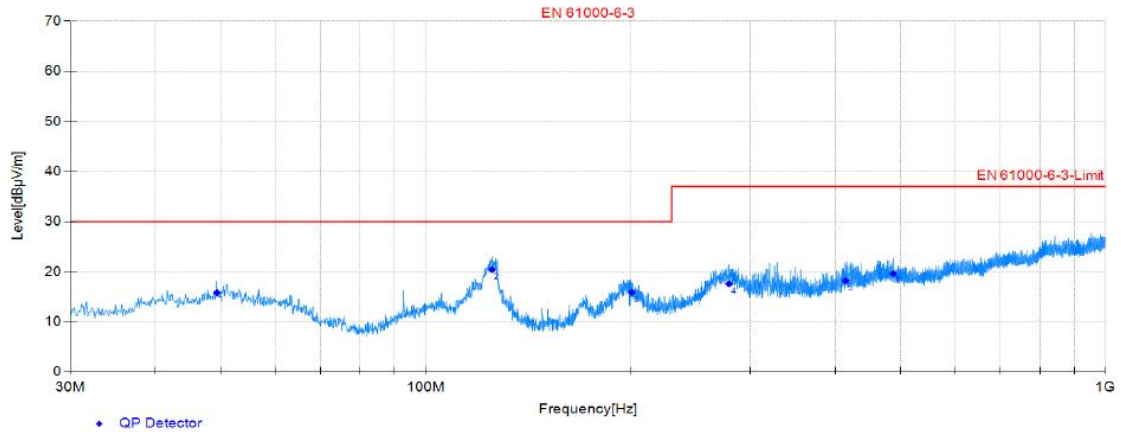


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Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

**Continued
Mode 2**

H



Final Data List

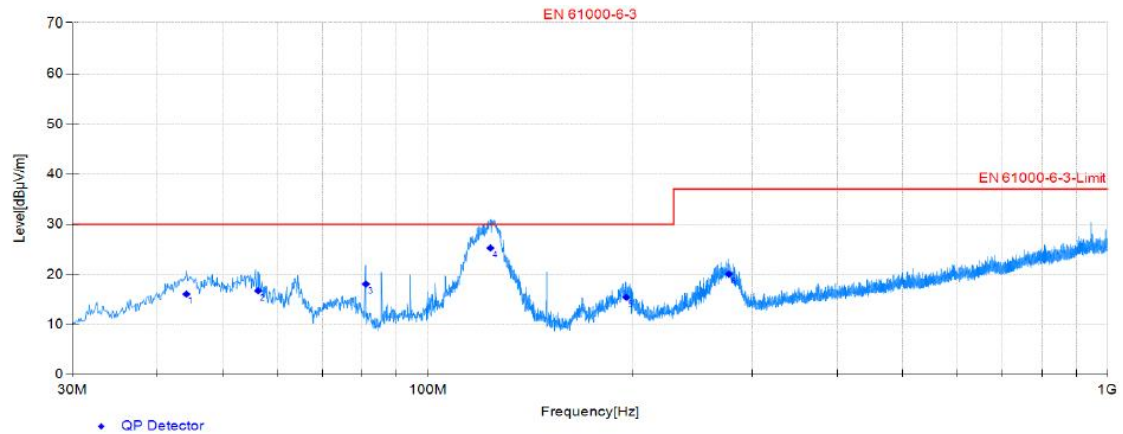
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Value [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	49.304	26.76	-10.97	15.79	30.00	14.21	QP	100	112	Horizontal
2	125.16	36.04	-15.64	20.40	30.00	9.60	QP	400	43	Horizontal
3	200.93	29.46	-13.61	15.85	30.00	14.15	QP	300	179	Horizontal
4	279.31	29.58	-12.03	17.55	37.00	19.45	QP	300	52	Horizontal
5	414.74	26.85	-8.69	18.16	37.00	18.84	QP	200	25	Horizontal
6	487.10	26.84	-7.28	19.56	37.00	17.44	QP	200	299	Horizontal

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Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Continued

V



Final Data List

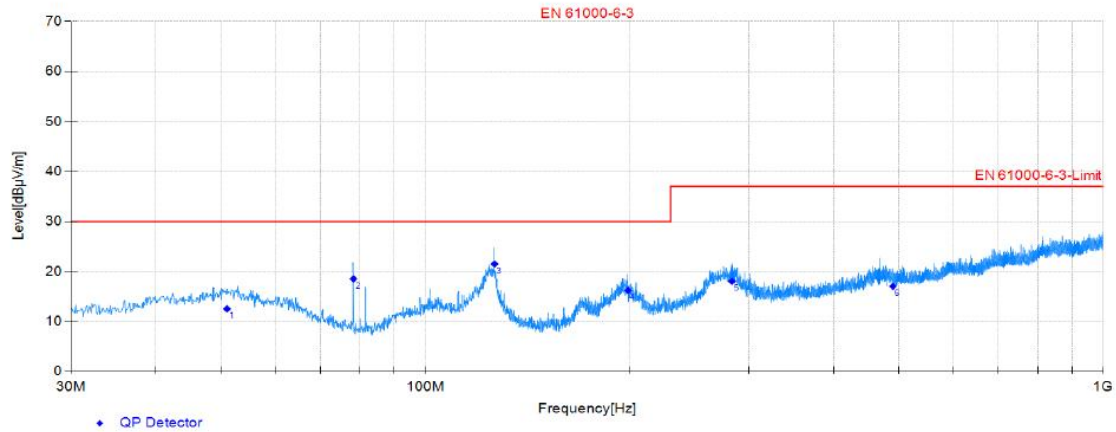
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Value [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	44.163	40.02	-24.00	16.02	30.00	13.98	QP	200	84	Vertical
2	56.289	40.62	-23.94	16.68	30.00	13.32	QP	100	353	Vertical
3	81.124	48.11	-30.08	18.03	30.00	11.97	QP	300	72	Vertical
4	123.64	52.93	-27.69	25.24	30.00	4.76	QP	106.3	241.9	Vertical
5	195.78	40.36	-24.98	15.38	30.00	14.62	QP	200	360	Vertical
6	277.27	43.36	-23.34	20.02	37.00	16.98	QP	100	23	Vertical

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Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

