RESOLUCION 737 - SUBTEL

Fecha de publicación:

Información Comercial

Nombre comercial del equipo

Código	Descripción
929002469202	Philips HueW 9.5W A60 E27 EU
290024692A	Philips HueW 9.5W A60 E27 EU

Fabricante: Signify (China) Investment Co., Ltd.

Importador o representante en Chile: SIGNIFY CHILENA S.A.

Domicilio: *El Bosque Norte 0211, Las Condes - Santiago*

Correo electrónico de contacto: tomas.aragona@signify.com

Sitio Web: philips-hue.com/es-cl

Características técnicas

Tipo de equipo	Lámpara LED
Marca	Hue
Modelo	290024692A
Módulo	EFR32RM21
Tecnología o modulación	GFSK
Frecuencias	BT: 2402-2480; ZigBee: 2405-2480 MHz.
Ganancia de antena (dBi)	–5,0 dBi
P.I.R.E. (EIRP)	BT: 3,27 mW (5,15 dBm); ZigBee: 3,21 mW (5,07 dBm).

Declaración de conformidad

"El equipo previamente individualizado cumple con las disposiciones establecidas en la Norma Técnica de Equipos de alcance reducido, aprobada por la resolución exenta N° 1.985, de 2017, de la Subsecretaría de Telecomunicaciones."

Firma del Importador/Responsable:

Nombre de quien firma: Tomás Aragona

Cargo: Representante Legal

Oficio Nº 3776 / 2024
Santiago, 28 de marzo de 2024

Exp. 2024006300

/DO N° 105978/F60

ANT.: 1. Ingreso SUBTEL N° 36923 de 18.03.2024.
2. Resolución Exenta N° 1985 de 2017, y sus modificaciones, de la Subsecretaría de Telecomunicaciones
3. Resolución Exenta N° 3.103 de 2012, de la Subsecretaría de Telecomunicaciones.
4. Resolución Exenta N° 470 de fecha 13.02.2013, que faculta a los jefes de División y de Departamento para firmar "Por Orden del Subsecretario de Telecomunicaciones" y delega las facultades que indica.

MAT.: Certifica equipo de alcance reducido.

DE: SUBSECRETARÍA DE TELECOMUNICACIONES

A: MBSERVICES

1. De acuerdo a la información proporcionada por documento de ANT. 1), esta Subsecretaría de Estado extiende el presente certificado para operar dentro del país, condicionado al estricto cumplimiento de lo señalado en letra(s) j.1) del artículo 1° de la norma señalada en ANT. 2):

- Tipo de Equipo : LÁMPARA LED.
- Marca : HUE.
- Modelo(s) : 290024692A
- Fabricante : Signify (China) Investment Co., Ltd.
- Frecuencias de operación : BT: 2402-2480; ZigBee: 2405-2480 MHz.
- Potencia máxima radiada : BT: 3,27 mW (5,15 dBm); ZigBee: 3,21 mW (5,07 dBm).
- Restricciones : Estos equipos deben emplear técnicas de compartición de frecuencias.

2. El incumplimiento de lo dispuesto por el presente certificado, será sancionado de acuerdo a las disposiciones legales vigentes. Estos equipos no deberán provocar interferencias a servicios de concesionarias de telecomunicaciones y no estarán protegidos respecto de interferencias que eventualmente puedan recibir.

Saluda atentamente a Ud.,
Por orden del Subsecretario de Telecomunicaciones

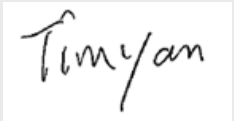
DISTRIBUCIÓN:
- MBSERVICES: Laboratorio@mbservices.cl
- Oficina de Partes.

Francisco Javier Pizarro Sepulveda
Jefe División Fiscalización
28/03/2024 12:20

DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch
Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Tel +86 20 6661 2000 Fax +86 20 6661 2001 www.dekra-certification.com

Test report No: 4388006.51

TEST REPORT
Radio Spectrum Matters (RF)

Identification of item tested	LED lamp
Trademark	PHILIPS
Model and /or type reference	9290018216A, 9290018217A, 9290024692A, 9290024693A
Features	220-240 Vac, 50/60 Hz, 9 / 9,5 W
Applicant´s name / address	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai 200233, China
Test method requested, standard	ETSI EN 300 328 V2.2.2 (2019-07)
Verdict Summary	COMPLIANCE
Tested by (name & signature)	Harry Deng 
Approved by (name & signature)	Tim Yan 
Date of issue	2022-05-25
Report template No	TRF_EMC 2017-06-328

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GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. This report will not be used for social proof function in China market.

UNCERTAINTY

For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in EN 55016-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.				
☐ Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.				
Decimal separator used in this report	☒	Comma (,)	☐	Point (.)

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	:	Equipment Under Test
QP	:	Quasi-Peak
CAV	:	CISPR Average
AV	:	Average
CDN	:	Coupling Decoupling Network
SAC	:	Semi-Anechoic Chamber
OATS	:	Open Area Test Site
BW	:	Bandwidth
AM	:	Amplitude Modulation
PM	:	Pulse Modulation
HCP	:	Horizontal Coupling Plane
VCP	:	Vertical Coupling Plane
U_N	:	Nominal voltage
*T*x	:	Transmitter
*R*x	:	Receiver
N/A	:	Not Applicable
N/M	:	Not Measured

DOCUMENT HISTORY

Report nr.	Date	Description
4388006.51	2022-05-25	First release.

REMARKS AND COMMENTS

The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item ..... :	LED lamp
Model / Type number ..... :	PHILIPS
Trademark ..... :	9290018216A, 9290018217A, 9290024692A, 9290024693A
Ratings ..... :	220-240 Vac, 50/60 Hz, 9290018216A, 9290018217A: 9 W; 9290024692A, 9290024693A: 9,5 W
Manufacturer/Factory..... :	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai 200233, China

For Zigbee

Operating frequency range(s) – Tx :	2405-2480 MHz
Operating frequency range(s) – Rx :	2405-2480 MHz
Type of Modulation ..... :	GFSK
Antenna type..... :	Integral Antenna
Antenna gain..... :	-5,0 dBi
Number of channel..... :	16
Operating Temperature Range..... :	-20 – 45 ℃

For BLE

Operating frequency range(s) – Tx :	2402-2480 MHz
Operating frequency range(s) – Rx :	2402-2480 MHz
Type of Modulation ..... :	GFSK
Data rate..... :	1 Mbps, 2 Mbps, 125 kbps, 500 kbps
Antenna type..... :	Integral Antenna
Antenna gain..... :	-5,0 dBi
Number of channel..... :	40
Operating Temperature Range..... :	-20 – 45 ℃

Rated power supply .....:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☒	AC: 220 – 240 V, 50/60 Hz	☒	☐	☐	☒	☐
	☐	DC: 12 V, 24 V, 12 / 24 V					
	☐	Battery:					
Mounting position.....:	☐	Table top equipment					
	☒	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☐	Other:					

Intended use of the Equipment Under Test (EUT)
The apparatus as supplied for the test is LED lamp which intended for residential use, the product contains electronic control circuitry but without earth connection and no component susceptible to magnetic fields. According to manufacturer's declaration, all models are identical except different rated power and lamp cap. Hence, model 9290024692A was chosen for full test and the corresponding test data are also representative of the other models as well.

Copy of marking plate:
No provide.

1.2 Test data

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Date of receipt of test item	2022-04-18
Date (s) of performance of tests	2022-04-18 to 2022-04-28

1.3 The environment(s) in which the EUT is intended to be used

The equipment under test (EUT) is intended to be used in the following environment(s):

☒	Residential (domestic) environment.
☒	Commercial and light-industrial environment.
☐	Industrial environment.

1.4 Classification of Receivers according to ETSI EN 300328

The receivers were subdivided into 3 categories according to ETSI EN 300 328. For each category, the specific immunity requirements are formulated.

	Receiver category	Definition
	1	Adaptive equipment with a maximum RF output power greater than 10 dBm(e.i.r.p).
√	2	Non-adaptive equipment with a Medium Utilization (MU) factor greater than 1 % and less than or equal to 10 % or adaptive equipment with a maximum RF output power of 10 dBm(e.i.r.p).
	3	Non-adaptive equipment with a maximum Medium Utilization (MU) factor of 1 % or adaptive equipment with a maximum RF output power of 0 dBm(e.i.r.p).

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Operating mode	Operating mode description	Used for methos	
		Conducted	Radiated
1	Transmitting @Zigbee mode	☒	☒
2	Receiving @Zigbee mode	☒	☒
3		☐	☐
Supplemental information: ---			

2.2 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
Laptop	Latitude 5488	DELL	DEKRA
Supplemental information: ---			

2.3 Test Configuration / Block diagram used for tests

Refer to Annex 3.

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
ETSI EN 300 328 V2.2.2	2019-07	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

3.3 Overview of results

TRANSMITTER TESTS		
Requirement – Test case for Wide band modulation other than FHSS	**Verdict**	**Remark**
RF output power	PASS	---
Power Spectral Density	PASS	---
Duty Cycle, Tx-sequence, Tx-gap	N/A	See 1)
Medium Utilization (MU) factor	N/A	See 2)
Adaptivity	N/A	See 3)
Occupied Channel Bandwidth (BW)	PASS	---
Transmitter unwanted emissions in the out-of-band domain	PASS	---
Transmitter unwanted emissions in the spurious domain	PASS	---
Supplementary information: 1) These requirements apply to non-adaptive equipment or to adaptive equipment when operating in a non-adaptive mode. 2) This requirement does not apply to adaptive equipment unless operating in a non-adaptive mode. 3) The maximum RF output power for this product is less than 10 dBm.		

RECEIVER TESTS		
Requirement	**Verdict**	**Remark**
Receiver spurious emission	PASS	--
Receiver Blocking	PASS	---
Geo-location capability	N/A	See 1)
Supplementary information: 1) This requirement only applies to equipment with geo-location capability		

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result.

3.4 Measurement procedure

The EUT was controlled by a serial PCB which provided by manufacturer which connected to laptop through the com port. After connected, run the software “HueApprobationTool” supplied by manufacturer to control the EUT work in required test mode as below table.

Mode	Frequency (MHz)
Zigbee	2405
	2440
	2480

4 TRANSMITTER TEST RESULTS

4.1 **RF output power**	**VERDICT: PASS**

Standard	ETSI EN 300 328
Limits: For adaptive equipment using wide band modulation other than FHSS, the maximum RF output power shall be 20 dBm. The maximum RF output power for non-adaptive equipment shall be declared by the supplier and shall not exceed 20 dBm. For non-adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be equal to or less than the value declared by the supplier. This limit shall apply for any combination of power level and intended antenna assembly.	

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results

Temperature	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	RF output power (dBm)	Limit (dBm)
25 ℃	2405	10,00	-5,00	5,00	20
	2440	10,07	-5,00	5,07	20
	2480	9,62	-5,00	4,62	20
-20 ℃	2405	9,83	-5,00	4,83	20
	2440	9,93	-5,00	4,93	20
	2480	9,53	-5,00	4,53	20
45 ℃	2405	9,93	-5,00	4,93	20
	2440	9,96	-5,00	4,96	20
	2480	9,59	-5,00	4,59	20

4.2 **Power Spectral Density**	**VERDICT: PASS**

Standard	ETSI EN 300 328
Limits: For equipment using wide band modulations other than FHSS, the maximum Power Spectral Density is limited to 10 dBm per MHz.	

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results

Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/ MHz)
2405	3,029	10
2440	3,093	
2480	2,629	

4.3 **Occupied Channel Bandwidth**	**VERDICT: PASS**

Standard	ETSI EN 300 328
Limits: The Occupied Channel Bandwidth shall fall completely within the band given in Clause 1 (2,4 GHz to 2,4835 GHz). In addition, for non-adaptive systems using wide band modulations other than FHSS and with e.i.r.p greater than 10 dBm, the occupied channel bandwidth shall be less than 20 MHz.	

