

TEST REPORT

Application No.: HKEM2009000976AT
Applicant: BINATONE ELECTRONICS INTERNATIONAL LIMITED
Address of Applicant: FCC Address 1: 25/F, Guangdong Investment Tower, 148 Connaught Road, Central, Sheung Wan, Hong Kong, China
 ISED Address 2: Flat 23A, 9 Des Voeux Road West Sheung Wan, Hong Kong, China

Equipment Under Test (EUT):
EUT Name: 5-in-1 Nursery Humidifier
Model No.: ST600
FCC ID: VLJ-ST600
IC: 4522A-ST600
HVIN: ST600
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: 2020-12-03 to 2020-12-10
Date of Issue: 2020-12-10

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.





Law Man Kit
EMC Manager

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-12-10		Original

Authorized for issue by:			
			
		<hr/> Leo Xu /Project Engineer	Date: 2020-12-10
			
		<hr/> Law Man Kit /Reviewer	Date: 2020-12-10



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:

N/A

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: GQ12-240065-AU Input: AC 100 V - 240 V, 50/60 Hz, 0.4 A Output: DC 24 V, 0.65 A
Test voltage:	AC 120 V
Cable:	Power Cable: 183.5 cm unshielded 2-wire DC cable
Antenna Gain:	0 dBi
Antenna Type:	Integral Antenna
Bluetooth Version:	V5.0 Classic
Channel Spacing:	1MHz
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels:	79
Operation Frequency:	2402MHz to 2480MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Serial No.:	A1
Hardware Version:	501-BK3266-32P-V:00
Firmware Version:	V1.5

Frequency List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	40	2442
1	2403	41	2443
2	2404	42	2444
3	2405	43	2445
4	2406	44	2446
5	2407	45	2447
6	2408	46	2448
7	2409	47	2449
8	2410	48	2450
9	2411	49	2451
10	2412	50	2452
11	2413	51	2453
12	2414	52	2454
13	2415	53	2455
14	2416	54	2456
15	2417	55	2457
16	2418	56	2458
17	2419	57	2459
18	2420	58	2460
19	2421	59	2461
20	2422	60	2462
21	2423	61	2463
22	2424	62	2464
23	2425	63	2465
24	2426	64	2466
25	2427	65	2467
26	2428	66	2468
27	2429	67	2469
28	2430	68	2470
29	2431	69	2471
30	2432	70	2472
31	2433	71	2473
32	2434	72	2474
33	2435	73	2475
34	2436	74	2476
35	2437	75	2477
36	2438	76	2478
37	2439	77	2479
38	2440	78	2480
39	2441		

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Galaxy A51	Samsung	SM-A515F	R58N23ACSTV
Laptop	DELL	P75F	H55LXQ2
BK32xx RF Test_V1.8	Goldsound Electronic Ltd.	N/A	N/A

4.3 Modulation Configuration

RF software:	BK32xx RF Test_V1.8			
Modulation	Packet	Packet Type	Packet Size	Power
GFSK	DH1	Default	Default	1
	DH3	Default	Default	1
	DH5	Default	Default	1
$\pi/4$ DQPSK	2DH1	Default	Default	1
	2DH3	Default	Default	1
	2DH5	Default	Default	1
8DPSK	3DH1	Default	Default	1
	3DH3	Default	Default	1
	3DH5	Default	Default	1
Remark: 1. 1 value was set in test software as maximum output power setting. 2. Only one sample was 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 and 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-187)**

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, RSS-102 Issue 5, section 2.5.2

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/cm²)
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)

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 $22.48/f^{0.5}$ W (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 $1.31 \times 10^{-2} f^{0.6834}$ 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).

5.1.1 EUT RF Exposure Evaluation

Antenna Gain: 0 dBi for Bluetooth classic.

The maximum Gain measured in fully anechoic chamber is 1 (Bluetooth classic) in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

For FCC;

Bluetooth classic:

Operation mode	Channel	Frequency (MHz)	Conduct power (including Tune-up tolerance) (dBm)	Conduct power (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
GFSK	Low	2402	-7.2	0.191	0.00004	1	PASS
GFSK	Middle	2441	-8.5	0.141	0.00003	1	PASS
GFSK	High	2480	-8.4	0.145	0.00003	1	PASS
π /4DQPSK	Low	2402	-7.3	0.186	0.00004	1	PASS
π /4DQPSK	Middle	2441	-8.6	0.138	0.00003	1	PASS
π /4DQPSK	High	2480	-8.5	0.141	0.00003	1	PASS
8DPSK	Low	2402	-7.3	0.186	0.00004	1	PASS
8DPSK	Middle	2441	-8.6	0.138	0.00003	1	PASS
8DPSK	High	2480	-8.6	0.138	0.00003	1	PASS

For IC;

Bluetooth classic:

Operation mode	Channel	Frequency (MHz)	Conduct power (including Tune-up tolerance) (dBm)	E.I.R.P (dBm)	E.I.R.P (W)	Limit (W)	Result
GFSK	Low	2402	-7.2	-7.2	0.000191	2.7	PASS
GFSK	Middle	2441	-8.5	-8.5	0.000141	2.7	PASS
GFSK	High	2480	-8.4	-8.4	0.000145	2.7	PASS
π /4DQPSK	Low	2402	-7.3	-7.3	0.000186	2.7	PASS
π /4DQPSK	Middle	2441	-8.6	-8.6	0.000138	2.7	PASS
π /4DQPSK	High	2480	-8.5	-8.5	0.000141	2.7	PASS
8DPSK	Low	2402	-7.3	-7.3	0.000186	2.7	PASS
8DPSK	Middle	2441	-8.6	-8.6	0.000138	2.7	PASS
8DPSK	High	2480	-8.6	-8.6	0.000138	2.7	PASS



6 Photographs

Remark: Photos refer to appendices external and internal photos.

- End of the Report -