**Continued
Mode 3**

H



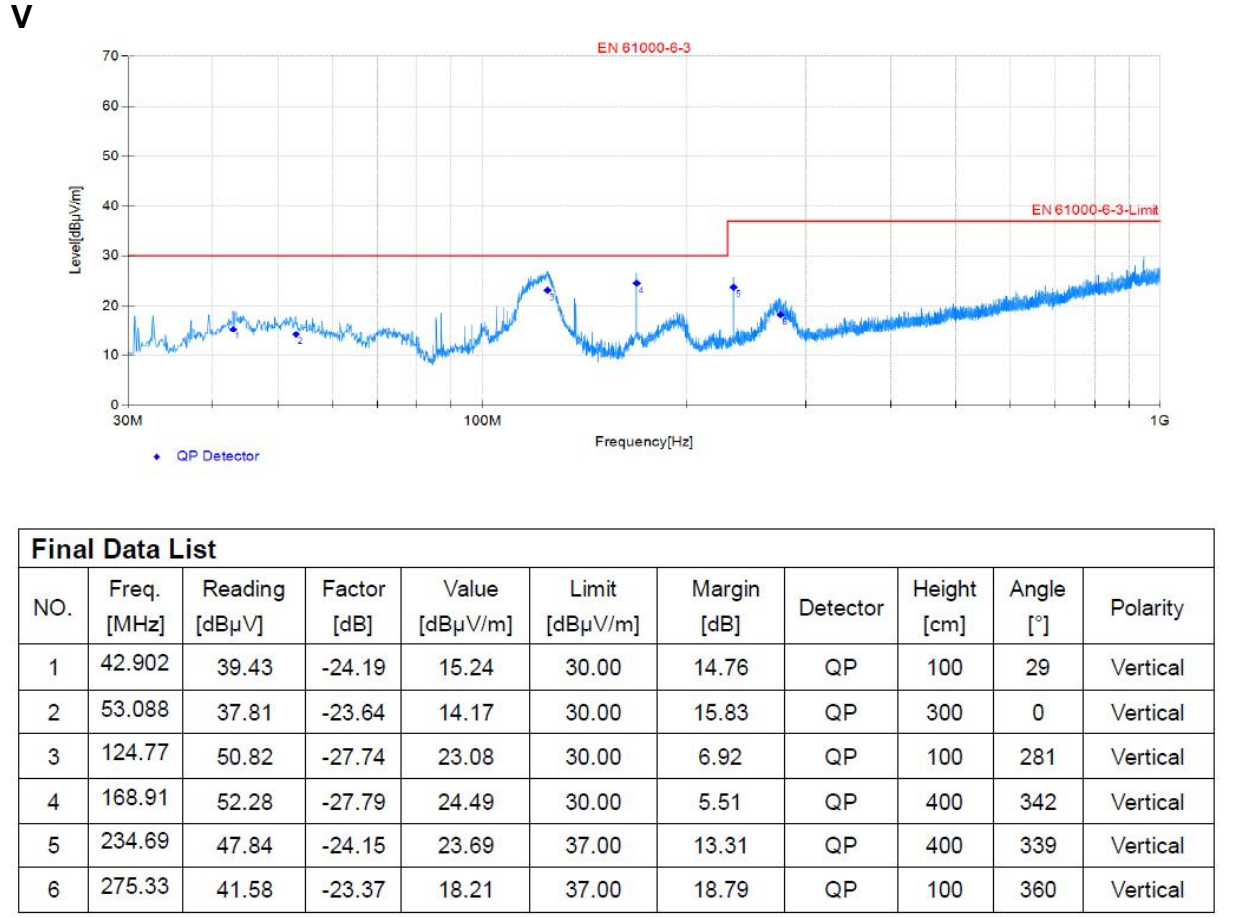
Final Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Value [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	50.954	23.4	-10.91	12.49	30.00	17.51	QP	400	82	Horizontal
2	78.310	36.1	-17.60	18.50	30.00	11.50	QP	400	342	Horizontal
3	126.42	37.24	-15.76	21.48	30.00	8.52	QP	400	342	Horizontal
4	198.99	29.62	-13.44	16.18	30.00	13.82	QP	400	0	Horizontal
5	283.19	29.98	-11.96	18.02	37.00	18.98	QP	400	224	Horizontal
6	489.34	24.24	-7.24	17.00	37.00	20.00	QP	100	346	Horizontal

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Continued

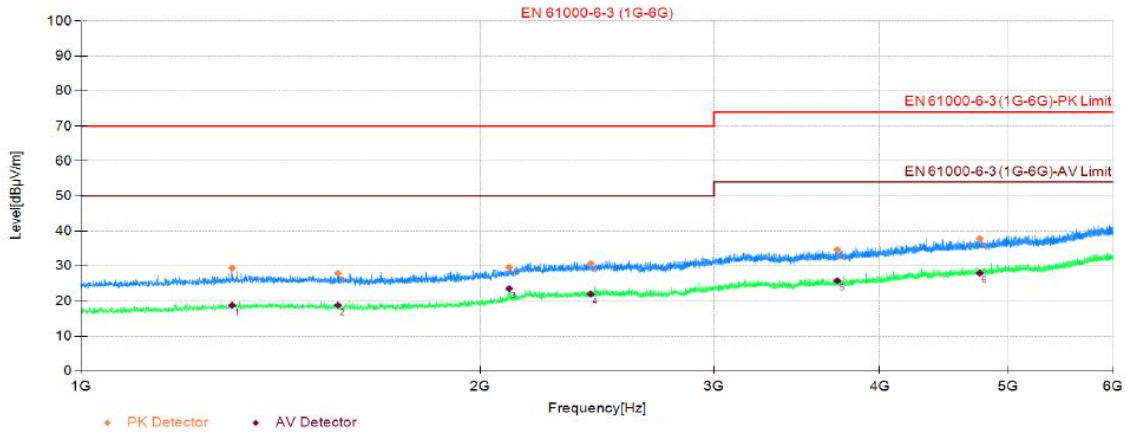


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Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Diagram No. 2
Mode 1

H



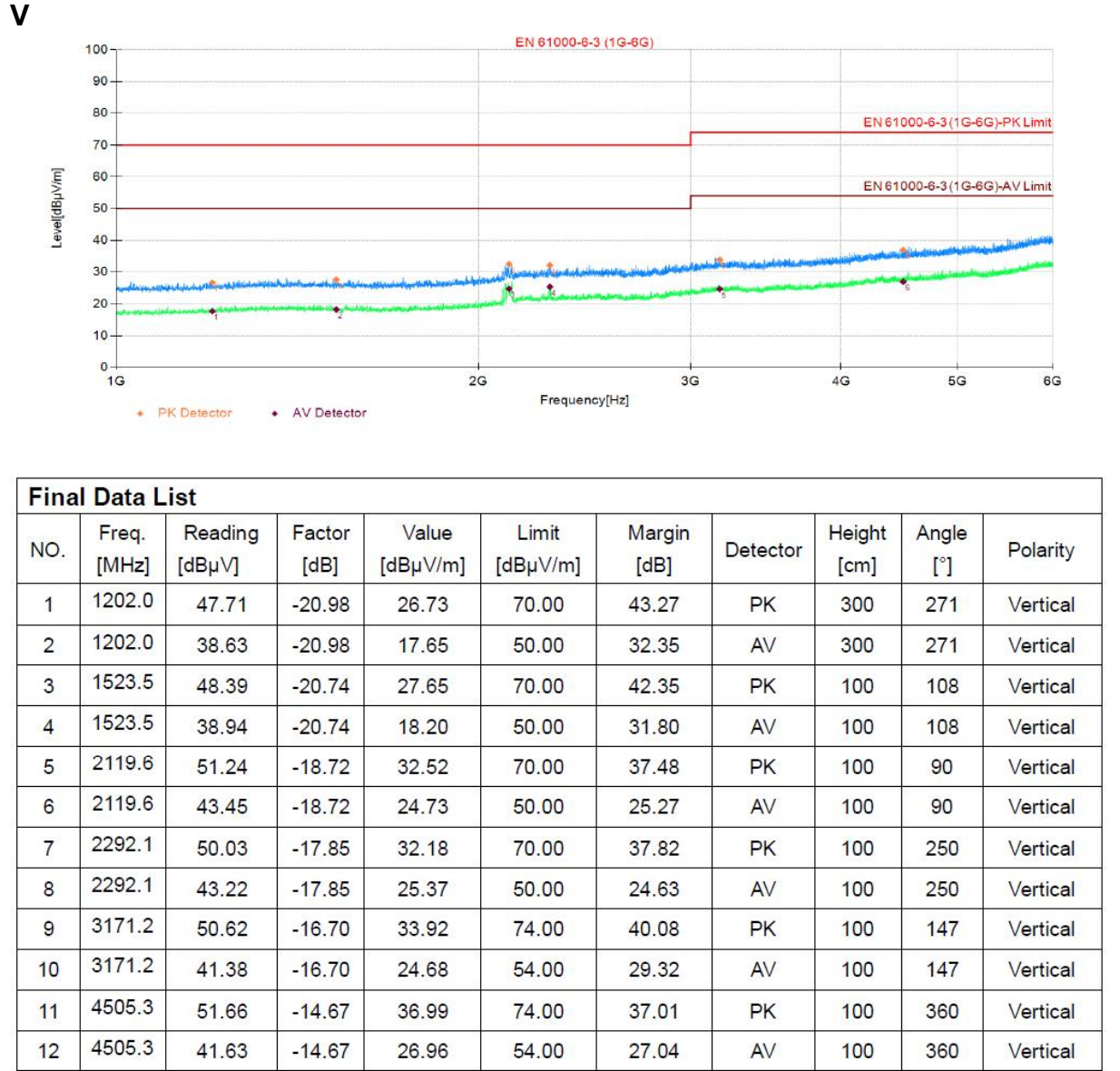
Final Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Value [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Polarity
1	1300.0	49.83	-20.41	29.42	70.00	40.58	PK	300	157	Horizontal
2	1300.0	39.16	-20.41	18.75	50.00	31.25	AV	300	157	Horizontal
3	1562.0	48.83	-20.91	27.92	70.00	42.08	PK	100	214	Horizontal
4	1562.0	39.70	-20.91	18.79	50.00	31.21	AV	100	214	Horizontal
5	2102.1	48.6	-18.96	29.64	70.00	40.36	PK	300	34	Horizontal
6	2102.1	42.49	-18.96	23.53	50.00	26.47	AV	300	34	Horizontal
7	2422.1	48.89	-18.20	30.69	70.00	39.31	PK	300	99	Horizontal
8	2422.1	40.15	-18.20	21.95	50.00	28.05	AV	300	99	Horizontal
9	3715.7	50.87	-16.19	34.68	74.00	39.32	PK	100	121	Horizontal
10	3715.7	41.99	-16.19	25.80	54.00	28.20	AV	100	121	Horizontal
11	4759.3	51.87	-14.02	37.85	74.00	36.15	PK	100	11	Horizontal
12	4759.3	41.97	-14.02	27.95	54.00	26.05	AV	100	11	Horizontal