Performed measurements

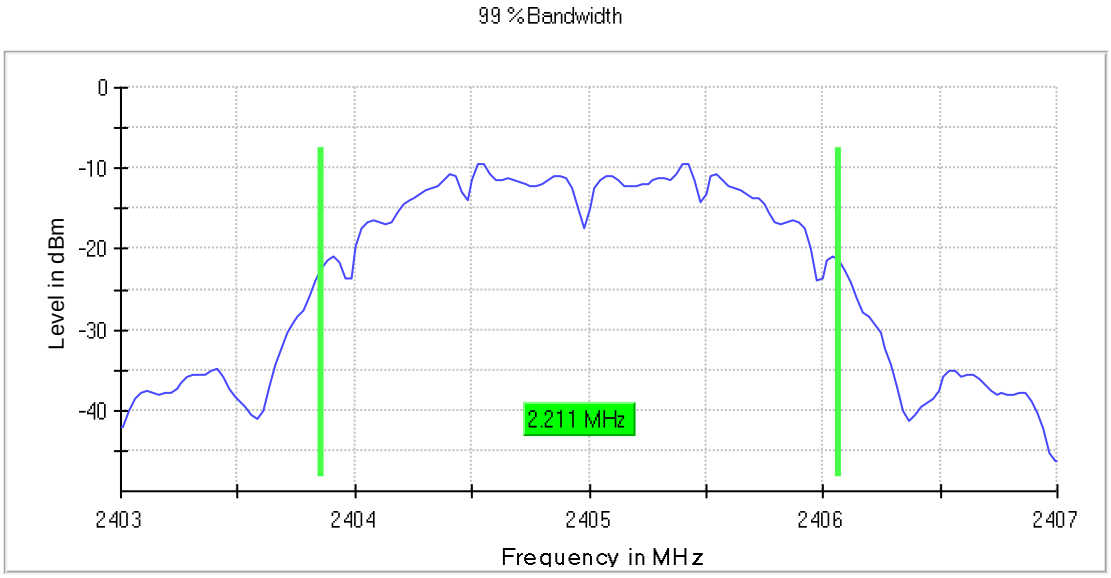
Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results

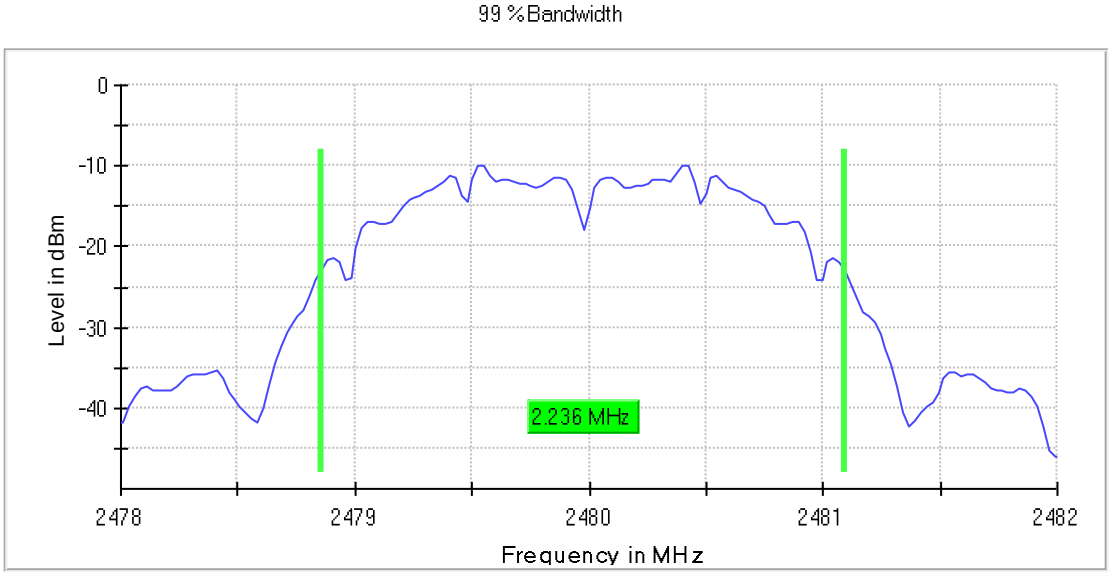
Frequency (MHz)	Bandwidth 99%(MHz)	FL (MHz) or FH (MHz)	Lower Limit (MHz)	Higher Limit
2405	2,21	2403,857	> 2400,0	N/A
2480	2,23	2481,093	N/A	< 2483,5

Test figure

Channel 2405 MHz



Channel 2480 MHz



4.4	**Transmitter unwanted emissions in the out-of-band domain**	**VERDICT: PASS**

Standard	ETSI EN 300 328

Limits:

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 3.

NOTE: Within the 2 400 MHz to 2 483,5 MHz band, the Out-of-band emissions are fulfilled by compliance with the Occupied Channel Bandwidth requirement in clause 4.3.2.6.

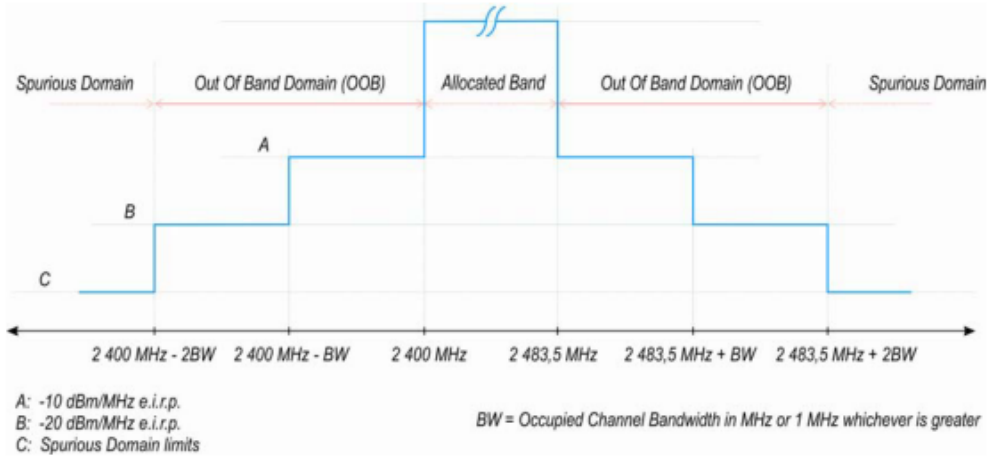


Figure 3: Transmit mask

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results for 2402 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2396.077640	-56.8	-20.0	PASS
2396.288820	-56.8	-20.0	PASS
2397.288820	-55.6	-20.0	PASS
2398.288820	-54.2	-10.0	PASS
2398.500000	-53.8	-10.0	PASS
2399.500000	-51.2	-10.0	PASS
2484.000000	-61.0	-10.0	PASS
2485.000000	-61.0	-10.0	PASS
2485.211180	-61.0	-10.0	PASS
2486.211180	-61.0	-20.0	PASS
2487.211180	-61.0	-20.0	PASS
2487.422360	-61.0	-20.0	PASS

Results for 2480 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2396.027950	-61.0	-20.0	PASS
2396.263975	-61.0	-20.0	PASS
2397.263975	-61.0	-20.0	PASS
2398.263975	-61.0	-10.0	PASS
2398.500000	-61.0	-10.0	PASS
2399.500000	-60.9	-10.0	PASS
2484.000000	-47.4	-10.0	PASS
2485.000000	-50.2	-10.0	PASS
2485.236025	-50.9	-10.0	PASS
2486.236025	-53.2	-20.0	PASS
2487.236025	-54.7	-20.0	PASS
2487.472050	-54.7	-20.0	PASS

4.5	**Transmitter unwanted emissions in the spurious domain**	**VERDICT: PASS**

Standard	ETSI EN 300 328

Limits:

Frequency range	**Maximum power e.r.p. (≤1 GHz) e.i.r.p. (>1 GHz)**	**Bandwidth**
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 694 MHz	-54 dBm	100 kHz
694 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

Performed measurements

Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1 (1M) worst case	
Remark	---	

Results

Channel (MHz)	Polarity	Frequency (MHz)	Result (dBm)	Limit (dBm)	Verdict
2405	H	7212,00	-41,44	-30,00	PASS
	V	4810,00	-47,49	-30,00	PASS
		7212,00	-39,48	-30,00	PASS
2480	H	7433,00	-45,18	-30,00	PASS
	V	4949,00	-47,13	-30,00	PASS
		7433,00	-39,77	-30,00	PASS

5 RECEIVER TEST RESULTS

5.1	**Receiver spurious emissions**	**VERDICT: PASS**

Standard	ETSI EN 300 328

Limits:

Frequency range	**Maximum power e.r.p. (≤1 GHz) e.i.r.p. (>1 GHz)**	**Measurement bandwidth**
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12,75 GHz	-47 dBm	1 MHz

Performed measurements

Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 2	
Remark	---	

Results

Channel (MHz)	Polarity	Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Result (dBm)	Limit (dBm)	Verdict
2405	H	No significant emissions were measured at the frequency range of interest employing the PK detectors (more than 20 dB below limits).					PASS
	V						PASS
2480	H	No significant emissions were measured at the frequency range of interest employing the PK detectors (more than 20 dB below limits).					PASS
	V						PASS

5.2 **Receiver Blocking**	**VERDICT: PASS**

Standard	ETSI EN 300 328

Limits:

Table 15: Receiver Blocking parameters receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW

NOTE 1: OCBW is in Hz.
NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.
NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 2	
Remark	---	

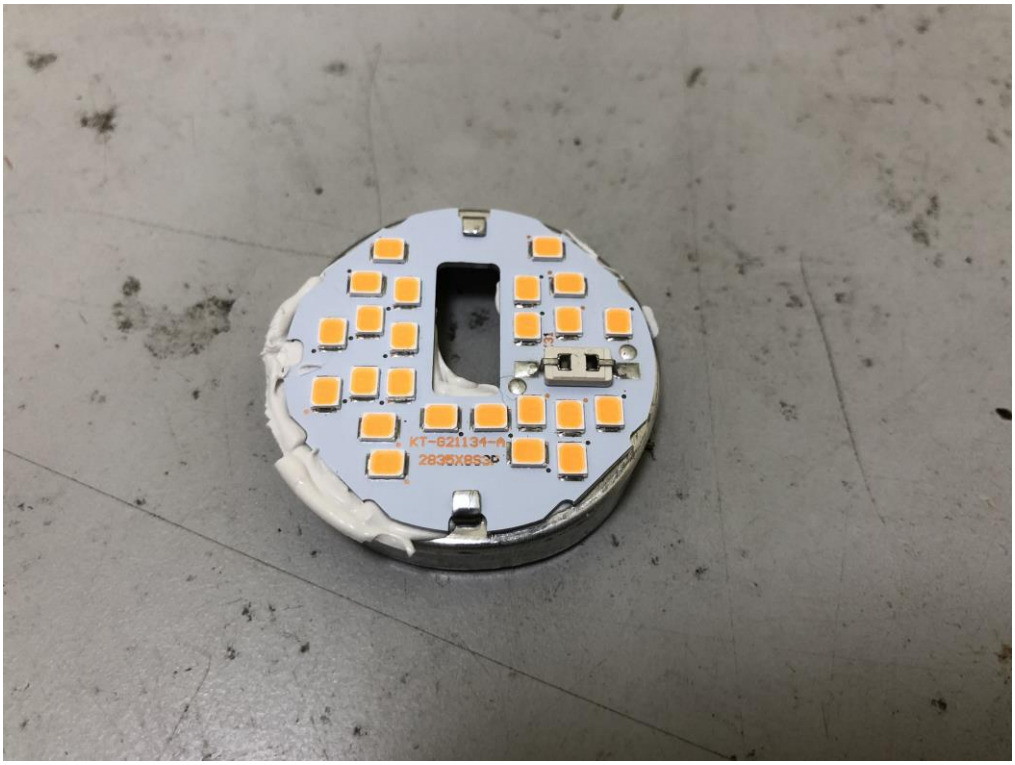
Results

Test Channel	Freq [MHz]	Wanted Signal Level [dBm]	CW Level [dBm]	PER [%]	Limit [%]	Verdict
2404	2380.000000	-69	-34	0.23	<=10	PASS
2404	2300.000000	-69	-34	0.45	<=10	PASS
2480	2504.000000	-69	-34	0.32	<=10	PASS
2480	2584.000000	-69	-34	0.24	<=10	PASS

