TEST REPORT

Application No.:	HKEM2012001282AT
Applicant:	Home Fragrance Italia S.r.L.
Address of Applicant:	Via Tonale 26, Milan 20125, Italy
Equipment Under Test (EUT):	
EUT Name:	Aroma Diffuser with speaker with wireless technology
Model No.:	NA-393
FCC ID:	2AZTFDUPL
Standard(s) :	47 CFR Part 1.1307; 47 CFR Part 2.1093 KDB447498D01 General RF Exposure Guidance v06 RSS102 Issue 5 March 2015
Date of Receipt:	2020-12-03
Date of Test:	2020-12-09 to 2020-12-22
Date of Issue:	2020-12-28
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Law Man Kit
EMC Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		*2020-12-28*		*Original*

Authorized for issue by:				
				
		Leo Xu /Project Engineer		Date: *2020-12-28*
				
		Law Man Kit /Reviewer		Date: *2020-12-28*

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
RF Exposure	47 CFR Part 1.1307, 47 CFR Part 2.1093, KDB 447498 D01	KDB447498D01	KDB447498D01	PASS
RF Exposure	RSS102 Issue 5	RSS-102 Section 2.5.1	RSS102 Issue 5	PASS

Declaration of EUT Family Grouping:
None.

Abbreviation:

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application.

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4 General Information

4.1 Details of E.U.T.

Power supply:	Adaptor model: GQ12-120100-AG Input: AC 100-240V, 50/60Hz, 0.4A Output: DC12V, 1A
Test voltage:	AC 120V
Cable:	Power Cable: 185 cm unshielded 2 wires DC cable
Antenna Gain:	0 dBi
Antenna Type:	Integral antenna
Bluetooth Version:	V5.0 Classic
Channel Spacing:	3MHz
Modulation Type:	GFSK
Number of Channels:	1MHz
Operation Frequency:	GFSK, π/4DQPSK, 8DPSK
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum (FHSS)
Number of Channels:	79
Operation Frequency:	2402MHz to 2480MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Series number:	A1
Hardware Version:	V3.1
Software Version:	V1.0

4.2 Description of Support Units

The EUT has been tested with corresponding accessories as below:
Supplied by SGS:

Description	Manufacturer	Model No.	Serial No.
Galaxy A51	Samsung	SM-A515F	R58N23ACSTV
Surface Pro	Microsoft	1866	N/A

4.3 Modulation configure

RF software:	BK32xx RF Test_V1.5			
Modulation	**Packet**	**Packet Type**	**Packet Size**	**Power**
GFSK	DH1	Pn9	Default	2
	DH3	Pn9	Default	2
	DH5	Pn9	Default	2
	DM1	Pn9	Default	2
	DM3	Pn9	Default	2
	DM5	Pn9	Default	2
	HV1	Pn9	Default	2
	HV2	Pn9	Default	2
	HV3	Pn9	Default	2
π/4DQPSK	2DH1	Pn9	Default	2
	2DH3	Pn9	Default	2
	2DH5	Pn9	Default	2
8DPSK	3DH1	Pn9	Default	2
	3DH3	Pn9	Default	2
	3DH5	Pn9	Default	2
Remark: 1. Only two samples were used for RF test.				

4.4 Test Location

All tests were performed at:

SGS Hong Kong Limited

Unit 2 and 3, G/F, Block A, Po Lung Centre,

11 Wang Chiu Road, Kowloon Bay, Kowloon, Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480

No tests were sub-contracted.

4.5 Test Facility

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

- **HOKLAS (Lab Code: 009)**

SGS Hong Kong Limited has been accepted by HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a HOKLAS Accredited Laboratory, this laboratory meets the requirements of ISO/IEC 17025:2017 an it has been accredited for performing specific test as listed in the scope of accreditation within the test category of Electrical and Electronic Products.

- **IAS Accreditation (Lab Code: TL-817)**

SGS Hong Kong Limited has met the requirements of AC89, IAS Accreditation Criteria for Testing Laboratories, and has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories. This organization is accredited to provide the services specified in the scope of accreditation maintained on the IAS website (www.iasonline.org).

The report must not be used by the client to claim product certification, approval, or endorsement by IAS, NIST, or any agency of the Federal Government.

- **FCC Recognized Accredited Test Firm(CAB Registration No.: 514599)**

SGS Hong Kong Limited has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: HK0015, Test Firm Registration Number: 514599.

- **Industry Canada (Site Registration No.: 26103; CAB Identifier No.: HK0015)**

SGS Hong Kong Limited has been recognized by Department of Innovation, Science and Economic Development (ISED) Canada as a wireless testing laboratory. The acceptance letter from the ISED is maintained in our files. CAB Identifier No: HK0015, Site Registration Number: 26103.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Radio Spectrum Technical Requirement

5.1 RF Exposure

5.1.1 Test Requirement:

CFR 47 Part 1.1310

Limit:

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in Part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	$*180/f^2$	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

According to IEEE C95.3:2002 section 5.5.1.1, The power density S at a point on the axis at a distance d from a transmitting antenna is given by the Friis free-space transmission formula

$$S = \frac{PG}{4\pi d^2}$$

S = power density (mW/cm^2)
P = the net power delivered to the antenna (mW)
G = gain of the antenna in linear scale
d = distance between observation point and center of the radiator (cm)

5.1.1 IC Radiofrequncy radiation

According to RSS-102 Issue 5, section 2.5.2 Exemption.

RF exposure evaluation is required if the separation distance between the user and the device's radiating element is greater than 20 cm, except when the device operates as follows:

below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);

at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 22.48/f0.5W (adjusted for tune-up tolerance), where f is in MHz;

at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);

at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1.31 x 10-2 f0.6834 W (adjusted for tune-up tolerance), where f is in MHz;

at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

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5.1.2 EUT RF Exposure Evaluation

Antenna Gain:

The maximum Gain measured in fully anechoic chamber is 1 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

For FCC;

BT (2DH5):

Channel	Frequency (MHz)	Conduct power (including Tune-up tolerance) (dBm)	Conduct powe (mW)	Power Density at R = 20 cm (mW/cm2)	Limit	MPE Ratios	Result
Low	2405	2.5	1.778	0.00035	1	0.00035	PASS
Middle	2439	2.7	1.862	0.00037	1	0.00037	PASS
High	2475	2.3	1.698	0.00034	1	0.00034	PASS

Note: 1. Refer to report No. HKEM201200128202 for EUT test conducted power value. requirement.

6 Photographs

Remark: Photos refer to Appendix of HKEM2012001282AT.

- End of the Report -