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Continued

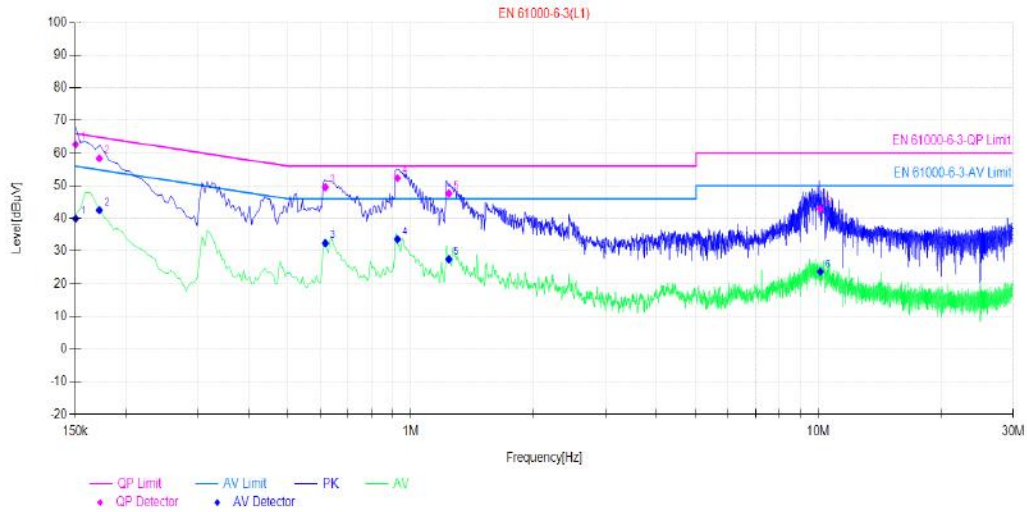


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**Diagram No. 3
Mode 1**

L



Final Data List

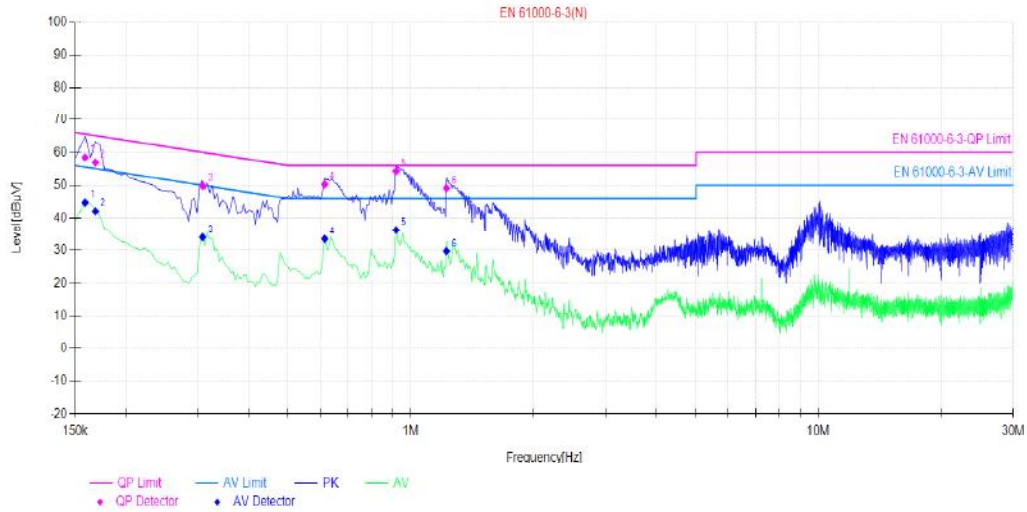
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.15	10.24	62.65	65.97	3.32	39.92	55.97	16.05	PASS
2	0.17	10.24	58.40	64.86	6.46	42.54	54.86	12.32	PASS
3	0.62	10.12	49.55	56.00	6.45	32.41	46.00	13.59	PASS
4	0.93	10.04	52.33	56.00	3.67	33.62	46.00	12.38	PASS
5	1.24	10.03	47.66	56.00	8.34	27.51	46.00	18.49	PASS
6	10.10	10.16	42.91	60.00	17.09	23.71	50.00	26.29	PASS

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Continued

N



Final Data List

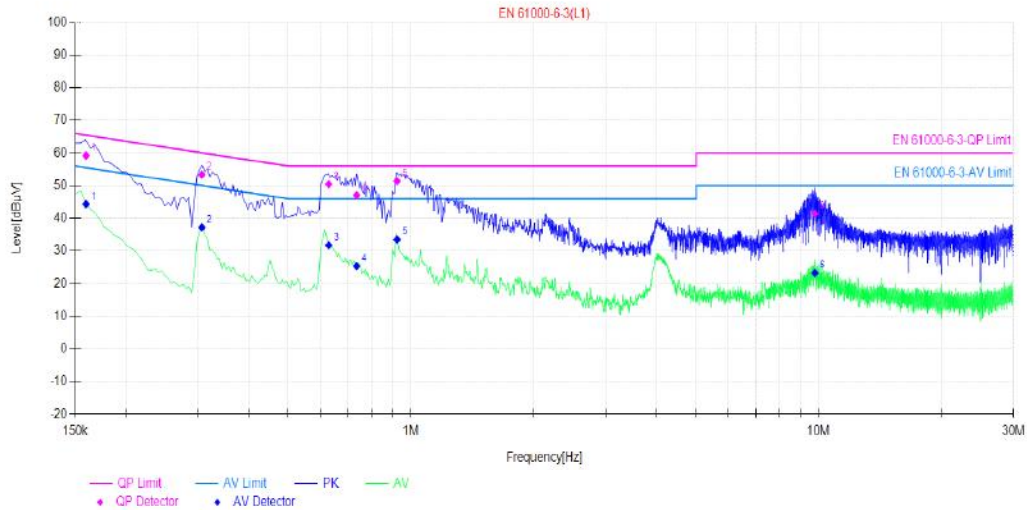
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.16	10.34	58.43	65.54	7.11	44.72	55.54	10.82	PASS
2	0.17	10.34	56.90	65.05	8.15	42.14	55.05	12.91	PASS
3	0.31	10.17	49.89	60.02	10.13	34.12	50.02	15.90	PASS
4	0.61	10.23	50.31	56.00	5.69	33.62	46.00	12.38	PASS
5	0.92	10.15	54.31	56.00	1.69	36.33	46.00	9.67	PASS
6	1.22	10.14	49.17	56.00	6.83	29.77	46.00	16.23	PASS