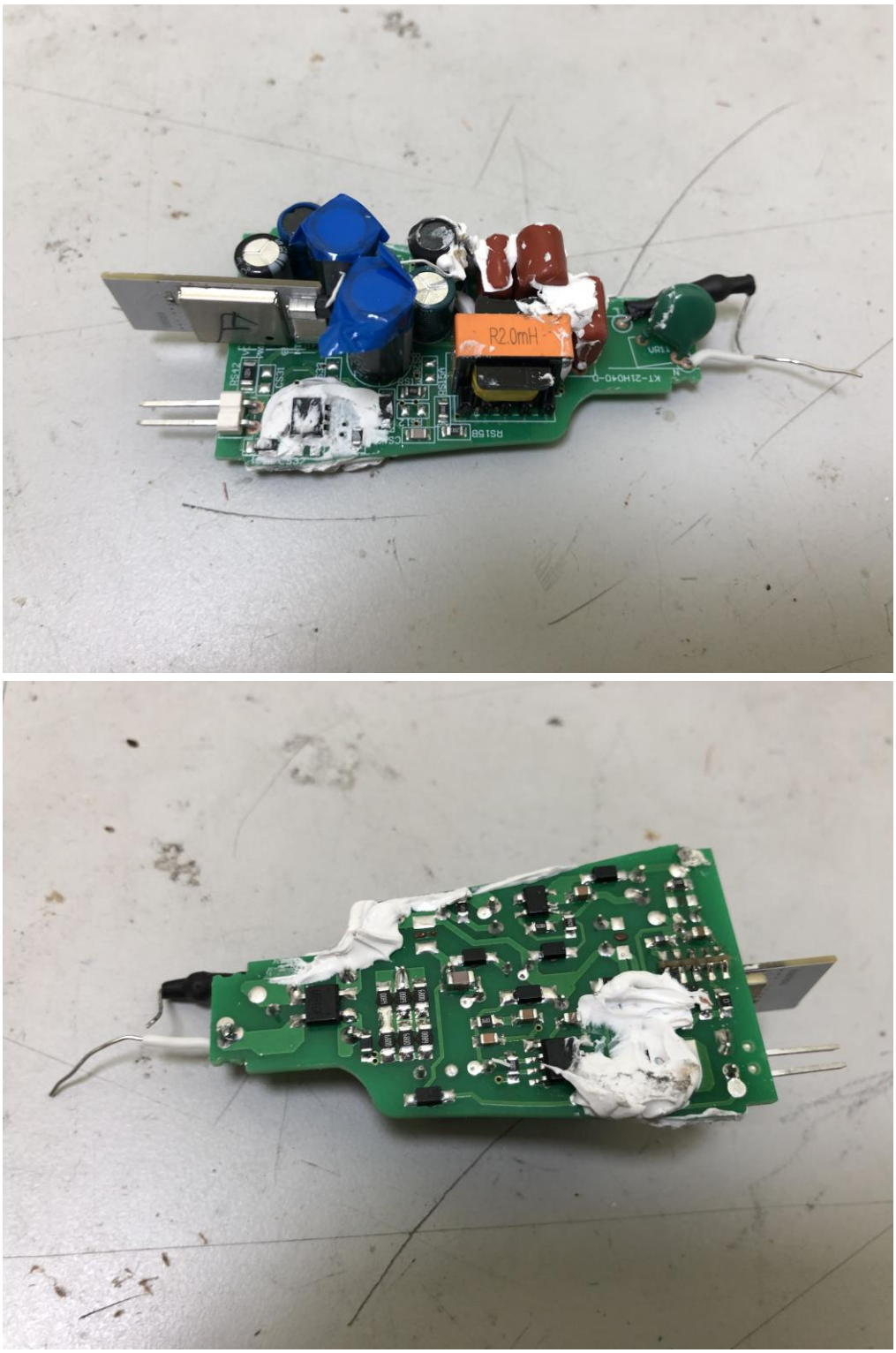
6 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.

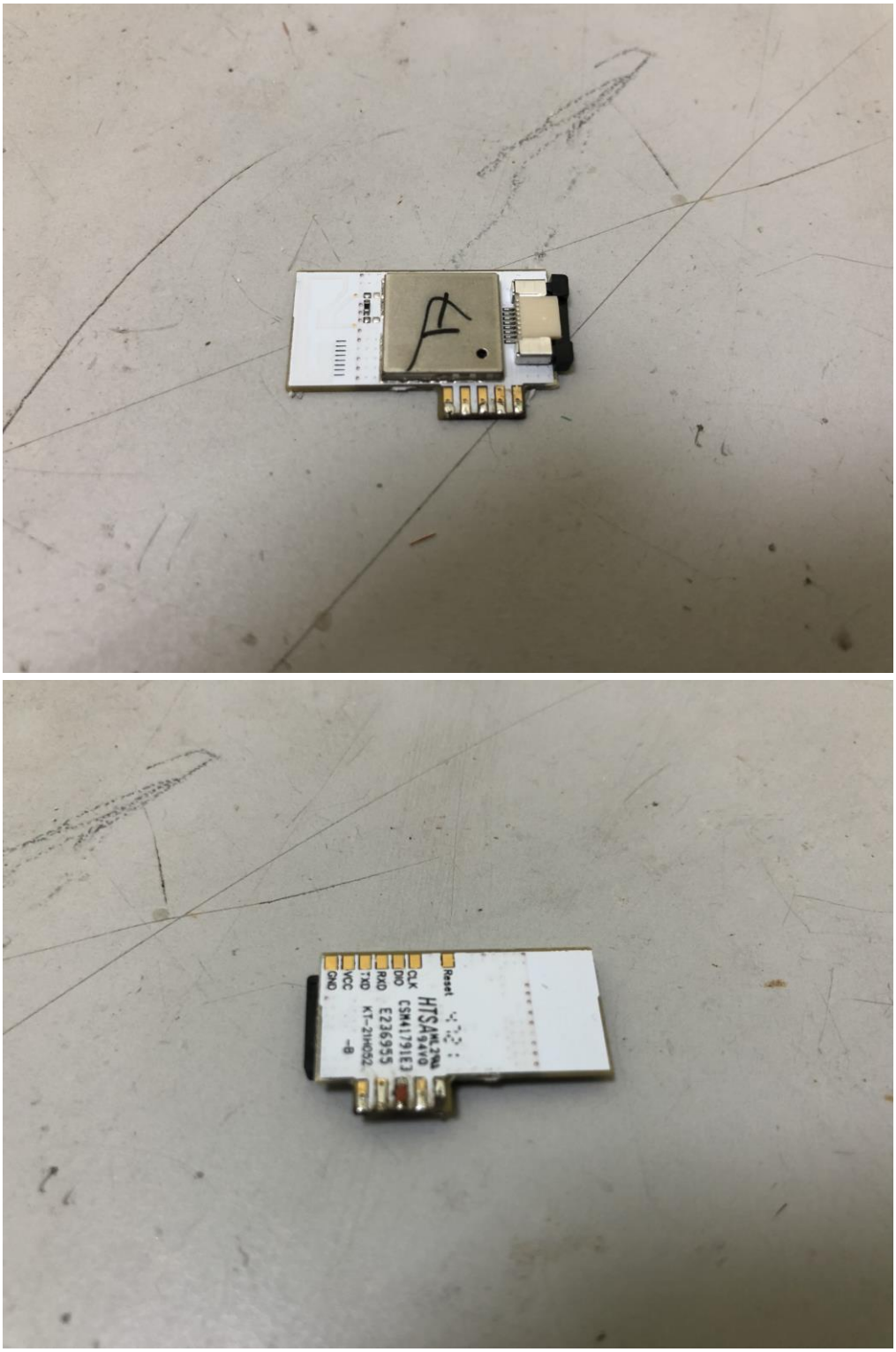
Model 9290024692A



LED module



Ppower PCB



RF module

ANNEX 1 – MEASUREMENT UNCERTAINTY

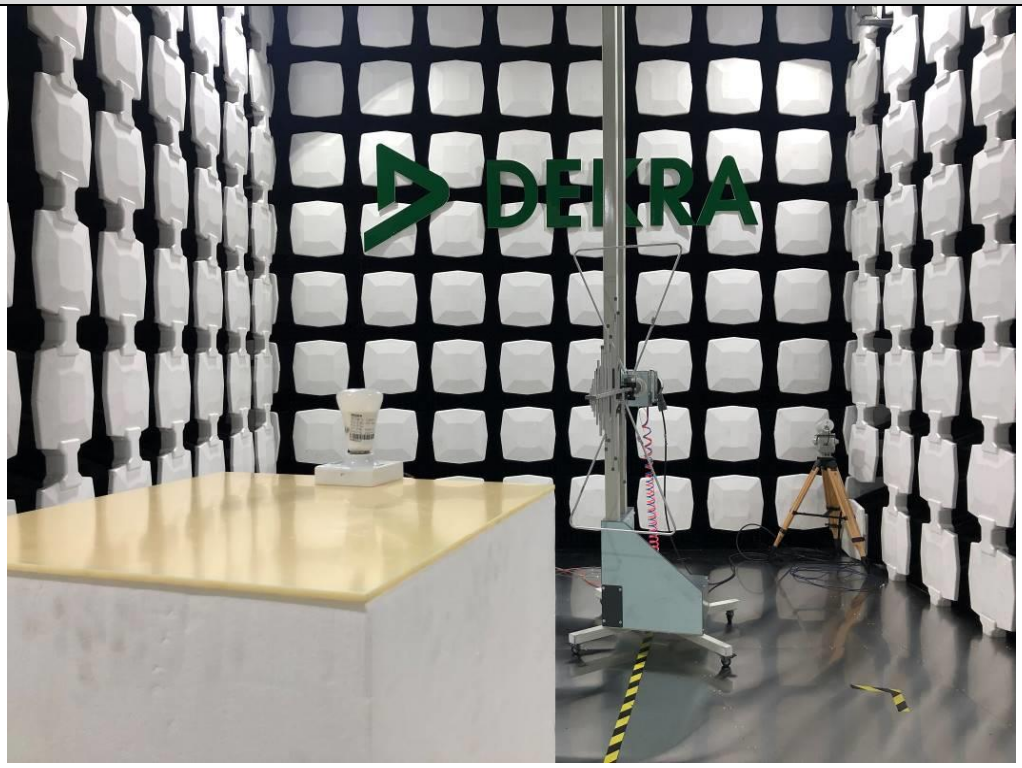
Test Item	Uncertainty
Occupied Channel Bandwidth	±0,7%
RF Output power, conducted	±0,6dB
Power Spectral Density, Conducted	±0,6dB
Unwanted Emissions, Conducted	±0.7dB
Spurious (30-1000MHz)	±4,4dB
Spurious (1-12,75GHz)	±4,4dB

ANNEX 2 - USED EQUIPMENT

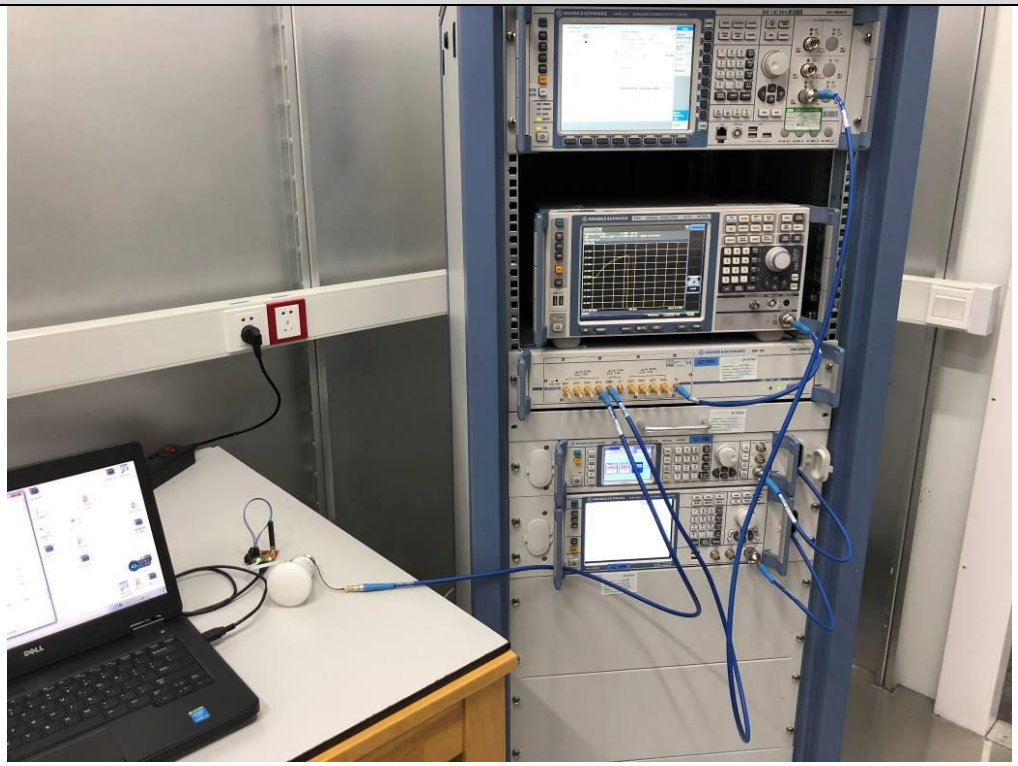
Item	Instrumentation	Manufacturer	Model	Serial no.	DEKRA No.	Cal Due date
1	EMI receiver	R&S	ESCI	101205	G/L857	2022/07/21
2	Antenna (30MHz-3GHz)	SCHWARZBECK	VULB9163	506	G/L864	2022/10/26
3	Antenna (1GHz-18GHz)	R&S	HF907	102306	G/L1236	2023/02/14
4	Horn antenna preamplifier	Schwarzbeek	SCU-18	102234	G/L1236-1	2023/02/14
5	Spectrum analyzer	R&S	FSV	SN101012	G/L1235	2023/01/17
6	Chamber	ETS	/	/	G/L856	2024/06/10
7	OSP	R&S	OSP 150	101907	GZ1894	2023/04/27
8	Signal generator	R&S	SMB 100A	181317	GZ1895	2023/04/27
9	Vector signal generator	R&S	SMBV100A	263671	GZ1896	2023/04/27
10	Wireless connectivity tester	R&S	CMW 270	100990	GZ1893	2022/04/27
11	Programmable Temperature & Humidity Chamber	ESPEC	EL-10KA	08107561	G/L466	2022/10/12

ANNEX 3 - TEST PHOTOS

Radiated measurements



Conducted measurements



Normal temperature

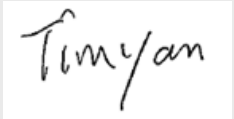
Extreme temperature

--- END ---

DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch
Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Tel +86 20 6661 2000 Fax +86 20 6661 2001 www.dekra-certification.com

Test report No: 4388006.50

TEST REPORT
Radio Spectrum Matters (RF)

Identification of item tested	LED lamp
Trademark	PHILIPS
Model and /or type reference	9290018216A, 9290018217A, 9290024692A, 9290024693A
Features	220-240 Vac, 50/60 Hz, 9 / 9,5 W
Applicant´s name / address	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai 200233, China
Test method requested, standard	ETSI EN 300 328 V2.2.2 (2019-07)
Verdict Summary	COMPLIANCE
Tested by (name & signature)	Harry Deng 
Approved by (name & signature)	Tim Yan 
Date of issue	2022-05-25
Report template No	TRF_EMC 2017-06-328

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page

GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. This report will not be used for social proof function in China market.

UNCERTAINTY

For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in EN 55016-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.				
☐ Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.				
Decimal separator used in this report	☒	Comma (,)	☐	Point (.)

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	:	Equipment Under Test
QP	:	Quasi-Peak
CAV	:	CISPR Average
AV	:	Average
CDN	:	Coupling Decoupling Network
SAC	:	Semi-Anechoic Chamber
OATS	:	Open Area Test Site
BW	:	Bandwidth
AM	:	Amplitude Modulation
PM	:	Pulse Modulation
HCP	:	Horizontal Coupling Plane
VCP	:	Vertical Coupling Plane
U_N	:	Nominal voltage
*T*x	:	Transmitter
*R*x	:	Receiver
N/A	:	Not Applicable
N/M	:	Not Measured

DOCUMENT HISTORY

Report nr.	Date	Description
4388006.50	2022-05-25	First release.

REMARKS AND COMMENTS

The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item ..... :	LED lamp
Model / Type number ..... :	PHILIPS
Trademark ..... :	9290018216A, 9290018217A, 9290024692A, 9290024693A
Ratings ..... :	220-240 Vac, 50/60 Hz, 9290018216A, 9290018217A: 9 W; 9290024692A, 9290024693A: 9,5 W
Manufacturer/Factory..... :	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai 200233, China

For Zigbee

Operating frequency range(s) – Tx :	2405-2480 MHz
Operating frequency range(s) – Rx :	2405-2480 MHz
Type of Modulation ..... :	GFSK
Antenna type..... :	Integral Antenna
Antenna gain..... :	-5,0 dBi
Number of channel..... :	16
Operating Temperature Range..... :	-20 – 45 ℃

For BLE

Operating frequency range(s) – Tx :	2402-2480 MHz
Operating frequency range(s) – Rx :	2402-2480 MHz
Type of Modulation ..... :	GFSK
Data rate..... :	1 Mbps, 2 Mbps, 125 kbps, 500 kbps
Antenna type..... :	Integral Antenna
Antenna gain..... :	-5,0 dBi
Number of channel..... :	40
Operating Temperature Range..... :	-20 – 45 ℃

Rated power supply .....:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☒	AC: 220 – 240 V, 50/60 Hz	☒	☐	☐	☒	☐
	☐	DC: 12 V, 24 V, 12 / 24 V					
	☐	Battery:					
Mounting position.....:	☐	Table top equipment					
	☒	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☐	Other:					

Intended use of the Equipment Under Test (EUT)
The apparatus as supplied for the test is LED lamp which intended for residential use, the product contains electronic control circuitry but without earth connection and no component susceptible to magnetic fields. According to manufacturer's declaration, all models are identical except different rated power and lamp cap. Hence, model 9290024692A was chosen for full test and the corresponding test data are also representative of the other models as well.

Copy of marking plate:
No provide.

1.2 Test data

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Date of receipt of test item	2022-04-18
Date (s) of performance of tests	2022-04-18 to 2022-04-28

1.3 The environment(s) in which the EUT is intended to be used

The equipment under test (EUT) is intended to be used in the following environment(s):

☒	Residential (domestic) environment.
☒	Commercial and light-industrial environment.
☐	Industrial environment.

1.4 Classification of Receivers according to ETSI EN 300328

The receivers were subdivided into 3 categories according to ETSI EN 300 328. For each category, the specific immunity requirements are formulated.

	Receiver category	Definition
	1	Adaptive equipment with a maximum RF output power greater than 10 dBm(e.i.r.p).
√	2	Non-adaptive equipment with a Medium Utilization (MU) factor greater than 1 % and less than or equal to 10 % or adaptive equipment with a maximum RF output power of 10 dBm(e.i.r.p).
	3	Non-adaptive equipment with a maximum Medium Utilization (MU) factor of 1 % or adaptive equipment with a maximum RF output power of 0 dBm(e.i.r.p).

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Operating mode	Operating mode description	Used for methos	
		Conducted	Radiated
1	Transmitting @BLE mode	☒	☒
2	Receiving @BLE mode	☒	☒
3		☐	☐
Supplemental information: ---			

2.2 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
Laptop	Latitude 5488	DELL	DEKRA
Supplemental information: ---			

2.3 Test Configuration / Block diagram used for tests

Refer to Annex 3.

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
ETSI EN 300 328 V2.2.2	2019-07	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

3.3 Overview of results

TRANSMITTER TESTS		
Requirement – Test case for Wide band modulation other than FHSS	**Verdict**	**Remark**
RF output power	PASS	---
Power Spectral Density	PASS	---
Duty Cycle, Tx-sequence, Tx-gap	N/A	See 1)
Medium Utilization (MU) factor	N/A	See 2)
Adaptivity	N/A	See 3)
Occupied Channel Bandwidth (BW)	PASS	---
Transmitter unwanted emissions in the out-of-band domain	PASS	---
Transmitter unwanted emissions in the spurious domain	PASS	---
Supplementary information: 1) These requirements apply to non-adaptive equipment or to adaptive equipment when operating in a non-adaptive mode. 2) This requirement does not apply to adaptive equipment unless operating in a non-adaptive mode. 3) The maximum RF output power for this product is less than 10 dBm.		

RECEIVER TESTS		
Requirement	**Verdict**	**Remark**
Receiver spurious emission	PASS	--
Receiver Blocking	PASS	---
Geo-location capability	N/A	See 1)
Supplementary information: 1) This requirement only applies to equipment with geo-location capability		

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result.

3.4 Measurement procedure

The EUT was controlled by a serial PCB which provided by manufacturer which connected to laptop through the com port. After connected, run the software “HueApprobationTool” supplied by manufacturer to control the EUT work in required test mode as below table.

Mode	Frequency (MHz)
BLE	2402
	2440
	2480

4 TRANSMITTER TEST RESULTS

4.1 **RF output power**	**VERDICT: PASS**

Standard	ETSI EN 300 328
Limits: For adaptive equipment using wide band modulation other than FHSS, the maximum RF output power shall be 20 dBm. The maximum RF output power for non-adaptive equipment shall be declared by the supplier and shall not exceed 20 dBm. For non-adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be equal to or less than the value declared by the supplier. This limit shall apply for any combination of power level and intended antenna assembly.	

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results for 1M

Temperature	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	RF output power (dBm)	Limit (dBm)
25 ℃	2402	9,99	-5,00	4,99	20
	2440	10,15	-5,00	5,15	20
	2480	9,69	-5,00	4,69	20
-20 ℃	2402	9,78	-5,00	4,78	20
	2440	10,02	-5,00	5,02	20
	2480	9,62	-5,00	4,62	20
45 ℃	2402	9,83	-5,00	4,83	20
	2440	10,1	-5,00	5,10	20
	2480	9,67	-5,00	4,67	20

Results for 2M

Temperature	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	RF output power (dBm)	Limit (dBm)
25 ℃	2402	10,06	-5,00	5,06	20
	2440	10,12	-5,00	5,12	20
	2480	9,67	-5,00	4,67	20
-20 ℃	2402	9,89	-5,00	4,89	20
	2440	9,98	-5,00	4,98	20
	2480	9,55	-5,00	4,55	20
45 ℃	2402	9,95	-5,00	4,95	20
	2440	10,06	-5,00	5,06	20
	2480	9,59	-5,00	4,59	20

Results for 125 kbps

Temperature	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	RF output power (dBm)	Limit (dBm)
25 ℃	2402	10,02	-5,00	5,02	20
	2440	10,08	-5,00	5,08	20
	2480	9,62	-5,00	4,62	20
-20 ℃	2402	9,83	-5,00	4,83	20
	2440	9,92	-5,00	4,92	20
	2480	9,52	-5,00	4,52	20
45 ℃	2402	9,97	-5,00	4,97	20
	2440	9,99	-5,00	4,99	20
	2480	9,59	-5,00	4,59	20

Results for 500 kbps

Temperature	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	RF output power (dBm)	Limit (dBm)
25 ℃	2402	10,02	-5,00	5,02	20
	2440	10,08	-5,00	5,08	20
	2480	9,63	-5,00	4,63	20
-20 ℃	2402	9,81	-5,00	4,81	20
	2440	9,86	-5,00	4,86	20
	2480	9,52	-5,00	4,52	20
45 ℃	2402	9,92	-5,00	4,92	20
	2440	9,97	-5,00	4,97	20
	2480	9.54	-5,00	4.54	20

4.2 **Power Spectral Density**	**VERDICT: PASS**

Standard	ETSI EN 300 328
Limits: For equipment using wide band modulations other than FHSS, the maximum Power Spectral Density is limited to 10 dBm per MHz.	

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results for 1M

Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/ MHz)
2402	4,941	10
2440	5,105	
2480	4,645	

Results for 2M

Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/ MHz)
2402	3,913	10
2440	3,965	
2480	3,520	

Results for 125 kbps

Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/ MHz)
2402	4,931	10
2440	4,987	
2480	4,531	

Results for 500 kbps

Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/ MHz)
2402	4,936	10
2440	4,999	
2480	4,544	

4.3 **Occupied Channel Bandwidth**	**VERDICT: PASS**

Standard	ETSI EN 300 328
Limits: The Occupied Channel Bandwidth shall fall completely within the band given in Clause 1 (2,4 GHz to 2,4835 GHz). In addition, for non-adaptive systems using wide band modulations other than FHSS and with e.i.r.p greater than 10 dBm, the occupied channel bandwidth shall be less than 20 MHz.	