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Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

**Continued
Mode 2**

L



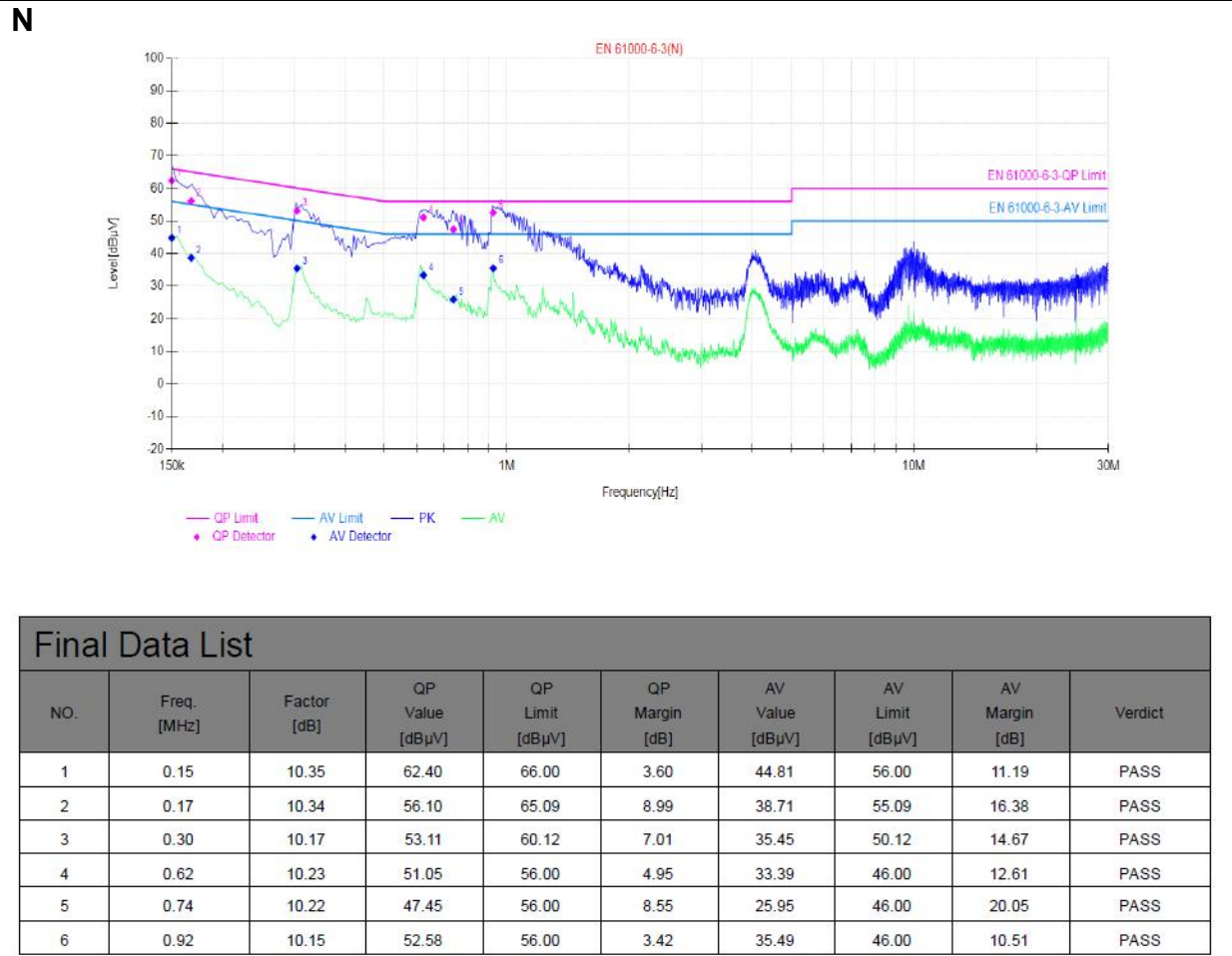
Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.16	10.23	59.22	65.49	6.27	44.35	55.49	11.14	PASS
2	0.31	10.06	53.35	60.06	6.71	37.22	50.06	12.84	PASS
3	0.63	10.12	50.44	56.00	5.56	31.75	46.00	14.25	PASS
4	0.74	10.11	47.09	56.00	8.91	25.37	46.00	20.63	PASS
5	0.92	10.04	51.40	56.00	4.60	33.48	46.00	12.52	PASS
6	9.78	10.15	41.42	60.00	18.58	23.25	50.00	26.75	PASS

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Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Continued

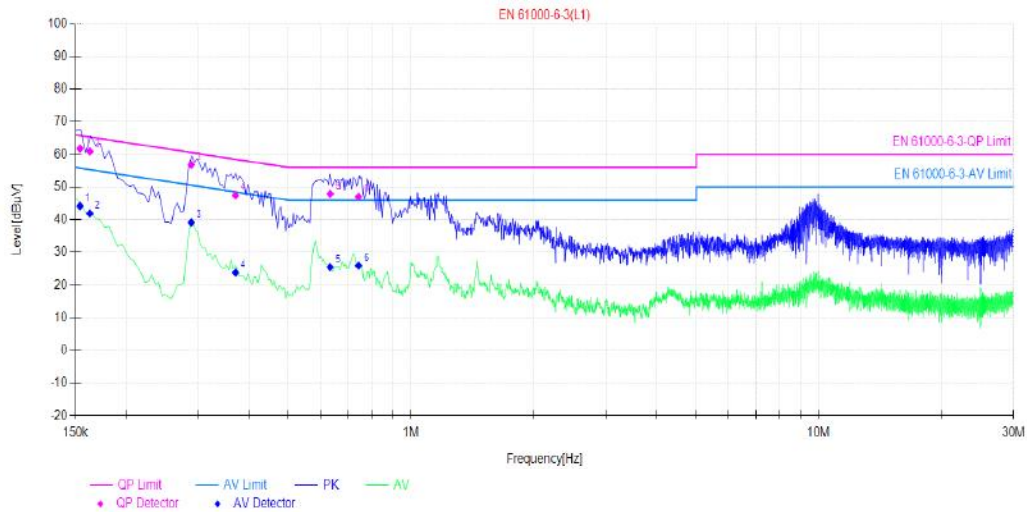


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Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

**Continued
Mode 3**

L



Final Data List

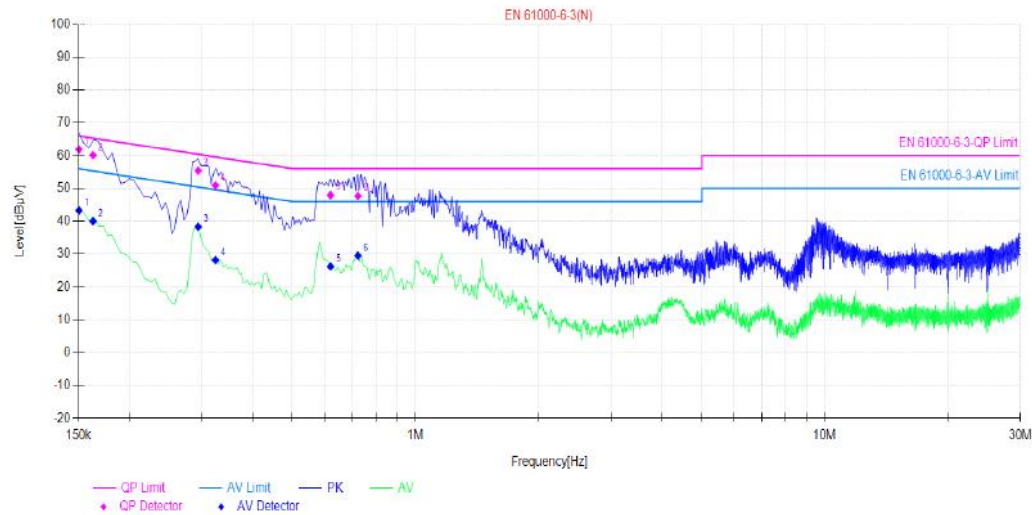
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.15	10.24	61.75	65.79	4.04	44.17	55.79	11.62	PASS
2	0.16	10.23	60.88	65.32	4.44	41.92	55.32	13.40	PASS
3	0.29	10.08	56.80	60.56	3.76	39.14	50.56	11.42	PASS
4	0.37	10.08	47.46	58.48	11.02	23.81	48.48	24.67	PASS
5	0.63	10.12	47.93	56.00	8.07	25.49	46.00	20.51	PASS
6	0.74	10.11	47.04	56.00	8.96	25.96	46.00	20.04	PASS

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Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Continued

N



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.15	10.35	61.87	65.97	4.10	43.31	55.97	12.66	PASS
2	0.16	10.34	60.13	65.32	5.19	39.97	55.32	15.35	PASS
3	0.29	10.18	55.40	60.41	5.01	38.33	50.41	12.08	PASS
4	0.32	10.18	50.91	59.60	8.69	28.18	49.60	21.42	PASS
5	0.62	10.23	47.96	56.00	8.04	26.26	46.00	19.74	PASS
6	0.72	10.22	47.71	56.00	8.29	29.52	46.00	16.48	PASS

**TEST REPORT N°: BMH-ESH-P21080065B-1-A2**

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Table No. 1**100% Load****Average harmonic current results**

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	4.346			
2	0.0010			PASS
3	0.0727	3.1610	2.3000	PASS
4	0.0014			PASS
5	0.0688	6.0370	1.1400	PASS
6	0.0017			PASS
7	0.0631	8.1990	0.7700	PASS
8	0.0016			PASS
9	0.0559	13.9830	0.4000	PASS
10	0.0014			PASS
11	0.0468	14.1780	0.3300	PASS
12	0.0013			PASS
13	0.0388	18.4660	0.2100	PASS
14	0.0013			PASS
15	0.0311	20.7310	0.1500	PASS
16	0.0014			PASS
17	0.0224	16.9140	0.1324	PASS
18	0.0011			PASS
19	0.0146	12.3070	0.1184	PASS
20	0.0009			PASS
21	0.0080	4.9710	0.1607	PASS
22	0.0009			PASS
23	0.0041			PASS
24	0.0008			PASS
25	0.0038			PASS
26	0.0008			PASS
27	0.0052	4.1990	0.1250	PASS
28	0.0008			PASS
29	0.0064	5.5400	0.1164	PASS
30	0.0008			PASS
31	0.0064	5.8760	0.1089	PASS
32	0.0008			PASS
33	0.0060	5.8640	0.1023	PASS
34	0.0007			PASS
35	0.0049			PASS
36	0.0007			PASS
37	0.0035			PASS
38	0.0007			PASS
39	0.0024			PASS
40	0.0007			PASS

**TEST REPORT N°: BMH-ESH-P21080065B-1-A2**

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

50% Load

Average and Maximum harmonic current results									
Hn	Average				Maximum				Harmonic Result
	Ieff [A]	of Limit [%]	Limit [A]	Result	Ieff [A]	of Limit [%]	Limit [A]	Result	
1	1.909				1.968				
2	0.002	0.177	1.080	n/a	0.002	0.138	1.620	n/a	PASS
3	0.024	1.024	2.300	PASS	0.026	0.762	3.450	PASS	PASS
4	0.002	0.377	0.430	n/a	0.002	0.276	0.645	n/a	PASS
5	0.010	0.876	1.140	n/a	0.010	0.608	1.710	n/a	PASS
6	0.001	0.471	0.300	n/a	0.002	0.358	0.450	n/a	PASS
7	0.017	2.179	0.770	PASS	0.019	1.659	1.155	PASS	PASS
8	0.001	0.527	0.230	n/a	0.001	0.396	0.345	n/a	PASS
9	0.020	4.924	0.400	PASS	0.021	3.525	0.600	PASS	PASS
10	0.001	0.668	0.184	n/a	0.001	0.513	0.276	n/a	PASS
11	0.019	5.618	0.330	PASS	0.019	3.926	0.495	PASS	PASS
12	0.002	1.331	0.153	n/a	0.002	0.956	0.230	n/a	PASS
13	0.015	6.927	0.210	PASS	0.015	4.851	0.315	PASS	PASS
14	0.001	0.987	0.131	n/a	0.001	0.732	0.197	n/a	PASS
15	0.010	6.794	0.150	n/a	0.011	4.883	0.225	n/a	PASS
16	0.001	1.101	0.115	n/a	0.001	0.832	0.173	n/a	PASS
17	0.008	5.817	0.132	n/a	0.008	4.273	0.199	n/a	PASS
18	0.001	1.090	0.102	n/a	0.001	0.803	0.153	n/a	PASS
19	0.006	4.945	0.118	n/a	0.006	3.631	0.178	n/a	PASS
20	0.001	1.355	0.092	n/a	0.001	0.988	0.138	n/a	PASS
21	0.004	4.147	0.107	n/a	0.005	3.197	0.161	n/a	PASS
22	0.001	1.576	0.084	n/a	0.001	1.164	0.125	n/a	PASS
23	0.006	5.818	0.098	n/a	0.006	4.315	0.147	n/a	PASS
24	0.001	1.473	0.077	n/a	0.001	1.093	0.115	n/a	PASS
25	0.005	6.002	0.090	n/a	0.006	4.426	0.135	n/a	PASS
26	0.001	1.459	0.071	n/a	0.001	1.076	0.106	n/a	PASS
27	0.004	5.377	0.083	n/a	0.006	4.606	0.125	n/a	PASS
28	0.001	1.558	0.066	n/a	0.001	1.137	0.099	n/a	PASS
29	0.008	10.329	0.078	n/a	0.009	7.617	0.116	n/a	PASS
30	0.001	1.687	0.061	n/a	0.001	1.246	0.092	n/a	PASS
31	0.008	10.843	0.073	n/a	0.009	7.881	0.109	n/a	PASS
32	0.001	1.831	0.058	n/a	0.001	1.392	0.086	n/a	PASS
33	0.008	11.031	0.068	n/a	0.008	7.675	0.102	n/a	PASS
34	0.001	2.048	0.054	n/a	0.001	1.528	0.081	n/a	PASS
35	0.010	14.928	0.064	n/a	0.010	10.604	0.096	n/a	PASS
36	0.001	2.173	0.051	n/a	0.001	1.633	0.077	n/a	PASS
37	0.009	14.525	0.061	n/a	0.009	10.139	0.091	n/a	PASS
38	0.001	2.171	0.048	n/a	0.001	1.609	0.073	n/a	PASS
39	0.007	11.864	0.058	n/a	0.008	8.994	0.087	n/a	PASS
40	0.001	2.234	0.046	n/a	0.001	1.682	0.069	n/a	PASS