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results for 1M

Frequency (MHz)	Bandwidth 99%(MHz)	FL (MHz) or FH (MHz)	Lower Limit (MHz)	Higher Limit
2402	1,034	2401,462	> 2400,0	N/A
2480	1,034	2480,497	N/A	< 2483,5

Results for 2M

Frequency (MHz)	Bandwidth 99%(MHz)	FL (MHz) or FH (MHz)	Lower Limit (MHz)	Higher Limit
2402	2,086	2400,931	> 2400,0	N/A
2480	2,111	2481,043	N/A	< 2483,5

Results for 125 kbps

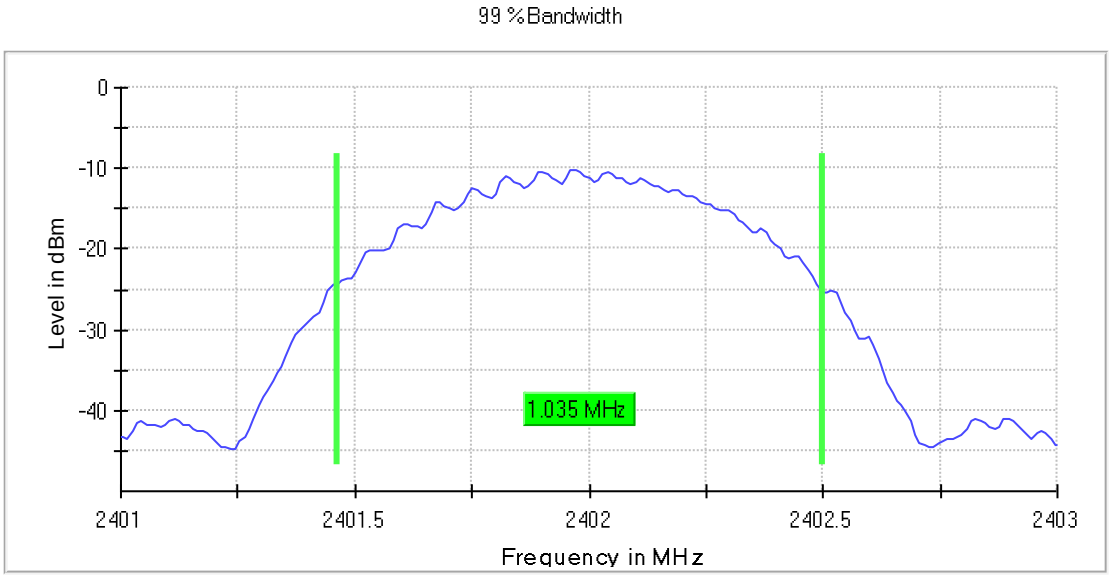
Frequency (MHz)	Bandwidth 99%(MHz)	FL (MHz) or FH (MHz)	Lower Limit (MHz)	Higher Limit
2402	1,094	2401,432	> 2400,0	N/A
2480	1,084	2480,517	N/A	< 2483,5

Results for 500 kbps

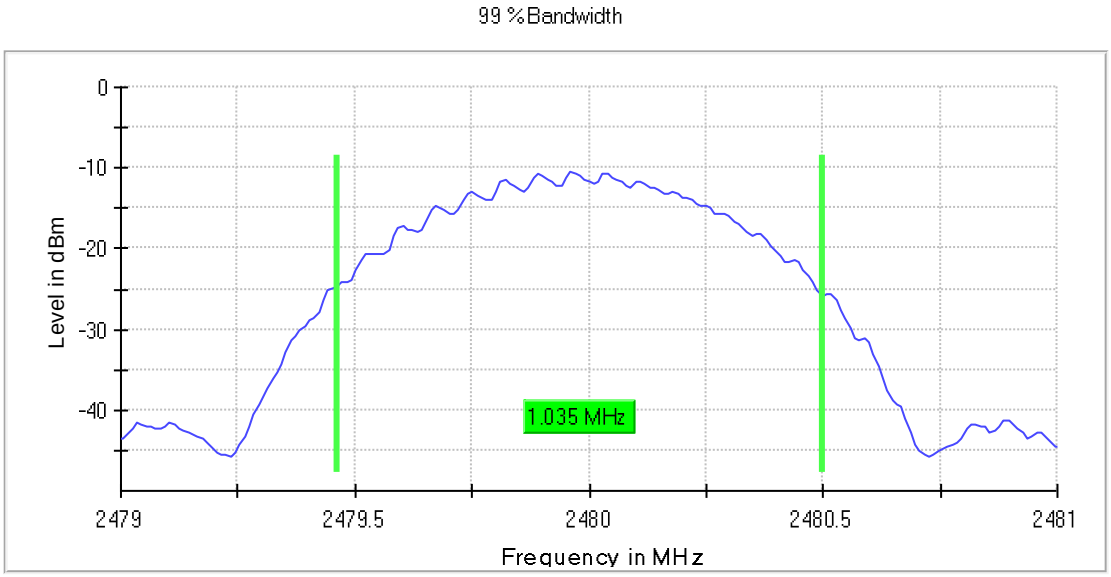
Frequency (MHz)	Bandwidth 99%(MHz)	FL (MHz) or FH (MHz)	Lower Limit (MHz)	Higher Limit
2402	1,104	2401,422	> 2400,0	N/A
2480	1,094	2480,517	N/A	< 2483,5