**TEST REPORT N°: BMH-ESH-P21080065B-1-A2**

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

25% Load

Average and Maximum harmonic current results									
Hn	Average				Maximum				Harmonic Result
	I _{eff} [A]	of Limit [%]	Limit [A]	Result	I _{eff} [A]	of Limit [%]	Limit [A]	Result	
1	0.993				1.031				
2	0.001	0.114	1.080	n/a	0.001	0.086	1.620	n/a	PASS
3	0.011	0.466	2.300	PASS	0.011	0.330	3.450	PASS	PASS
4	0.001	0.294	0.430	n/a	0.001	0.218	0.645	n/a	PASS
5	0.005	0.464	1.140	n/a	0.006	0.346	1.710	n/a	PASS
6	0.001	0.388	0.300	n/a	0.001	0.282	0.450	n/a	PASS
7	0.008	1.098	0.770	PASS	0.010	0.844	1.155	PASS	PASS
8	0.001	0.436	0.230	n/a	0.001	0.327	0.345	n/a	PASS
9	0.013	3.363	0.400	PASS	0.015	2.482	0.600	PASS	PASS
10	0.001	0.517	0.184	n/a	0.001	0.519	0.276	n/a	PASS
11	0.014	4.367	0.330	PASS	0.015	3.104	0.495	PASS	PASS
12	0.002	1.260	0.153	n/a	0.002	0.903	0.230	n/a	PASS
13	0.012	5.608	0.210	PASS	0.012	3.948	0.315	PASS	PASS
14	0.001	0.776	0.131	n/a	0.001	0.571	0.197	n/a	PASS
15	0.007	4.959	0.150	PASS	0.008	3.546	0.225	PASS	PASS
16	0.001	0.836	0.115	n/a	0.001	0.731	0.173	n/a	PASS
17	0.004	3.311	0.132	n/a	0.005	2.334	0.199	n/a	PASS
18	0.001	0.896	0.102	n/a	0.001	0.674	0.153	n/a	PASS
19	0.004	3.184	0.118	n/a	0.004	2.256	0.178	n/a	PASS
20	0.001	1.049	0.092	n/a	0.001	0.786	0.138	n/a	PASS
21	0.004	4.016	0.107	n/a	0.005	2.930	0.161	n/a	PASS
22	0.001	1.418	0.084	n/a	0.001	1.043	0.125	n/a	PASS
23	0.004	4.240	0.098	n/a	0.005	3.279	0.147	n/a	PASS
24	0.001	1.430	0.077	n/a	0.001	1.075	0.115	n/a	PASS
25	0.004	4.545	0.090	n/a	0.005	3.647	0.135	n/a	PASS
26	0.001	1.434	0.071	n/a	0.001	1.072	0.106	n/a	PASS
27	0.005	6.314	0.083	n/a	0.006	5.003	0.125	PASS	PASS
28	0.001	1.467	0.066	n/a	0.001	1.072	0.099	n/a	PASS
29	0.006	8.022	0.078	PASS	0.007	5.686	0.116	PASS	PASS
30	0.001	1.527	0.061	n/a	0.001	1.145	0.092	n/a	PASS
31	0.006	8.300	0.073	n/a	0.006	5.843	0.109	PASS	PASS
32	0.001	1.634	0.058	n/a	0.001	1.213	0.086	n/a	PASS
33	0.005	7.561	0.068	n/a	0.006	5.408	0.102	n/a	PASS
34	0.001	1.863	0.054	n/a	0.001	1.401	0.081	n/a	PASS
35	0.005	7.366	0.064	n/a	0.005	5.270	0.096	n/a	PASS
36	0.001	1.793	0.051	n/a	0.001	1.377	0.077	n/a	PASS
37	0.005	8.090	0.061	n/a	0.005	5.884	0.091	n/a	PASS
38	0.001	1.760	0.048	n/a	0.001	1.294	0.073	n/a	PASS
39	0.005	8.032	0.058	n/a	0.005	5.599	0.087	n/a	PASS
40	0.001	1.858	0.046	n/a	0.001	1.405	0.069	n/a	PASS

**TEST REPORT N°: BMH-ESH-P21080065B-1-A2**

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Table No. 2**100% Load**

	EUT values	Limit	Result
Pst	0.034	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.011	3.30	PASS
dmax [%]	0.211	4.00	PASS
Tmax [s]	0.000	0.50	PASS

50% Load

	EUT values	Limit	Result
Pst	0.050	1.00	PASS
Plt	0.031	0.65	PASS
dc [%]	0.326	3.30	PASS
dmax [%]	0.456	4.00	PASS
Tmax [s]	0.000	0.50	PASS

25% Load

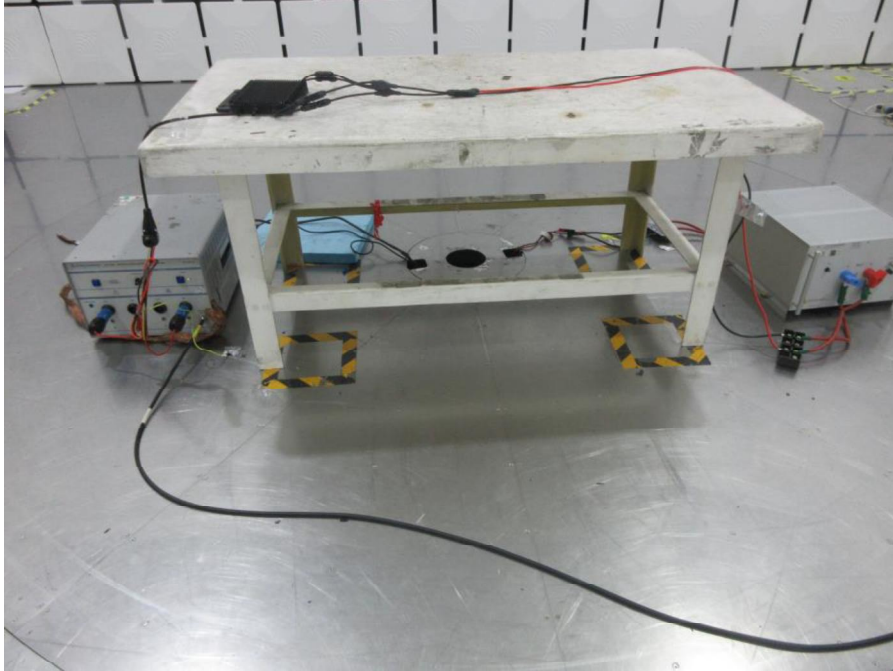
	EUT values	Limit	Result
Pst	0.050	1.00	PASS
Plt	0.031	0.65	PASS
dc [%]	0.168	3.30	PASS
dmax [%]	0.334	4.00	PASS
Tmax [s]	0.000	0.50	PASS

TEST REPORT N°: BMH-ESH-P21080065B-1-A2

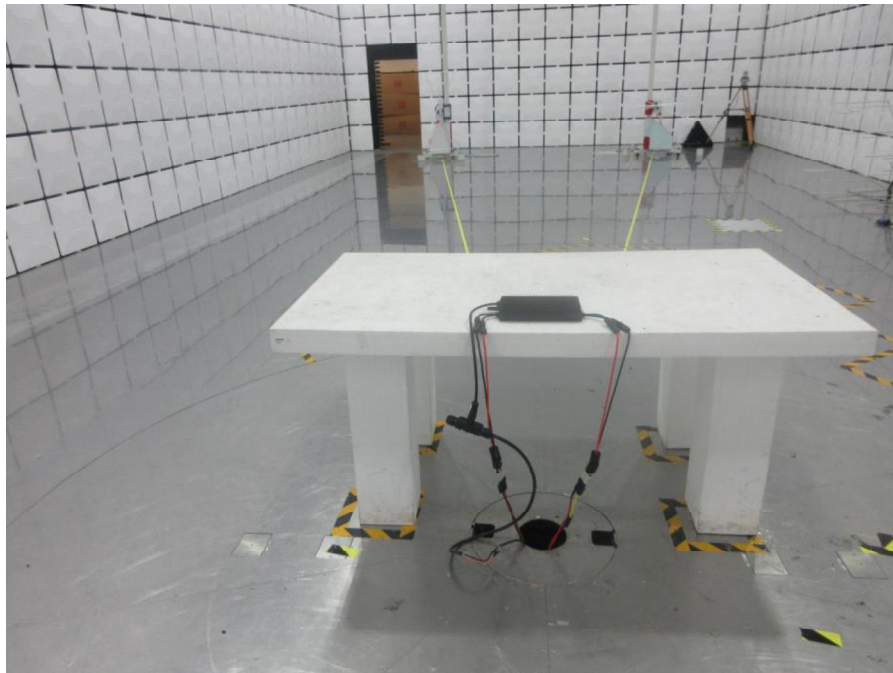
Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

10 TEST PHOTO

Conducted emission test

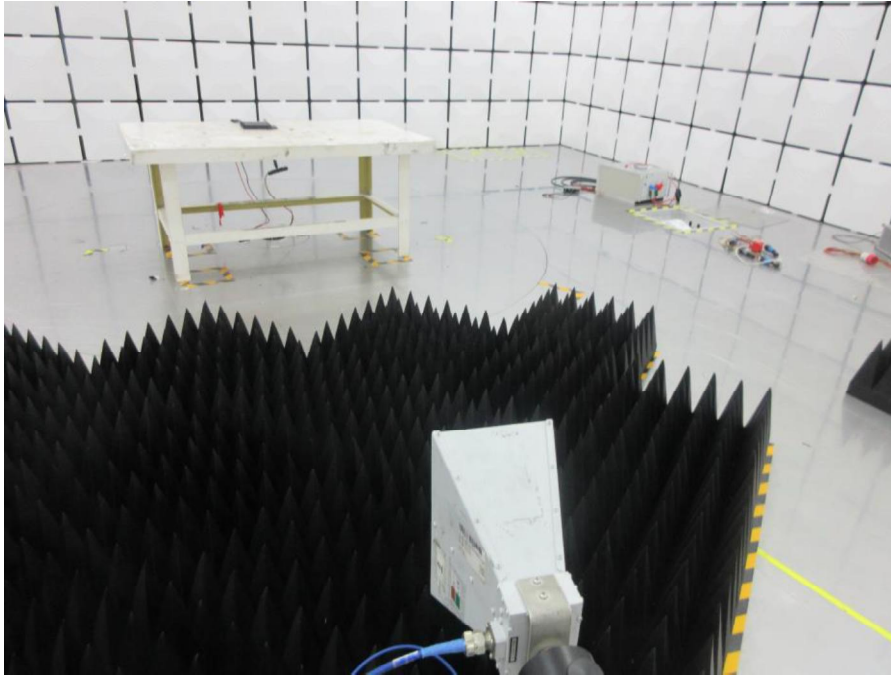


Radiated emission test



TEST REPORT N°: BMH-ESH-P21080065B-1-A2

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

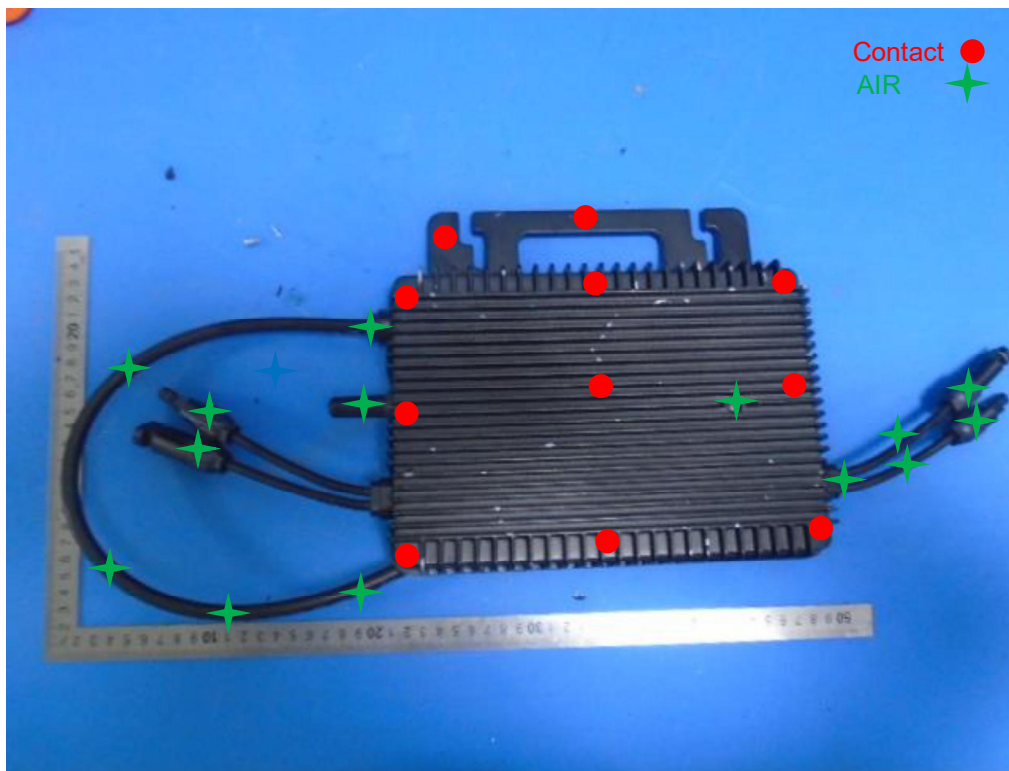
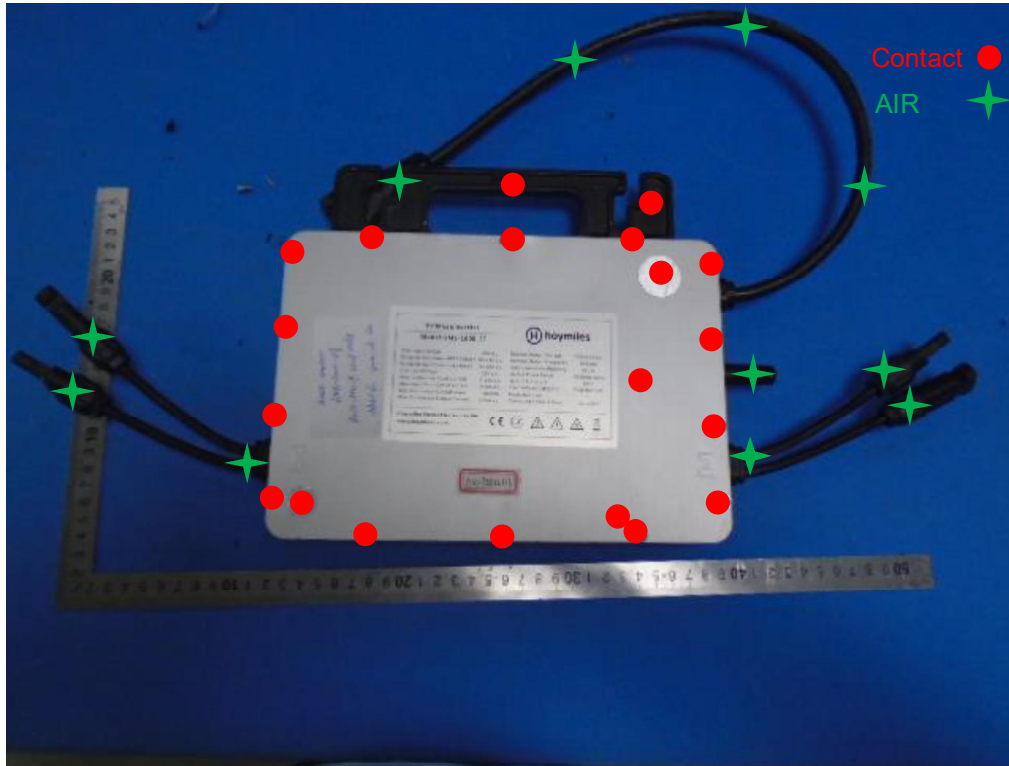