Test figure for 1M

Channel 2402 MHz

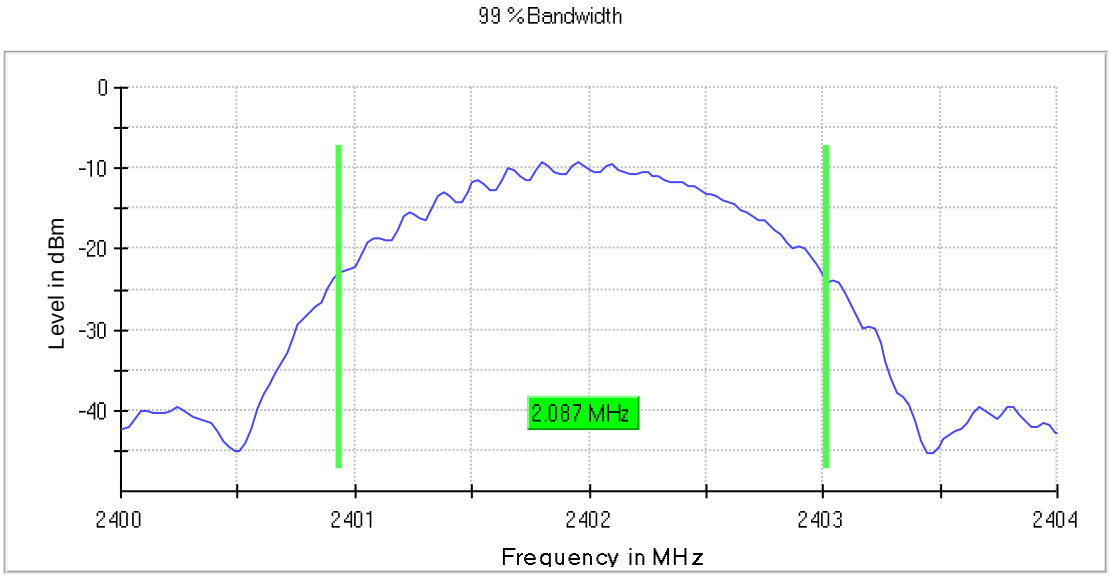


Channel 2480 MHz

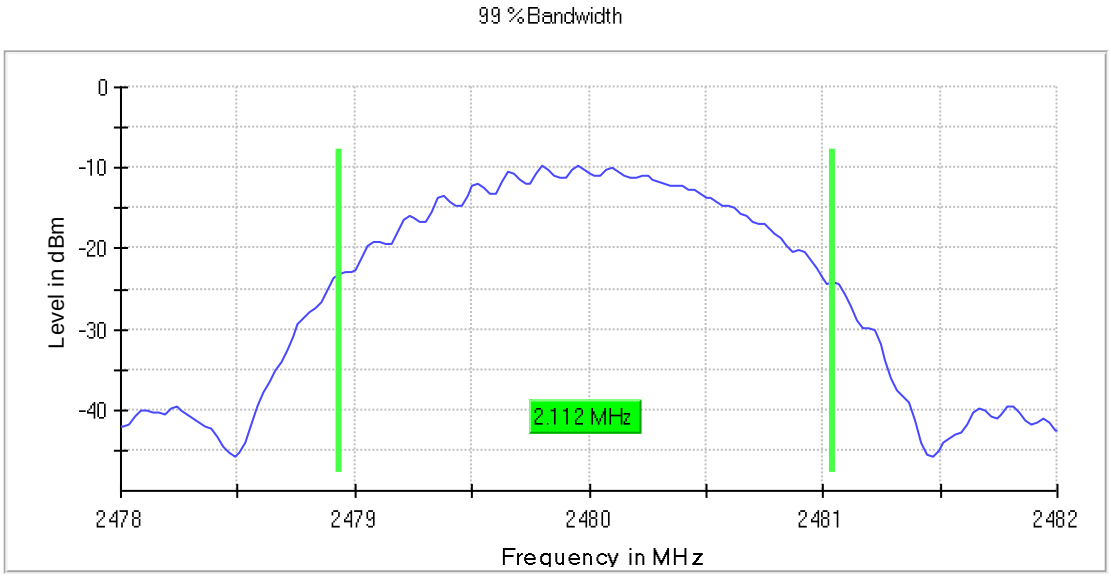


Test figure for 2M

Channel 2402 MHz

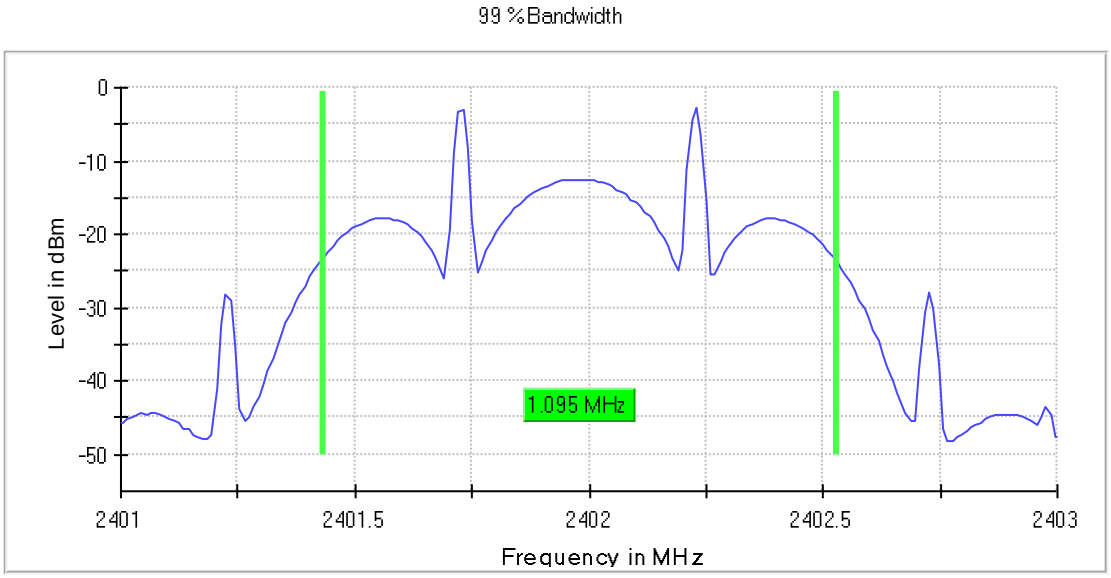


Channel 2480 MHz

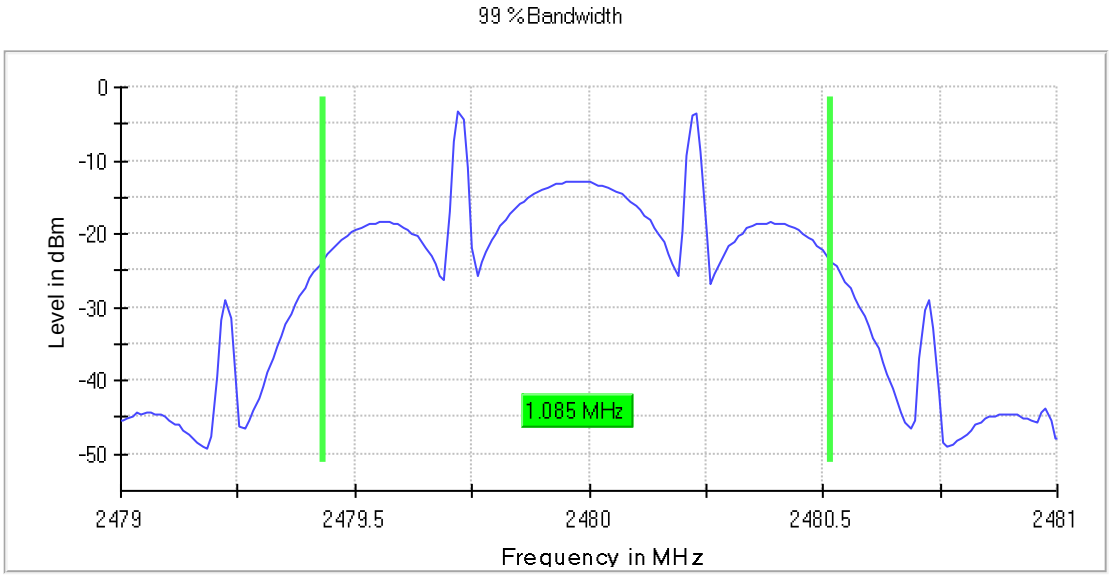


Test figure for 125 kbps

Channel 2402 MHz

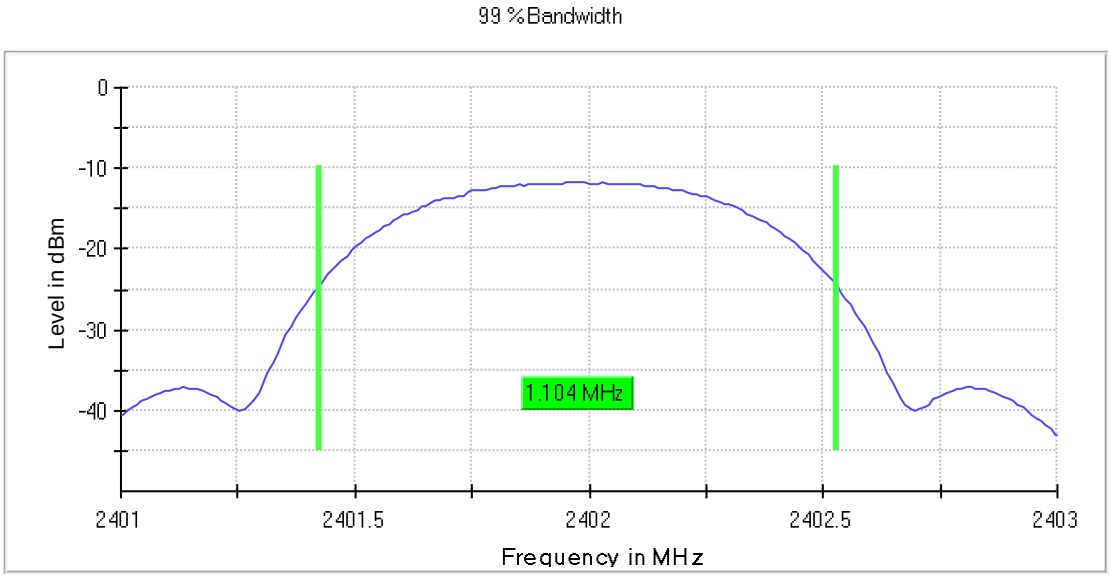


Channel 2480 MHz

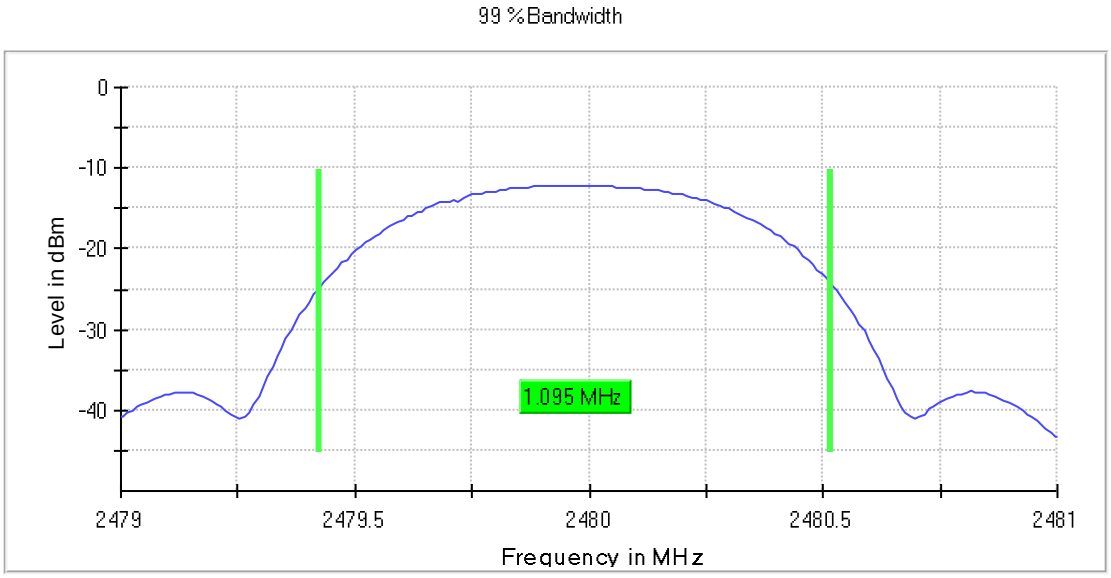


Test figure for 500 kbps

Channel 2402 MHz



Channel 2480 MHz



4.4	**Transmitter unwanted emissions in the out-of-band domain**	**VERDICT: PASS**

Standard	ETSI EN 300 328

Limits:

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 3.

NOTE: Within the 2 400 MHz to 2 483,5 MHz band, the Out-of-band emissions are fulfilled by compliance with the Occupied Channel Bandwidth requirement in clause 4.3.2.6.

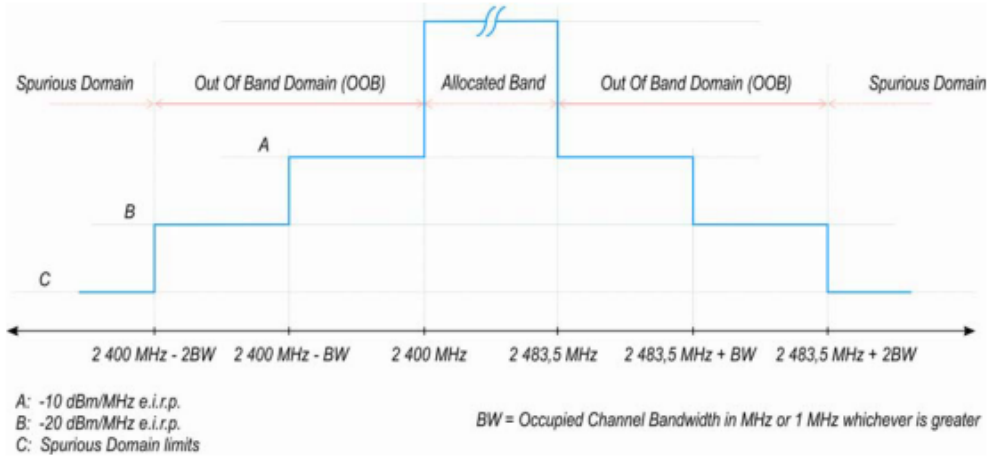


Figure 3: Transmit mask

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results for 1M at 2402 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2398.430350	-49.8	-20.0	PASS
2398.465175	-49.8	-20.0	PASS
2399.465175	-46.0	-10.0	PASS
2399.500000	-45.8	-10.0	PASS
2484.000000	-61.0	-10.0	PASS
2484.034825	-61.1	-10.0	PASS
2485.034825	-61.0	-20.0	PASS
2485.069650	-61.1	-20.0	PASS

Results for 1M at 2480 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2398.430350	-61.0	-20.0	PASS
2398.465175	-61.0	-20.0	PASS
2399.465175	-61.0	-10.0	PASS
2399.500000	-61.0	-10.0	PASS
2484.000000	-51.4	-10.0	PASS
2484.034825	-51.5	-10.0	PASS
2485.034825	-53.6	-20.0	PASS
2485.069650	-53.6	-20.0	PASS

Results for 2M at 2402 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2396.326086	-52.5	-20.0	PASS
2396.413043	-52.3	-20.0	PASS
2397.413043	-49.7	-20.0	PASS
2398.413043	-46.7	-10.0	PASS
2398.500000	-46.3	-10.0	PASS
2399.500000	-31.5	-10.0	PASS
2484.000000	-61.0	-10.0	PASS
2485.000000	-61.0	-10.0	PASS
2485.086957	-61.0	-10.0	PASS
2486.086957	-61.0	-20.0	PASS
2487.086957	-61.1	-20.0	PASS
2487.173914	-61.0	-20.0	PASS

Results for 2M at 2480 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2396.276398	-61.0	-20.0	PASS
2396.388199	-61.0	-20.0	PASS
2397.388199	-61.0	-20.0	PASS
2398.388199	-61.0	-10.0	PASS
2398.500000	-61.0	-10.0	PASS
2399.500000	-61.0	-10.0	PASS
2484.000000	-48.2	-10.0	PASS
2485.000000	-50.3	-10.0	PASS
2485.111801	-50.6	-10.0	PASS
2486.111801	-52.9	-20.0	PASS
2487.111801	-54.4	-20.0	PASS
2487.223602	-54.5	-20.0	PASS

Results for 125 kbps at 2402 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2398.310946	-50.1	-20.0	PASS
2398.405473	-49.9	-20.0	PASS
2399.405473	-46.6	-10.0	PASS
2399.500000	-46.3	-10.0	PASS
2484.000000	-61.0	-10.0	PASS
2484.094527	-61.1	-10.0	PASS
2485.094527	-61.1	-20.0	PASS
2485.189054	-61.0	-20.0	PASS

Results for 125 kbps at 2480 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2398.330846	-60.9	-20.0	PASS
2398.415423	-61.0	-20.0	PASS
2399.415423	-61.0	-10.0	PASS
2399.500000	-60.9	-10.0	PASS
2484.000000	-51.4	-10.0	PASS
2484.084577	-51.6	-10.0	PASS
2485.084577	-53.5	-20.0	PASS
2485.169154	-53.2	-20.0	PASS

Results for 500 kbps at 2402 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2398.291046	-50.0	-20.0	PASS
2398.395523	-49.8	-20.0	PASS
2399.395523	-46.6	-10.0	PASS
2399.500000	-46.1	-10.0	PASS
2484.000000	-61.0	-10.0	PASS
2484.104477	-61.0	-10.0	PASS
2485.104477	-61.0	-20.0	PASS
2485.208954	-61.0	-20.0	PASS

Results for 500 kbps at 2480 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2398.310946	-61.0	-20.0	PASS
2398.405473	-61.0	-20.0	PASS
2399.405473	-61.0	-10.0	PASS
2399.500000	-61.0	-10.0	PASS
2484.000000	-51.5	-10.0	PASS
2484.094527	-51.7	-10.0	PASS
2485.094527	-53.5	-20.0	PASS
2485.189054	-53.4	-20.0	PASS

4.5	**Transmitter unwanted emissions in the spurious domain**	**VERDICT: PASS**

Standard	ETSI EN 300 328

Limits:

Frequency range	**Maximum power e.r.p. (≤1 GHz) e.i.r.p. (>1 GHz)**	**Bandwidth**
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 694 MHz	-54 dBm	100 kHz
694 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

Performed measurements

Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1 (1M) worst case	
Remark	---	

Results

Channel (MHz)	Polarity	Frequency (MHz)	Result (dBm)	Limit (dBm)	Verdict
2402	H	7212,00	-43,84	-30,00	PASS
	V	4801,00	-45,70	-30,00	PASS
		7212,00	-41,44	-30,00	PASS
2480	H	7433,00	-44,18	-30,00	PASS
	V	4960,00	-49,88	-30,00	PASS
		7433,00	-40,41	-30,00	PASS

5 RECEIVER TEST RESULTS

5.1	**Receiver spurious emissions**	**VERDICT: PASS**

Standard	ETSI EN 300 328

Limits:

Frequency range	**Maximum power e.r.p. (≤1 GHz) e.i.r.p. (>1 GHz)**	**Measurement bandwidth**
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12,75 GHz	-47 dBm	1 MHz

Performed measurements

Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 2	
Remark	---	

Results

Channel (MHz)	Polarity	Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Result (dBm)	Limit (dBm)	Verdict
2402	H	No significant emissions were measured at the frequency range of interest employing the PK detectors (more than 20 dB below limits).					PASS
	V						PASS
2480	H	No significant emissions were measured at the frequency range of interest employing the PK detectors (more than 20 dB below limits).					PASS
	V						PASS

5.2 **Receiver Blocking**	**VERDICT: PASS**

Standard	ETSI EN 300 328

Limits:

Table 15: Receiver Blocking parameters receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW

NOTE 1: OCBW is in Hz.
NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.
NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 2	
Remark	---	

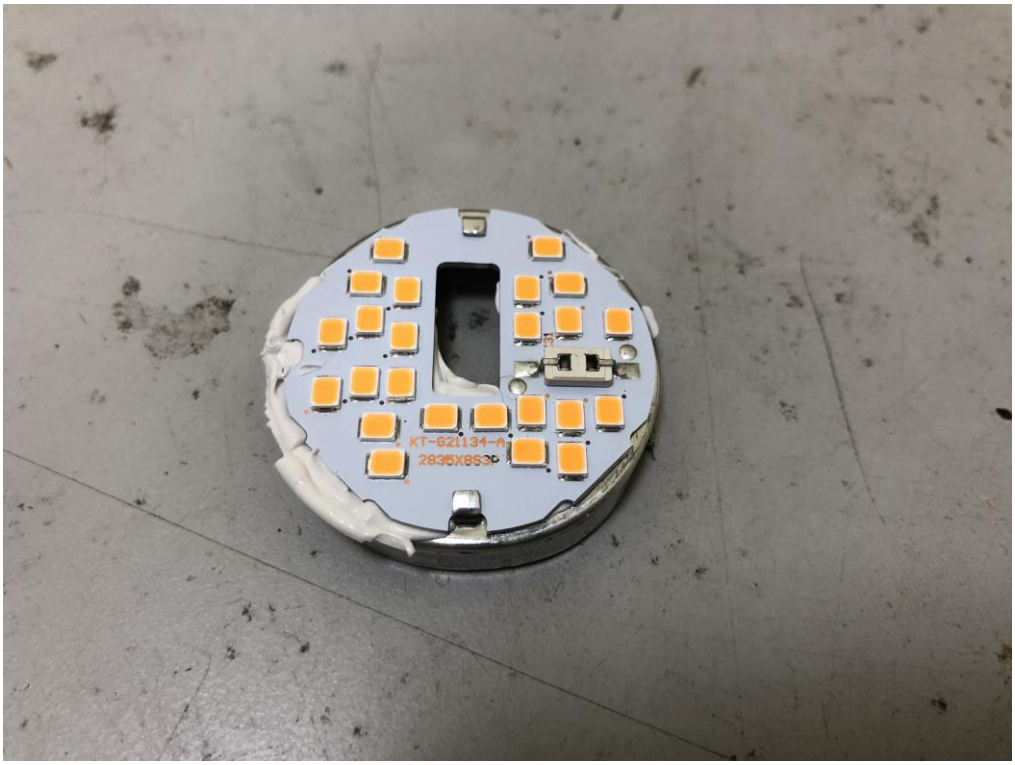
Results

Test Channel	Freq [MHz]	Wanted Signal Level [dBm]	CW Level [dBm]	PER [%]	Limit [%]	Verdict
2402	2380.000000	-69	-34	0.01	<=10	PASS
2402	2300.000000	-69	-34	0.02	<=10	PASS
2480	2504.000000	-69	-34	0.01	<=10	PASS
2480	2584.000000	-69	-34	0.01	<=10	PASS

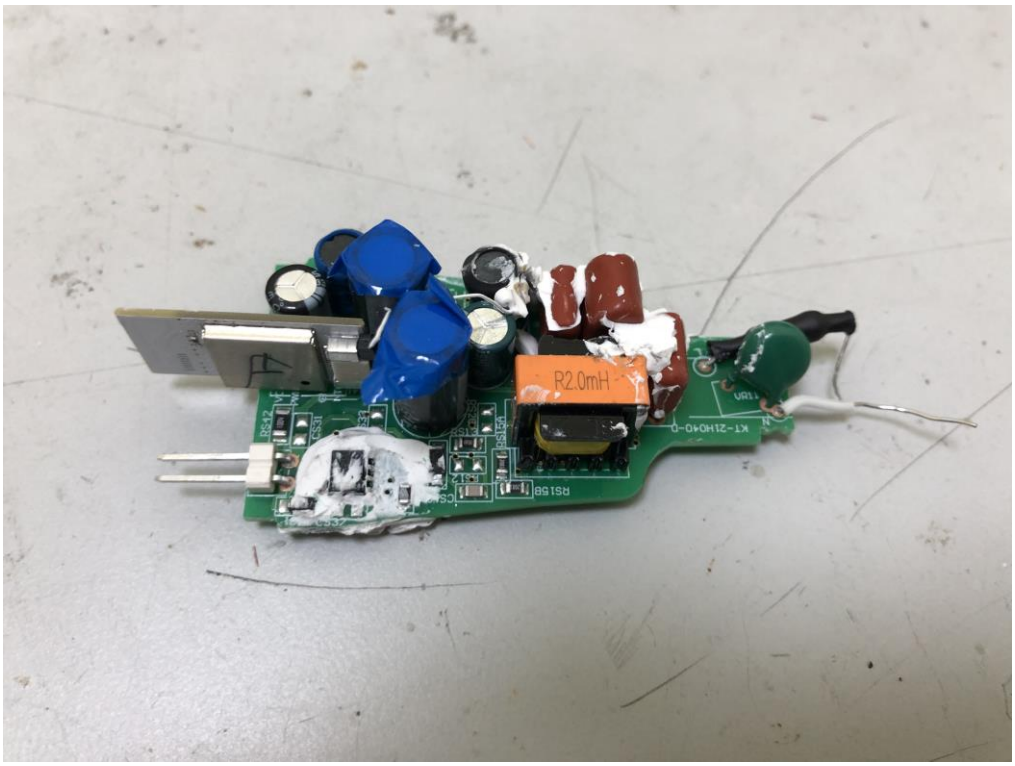
6 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

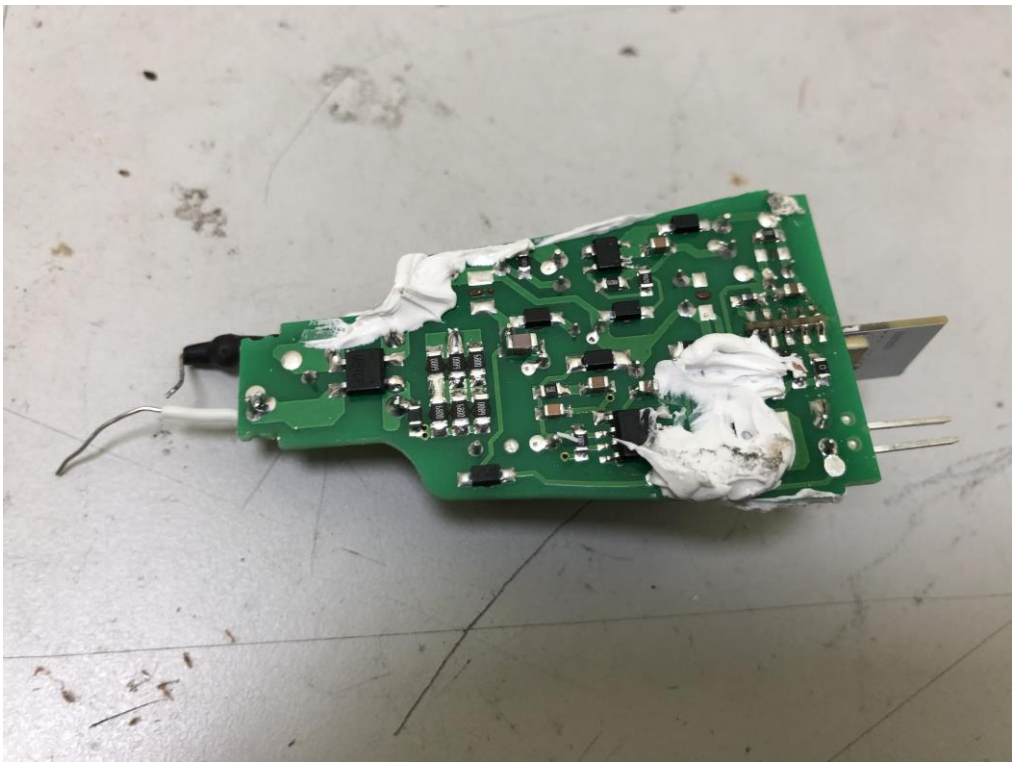
The photographs show the tested device.

Model 9290024692A

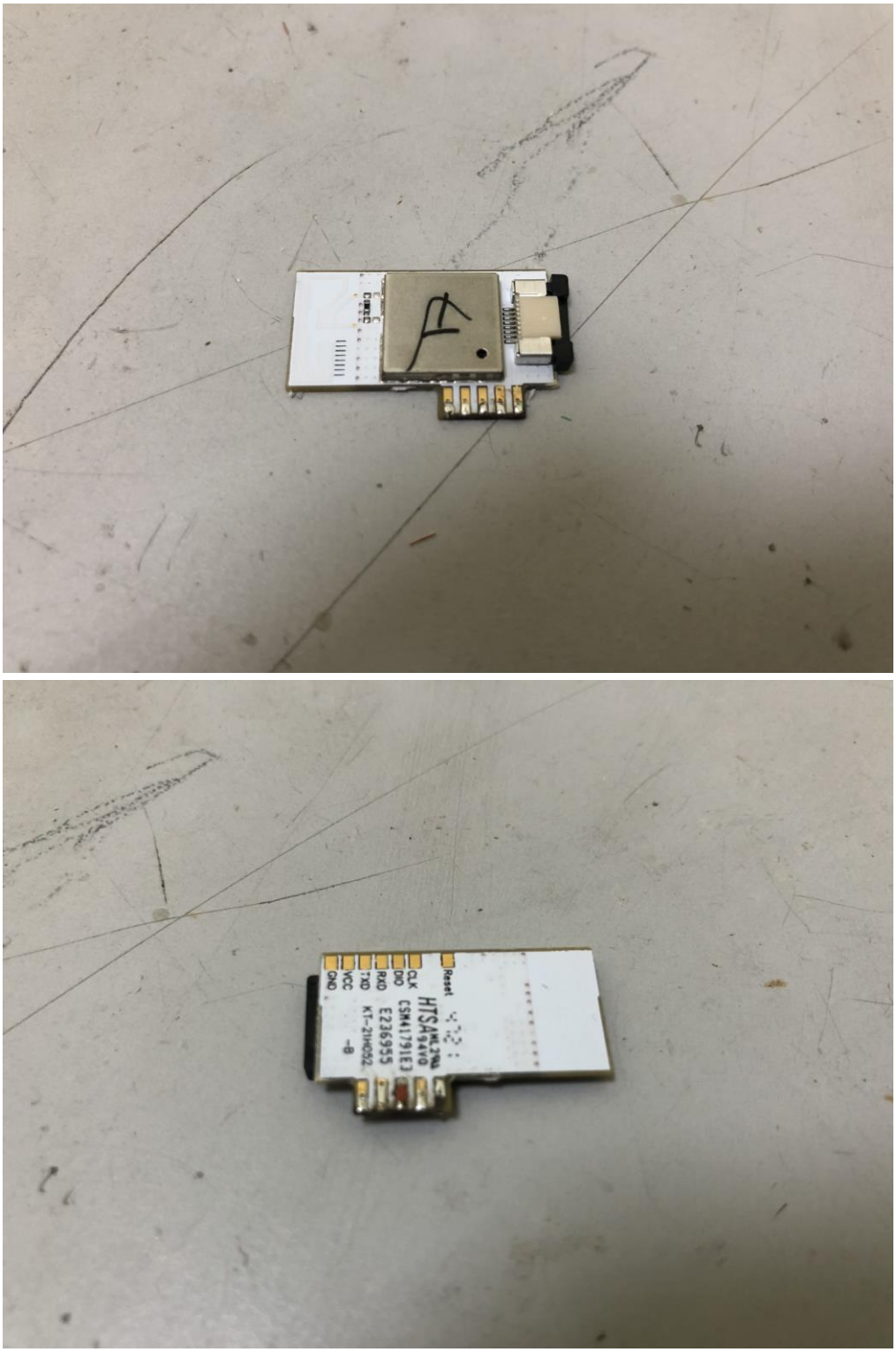


LED module





Ppower PCB



RF module

ANNEX 1 – MEASUREMENT UNCERTAINTY

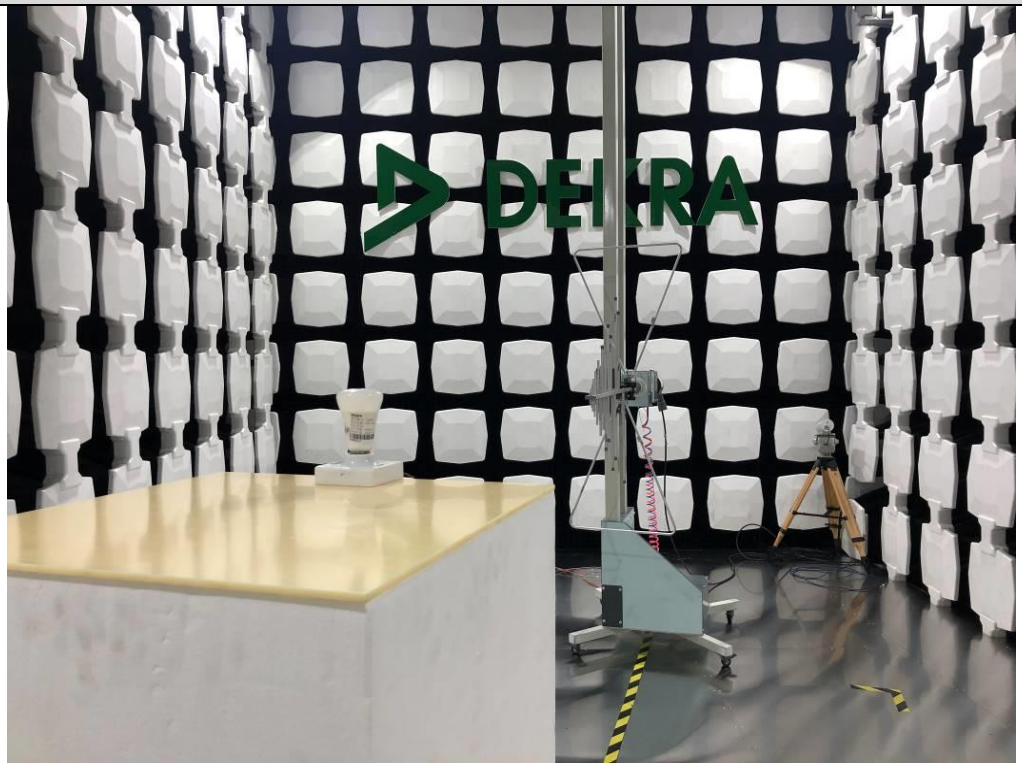
Test Item	Uncertainty
Occupied Channel Bandwidth	±0,7%
RF Output power, conducted	±0,6dB
Power Spectral Density, Conducted	±0,6dB
Unwanted Emissions, Conducted	±0.7dB
Spurious (30-1000MHz)	±4,4dB
Spurious (1-12,75GHz)	±4,4dB