Electrostatic discharges test



TEST REPORT N°: BMH-ESH-P21080065B-1-A2

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

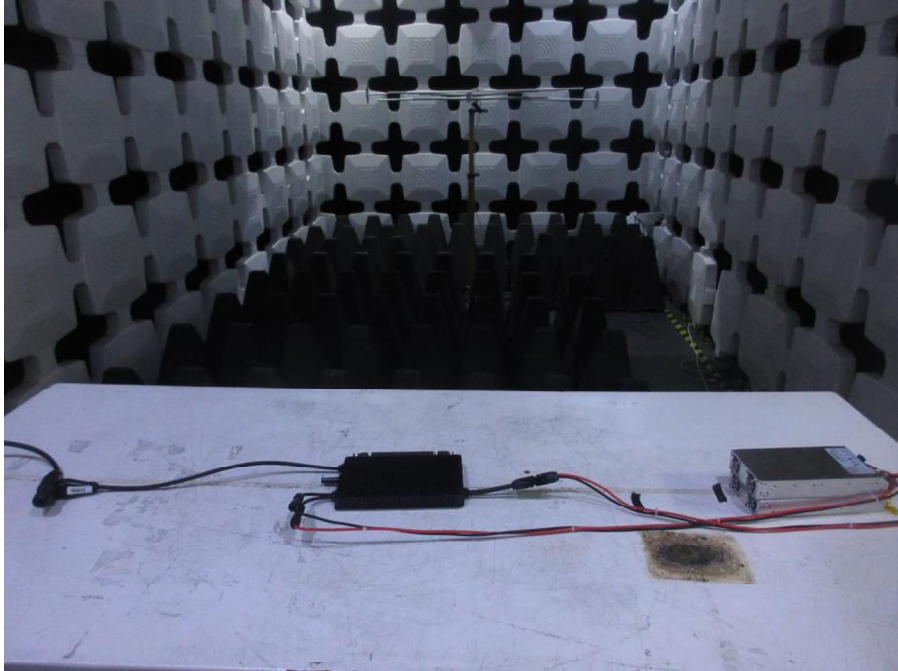


TEST REPORT N°: BMH-ESH-P21080065B-1-A2

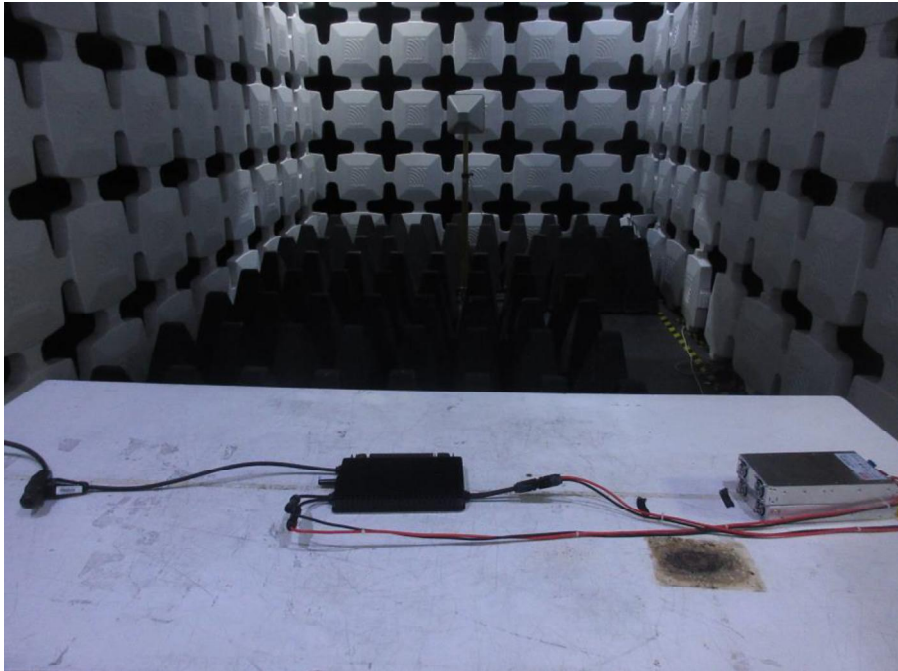
Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Radiated radio-frequency electromagnetic field test

Below 1GHz



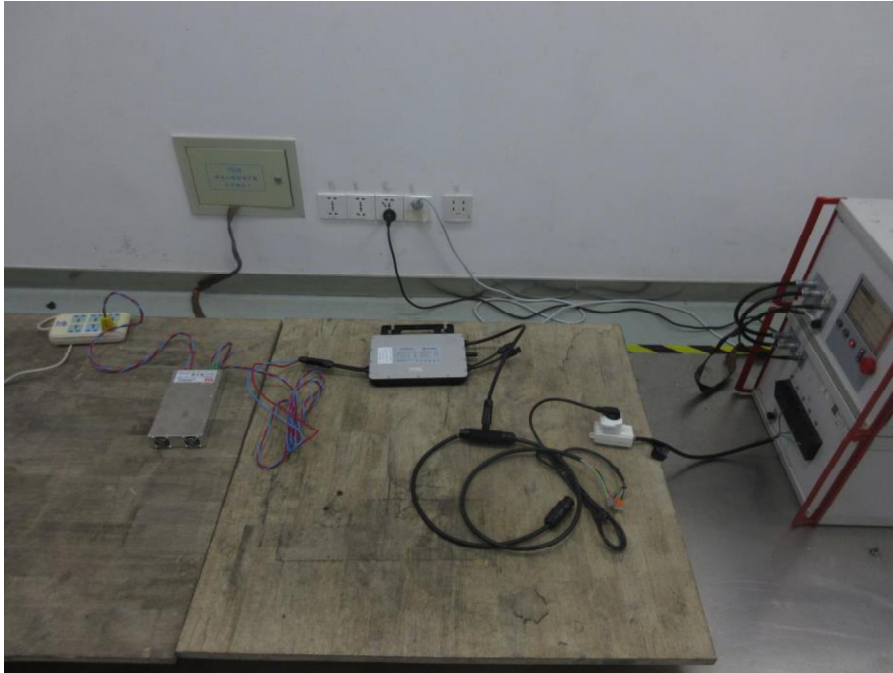
Above 1GHz



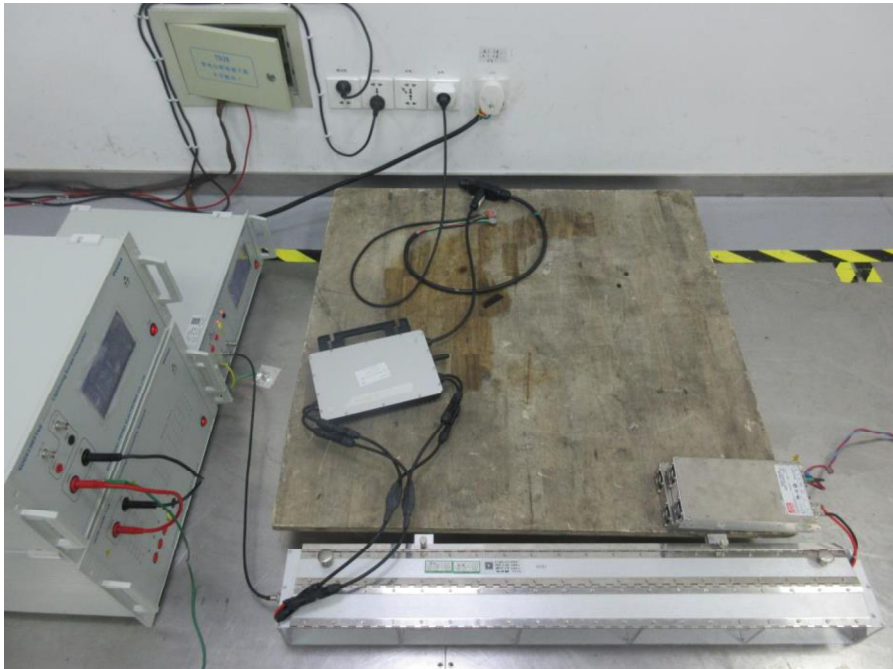
TEST REPORT N°: BMH-ESH-P21080065B-1-A2

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Fast transients/bursts test and surge test
AC Port



Fast transients/bursts test
DC Port



TEST REPORT N°: BMH-ESH-P21080065B-1-A2

Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Conducted disturbances induced by radio-frequency fields test
AC Port



DC Port





TEST REPORT N°: BMH-ESH-P21080065B-1-A2
Supplement "A2" to test report No.: BMH-ESH-P21080066B-1-A1 dated on 2023-09-28

Harmonic, Voltage dips and voltage interruptions test



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