ANNEX 2 - USED EQUIPMENT

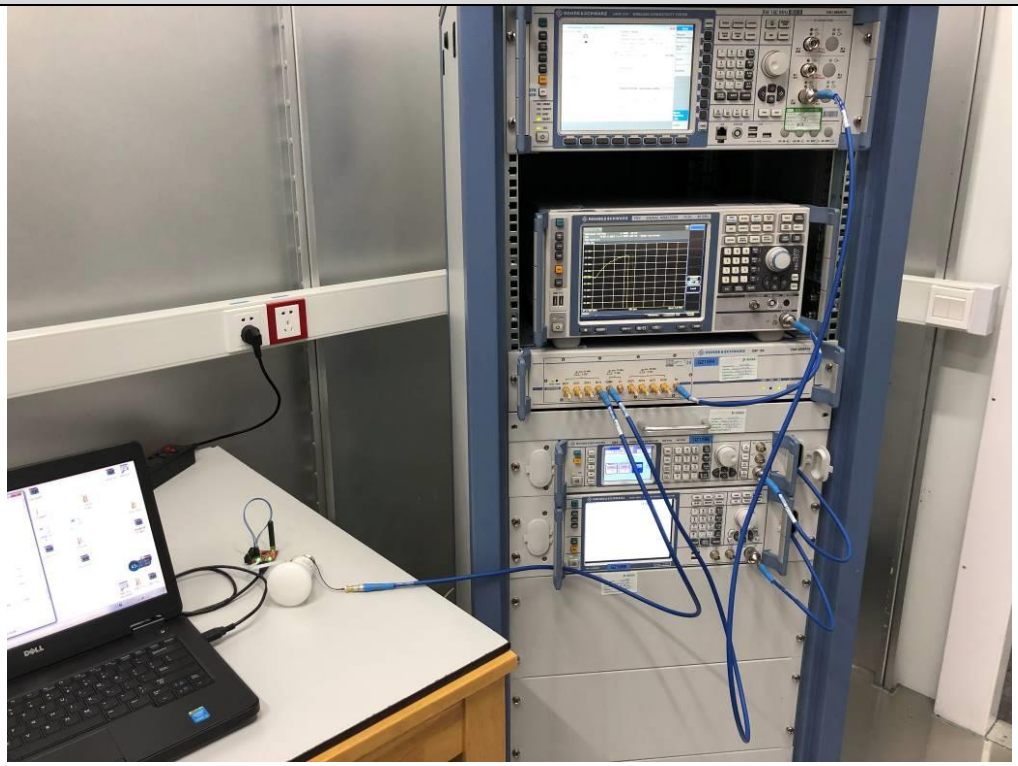
Item	Instrumentation	Manufacturer	Model	Serial no.	DEKRA No.	Cal Due date
1	EMI receiver	R&S	ESCI	101205	G/L857	2022/07/21
2	Antenna (30MHz-3GHz)	SCHWARZBECK	VULB9163	506	G/L864	2022/10/26
3	Antenna (1GHz-18GHz)	R&S	HF907	102306	G/L1236	2023/02/14
4	Horn antenna preamplifier	Schwarzbeek	SCU-18	102234	G/L1236-1	2023/02/14
5	Spectrum analyzer	R&S	FSV	SN101012	G/L1235	2023/01/17
6	Chamber	ETS	/	/	G/L856	2024/06/10
7	OSP	R&S	OSP 150	101907	GZ1894	2023/04/27
8	Signal generator	R&S	SMB 100A	181317	GZ1895	2023/04/27
9	Vector signal generator	R&S	SMBV100A	263671	GZ1896	2023/04/27
10	Wireless connectivity tester	R&S	CMW 270	100990	GZ1893	2022/04/27
11	Programmable Temperature & Humidity Chamber	ESPEC	EL-10KA	08107561	G/L466	2022/10/12

ANNEX 3 - TEST PHOTOS

Radiated measurements



Conducted measurements



Normal temperature

Extreme temperature

--- END ---

Test Report issued under the responsibility of:

TEST REPORT
EN 62493
Assessment of lighting equipment related to human exposure to electromagnetic fields

Report Number. ..... :	6130001.10
Date of issue ..... :	2022-05-24
Total number of pages ..... :	**7**
Name of Testing Laboratory preparing the Report ..... :	DEKRA Testing and Certification (Shanghai) Ltd. 3 F., No. 250 Jiangchangsan Road, Zhabei District, Shanghai City, 200436, China
Applicant's name ..... :	Signify (China) Investment Co., Ltd.
Address ..... :	Building No.9, Lane 888, Tianlin Road, Minhang district, 200233 Shanghai, China
Test specification:	
Standard ..... :	EN 62493: 2015 EN 62479: 2010
Test procedure ..... :	Type Test
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC62493B
Test Report Form(s) Originator .... :	Intertek Semko AB
Master TRF ..... :	2016-04

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

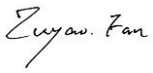
This report will not be used for social proof function in China market.
This report is only referred to the item that has undergone the test
The information provided by the customer in this report may affect the validity of the results, the test lab is not responsible for it.

The test results presented in this report relate only to the object tested.

General disclaimer:

The test results presented in this report relate only to the object tested.

Test item description ..... :	LED lamp
Trade Mark ..... :	PHILIPS
Manufacturer ..... :	Signify (China) Investment Co., Ltd. Building No.9, Lane 888, Tianlin Road, Minhang district, 200233 Shanghai, China
Model/Type reference ..... :	9290018216A, 9290018217A, 9290024692A, 9290024693A
Ratings ..... :	220-240 Vac, 50/60 Hz, 9 / 9.5W

Testing procedure and testing location:	
☒ **Testing Laboratory ..... :**	DEKRA Testing and Certification (Shanghai) Ltd.
Testing location/ address ..... :	3 F., No. 250 Jiangchangsan Road, Zhabei District, Shanghai City, 200436, China
☐ **Associated Test Laboratory ..... :**	
Testing location/ address ..... :	
Tested by (name + signature) ..... :	Kaiyuan Dai 
Approved by (name + signature) .. :	Zuyao Fan 

List of Attachments (including a total number of pages in each attachment): **N/A**	
Summary of testing:	
Tests performed (name of test and test clause): Assessment procedure intentional radiators: Low-power exclusion method	**Testing location:** DEKRA Testing and Certification (Shanghai) Ltd. No.250, Jiangchangsan Road, Jing'an District, Shanghai, China
Summary of compliance with National Differences (List of countries addressed): ☒ **The product fulfils the requirements of __IEC 62493:2015, IEC 62479:2010__ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)**	

IEC 62493			
Clause	Requirement + Test	Result - Remark	Verdict

Test item particulars.....:	LED lamp
Classification of installation and use.....:	Normal use
Supply Connection.....:	E27 / B22 cap
.....:	--
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	2022-04-13
Date (s) of performance of tests.....:	2022-04-13 to 2022-05-06

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies).....: 1915; 54877

IEC 62493			
Clause	Requirement + Test	Result - Remark	Verdict

General product information:		
Description of the EUT ..... :	☒	Luminaire
		Self-ballasted lamp
		Built-in electronic control gear
		Independent electronic control gear
		Others:
Control Gear ..... :		Magnetic control gear / transformer
	☒	Electronic control gear
		Others:
Lamp technology used ..... :		Fluorescent lamp
		High pressure discharge lamp (HID)
	☒	Light emitting diode (LED)
		Tungsten halogen lamp
		Incandescent lamp
		Others:
Model Number ..... :	9290024693A	
Brand ..... :	PHILIPS	
Rated Voltage/Frequency..... :	☒	AC:
		DC:
		AC/DC:
Rated Power ..... :	9.5 W	
Protection Class ..... :	Class II	
Number of phases ..... :	Single-phase	
Accessories ..... :	--	

IEC 62493			
Clause	Requirement + Test	Result - Remark	Verdict
4	**LIMITS**		P
4.1	**General**		P
	Comply with Van der Hoofden test limit in 4.2.3 or inherently compliant in 4.2.2 and pass assessment procedure for intentional radiators in 4.3		P
4.2	**Unintentional radiating part of lighting equipment**		P
4.2.2	Lighting equipment deemed to comply with the Van der Hoofden test without testing		P
	1) electronic controlgear	Yes ☐ No ☐	—
	2) incandescent-lamp technology	Yes ☐ No ☐	—
	3) LED-light-source technology	Yes ☒ No ☐	—
	4) OLED-light-source technology	Yes ☐ No ☐	—
	5) high-pressure discharge lamp LED-light-source technologies	Yes ☐ No ☐	—
	6) low-pressure discharge lamp technologies with exposure distance ≥ 50 cm	Yes ☐ No ☐	—
	7) independent auxiliary	Yes ☐ No ☐	—
	Not fulfil any of 1-7 above subject to 4.2.3		—
4.2.3	Applications of limits		N/A
	Not fulfil any of 1-7 in 4.2.2 but the compliance factor *F* is ≤ 1		N/A
4.3	**Intentional radiating part of lighting equipment**		**P**
	Comply with one of methods in Clause 7 if intentional radiator		P
5	**GENERAL**		**N/A**
5.1	**Measurand**		**N/A**
	Test head, measuring instrumentation and measuring conditions according Clause 5.1 – 5.8		**N/A**
6	**MEASUREMENT PROCEDURE FOR THE VAN DER HOOFDEN TEST**		**N/A**
6.1	**General**		**N/A**
	Measurements carried out under conditions according Clause 6.1 – 6.6	See Table 6	**N/A**

IEC 62493			
Clause	Requirement + Test	Result - Remark	Verdict

7	**ASSESSMENT PROCEDURE INTENTIONAL RADIATORS**		**P**
7.2	**Low-power exclusion method**		N/A
7.2.1	Input $P_{int,rad}$ ..... :	5.07 dBm	—
	Exclusion level P_{max}..... :	13.01dBm (20 mW)	—
	Input power $P_{int,rad}$ < exclusion level P_{max}		P
7.3	**Application of the EMF product standard for body worn-equipment**		N/A
	If not Clause 7.2 is met and expose distance ≤ 0.05 m, comply with IEC 62209-2		N/A
7.4	**Application of the EMF product standard for base stations**		N/A
	If not Clause 7.2 is met and if intentional radiator is base station, comply with IEC 62232		N/A
7.5	**Application of another EMF standard**		N/A
	If not Clause 7.2 is met and if intentional radiator cannot be considered as in Clause 7.3 or 7.4, comply with IEC 62311		N/A
	Power Density S (W/m^2)..... :		N/A
	Limit of Power Density S (W/m^2) ..... :		N/A
	Power Density S < Limit of Power Density S		N/A

6	**TABLE: Measurement results with Van der Hoofden test head**			N/A
Location of EuT	Measuring distance	Result (*F*)	Limit (*F*)	Verdict
N/A				

6	**TABLE: Equipment used during test with Van der Hoofden test head**		
Equipment	Manufacturer	Type	Id. No.
Van der Hoofden test head			
Measurement receiver			

----------END----------